GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: A-J/1-21

NOTES: The entire perimeter of the building was surveyed to determine the number of telescopic vents installed to vent through the Cellvent HX.

Good number of vents installed to score 1.5 points under BS8485:2019.

1. Telescopic vents installed beneath DPC Level.

2. Telescopic vents installed beneath DPC Level.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

3. Good number of telescopic vents installed around entire perimeter.

Vents circled above. Spacings given allow for point score of 1.5 under BS8485:2019.

Contractor confirmed suspended raft foundation has been poured with waterproofed

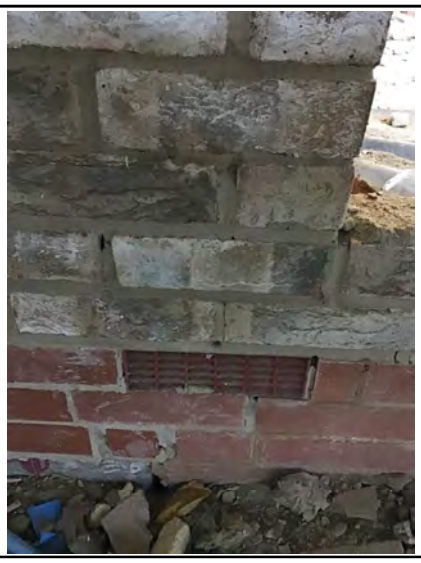
concrete. This gives a point score of 2 points for structural Barrier under BS8485:2019

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

LOCATION/GRID LINE: A-J/1-21

NOTES: Entire perimeter of the building checked to ensure high number of telescopic vents installed throughout. Vents installed in between all window and door thresholds and the rear of the property spacings at an average of 1.5M.



1. Photo evidence of vents

2. Photo evidence of vents

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

3. Photo evidence of vents

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of vents

Photo evidence of vents

Photo evidence of vents

Photo evidence of vents

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

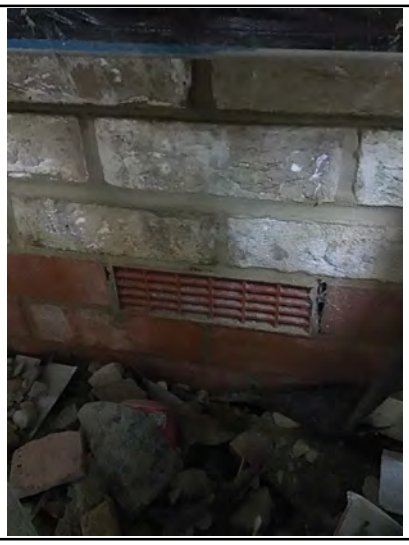


Photo evidence of vents

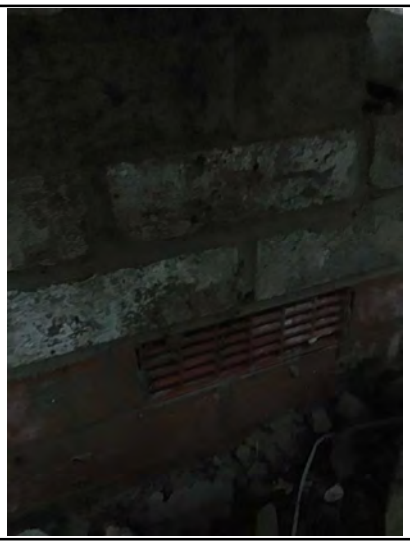


Photo evidence of vents

Photo evidence of vents

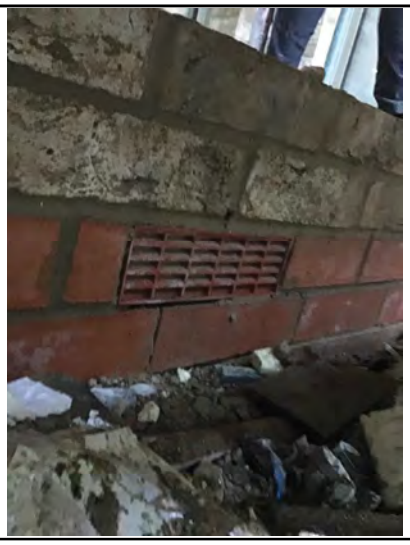


Photo evidence of vents

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

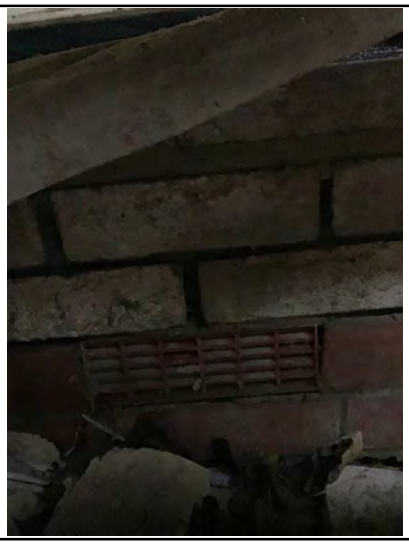


Photo evidence of vents

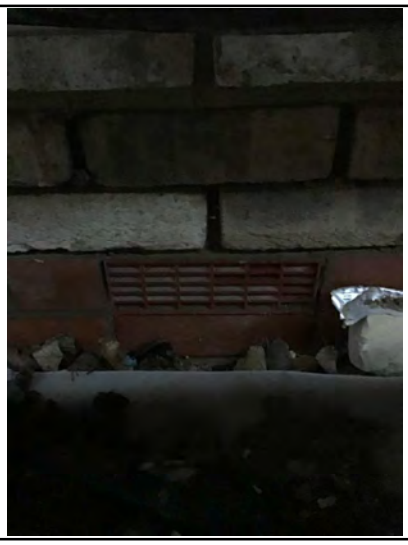


Photo evidence of vents

Photo evidence of vents

Photo evidence of vents

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of Cellvent HX installation

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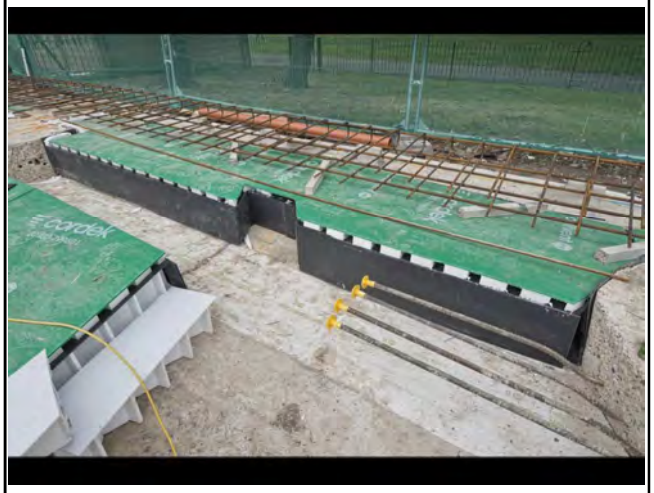

Photo evidence of Cellvent HX installation

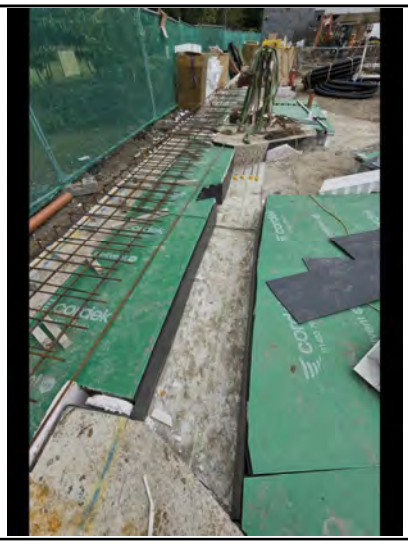

Photo evidence of Cellvent HX installation

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

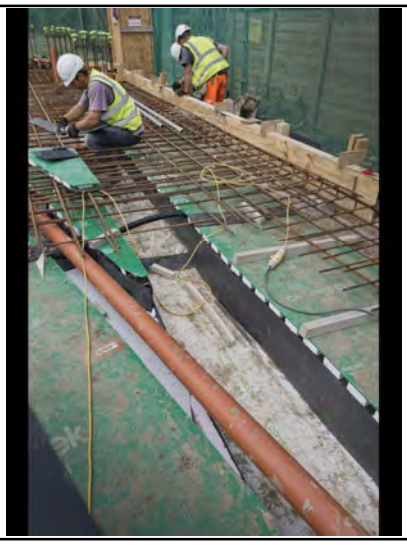

Photo evidence of Cellvent HX installation

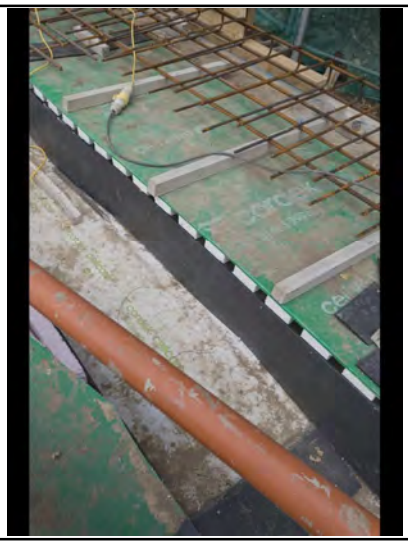

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

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GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of Cellvent HX installation

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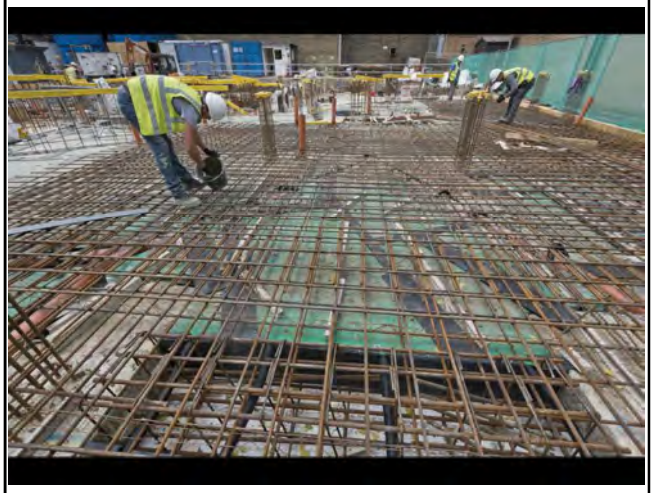

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

GEOSHIELD Verification Report

ADDITIONAL PHOTOGRAPHS

Photo evidence of Cellvent HX installation

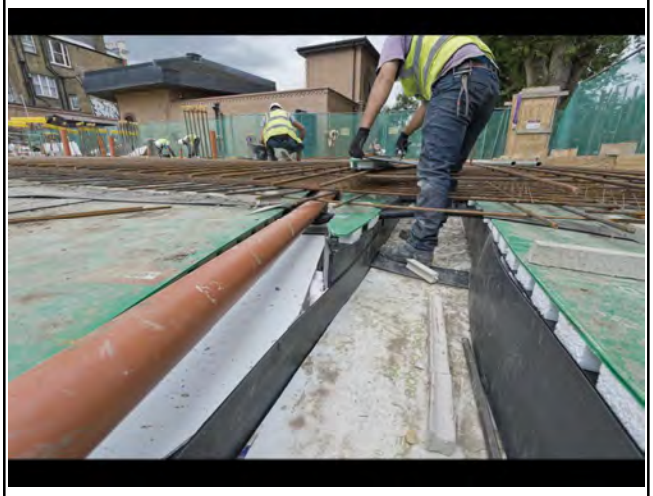

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

Photo evidence of Cellvent HX installation

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
7th Nov 19	001	Project completed internally where the Membrane had been	
		completed but not verified.	
9th Dec 19	002	Having reviewed the Approved Remediation Strategy the Low	
		Permeability Membrane (DPC) does not require verification.	
		The ground gas protection system comprised venting and	
		structural barrier.	

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔

Testing checklist attached: YES NO

Gridline/Plot Sign off

Gridline/Plot Sign off	A-J/1-21	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
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Gridline/Plot Sign off		
Gridline/Plot Sign off		

GEOSHIELD Verification Report

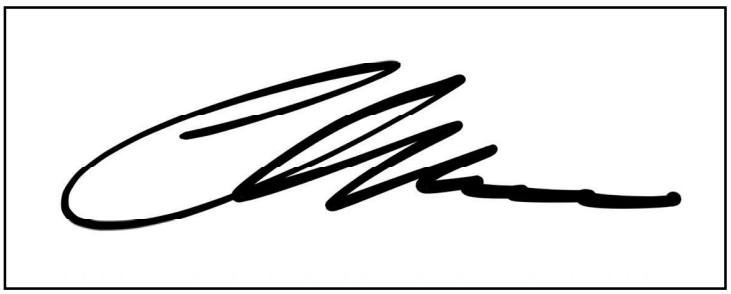
VERIFICATION SUMMARY

Report 002 is for the entire development - Gridline A-J/1-21.

The Approved Remediation Strategy was reviewed on arrival to site to establish what the planners have authorised with regards the ground gas protection system. This comprises suspended waterproofed raft with venting beneath and a DPC on top of the raft. Under BS8485:2019 the system achieves 1.5 for venting and 2 for a suspended waterproofed Barrier as the entire building sits on the raft with minimal penetrations through the slab. Due to the number of telescopic vents installed and the construction method of the raft we are able to revise the initial Pre Verification Plan to suit.

The works have been verified in accordance with BS8485:2019.

GEOSHIELD SIGNATURE:



DATE:	9th December 2019

GEOSHIELD Verification Report

PROJECT REFERENCE:	GEO100718		
REPORT NUMBER:	003	REPORT DATE:	10/06/2020
PROJECT:	Godfrey Ltd - Kilburn High Road		
PROJECT ADDRESS:	254 Kilburn High Road		

London

NW6 2BS

MEMBRANE SPECIFICATION: Verified in accordance CIRIA 735.

Design in accordance with BS8485 2015 + 2019 for Methane and Carbon Dioxide.

Substrate prepared in-accordance with manufactures instructions and BS8485

Cordek Tori-Gas Membrane - Taped System

Cordek Cellcore

Cordek Cellvent HX

Telescopic Vents

GEOSHIELD Verification Report

MEMBRANE SPECIFICATION:

DESIGN DETAILS:

3630 - 200F Drainage Layout

3630 - 201 D

3630 - 001 Piling Layout Rev A

3630 - 002 Pile Cap Layout Rev B

3630 - 004 Core Layout Rev A

3630 - 005 Ground Floor Layout Rev E

22_446 - Separation Wall Detail 08 Rev 01

3144_420 External Wall Details Rev 04

3144_421 External Wall Details Rev 03

Issued on 09/12/2019 - 3144 420 External Wall Details Sht 1 Rev 04

GEOSHIELD Verification Report

VERIFICATION OFFICER: Chris Ingham

VERIFICATION COMPANY: GeoShield Limited

Icon Business Park, 4100 Park Approach

Thorpe Park, LEEDS

West Yorkshire

LS15 8GB

CONTACT NUMBER: 07555214679

EMAIL ADDRESS: CIngham@Geoshield.co.uk

ORDER NUMBER:

PER VISIT: YES: ✔ NO: ☐ PROJECT: YES: ☐ NO: ✔

GEOSHIELD Verification Report

CLIENT DETAILS

CLIENT CONTACT:	Aleem Hassoo
CONTACTS ROLE:	Godfrey Ltd
MOBILE PHONE:	02082093048
EMAIL ADDRESS:	Aleem@godfreylondon.co.uk

CLIENT CONTACT:	Robert Lewis
CONTACTS ROLE:	Site Manager
MOBILE PHONE:	07866 464872
EMAIL ADDRESS	Robert.lewis@godfreylondon.co.uk
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

APPLICATION TEAM LEADERS

APPLICATOR NAME:	Bill Ndreu
COMPANY:	BNS Screeding Ltd
APPLICATOR TEL:	
APPLICATOR EMAIL:	Bndreu@bns-screeding.com

APPLICATOR NAME:	
COMPANY:	
APPLICATOR TEL:	
APPLICATOR EMAIL:	

NOTES:	
NOTES:	
NOTES:	
NOTES:	

GEOSHIELD Verification Report

AREA SURVEYED: A-J:1-21

SITE CONDITIONS:

WEATHER: N/A - Membrane installed inside the property

TEMPERATURE: N/A

MEMBRANE TEMPERATURE: N/A

RELATIVE HUMIDITY: N/A

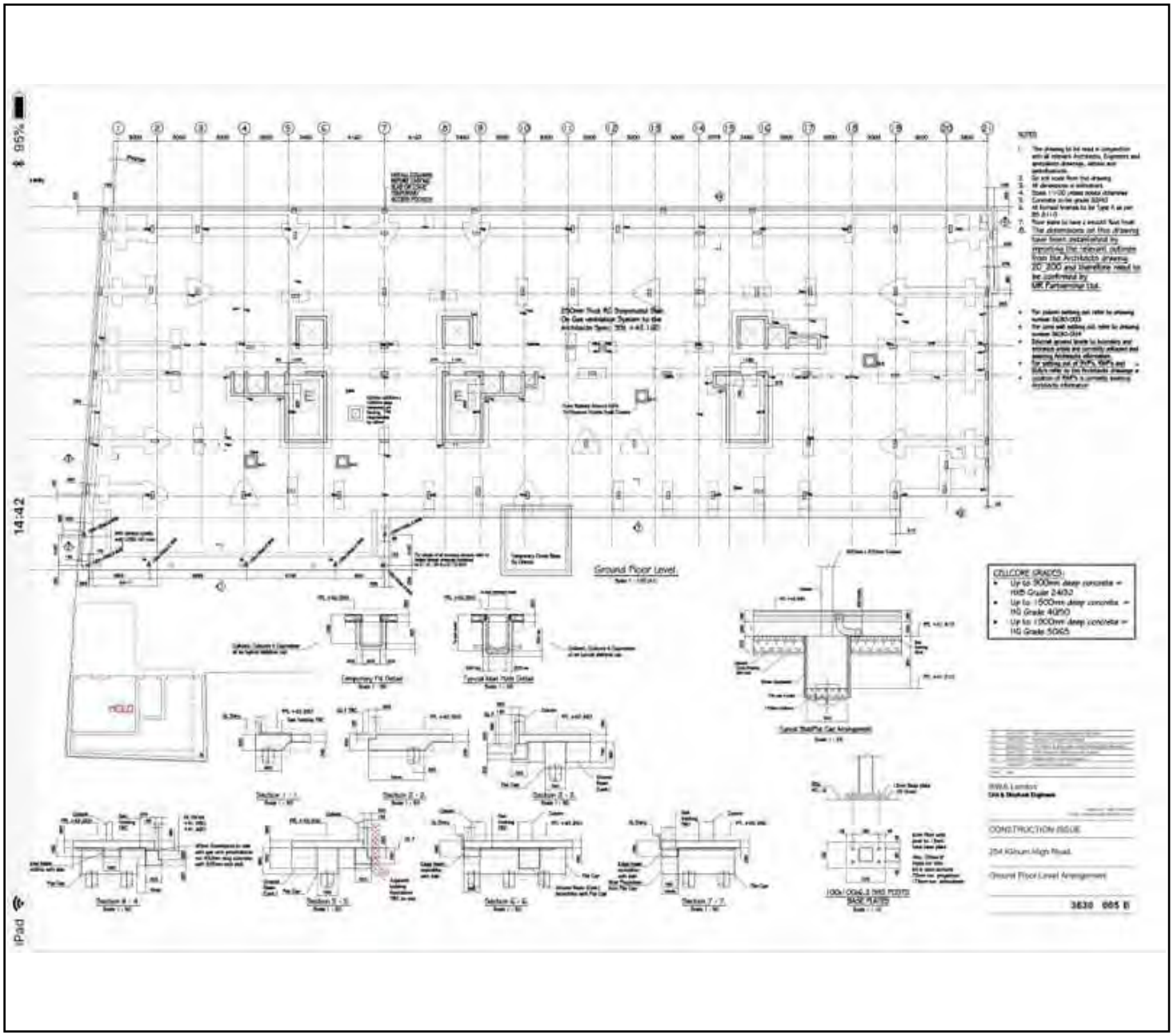
TIME: 12:00 - 13:00 REPORT NUMBER: 003

DATE: 3rd June 2020

ACCOMPANIED

GEOSHIELD Verification Report

VERIFICATION LAYOUT

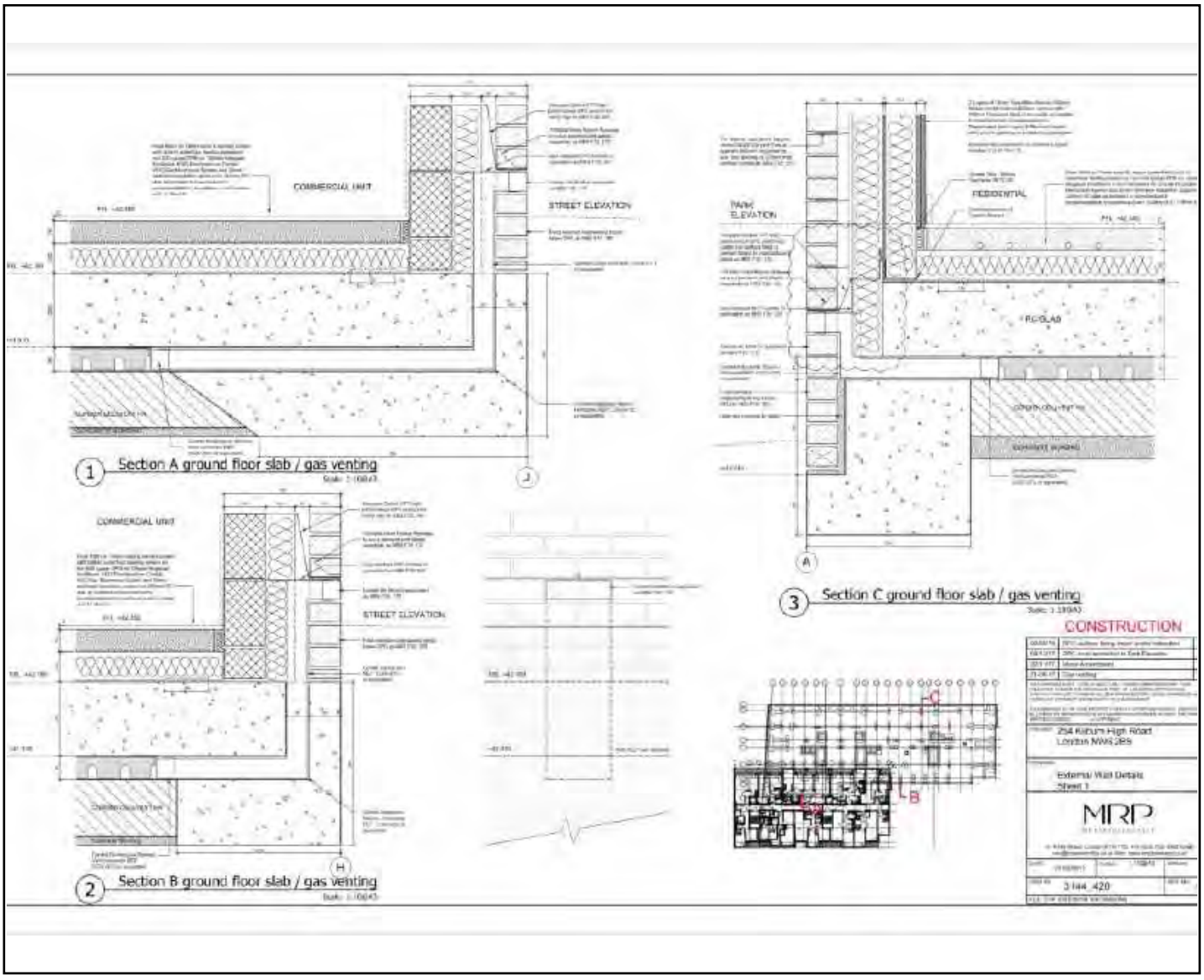


A-J:1-21

Interior of development verified in this report

GEOSHIELD Verification Report

VERIFICATION LAYOUT



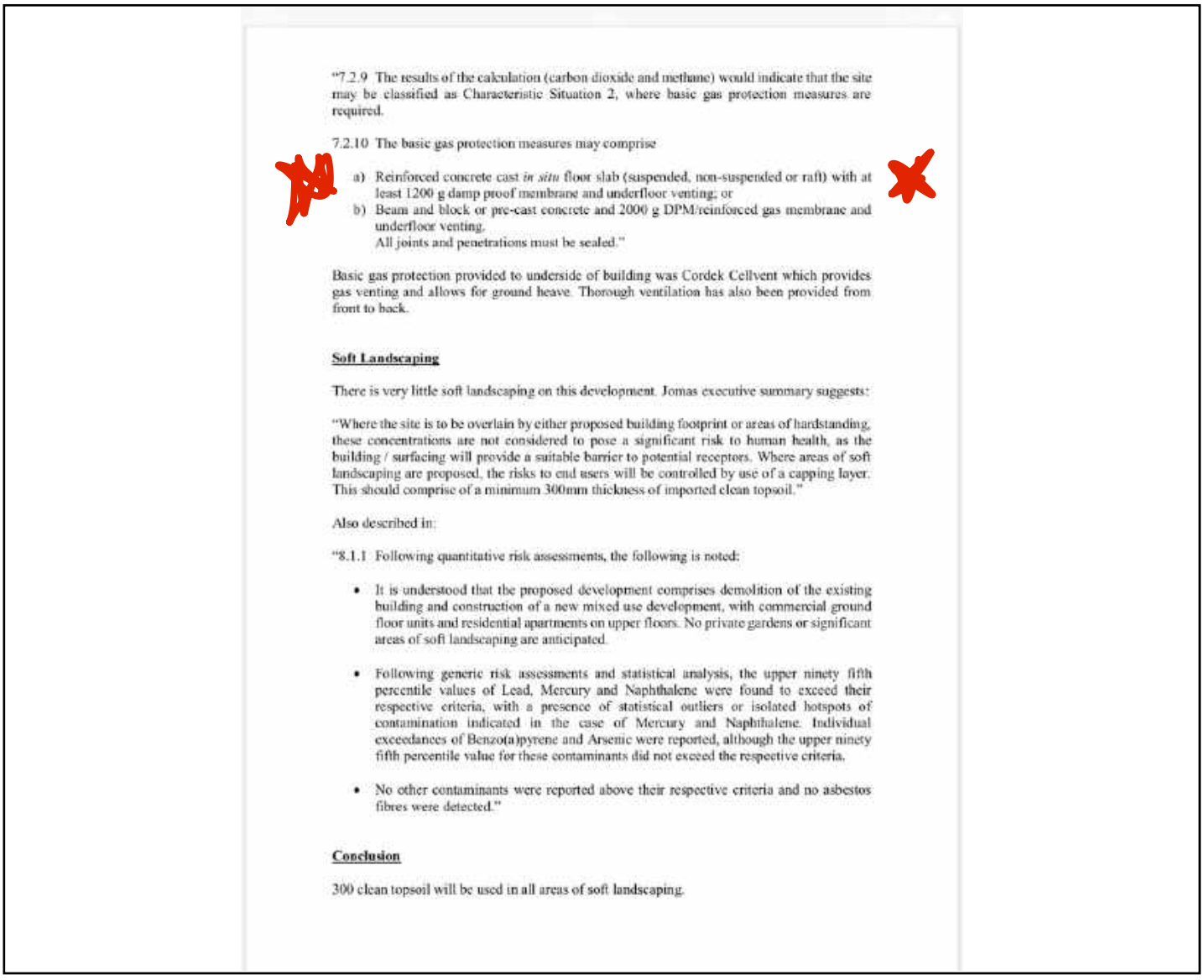
Drawing issued confirming the design detail for ventilating beneath the raft

slab. Note: entire building is built on a suspended raft foundation with

ventilation beneath the raft.

GEOSHIELD Verification Report

VERIFICATION LAYOUT



"7.2.9 The results of the calculation (carbon dioxide and methane) would indicate that the site may be classified as Characteristic Situation 2, where basic gas protection measures are required.

7.2.10 The basic gas protection measures may comprise

a) Reinforced concrete cast *in situ* floor slab (suspended, non-suspended or raft) with at least 1200 g damp proof membrane and underfloor venting; or
b) Beam and block or pre-cast concrete and 2000 g DPM/reinforced gas membrane and underfloor venting.
All joints and penetrations must be sealed."

Basic gas protection provided to underside of building was Cordek Cellvent which provides gas venting and allows for ground heave. Thorough ventilation has also been provided from front to back.

Soft Landscaping

There is very little soft landscaping on this development. Jomas executive summary suggests:

"Where the site is to be overlain by either proposed building footprint or areas of hardstanding, these concentrations are not considered to pose a significant risk to human health, as the building / surfacing will provide a suitable barrier to potential receptors. Where areas of soft landscaping are proposed, the risks to end users will be controlled by use of a capping layer. This should comprise of a minimum 300mm thickness of imported clean topsoil."

Also described in:

"8.1.1 Following quantitative risk assessments, the following is noted:

- It is understood that the proposed development comprises demolition of the existing building and construction of a new mixed use development, with commercial ground floor units and residential apartments on upper floors. No private gardens or significant areas of soft landscaping are anticipated.
- Following generic risk assessments and statistical analysis, the upper ninety fifth percentile values of Lead, Mercury and Naphthalene were found to exceed their respective criteria, with a presence of statistical outliers or isolated hotspots of contamination indicated in the case of Mercury and Naphthalene. Individual exceedances of Benzo(a)pyrene and Arsenic were reported, although the upper ninety fifth percentile value for these contaminants did not exceed the respective criteria.
- No other contaminants were reported above their respective criteria and no asbestos fibres were detected."

Conclusion

300 clean topsoil will be used in all areas of soft landscaping.

Approved remediation statement states the ground gas protection system is to

comprise of a suspended raft foundation with underfloor venting with a minimum

1200 gauge membrane on top of the raft.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

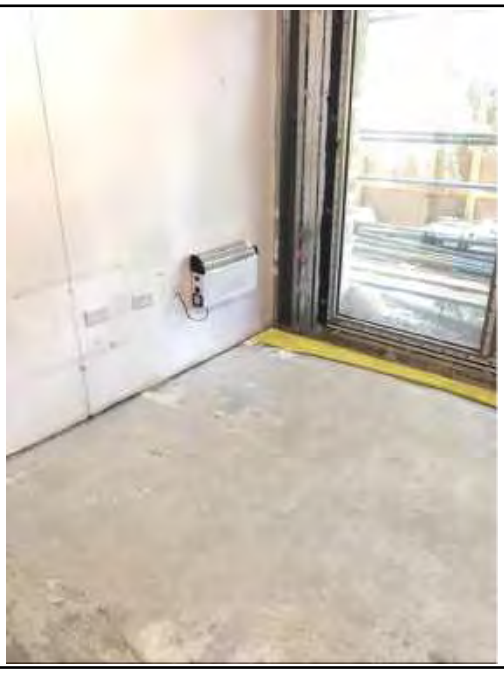
LOCATION/GRID LINE: A-J:1-21

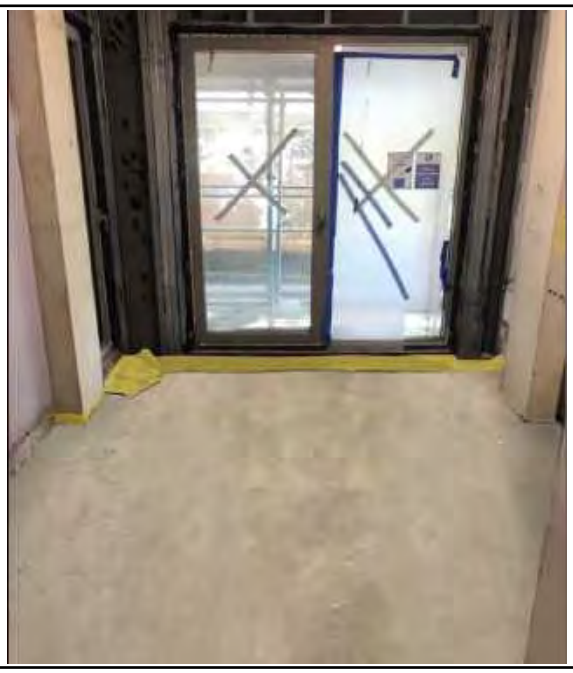
NOTES: The Approved Remediation Strategy states a minimum

1200 gauge DPM is required on top of the slab. The installed membrane is a Visqueen

Low Permeability Membrane. This membrane does not meet requirements of BS8485

but it IS a suitable DPM as required in the Approved Remediation Strategy.





Left photo) yellow damp proof course visible on the perimeter of screed pour.

Right photo) overview of room with damp proof course visible.

GEOSHIELD Verification Report

VERIFICATION ITEM ONE

Above photo) this photo is an overview of an area where screed has been poured on

top of the damp proof course, the dpc can be seen in the photo.

Sufficient evidence has been supplied to confirm a the Visqueen Low Permeabilty

Membrane has been installed as the required DPM.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

LOCATION/GRID LINE: A-J:1-21

NOTES: Damp proof course has been applied to a large area

and a concrete screed has been poured on top. In the photos below the yellow

damp proof course can be identified.

Left photo) this shows a concrete column with yellow visqueen damp proof course

lapped up against it, coming out above the screed pour.

Right photo) this shows a corner detail of a concrete column, the damp proof course

has again been lapped up the column and above the screed pour.

GEOSHIELD Verification Report

VERIFICATION ITEM TWO

Above photo) the area highlighted above is a stair well that has had a concrete

screed pour on top of the damp proof course. The dpc can be seen at the bottom

off the stairs.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE

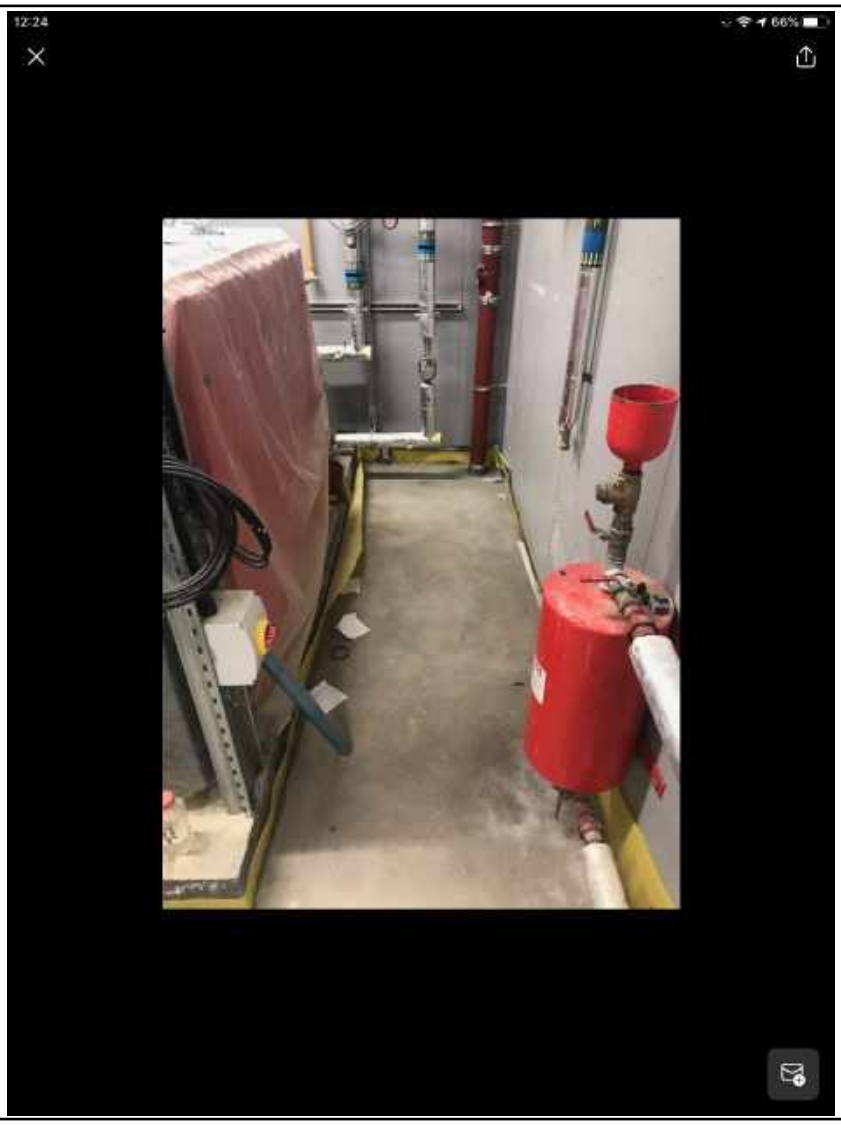
LOCATION/GRID LINE: A-J:1-21

NOTES: DPM installations do not require as rigorous testing as ground gas membranes, as in accordance with CIRIA735 and BS8485:2019. The Ground Gas Protection System complies with BS8485:2019 and the Approved Remediation Strategy with a DPM being installed on top of the slab.

Photo evidence that the DPM has been installed is sufficient evidence to provide sign off the ground gas protection system as the points required are achieved from the Structural Barrier and The Ventilation.

GEOSHIELD Verification Report

VERIFICATION ITEM THREE



Sufficient evidence has been submitted that's DPM has been installed throughout

the development.

GEOSHIELD Verification Report

REMEDIATION LOG

Date	Nr	Remediation Description	Y/N
7th Nov 19	001	Project completed internally where the Membrane had been	
		completed but not verified.	
9th Dec 19	002	Having reviewed the Approved Remediation Strategy the Low	
		Permeability Membrane (DPC) does not require verification.	
		The ground gas protection system comprised venting and	
		structural barrier.	
4th Jun 20	003	No faults found	

GEOSHIELD Verification Report

GAS MEMBRANE TESTING

VISUAL:	YES	✔	NO		SMOKE TEST:	YES		NO	✔
COMPRESSED AIR:	YES		NO	✔	DILECTIC	YES		NO	✔
DESTRUCTIVE:	YES		NO	✔	OTHER:	YES		NO	✔

Testing checklist attached: YES NO

Gridline/Plot Sign off

Gridline/Plot Sign off	A-J/1-21	✔
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
Gridline/Plot Sign off		
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Gridline/Plot Sign off		

GEOSHIELD Verification Report

VERIFICATION SUMMARY

Report 003 confirms that a DPM has been installed throughout the entire development. This confirms that the design has been carried in accordance with the Approved Remediation Strategy.

Under BS8485:2019 the installed ground gas protection system does comply without the DPM as the required points are achieved by the Structural Barrier and The Ventilation.

Evidence that the DPM has been installed is sufficient to sign off the installation in accordance with BS8485:2019, CIRIA 735 and the Approved Remediation Strategy. All works to the Ground Gas Protection System are now complete and Signed Off.

GEOSHIELD SIGNATURE:

DATE:	10th June 2020

APPENDIX C

EVIDENCE FOR SOFT LANDSCAPING

MP MORAN
BUILDERS & PLUMBERS MERCHANTS

25 Iverson Road, West Hampstead, London, NW6 2QT
Tel:0207 644 9022, Email:sales@mpmoran.co.uk

Sales Invoice

Invoice No: 02/4054995
Invoice Date: 30/05/2020
Customer: GOD00002
Our Ref: 4053791
Your Ref:
Raised By: Liam Cannon
Sale Type: Delivered

Invoice Address
Godfrey Construction (London) Ltd
Hillview House
1 Hallswelle Parade
NW11 ODL

Delivery Address
Godfrey Construction (London) Ltd
254 Kilburn High Road
London
NW6 2BS

No.	Description	Quantity	Price	Unit Price	Goods Total	VAT	Rate
1	Bulk Bag Springbridge Multi-Purpose Topsoil Approximately 0.5 Cubic Metre	10 ea	£ 29.96	£ 29.96	£ 299.6	£ 59.9	20.0%

Subject to our terms and conditions of sale. Copies available on request.
Title of goods do not pass until payment has been received.
Please ensure items marked with an * meet your exact requirements. These are perishable or non stocked products which are non-refundable & non-returnable.
Stocked product lines are subject to a 25% restocking charge when returned within 28 days of purchase AND in their original condition.
Shortages or damages must be notified within 48 hours of delivery/collection.

Total Amount	£ 299.6
Total VAT	£ 59.9
Invoice Total	£ 359.5

FORS FLEET OPERATOR RECOGNITION SCHEME
ID:004142

Chemtest
The right chemistry to deliver results
Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING 2183

mCERTS

Final Report

Report No.:	20-07249-1
Initial Date of Issue:	12-Mar-2020
Client	Springbridge Direct Ltd
Client Address:	Oxford Road Denham Middlesex UB9 4DF
Contact(s):	Katie East Tom Hawkins
Project	Springbridge Yard
Quotation No.:	Q19-19030
Order No.:	97478
No. of Samples:	1
Turnaround (Wkdays):	5
Date Approved:	12-Mar-2020
Approved By:	
Details:	Darrell Hall, Director

Date Received:	06-Mar-2020
Date Instructed:	06-Mar-2020
Results Due:	12-Mar-2020

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd			Chemtest Job No.:		20-07249
Quotation No.: Q19-19030			Chemtest Sample ID.:		981590
			Client Sample ID.:		1
			Sample Type:		SOIL
			Date Sampled:		02-Mar-2020
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192	%	0.001	No Asbestos Detected
ACM Detection Stage	U	2192		N/A	-
Moisture	N	2030	%	0.020	11
Soil Colour	N	2040		N/A	Brown,
Other Material	N	2040		N/A	Roots,
Soil Texture	N	2040		N/A	Loam,
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	1.5
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Arsenic	M	2450	mg/kg	1.0	9.9
Cadmium	M	2450	mg/kg	0.10	0.12
Chromium	M	2450	mg/kg	1.0	30
Copper	U	2450	mg/kg	0.50	18
Mercury	M	2450	mg/kg	0.10	< 0.10
Nickel	M	2450	mg/kg	0.50	47
Lead	M	2450	mg/kg	0.50	17
Selenium	M	2450	mg/kg	0.20	< 0.20
Zinc	U	2450	mg/kg	0.50	68
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
Aliphatic TPH >C5-C6	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C6-C8	N	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C16-C21	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aliphatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aliphatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Aromatic TPH >C5-C7	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C7-C8	N	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C8-C10	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C10-C12	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C12-C16	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C16-C21	U	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C21-C35	M	2680	mg/kg	1.0	< 1.0
Aromatic TPH >C35-C44	N	2680	mg/kg	1.0	< 1.0
Total Aromatic Hydrocarbons	N	2680	mg/kg	5.0	< 5.0
Total Petroleum Hydrocarbons	N	2680	mg/kg	10.0	< 10
Naphthalene	N	2700	mg/kg	0.010	< 0.010

Chemtest
The right chemistry to deliver results

Results - Soil

Project: Springbridge Yard

Client: Springbridge Direct Ltd			Chemtest Job No.:		20-07249
Quotation No.: Q19-19030			Chemtest Sample ID.:		981590
			Client Sample ID.:		1
			Sample Type:		SOIL
			Date Sampled:		02-Mar-2020
			Asbestos Lab:		COVENTRY
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Acenaphthylene	N	2700	mg/kg	0.010	< 0.010
Acenaphthene	N	2700	mg/kg	0.010	< 0.010
Fluorene	N	2700	mg/kg	0.010	< 0.010
Phenanthrene	N	2700	mg/kg	0.010	< 0.010
Anthracene	N	2700	mg/kg	0.010	< 0.010
Fluoranthene	N	2700	mg/kg	0.010	0.40
Pyrene	N	2700	mg/kg	0.010	0.50
Benzo[a]anthracene	N	2700	mg/kg	0.010	< 0.010
Chrysene	N	2700	mg/kg	0.010	< 0.010
Benzo[b]fluoranthene	N	2700	mg/kg	0.010	< 0.010
Benzo[k]fluoranthene	N	2700	mg/kg	0.010	< 0.010
Benzo[a]pyrene	N	2700	mg/kg	0.010	< 0.010
Indeno(1,2,3-c,d)Pyrene	N	2700	mg/kg	0.010	< 0.010
Dibenz(a,h)Anthracene	N	2700	mg/kg	0.010	< 0.010
Benzo[g,h,i]perylene	N	2700	mg/kg	0.010	< 0.010
Total Of 16 PAH's	N	2700	mg/kg	0.20	0.90
Benzene	M	2760	µg/kg	1.0	< 1.0
Toluene	M	2760	µg/kg	1.0	< 1.0
Ethylbenzene	M	2760	µg/kg	1.0	< 1.0
m & p-Xylene	M	2760	µg/kg	1.0	< 1.0
o-Xylene	M	2760	µg/kg	1.0	< 1.0
Total Phenols	M	2920	mg/kg	0.30	< 0.30

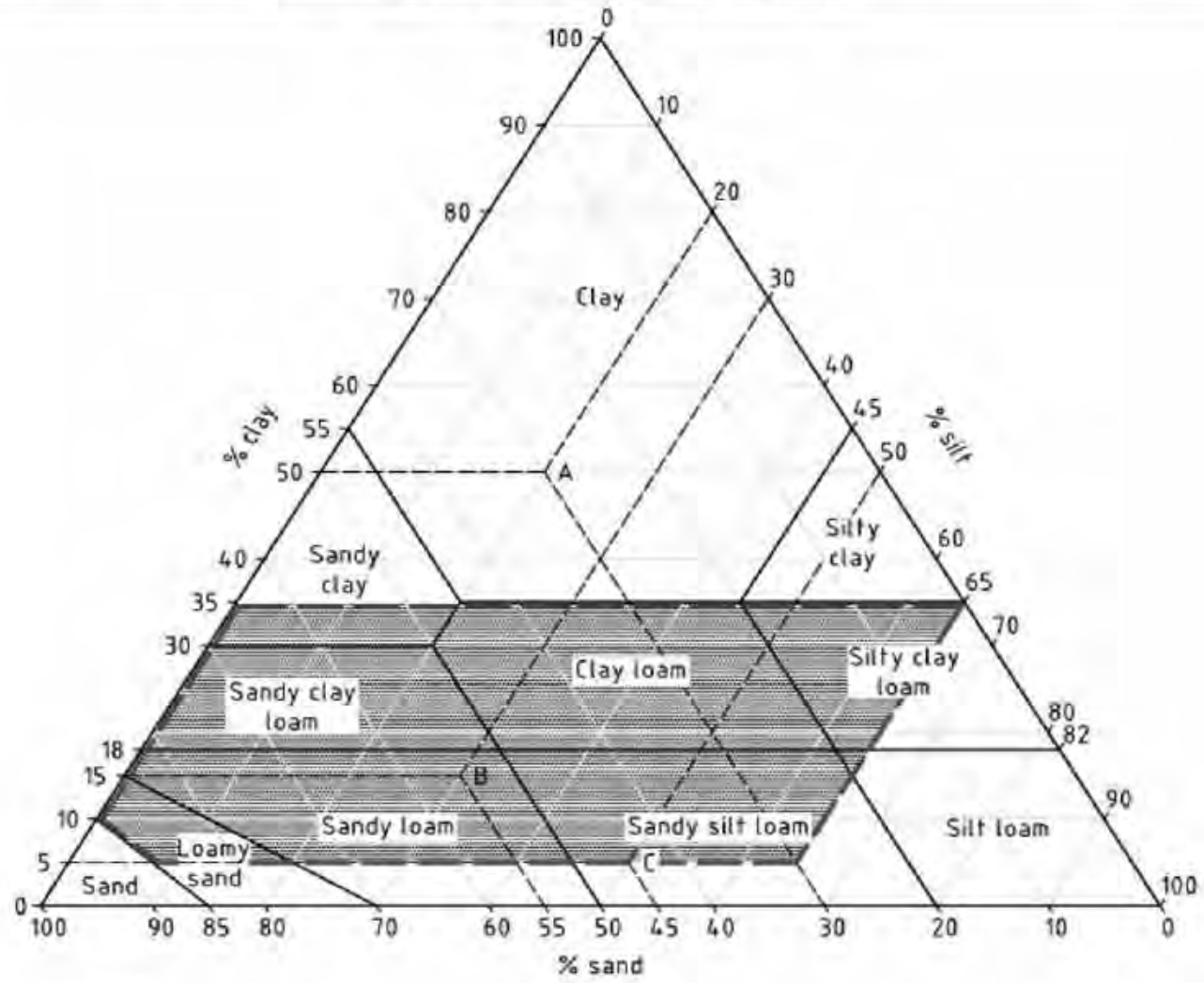
Results - Topsoil Report

BS3882:2015

Chemtest Job No.: 20-07249
Chemtest Sample ID.: 981590
Client Sample Ref.:
Sample Location:
Client Sample ID.: 1
Top Depth (m):
Bottom Depth (m):
Date Sampled: 02-Mar-2020
Time Sampled:

Parameter	Units	Multipurpose Range	Result	Compliant with Multipurpose Range? (Y/N)	Compliant with Specific Purpose Range? (Y/N)		
Texture					**Acid**	**Low F**	**Calc.**
Clay content	%		8.1				
Silt content	%		8.1				
Sand content	%		84				
Soil texture class		See Attached Chart	Loamy Sand	YES			
Mass Loss on Ignition							
Clay 5-20%		3.0-20	4.8	YES	YES	YES	YES
Clay 20-35%		5.0-20					
Stone Content	**% m/m**						
>2mm		0-30	20	YES			
>20mm		0-10	< 0.020	YES			
>50mm		0	< 0.020	YES			
Soil pH value		5.5-8.5	8.5	YES	NO	YES	YES
Carbonate (Calcareous only)	%		1.4				YES
Electrical Conductivity	µS/cm	If >3300 do ESP	3200	YES			
Available Nutrient Content							
Nitrogen %		>0.15	0.20	YES	YES		YES
Extractable phosphorus	mg/l	16-140	16	YES	YES	YES	YES
Extractable potassium	mg/l	121-1500	1100	YES	YES		YES
Extractable magnesium	mg/l	51-600	120	YES	YES		YES
Carbon : Nitrogen Ratio		<20:1	19/1	YES	N/A	N/A	N/A
Exchangeable sodium	**%**	<15	12				
Available Calcium	mg/l		1300				
Available Sodium	mg/l		320				
Phytotoxic Contaminants (by soil pH)		**< 6.0** / **6.0-7.0** / **> 7.0**					
Zinc (Nitric Acid extract)	mg/kg	<200 / <200 / <300	60	YES			
Copper (Nitric Acid extract)	mg/kg	<100 / <135 / <200	18	YES			
Nickel (Nitric Acid extract)	mg/kg	<60 / <75 / <110	47	YES			
Visible Contaminants	**% mm**						
>2mm		<0.5	0.000	YES			
..... of which plastics		<0.25	0.000	YES			
..... man-made sharps		zero in 1kg	0.000	YES			

Topsoil:
Texture Classification Chart



Key

Area within which the texture of topsoil is required to fall

NOTE Examples of textural classification are as follows.

- *Soil A with 30% sand, 20% silt and 50% clay is in the "clay" textural class.*
- *Soil B with 55% sand, 30% silt and 15% clay is in the "sandy loam" textural class.*
- *Soil C with 45% sand, 50% silt and 5% clay is in the "sandy silt loam" textural class.*

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2020	Electrical Conductivity	Electrical conductivity (EC) of aqueous extract or calcium sulphate solution for topsoil	Measurement of the electrical resistance of a 2:1 water/soil extract.
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 <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2115	Total Nitrogen in Soils	Nitrogen	Determination by elemental analyser
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2260	Carbonate	Carbonate	Titration
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2400	Cations	Cations	ICP-MS
2420	Phosphate	Phosphate	Spectrophotometry - Discrete analyser
2450	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.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2620	LOI 440	LOI 440 Trommel Fines	Determination of the proportion by mass that is lost from a soil by ignition at 440°C
2680	TPH A/A Split	Aliphatics: >C5–C6, >C6–C8,>C8–C10, >C10–C12, >C12–C16, >C16–C21, >C21–C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Dichloromethane extraction / GCxGC FID detection
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

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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"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
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 TPH, BTEX, VOCs, SVOCs, PCBs, Phenols
For all other tests the samples were dried at < 37°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

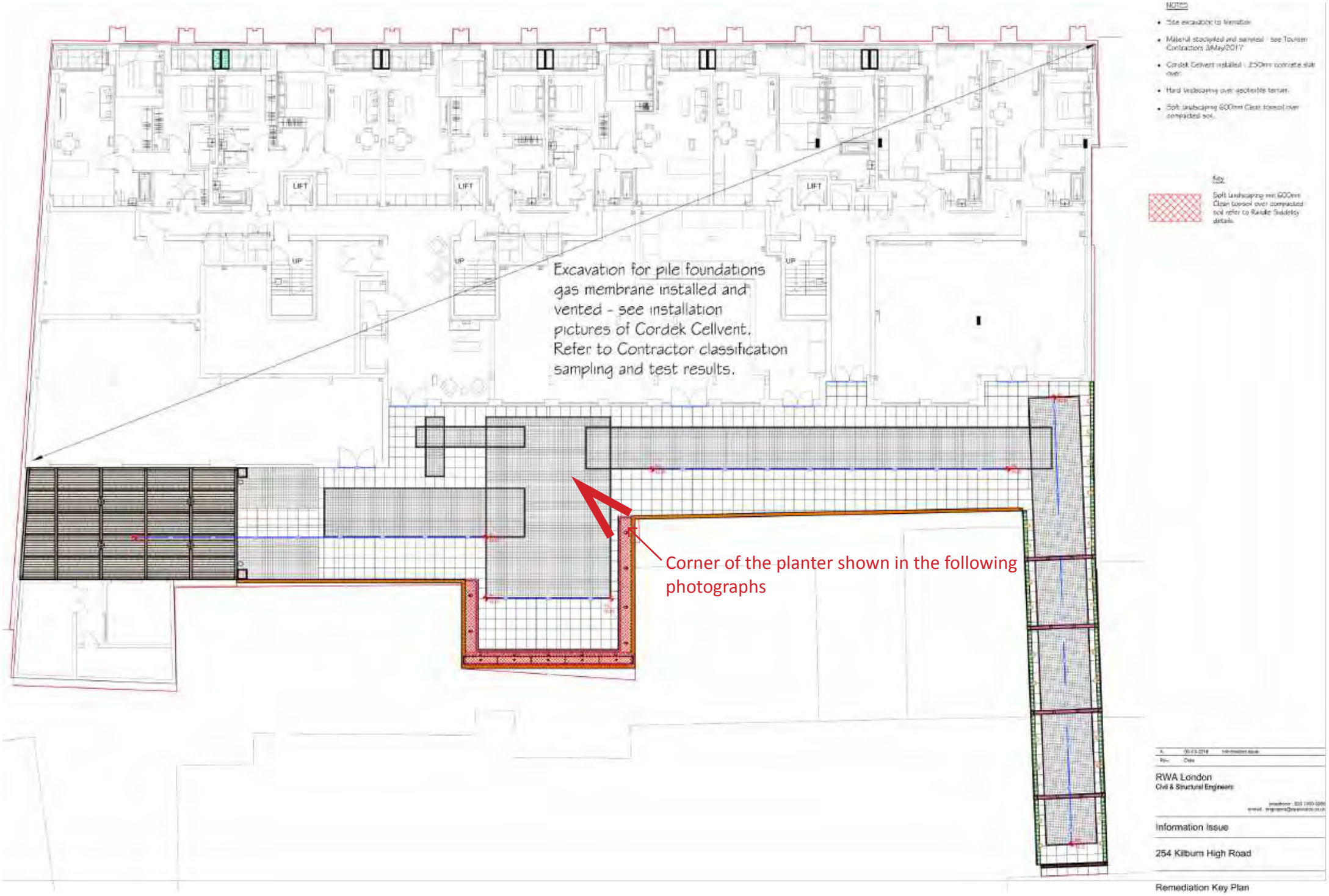
Sample Deviation Codes

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 - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 45 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

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


NOTES
Site excavation to formation
Material stockpiled and sampled - see Tourism Contractors 3/May/2017
Cordek Cellvent installed - 250mm concrete slab over
Hard landscaping over geotextile terrain.
Soft landscaping 600mm Clean topsoil over compacted soil.
Key
Soft landscaping min 600mm Clean topsoil over compacted soil refer to Ratalle Shadeley details.
LIFT
LIFT
LIFT
UP
UP
UP
Excavation for pile foundations gas membrane installed and vented - see installation pictures of Cordek Cellvent. Refer to Contractor classification sampling and test results.
Corner of the planter shown in the following photographs
RWA London
Civil & Structural Engineers
Information Issue
254 Kilburn High Road
Remediation Key Plan
3630-061 -1

APPENDIX D

EVIDENCE FOR POTABLE WATER

Gennaro D'Alo

From: Gary Mahony
Sent: 15 October 2019 12:07
To: DEVELOPER.SERVICES@THAMESWATER.CO.U
Cc: Simon Cox; Robert Lewis
Subject: Godfrey construction
Attachments: KHR ground reports - email 2 of 2

Good morning

Please see attached soil report for 254 Kilburn High Road NW6 2BS ref/no DS/6032717. Requested by your engineer on site please review and get back to me if this is acceptable.

Regards

Gary Mahony
Godfrey Construction
07794765481

Gennaro D'Alo

From: DEVELOPER.SERVICES@THAMESWATER.CO.U <DEVELOPER.SERVICES@THAMESWATER.CO.UK>
Sent: 27 October 2019 08:45
To: Gary Mahony
Cc: Robert Lewis; Simon Cox
Subject: DS6032717 NWC NW6 2BS 254 Kilburn High R

Good Morning,

I have had a senior designer review the soil report that was sent in and he has concluded that based on the sit history, Barrier Pipe will be required as there was an existing work shop/ industrial unit in its place.

If you require any further information about the above then feel free to get in contact with us.

Many thanks,

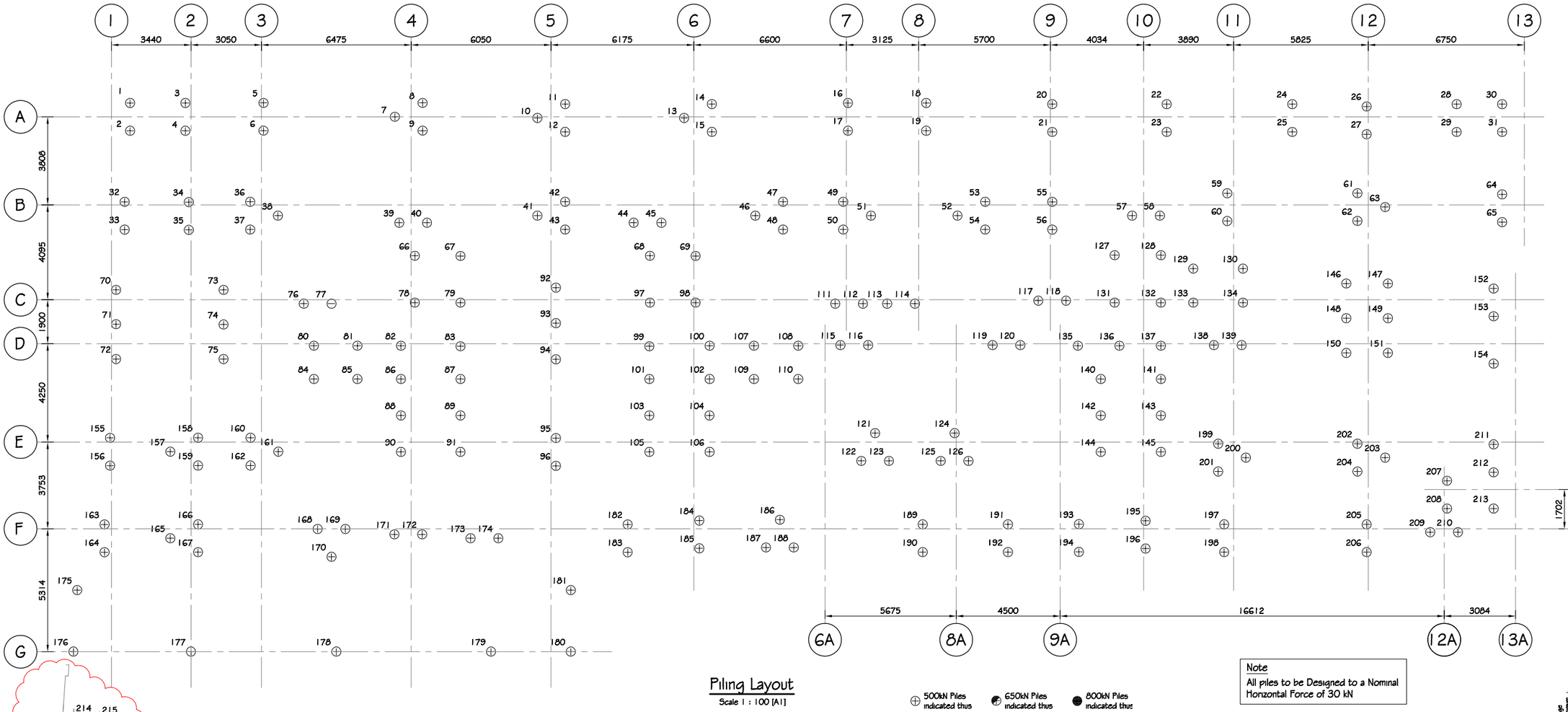
Priya Begum,

Thames Water

Visit us online www.thameswater.co.uk , follow us on twitter www.twitter.com/thameswater or find us on www.facebook.com/thameswater. We're happy to help you 24/7.

APPENDIX E

EVIDENCE FOR SULPHATE EFFECTS ON BURIED CONCRETE



Piling Layout

Scale 1 : 100 [A1]

⊕ 500kN Piles indicated thus
◐ 650kN Piles indicated thus
● 800kN Piles indicated thus

Note
All piles to be Designed to a Nominal Honzontal Force of 30 kN

NOTES

1. This drawing to be read in conjunction with all relevant Architects, Engineers and specialists drawings, details and specifications.
2. Do not scale from this drawing
3. All dimensions in millimeters
4. Reinforcement to piles to be of sufficient length to provide full anchorage into pile cap.
5. All piles to be integrity tested prior to commencement of construction of pile caps and results reported within 2 days.
6. Piles to have a 12 year guarantee backed by insurance adminstered by an independent insurance protection company. [Unless not required by the client]

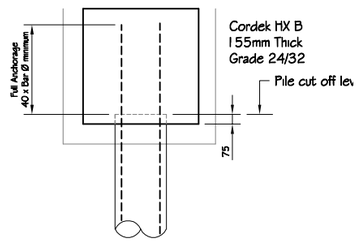
PILE SPECIFICATION

A. Piles to be constructed in accordance with the specification for piling and embedded retaining walls 2007 2nd edition.
B. Pile to be CFA or Bored to specialist contractors design to the unfactored load as shown in the pile schedule.
C. Concrete to piles to be min grade RC 28/35. Design sulphate class of DS-2 and ACEC class of AC-2.
D. Piles to be designed to a factor of safety of 3.0 to avoid the requiredment for load testing.
E. Maximum settlement of a single pile to be 25mm and differential settlement between piles not exceed 20mm.

Pile Notes
Piling contractor will confirm all pile lengths prior to site operation.
Subject to detailed design by Piling Contractor:
For budget purposes a 20m long pile length can be considered

Note
The position of ground obstructions that may affect the proposed pile locations TBC on site.

FOR PILE CAP LAYOUT REFER TO RWA DRAWING NO. 3630 - 02



Typical Pile Head Detail

Scale 1 : 25 [A1]

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
1	400	41.085	
2	400	41.085	
3	400	41.085	
4	400	41.085	
5	400	41.085	
6	400	41.085	
7	400	41.085	
8	400	41.085	
9	400	41.085	
10	400	41.085	
11	400	41.085	
12	400	41.085	
13	400	41.085	
14	400	41.085	
15	400	41.085	
16	400	41.085	
17	400	41.085	
18	400	41.085	
19	400	41.085	
20	400	41.085	
21	400	41.085	
22	400	41.085	
23	400	41.085	
24	400	41.085	
25	400	41.085	
26	400	41.085	
27	400	41.085	
28	400	41.085	
29	400	41.085	
30	400	41.085	
31	400	41.085	
32	400	41.085	
33	400	41.085	
34	400	41.085	
35	400	41.085	
36	400	41.085	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
37	400	41.085	
38	400	41.085	
39	400	41.085	
40	400	41.085	
41	400	41.085	
42	400	41.085	
43	400	41.085	
44	400	41.085	
45	400	41.085	
46	400	41.085	
47	400	41.085	
48	400	41.085	
49	400	41.085	
50	400	41.085	
51	400	41.085	
52	400	41.085	
53	400	41.085	
54	400	41.085	
55	400	41.085	
56	400	41.085	
57	400	41.085	
58	400	41.085	
59	400	41.085	
60	400	41.085	
61	400	41.085	
62	400	41.085	
63	400	41.085	
64	400	41.085	
65	400	41.085	
66	400	40.485	
67	400	40.485	
68	400	40.485	
69	400	40.485	
70	400	41.085	
71	400	41.085	
72	400	41.085	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
73	400	41.085	
74	400	41.085	
75	400	41.085	
76	400	41.085	
77	400	41.085	
78	400	40.485	
79	400	40.485	
80	400	40.485	
81	400	40.485	
82	400	40.485	
83	400	40.485	
84	400	40.485	
85	400	40.485	
86	400	40.485	
87	400	40.485	
88	400	40.485	
89	400	40.485	
90	400	40.485	
91	400	40.485	
92	400	41.085	
93	400	41.085	
94	400	41.085	
95	400	41.085	
96	400	41.085	
97	400	40.485	
98	400	40.485	
99	400	40.485	
100	400	40.485	
101	400	40.485	
102	400	40.485	
103	400	40.485	
104	400	40.485	
105	400	40.485	
106	400	40.485	
107	400	40.485	
108	400	40.485	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
109	400	40.485	
110	400	40.485	
111	400	41.085	
112	400	41.085	
113	400	41.085	
114	400	41.085	
115	400	41.085	
116	400	41.085	
117	400	41.085	
118	400	41.085	
119	400	41.085	
120	400	41.085	
121	400	41.085	
122	400	41.085	
123	400	41.085	
124	400	41.085	
125	400	41.085	
126	400	41.085	
127	400	40.485	
128	400	40.485	
129	400	40.485	
130	400	40.485	
131	400	40.485	
132	400	40.485	
133	400	40.485	
134	400	40.485	
135	400	40.485	
136	400	40.485	
137	400	40.485	
138	400	41.085	
139	400	41.085	
140	400	40.485	
141	400	40.485	
142	400	40.485	
143	400	40.485	
144	400	40.485	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
145	400	40.485	
146	400	41.085	
147	400	41.085	
148	400	41.085	
149	400	41.085	
150	400	41.085	
151	400	41.085	
152	400	41.085	
153	400	41.085	
154	400	41.085	
155	400	41.085	
156	400	41.085	
157	400	41.085	
158	400	41.085	
159	400	41.085	
160	400	41.085	
161	400	41.085	
162	400	41.085	
163	400	41.085	
164	400	41.085	
165	400	41.085	
166	400	41.085	
167	400	41.085	
168	400	41.085	
169	400	41.085	
170	400	41.085	
171	400	41.085	
172	400	41.085	
173	400	41.085	
174	400	41.085	
175	400	41.085	
176	400	41.085	
177	400	41.085	
178	400	41.085	
179	400	41.085	
180	400	41.085	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
181	400	41.085	
182	400	41.085	
183	400	41.085	
184	400	41.085	
185	400	41.085	
186	400	41.085	
187	400	41.085	
188	400	41.085	
189	400	41.085	
190	400	41.085	
191	400	41.085	
192	400	41.085	
193	400	41.085	
194	400	41.085	
195	400	41.085	
196	400	41.085	
197	400	41.085	
198	400	41.085	
199	400	41.085	
200	400	41.085	
201	400	41.085	
202	400	41.085	
203	400	41.085	
204	400	41.085	
205	400	41.085	
206	400	41.085	
207	400	41.085	
208	400	41.085	
209	400	41.085	
210	400	41.085	
211	400	41.085	
212	400	41.085	
213	400	41.085	
214	400	TBC	
215	400	TBC	
216	400	TBC	

Piles

Pile No.	Pile Ø mm	Cut off level (m)	Pile load (kN)
217	400	TBC	
218	400	TBC	
219	400	TBC	
220	400	TBC	
221	400	TBC	
222	400	TBC	
223	400	TBC	

WORKING DRAWING

Rev	Date	
B	24-03-2017	Piling layout revised. Pile diameter changed to 400mm Piling schedule revised to suit.
A	06-02-2017	Piling layout revised. Pile No's. off reduced and piles renumbered. Piling schedule revised to suit.
-	31-01-2017	Draft Issue

RWA London
Civil & Structural Engineers

telephone : 020 7593 0088
e-mail : engineers@rwalondon.co.uk

Draft Issue

254 Kilburn High Road

Piling Layout

3630 01 B

CERTIFICATE OF MIX DESIGN

BREEDON

To.
Toureen Contractors
25 Cecil Road
Harrow
Wealdstone
HA3 5QY

Certificate Number 5341 CC
Date: 01/06/2017
Enquiry No.: Q045480/1001713
F.t.a.o.:
Sales Manager: Luke Turner
Customer Fax No.
Customer Tel No.

Supplying Depot: Cricklewood
Site: 254 kilburn Road, London. NW6 2BS

Dear Sirs,
We have pleasure in detailing below our proposed concrete design and materials in connection with the supply of ready-mixed concrete to the above site.

Material	Supplier	Source	Size/Type	BS No.
Cement	Hope Cement	Hope Valley	CEM1 52.5N	BSEN 197
Type1 Addition	Hanson	Purfleet	GGBS	BSEN 15167-1
Aggregate 1	Tarmac	Tyttenhanger	4/20mm	BSEN 12620
Aggregate 2	Tarmac	Mountsorrel	4/10mm Granite	BSEN 12620
Aggregate 3	Tarmac	Tyttenhanger	0/4mm	BSEN 12620
Admixture 1	Grace	Warrington	WRDA17	BSEN 934
Admixture 2				
Admixture 3				

		1	2	3	4	5
Concrete Description		GEN 1	GEN 1	C28/35 Pump	C32/40	C32/40 DC-2
Min Cement Content		180	180			340
Max Water/Cement Ratio						0.50
Other special requirements		CIIIA	CIIIA	CIIIA	CIIIA	CIIIA+SR

BATCH WEIGHTS OF MATERIALS CALCULATED ON S.S.D. BASIS

MIX DESIGNS		UOM	m^3	m^3	m^3	m^3	m^3
Batch book ref.			B0140	B0147	G3516	H4009	H40126
Total Cement Content		Kg	200	180	340	370	370
Cement	CEM1 52.5N	Kg	100	90	170	185	185
Type1 Addition	GGBS	Kg	100	90	170	185	185
Aggregate 1	4/20mm	Kg	1016	989	985	983	983
Aggregate 2	4/10mm Granite	Kg					
Aggregate 3	0/4mm	Kg	930	967	864	838	838
		Kg					
Admixture 1	WRDA17	lt					
Admixture 2		lt				1.85	1.85
Admixture 3		bags					
Free Water		lt	193	164	193	179	179
Slump		mm	S2-70	S1 25	S3-125	S3-125	S3-125
Aggregate/Cement Ratio			9.73	10.87	5.44	4.92	4.92
% Fines content			47.8%	49.4%	46.7%	46.0%	46.0%
Free Water/Cement Ratio			0.97	0.91	0.57	0.48	0.48

Checked By: C. Lambert **Date:** 1-Jun-17

Note 1: The above mixes are designed to comply with EN206/BS8500 unless otherwise agreed with the customer.
Note 2: Aggregate quantities are in the saturated surface dry condition unless otherwise stated.
Note 3: A continuous quality control system is operated in accordance with the technical requirements of the BSI and the above may be subject to change to maintain the required design margin and material availability.

Yours sincerely

M. Johnson

On behalf of Breedon Southern Ltd.