

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
The Made Ground is present to depths of less than 1.00 m bgl and no putrescible material has been identified.						
Recommendation: The site is suitable for a residential end use without any mitigation measures.						
PL5	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (Made Ground)	Surface runoff. Migration through permeable strata and preferential pathways. Perched waters migration.	Groundwater (Principal aquifer). River Irwell/River Medlock	Likely	Low	LOW
Assessment: An assessment has been completed utilising the leachate analysis from Made Ground soils at the subject site collected during the site investigation. This assessment has confirmed the presence of Arsenic above the DWS criteria levels, however, given the absence of a viable surface water receptor, and in excess of 20.00 m of low permeability cohesive material protecting the underlying aquifer and in consideration of the hardstanding proposed for the entire site area there is considered to be a low risk at the site. Recommendation: No mitigation measures are required.						
PL6	Sulphate (potential ash within Made Ground)	Sulphate attack on concrete.	Building structure.	Likely	Moderate/Low	LOW
Assessment: The soils at the site meet class DS-2, AC-1s. Recommendation: Concrete should be designed in accordance with the chemical testing results.						



POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL7	Organic contaminants such as hydrocarbons, solvents (Made Ground, mills and works)	Ingestion of tainted water supply.	Future site users. Water pipes.	Likely	Low	LOW
Assessment: No elevated concentrations of TPH have been identified at the proposed pipeline depth (0.75 m – 1.35 m).						
Recommendation: The assessment suggests that PE pipe is suitable for any new or existing infrastructure.						

Main exposure pathways:

PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants.



10. GEOTECHNICAL ASSESSMENT

10.1. PROPOSED DEVELOPMENT

Forshaw Group intends to construct a four-storey residential town house. Drawing 15-018-002 (Appendix XI) identifies the proposed development layout.

10.2. SUMMARY OF GROUND CONDITIONS

10.2.1. MADE GROUND

Made Ground deposits were encountered within all exploratory hole locations to depths of between 0.0 m to 1.0 m bgl at most.

Made Ground deposits comprise a reworked topsoil of dark brown, clayey, sandy, gravel with brick, metal, ceramic and clinker in the majority of locations. In the northern sector, Made Ground deposits are slightly deeper.

10.2.2. DRIFT

Drift deposits were encountered within all exploratory locations. The drift deposits are homogenous across the site, generally comprising a stiff to very stiff, medium to high strength, brown or grey mottled brown CLAY with gravel of sandstone and mudstone.

The CLAY contains localised lenses of orange, fine to medium SAND.

10.2.3. SOLID

The solid bedrock geology was not encountered in any exploratory hole on site. However, the BGS boreholes in the area suggest bedrock could be expected at 23.00m bgl.

10.2.4. GROUNDWATER

No groundwater strikes were encountered during the site investigation completed to date.

10.3. SITE PREPARATION

The site should be cleared and any vegetation below areas of proposed development stripped in accordance with Series 200 of the *Manual of Contract Documents for Highway Works (MCHW)*. This should include the following:

-  Roots present below the footprint of proposed structures and infrastructure should be grubbed out and the resulting void infilled with suitable compacted engineered fill.
-  Redundant services should be sealed off and grubbed out and replaced with suitable compacted engineered fill.



- ✿ Buried structures and old foundations have been encountered on site. These should be excavated from below the proposed development footprint with the resulting void backfilled.

10.4. FOUNDATION CONDITIONS AND ASSESSMENT OF POTENTIAL BEARING CAPACITIES

In due consideration of the identified ground conditions, in-situ and laboratory geotechnical testing, E3P has undertaken an assessment of the net safe allowable bearing pressure (ABP) within the underlying natural stratum to assist in the detailed design of foundations and infrastructure and determine the target founding stratum. The results of this assessment are summarised in Table 10.1.

TABLE 10.1 SUMMARY OF ABP

COHESIVE SOILS			
Description	Depth (range m bgl)	Undrained Shear Strength (Cu) (kN/m ²)	Allowable Bearing Pressure (kN/m ²)
Stiff to Very Stiff CLAY	1.00–2.00	45–71	93–145
Stiff to Very Stiff CLAY	2.00–3.00	78–119	160–244
Stiff to Very Stiff CLAY	3.00–4.00	74–100	152–206
Stiff to Very Stiff CLAY	4.00–5.45	59–95	122–196

Based on the assessment of the relative undrained shear strength, relative in-situ densities and corresponding safe net allowable bearing pressure, the suitable target founding stratum has been identified as the underlying stiff to very stiff glacial clays.

It is unlikely anything more than minor levelling will be required to reduce the site to allow for the construction of the new slab and tie in with the adjacent road level to the north. Therefore, it is likely that the advised foundation solution will be possible and likely to be the most cost-effective option for the site that would be to use a mini piled foundation supporting a steel internal structure.

A summary of anticipated foundations is presented in Table 10.2.

TABLE 10.2 ANTICIPATED FOUNDATIONS

LOCATION	ANTICIPATED FOUNDING STRATA DEPTH (m bgl)	GROUND WATER (m bgl)	TARGET STRATUM	TREES	COAL	FOUNDATION TYPE	TYPE OF CONCRETE
WS101	1.65	N/A	Stiff CLAY	N	N	Mini Piled	DS-2 AC-1s
WS102	0.90	N/A	Stiff CLAY	N	N	Mini Piled	DS-2 AC-1s
WS103	0.95	N/A	Stiff CLAY	N	N	Mini Piled	DS-1 AC-1s
WS104	1.45	N/A	Stiff CLAY	N	N	Mini Piled	DS-2 AC-1s
WS105	1.45	N/A	Stiff CLAY	N	N	Mini Piled	DS-2 AC-1s



It is recommended that, at working drawing stage, a foundation schedule is prepared for the development taking account of the physical change of natural clay soils.

10.5. GROUND FLOOR SLABS

Current building control regulations require that where infilled ground is present to depths in excess of 600 mm, or where the substratum is variable in terms of the structure and settlement potential, or where clay soils are present within the influence of existing or proposed trees, a suspended floor slab is required.

In this instance, it is considered that for the majority of substructures, the underlying stratum would have in excess of 600 mm of infill and, as such, a suspended floor slab will be required.

The alternative to this would be the application of a ground bearing floor slab in accordance with a structural engineers detailed design that includes the use of a compressible material beneath the slab to tolerate and volumetric fluctuation or settlement in the shallow Made Ground materials.

10.6. HEAVE PRECAUTIONS

The site has been proven to be underlain by clay soils, which are susceptible to volumetric instability due to fluctuations in moisture content, particularly within influencing distance of trees as per the NHBC/LABC conjectured zones of influence.

As the clay is deemed to be moderate plasticity, heave precautions are required to the internal face of the external load-bearing walls (outside or within tree influence).

If a ground beam is to be constructed within the zone of tree influence, heave precautions are required to the underside of this and edge beams.

If the ground floor slab is to be constructed with a beam and block floor, a minimum subfloor void of 250 mm is required within any structures located in the zone of conjectured tree influence.

If the ground floor slab is constructed with a cast in-situ suspended floor slab, then heave precautions that can tolerate 100 mm of clay swelling are required within any part of the floor slab to be located within the zone of influence of a tree.

A summary of heave precautions is presented in Table 10.3.



TABLE 10.3 SUMMARY OF HEAVE PRECAUTIONS

		MINIMUM VOID DIMENSION FOR FOUNDATIONS, GROUND BEAMS AND SUSPENDED IN-SITU CONCRETE GROUND FLOORS		MINIMUM VOID DIMENSIONS UNDER PRECAST CONCRETE AND SUSPENDED TIMBER FLOORS
Plasticity Index of Soil	Required Foundation Depth (m)	Thickness of Void Former Against Side of Foundation or Ground Beam (mm)	Thickness of Void Former on Underside of Edge Beam and Floor Slab (mm)	Void Dimension (mm)
High Plasticity (> 40)	> 2.5	Engineer Design		Engineer Design
	2.0–2.5	35	150	300
	1.5–2.0	25	75	
Moderate Plasticity (20–40)	> 2.5	Engineer Design		Engineer Design
	2.0–2.5	25	100	250
	1.5–2.0	25	50	
Low Plasticity (< 20)	2.0–2.5	N/A	50	200
	> 2.0	No Special Precautions		

10.7. DRAINAGE

The presence of substantial depths of Made Ground across some areas of the site may result in settlement. It is therefore recommended that drain runs are designed using steeper gradients and flexible joints to allow for some differential settlement.

Furthermore, the site is predominantly underlain by circa 1–2 m of likely low-permeability gravelly CLAY. Therefore, the use of soakaway drainage will be limited, and as the lateral continuity of the Made Ground cannot be assured, it is not recommended that soakaways be utilised for the disposal of surface water runoff.

If soakaway drainage is to be considered, full BRE 365 testing must be completed to inform the detailed design.

10.8. CONCRETE DURABILITY

Based upon the results of the chemical analyses it is considered that subsurface concrete can be designed in accordance with Design Sulphate Class DS-1, Aggressive Chemical Environment for Concrete Classification (ACEC) AC-1s in accordance with the recommendations provided in BRE *Special Digest 1* (2005).

Elevated sulphate concentrations meeting Class DS-2, AC-1s were noted within the Made Ground deposits in WS101, WS102, WS104, WS105 at 0.10 m, 0.30 m, 0.30 m, 0.40 m bgl respectively.



10.9. EXCAVATIONS

The window sample probe holes were stable in both Made Ground and natural strata; as such it is considered that near-surface excavations will be feasible. Stiff clay was encountered in all window samples at depths ranging from 0.30 m to 1.20 m bgl.

Site observations indicated that excavations should be feasible in the near surface with normal plant. It is anticipated that all obstructions were grubbed out during the demolition and reduced-level dig for the substructure works.

It is considered that all excavations are supported or battered back in accordance with guidance contained in CIRIA R97.

If local pumping of groundwater is required during the advancement of excavations for the proposed foundations, then consideration should be given to the potential for dewatering gravels in the surrounding areas that may cause structural damage to building substructures in close proximity to the site.

TABLE 10.4 CIVIL ENGINEERING EXCAVATION RISK MATRIX

RISK ITEM	PRESENT	COMMENT
Running Sands	No	No running sand has been identified.
Minor Water Ingress	No	No water ingress. However, if water is encountered during construction localised dewatering/sump pumping during the construction of site drainage infrastructure.
Shallow Bedrock	No	No shallow bedrock has been identified.

10.10. CONSTRUCTION ACTIVITY AND INSPECTION

The following activities and inspections should be incorporated into the site works:

- Due to the variability of the soils at the site, it is recommended that sufficient allowance is made for the inspection of formations and sub-formations to foundations and pavement construction.
- Excavations, where access is required, should be subject to a risk assessment from a competent person and, where appropriate, mitigation measures such as benching back the sides or use of support systems in accordance with CIRIA R97 should be utilised.
- It is considered that dewatering may be required, especially following periods of heavy rainfall. Removal of surface water and water within trenches should be possible with conventional sump pumping. Discharge of any water should be agreed with the relevant regulatory body and be undertaken under a trade effluent discharge, where required. Measures to remove silt and suspended solids may be required and consideration should be given to the provision of space for settling tanks or an attenuation pond.
- Where access to confined spaces is required, appropriate mitigation measures should be addressed within the construction stage health and safety plan. A particular account should be taken of the gas results.
- The presence of potential contamination and mitigation measures should be addressed as part of the construction stage health and safety plan and should include measures to design out the



risks, reduce their impact and, finally, to include the use of personnel protective equipment (PPE).



10.11. GEOTECHNICAL RISK REGISTER

POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Remediation of contaminated soils	On-site	20	Elevated arsenic, lead and mercury have been detected within shallow Made Ground in isolated areas of the site.
Bedrock	N/A	0	No bedrock has been identified on-site. BGS suggests bedrock is present circa 23.00 m bgl
Obstructions	N/A	0	The site has recently been subject to demolition and removal of all buildings and hardstanding slabs. Adjacent building foundations could be considered obstructions however the design should allow for construction without the risk to these features.
Artificially levelled and filled platforms	Sitewide	100	The site appears to have been levelled and artificially backfilled given the depths of Made Ground identified.
Retaining walls	N/A	0	No retaining structures were identified on-site.
Trench collapse	Sitewide	100	Made Ground present beneath the site is likely to be loosely compacted and possibly prone to collapse during significant excavation. Collapse was not noted in window sample probeholes.
Mature trees	N/A	0	No trees have been identified on-site.
Volume change potential clay	Sitewide	100	Medium Volume Change Potential Clay identified.
Peat	N/A	0	No peat has been identified on-site.
Running sands	N/A	0	Data searches indicate very low risk.
Ground dissolution	N/A	0	Data searches indicate negligible risk.



POTENTIAL ABNORMAL CONSTRAINT	LOCATION ON SITE	ESTIMATED AREA OF SITE AT RISK (%)	ASSESSMENT AND MITIGATION
Concrete design	throughout	60	Soils on-site generally meet Class DS-1, AC-1s. Elevated sulphate concentrations meeting Class DS-2, AC1s were identified in shallow Made Ground deposits to depths of 0.40 m.
Low-permeability ground	On-site	100	Soakaways unlikely to be effective in areas where low permeability cohesive deposits are present or where areas of potentially contaminated soil and groundwater are present.
Services/sensitive structures	N/A	0	A review of online services has identified no services within the site boundary. Water mains and Combined sewers are located directly adjacent to the site boundary on Loom Street.
Abnormal foundation solutions	Sitewide	100	An intrusive site investigation has identified stiff to very stiff clays across the site. It is assumed that a piled foundation will be utilised.



10.12. FURTHER WORKS

Based on the findings of the intrusive site investigation, the following additional works are recommended to be completed in due course:

-  Speciation of mercury impacted soils to determine volatilisation risk.
-  Remediation Specification (if Mercury is present)



11. CONCLUSIONS AND RECOMMENDATIONS

11.1. CONTAMINATED LAND ASSESSMENT

Human Health	The Tier 1 human health risk assessment identified site-wide concentrations of non-volatile, insoluble heavy metal compounds that would present unacceptable degrees of theoretical risk to the identified receptors associated with direct exposure pathways. However as the proposed development will encase the site in its entirety with the ground floor concrete slab, the risk to end users is managed and severed. Construction works should be completed with appropriate PPE and welfare facilities. At this time it has not been possible to undertake a speciation of the identified Mercury exceedance. Mercury may present a potential volatilisation to indoor air risk. The elevated concentration has only been identified within one discrete area of the site within the shallow Made Ground and is therefore considered to be a localised hotspot. Where mercury speciation returns results confirming no elemental mercury, then the GAC limits (1.2 mg/kg) will no longer apply as this is based on vapour inhalation. The detected level of 2.5 mg/kg will then be related to inorganic mercury and the associated GAC will be 40 mg/kg. Chemical analysis of the natural clay drift deposits has identified these soils to be acceptable for use within the context of a residential development. No garden areas are proposed for the plot and so no topsoil is likely required, and existing subsoil/Made Ground will be capped by the building slab and so no risk will remain.
Controlled Waters	A low risk to controlled waters has been identified. Leachate analysis confirmed the presence of arsenic above the DWG levels which are considered a low risk due to no viable pathways of receptors within influencing distance to the site.
Ground Gas	The site will be suitable for classification as Characteristic Situation 1.
Potable Water	Assessment of chemical analysis obtained from soils present during the site investigation suggest that polyethylene (PE) pipeline will be suitable for the subject site.



11.2. GEOTECHNICAL ASSESSMENT

Based on the assessment of the relative undrained shear strength, relative in-situ densities and corresponding safe net allowable bearing pressure, the suitable target founding stratum has been identified as the underlying stiff to very stiff glacial clays.

The underlying natural clay drift deposits have been assessed as being stiff, high-strength with a net ABP in the order of 100 kN/m² at circa 1 m bgl increasing to 150–200 kN/m² at circa 2 m bgl.

It is unlikely anything more than minor levelling will be required to reduce the site to allow for the construction of the new slab and tie in with the adjacent road level to the north.

Therefore, it is likely that the advised foundation solution will be possible and likely to be the most cost-effective option for the site that would be to use a mini piled foundation supporting a steel internal structure.

END OF REPORT



APPENDIX I

LIMITATIONS

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the client as indicated in Section 1.3.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover, reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover, no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials, this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II

GLOSSARY

TERMS

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation



Loom Street, Ancoats

Phase II Geoenvironmental Site Assessment

February 2022

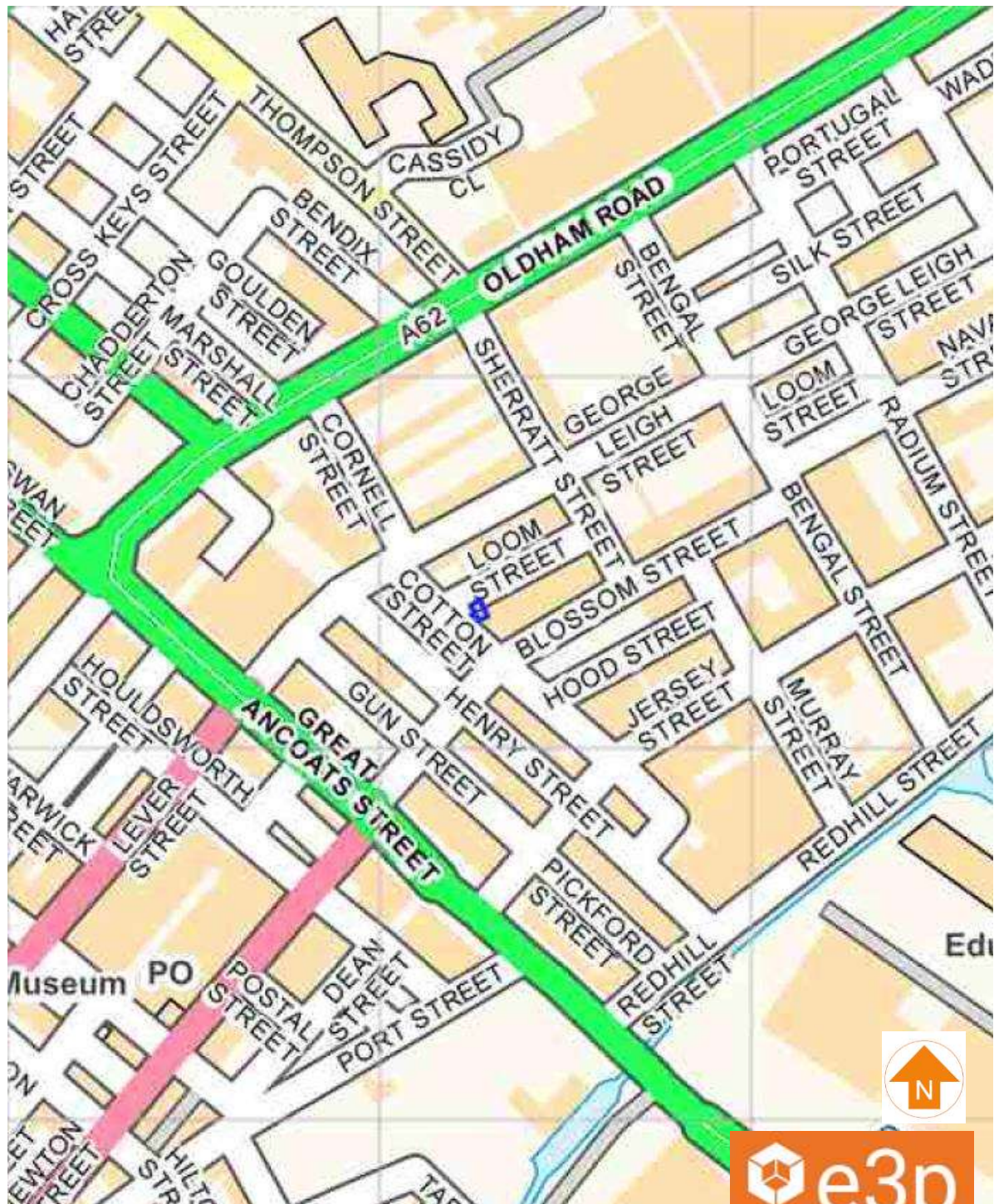
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MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection

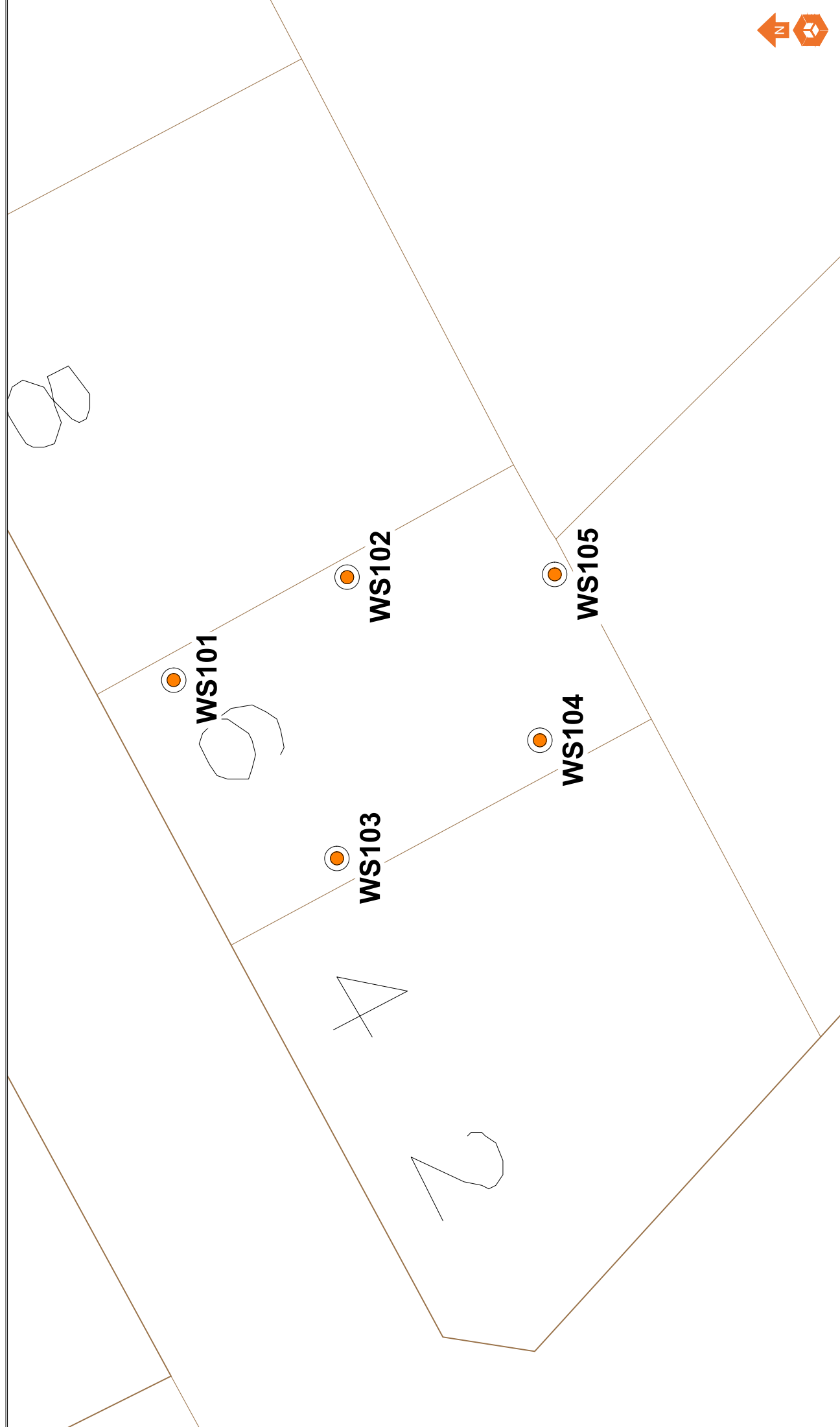


APPENDIX III

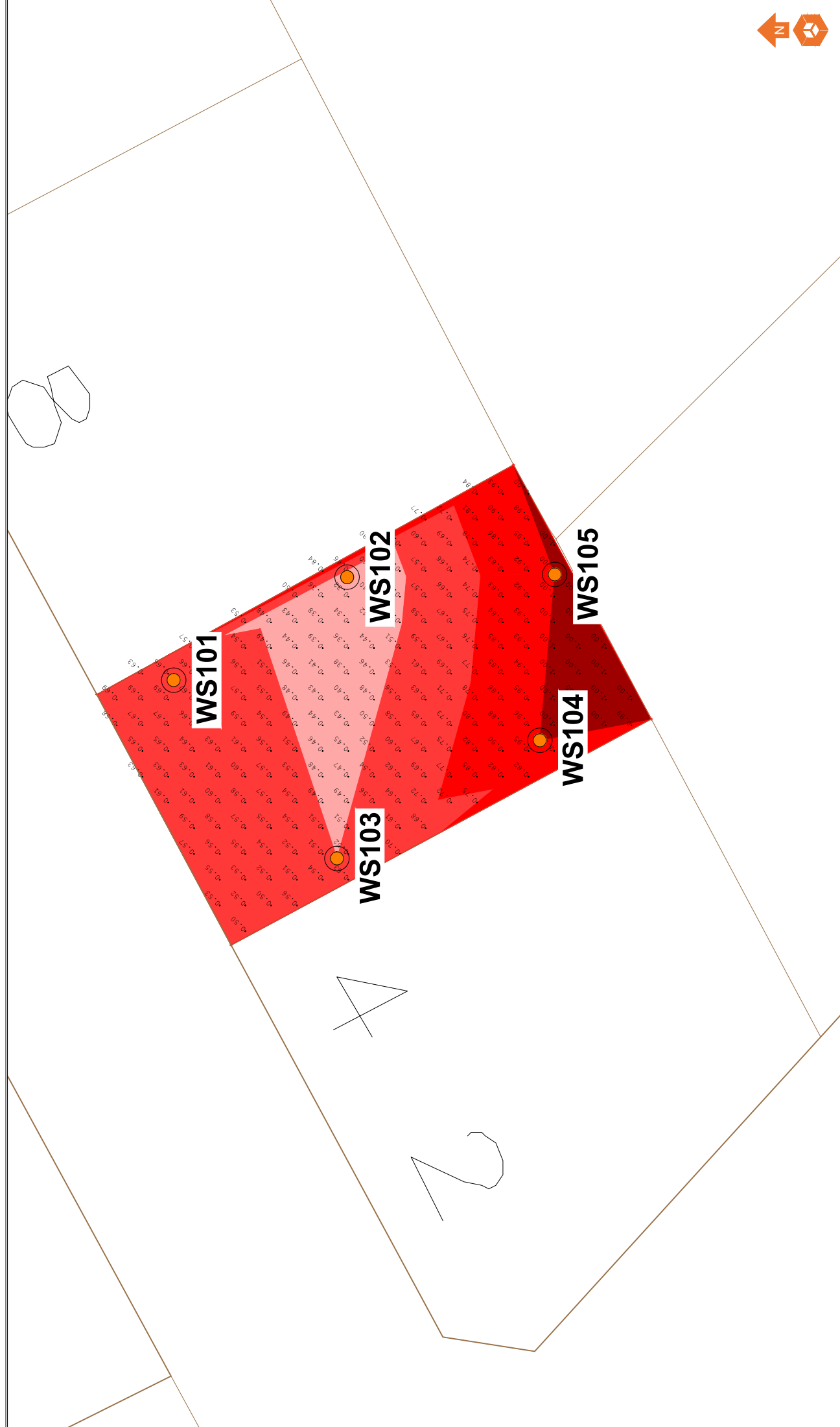
DRAWINGS

DRAWING 15-018-001 – SITE LOCATION PLAN





Location Symbols			Proposed Window Sample Probehole Location			Proposed Window Sample Probehole Location with Install			Environmental Engineering Partnership Ltd Taylor Road, Trafford Park Urmston, Manchester, M41 7JQ Tel: 0161 707 9812 Email: info@e3p.co.uk Website: www.e3p.co.uk						The client must not amend any drawing, design or other intellectual property produced by Esp Ltd without permission in writing from Esp Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, Esp Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.		
			Notes:			Client: <											



Location Symbols

Proposed Window Sample Probehole Location

Proposed Window Sample Probehole Location with Install

Made Ground Depth (m)

Depth of Made Ground 0.00 - 0.24m

Depth of Made Ground 0.25 - 0.49m

Depth of Made Ground 0.50 - 0.74m

Depth of Made Ground 0.75 - 1.00m

Notes:

Client:

Forshaw Group

Job No:

15-018

Date:

13.01.2022

Drawing No:

006

Scale:

NTS @ A3

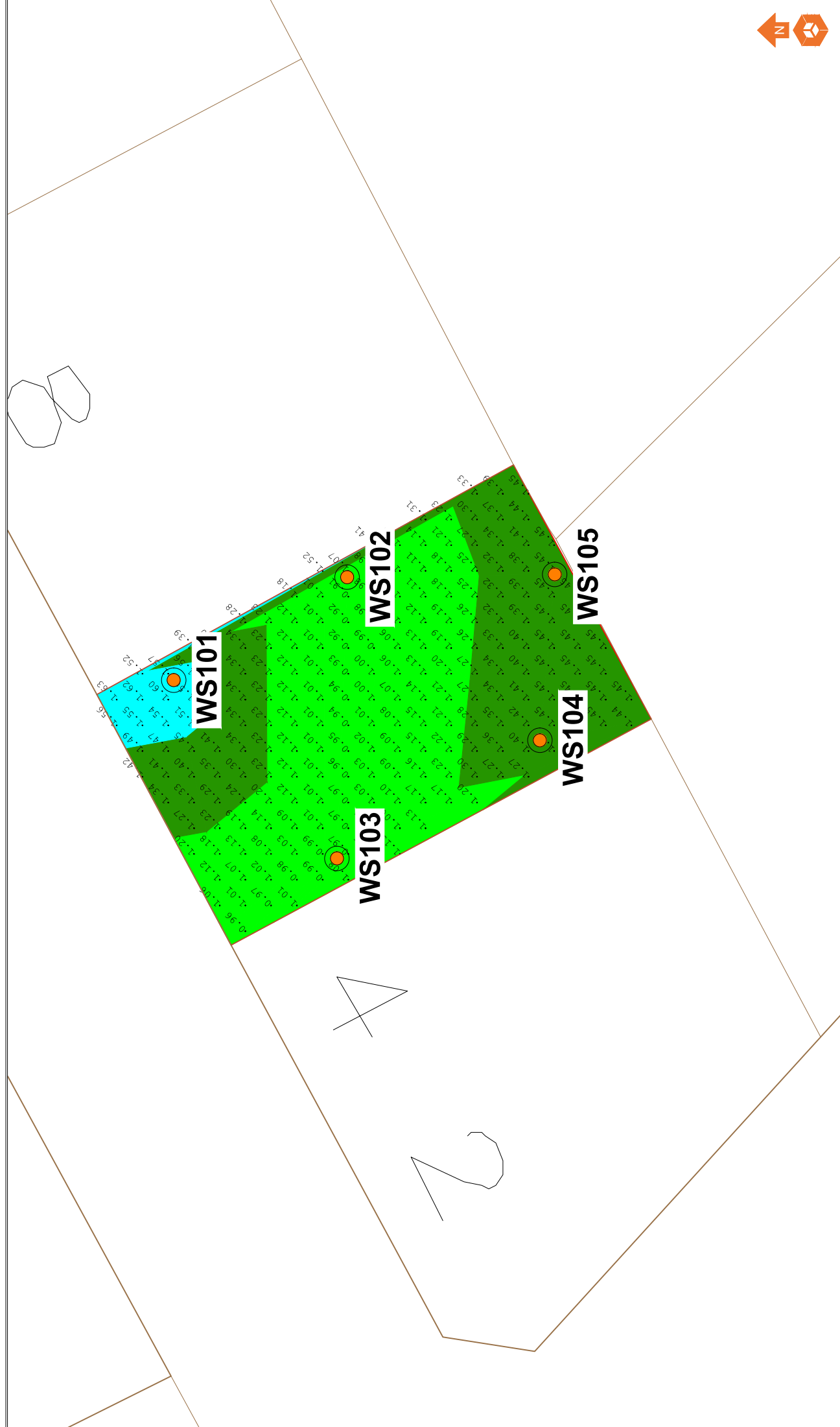
Job Title:

Land at Loom Street,
Manchester

Depth of Made
Ground Plan

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Location Symbols

Proposed Window Sample Probehole Location

Proposed Window Sample Probehole Location with Install

Shallow Strata Footings

Depth to Founding Strata 0.00 - 1.24m

Depth to Founding Strata 1.25 - 1.49m

Mass Transfer Fill Footings

Depth to Founding Strata 1.50 - 1.74m

Depth to Founding Strata 1.75 - 1.99m

Depth to Founding Strata 2.00 - 2.24m

Engineered Footings

Depth to Founding Strata 2.25 - 2.49m

Depth to Founding Strata > 5.0m

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North Arrow

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15-018

Date:

13.01.2022

Drawing No:

008

Scale:

NTS @ A3

Client:

Forshaw Group

Job Title:

Land at Loom Street,
Manchester

Notes:

Phase

Issue

Date

Drawn

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Depth to Founding Strata Plan

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15-018

14.01.2022

003

NTS @ A3

Forshaw Group

Land at Loom Street,
Manchester

Historical Features Plan

Notes:

Job No:

Date:

Drawing No:

Scale:

Client:

Job Title:

Phase

Issue

Date

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Historical Features

Former Building

Former Building

Former Courtyard

Former Lybian Buildings

Building

15-018

14.01.2022

LM

GH

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APPENDIX IV PHOTOGRAPHS

PLATE 1

VIEW NORTH



PLATE 2 VIEW OF SITE FACING SOUTH



PLATE 3 GROUND CONDITIONS IN WS104

