GROUND INVESTIGATION REPORT
GEOTECHNICAL SITE INVESTIGATION
FACTUAL REPORT
OF LAND AT
TAVISTOCK ROAD,
YIEWSLEY

Prepared for: -

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LIST OF ACRONYMS

Acronym	Meaning
BGS	British Geological Survey
BH	Borehole
CDM	Construction Design and Management
CL:AIRE	Contaminated Land: Applications In Real Environments
CLR	Contaminated Land Report
COSHH	Control Of Substances Hazardous to Health
CSM	Conceptual Site Model
DCP	Dynamic Cone Penetrometer
DEFRA	Department for Environment Foods and Rural Affairs
DP	Dynamic Probe
DoE	Department of Environment
DWS	Drinking Water Standard
EA	Environment Agency
EQS	Environmental Quality Standard
GAC	Generic Acceptance Criteria
HP	Hand Pit
HA	Hand Auger
LPA	Local Planning Authority
LQM	Land Quality Management
mbgl	Metres Below Ground Level
MP	Mackintosh Probe
NPPF	National Planning Policy Framework
NGR	National Grid Reference
OS	Ordnance Survey
SGV	Soil Guideline Value
SSV	Soil Screening Value
WSV	Water Screening Value
SPOSH	Significant Possibility of Significant Harm
SPZ	Source Protection Zone
SSSI	Site of Special Scientific Interest
TP	Trial Pit
TT	Trial Trench
WS	Windowless Sample / Window Sample

1.0 INTRODUCTION

1.1 Instruction

1.1.1 GeoCon Site Investigations Ltd (GeoCon) have been commissioned by Linea Homes Ltd (LH) to undertake a Geotechnical Ground Investigation on land at Tavistock Road, Yiewsley.

1.1.2 It is understood that a Ground Investigation is required to provide geotechnical information to support a basement impact assessment.

1.1.3 This report is provided to identify the ground conditions and provide details of their engineering properties in order to facilitate foundation design for a basement impact assessment.

1.2 Scope of Works

1.2.1 Prior to commencing the site works the proposed scope of investigation was as follows, however the proposed scope will be subject to change dependent upon site conditions, access, restrictions and obstructions. The actual works undertaken following the completion of the site works and any on site amendments are detailed in section 3.0.

Ground Investigation

- One cable percussion borehole to a nominal depth of up to 10.00mbgl or refusal;
- Insitu geotechnical testing;
- Full supervision of all works by engineering geologist including sampling and detailed geotechnical descriptions to BS5930, EN ISO 14688-1 EN ISO 14688-2 and EN ISO 14689 of all strata types encountered within the exploratory holes;
- The installation of one groundwater monitoring wells to a nominal depth of 5.00mbgl;
- Subsequent groundwater monitoring on one occasion;
- Production of an interpretation report.

1.3 Reliance and Limitations

1.3.1 This report has been prepared using published information and information provided by the Client and their professional advisers which has been made available to GeoCon at the time of writing only. GeoCon accepts no liability for any changes resulting from new information which has become available since this time.

1.3.2 This report is provided for the sole use of the client and their professional advisors and is confidential to them unless agreed otherwise in writing. This report may only be used and relied on once the work has been paid for in full. GeoCon owes no duty of care and has no liability to any third party who is not authorised by GeoCon to use this report. Any unauthorised third parties using information contained in this report do so at their own risk.

1.3.3 This assessment has been carried out to determine the potential risks posed to future end users, along with other key receptors, resulting from potential contamination at the site, based on the proposed development. Should any revisions in the development proposals result in a change any assessment parameters detailed in this report, a re-assessment of the risk should be carried out.

1.3.4 Whilst this report may reference observations made regarding the presence of features/ issues such as invasive species, ACM, site drainage and evidence of structural abnormalities, this report does not constitute specialist surveys on these matters. Should further specialist surveys be carried out in this regard, the findings of these should be reported to GeoCon so that we may determine if this has any impact on the findings of this report.

1.3.5 The assessment and interpretation of the factual data obtained as part of this Ground Investigation has been undertaken in accordance with standard consulting practise and with current national and international guidance.

1.3.6 This report presents the observations made during the Ground Investigation and the factual data obtained. The conclusions and recommendations in this report are limited to those which can be made based on the findings of the survey and information provided by third parties. GeoCon assumes all third party data to be true and correct. No responsibility can be accepted by GeoCon for inaccuracies in the information provided by any other party.

1.3.7 This report is written in the context of an agreed scope of works and should not be used in a different context. Furthermore new information, improved practises, and changes in legislation may require the reinterpretation of the report in whole or in part after its original issue. GeoCon reserve the right to alter their conclusions and recommendations in the light of further information that may become available. This report is provided for the sole use of the client and their professional advisers and is confidential to them unless agreed otherwise in writing.

1.3.8 Ground conditions can be variable and change rapidly, especially in areas of Made Ground, however it is assumed that the ground conditions encountered and observed are typical and representative of the site as a whole. Most specifically with regard to this limited investigation, the ground conditions have been determined from a limited number of exploratory holes formed across the site, therefore only a small percentage of the total area of the site has been investigated. Interpolation between exploratory holes has enabled a general picture of the subsurface conditions to be produced. Conclusions drawn from the ground investigation should be read in this context. GeoCon cannot accept responsibility for any situations resulting from locally unforeseen ground conditions occurring between exploratory holes.

1.3.9 In addition, subsurface conditions including contaminant concentrations and groundwater levels may vary spatially with time. This factor should be given due consideration in the event that the information contained within this report is used after any significant period of time has elapsed.

2.0 SITE LOCATION AND DESCRIPTION

2.1 Site Location

2.1.1 The site is located at land off Tavistock road, Yiewsley, at approximate National Grid Reference NGR: 505892:180167 (centre of the site).

2.1.2 A site location plan is presented as Drawing No. GSI 1059/01 in Appendix A.

2.2 Site Reconnaissance

2.2.1 A site reconnaissance was carried out on the 27th November 2019. All details from the site walkover are included in the site description below.

2.3 Site Description

2.3.1 The site is an irregular shaped piece of land with an approximate area of 0.08Ha.

2.3.2 The topography of the site is generally flat.

2.3.3 The site is currently occupied bya car park covered in hardstanding.

2.3.4 An approximate distribution of the surface covering is given below in Table 2.1: Site Surface Covering

Table 2.1: Site Surface Covering

Type of Surface Cover	Distribution (%)
Soft Ground (grassed and landscaped areas)	0
Hardstanding	100
Roadways	0
Buildings	0
Water (ponds, streams)	0

2.3.5 The site is bounded by Tavistock road to the south, and newly built flats to the north.

2.3.6 Access to the site is via Tavistock Road from the south.

2.4 Surrounding Area

2.4.1 The current surrounding land use to the site is generally residential and commercial properties in all directions, with a train line to the south.

2.4.2 The topography of the surrounding area is generally flat.

2.5 Future Site Usage

2.5.1 It is currently proposed to construct a high-rise building, however this report is for the basement design only.

3.0 GROUND INVESTIGATION

3.1 General

3.1.1 The intrusive investigation was carried out on 27th November 2019.

3.1.2 The specification and scope of works for the ground investigation has been provided by LH.

3.1.3 The ground investigation has been carried out in accordance with BS5930 and the UK Specification for Ground Investigation Second Edition 2012.

3.1.4 All strata descriptions were undertaken in accordance with BS5930 Amendment 1; EN ISO 14688 -1; EN ISO 14688 -2; and EN ISO 14689.

3.1.5 The actual ground investigation comprised the formation of:

- One cable percussion borehole;
- Full supervision of all works by engineering geologist including sampling and detailed geotechnical descriptions to BS5930, EN ISO 14688-1 EN ISO 14688-2 and EN ISO 14689 of all strata types encountered within the exploratory holes;
- The installation of one groundwater monitoring well;
- Subsequent groundwater monitoring on one occasion in accordance with CIRIA 665 commencing approximately one week after the completion of the ground investigation;
- Production of a factual report.

3.1.6 The ground investigation was carried out to determine the geotechnical properties of the soils and rock beneath the site for a proposed basement design at the site.

3.1.7 The location of the exploratory hole was specified by LH and was positioned to gain key information beneath the site in relation to the proposed development.

3.1.8 The location was checked against buried service location plans and then scanned with a Cable Avoidance Tool (CAT) and Genny prior to excavation, and a permit to dig was then issued. The location was then continued by hand, down to a minimum of 1.20mbgl to clear any buried services or other subsurface obstructions. All locations were then checked again with a CAT at the base of the hand excavated inspection pit by GeoCon prior to commencement of drilling.

3.1.9 All access permissions were arranged by LH prior to the ground investigation commencing.

3.1.10 An exploratory hole location plan is presented in Appendix A as drawing number GSI1059/02.

3.2 Cable Percussion Borehole

3.2.1 One cable percussion borehole referenced BH01 was drilled at the site to depths of 10.00mbgl.

3.2.2 The cable percussion borehole was drilled in order to gain an understanding of the geotechnical properties of the soils and rock beneath the site, and to facilitate the installation of groundwater monitoring standpipe.

3.2.3 The cable percussion borehole was commenced in 150mm diameter drilling string where necessary to achieve the target depths.

3.2.4 The cable percussion borehole log is presented in Appendix B.

3.3 Insitu Testing

3.3.1 The insitu testing regime included the following:

- Insitu Standard Penetration Tests (SPTs) were carried out at 1.00m intervals down to 5.00 mbgl and at 1.50 m intervals thereafter to collate insitu strength information (relative density) for the soils beneath the site.

3.4 Installation and Backfill

3.4.1 The cable percussion borehole was installed with ground water monitoring standpipe. The details of the ground water monitoring standpipe are summarised below in Table 3.1: Groundwater Monitoring Installation:

Table 3.1: Groundwater Monitoring Installation

BH ID	Installation Depth (mbgl)	Response Zone (mbgl)	Installation Date	Strata	Comments
BH01	5.00	1.00 – 5.00	27/11/2019	Lynch Hill Gravel Member	NA

3.4.2 Full details of the installation and backfill are presented on the exploratory hole log.

3.4.3 The monitoring standpipe is constructed using 50mm slotted pipe with a Geosock filter and gravel surround medium within the response zone, and 50mm plain pipe with a bentonite seal above the response zone (minimum 0.50m thick).

3.5 Groundwater

3.5.1 Where groundwater was encountered a waiting period of 20 minutes was allowed to monitor any change (rise or fall) in the levels of each groundwater strike.

3.6 Groundwater Monitoring

3.6.1 Groundwater monitoring has been carried out across the site on one occasion, to establish the standing water levels beneath the site.

3.7 Restrictions

3.7.1 No restrictions were encountered during this site investigation that would have prevented parts of the site being accessed and consequently resulting in any of the exploratory locations being abandoned.

4.0 GROUND CONDITIONS

4.1 Geology

4.1.1 The British Geological Survey shows the site to be underlain by the geological succession outlined below Table 4.1: Published Geology

Table 4.1: Published Geology

Geology	Description /strata
Artificial	None recorded on site however Made Ground is present to the south of the site.
Superficial	Langley Silt Member / Lynch Hill Gravel Member
Bedrock	London Clay Formation

4.1.2 There are no known artificial deposits recorded underlying the site, however there is Made Ground (undivided) to the south of the site.

4.1.3 The superficial geology recorded underlying the site is shown to be the Langley Silt Member and Lynch Hill Gravel Member which are generally described as *'silt to clay, commonly yellow-brown and massively bedded'* (BGS general description) and '*Sand and gravel, locally with lenses of silt, clay or peat'* (BGS Description).

4.1.4 The bedrock geology beneath the site is shown to be the London Clay Formation which is generally described as *'bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay.'* (BGS general description).

4.2 General

4.2.1 A generalised summary of the ground conditions encountered, depths to base, and thickness recorded from the exploratory hole records is presented below in Table 4.2: Summary of Ground Conditions.

Table 4.2: Summary of Ground Conditions

Geology / Strata	Depth (mbgl)				Thickness (m)		Locations encountered
	Top		Base		Min	Max	
	Min	Max	Min	Max			
Made Ground	0.00	-	1.20	-	1.20	-	BH01
Lynch Hill Gravel Member	1.20	-	5.30	-	4.10	-	BH01
London Clay Formation	5.30	-	10.00+	-	4.70	-	BH01
Groundwater	**Strike depth (mbgl)**		**Rest Level (mbgl)**		**Locations encountered**		
	Min	**Max**	**Min**	**Max**			
Seepage	-	-	-	-	NA		
Strike	4.60	-	4.10	-	BH01		
SWL only (no obvious strike)	-	-	-	-	NA		

4.2.2 The general ground conditions encountered have been summarised below.

4.2.3 Detailed strata descriptions are presented on the cable percussion borehole log presented in Appendix B.

4.2.4 The actual ground conditions encountered across the site were comprised Made Ground overlying Lynch Hill Gravel Member and London Clay Formation.

4.3 Made Ground

4.3.1 Made Ground was encountered in BH01 from ground level to a depth of 1.20mbgl. The Made Ground generally comprised hardstanding overlying layers of granular Made Ground materials.

Hardstanding:

4.3.3 Hardstanding was encountered in BH01 from ground level to a depth of 0.30mbgl and comprised of grey concrete.

Granular Made Ground:

4.3.4 Granular Made Ground materials were encountered in BH01 from beneath the hardstanding to depths of 1.20mbgl, and generally comprised sandy gravel with fragments of brick, sandstone, mudstone and concrete.

4.4 Superficial Deposits (Lynch Hill Gravel Member)

4.4.1 Soils considered to represent Lynch Hill Gravel Member was encountered in BH01 directly beneath the Made Ground and was proven to depth of 5.30mbgl.

4.4.2 The Lynch Hill Gravel Member deposits comprised of dense clayey sandy gravel, with fragments of chalk, flint and sandstone.

4.5 Bedrock (London Clay Formation)

4.5.1 Deposits considered to represent the London Clay Formation was encountered in BH01 directly beneath the Lynch Hill Gravel Member and was proven to a depth of 10.00mbgl.

4.5.2 The London Clay Formation deposits generally comprised of soft to stiff clay.

4.6 Groundwater

4.6.1 Groundwater was encountered in the exploratory hole on the site. Further details are as follows: -

- BH01 – strike at 4.60mbgl rising to 4.10mbgl after 20 minutes.

4.7 Groundwater Monitoring

4.7.1 A groundwater monitoring regime was carried out at the site to establish the ground water levels beneath the site, which included monitoring on one occasion. Table 4.3: Groundwater Monitoring Results, below presents the details of the groundwater monitoring regime. All boreholes were purged and developed accordingly to prior to the groundwater monitoring.

Table 4.3: Groundwater Monitoring Results

Exploratory Hole ID	Date of Visit	
	Base of Hole (mbgl)	Standing Water Level (SWL) (mbgl)
BH01	5.05	3.14

4.8 Obstructions

4.8.1 No obstructions were encountered during this ground investigation.

4.9 Contamination

4.9.1 A petrochemical odour was encountered at 0.30mbgl in BH01, with a discolouration of the strata to black.

4.9.2 The client was notified of this and a sample was taken, however it is considered that the Phase II site investigation will address this matter which is scheduled to be carried out in early 2020.

5.0 GEOTECHNICAL TESTING AND RESULTS

5.1 General

5.1.1 This geotechnical investigation was undertaken to provide details of the ground conditions, soils strengths, engineering properties of the soils and rock beneath the site, and subsequent advice on suitable foundation solutions for a basement impact assessment.

5.1.2 At this stage the precise construction details have not been provided to GeoCon, however it is understood the site is to be redeveloped with seven storey residential building with basement.

5.1.3 It should be noted that GeoCon have not been provided with any further details regarding the structural loading at this stage.

5.2 Geotechnical Testing

5.2.1 In-situ Standard Penetration Tests (SPTs) were undertaken in accordance with BS1377 (1990) within the cable percussion borehole. A summary of the insitu testing is given below in Table 5.1: Insitu Geotechnical Testing.

Table 5.1: Insitu Geotechnical Testing

Strata	SPT N Value vs Depth Range	Locations Encountered
Made Ground	NR	BH01
Lynch Hill Gravel Member	25 – 28	BH01
London Clay Formation	12 – 19	BH01

NR = Not Recorded In This Strata

5.2.2 A programme of geotechnical laboratory testing has not been undertaken at this stage. Geotechnical testing will form part of the phase II site investigation.

6.0 GEOTECHNICAL ASSESSMENT

6.1 General

6.1.1 It is understood that the proposed development will comprise the construction of a seven-storey residential building with a basement.

6.1.2 At this stage GeoCon have not been provided with any loadings for the proposed development.

6.1.3 The recommendations given below assume that ground levels intended for the redevelopment will be similar to those existing at present. If ground levels are subject to significant change as part of the proposed development, then the recommendations in this report may require reinterpretation.

6.2 Geotechnical Model

6.2.1 One cable percussion borehole was drilled within the area that the basement will reside in.

6.2.2 The ground conditions encountered within the exploratory hole are summarised below in Table 6.1: Summary of Ground Conditions.

Table 6.1: Summary of Ground Conditions

Stratum	Depth Range to Base of Stratum (mbgl) (Thickness Range)	Strength/Consistency	Notes
Made Ground and Topsoil			
Made Ground	1.20mbgl (1.20m)	Not recorded.	Made Ground was recorded in BH01 and comprised of grey concrete over sandy gravel.
Natural Strata			
Lynch Hill Gravel Member	5.30m (4.10m+)	Dense. SPT 'N' values obtained: 1.20 – 1.65: N = 42 2.20 – 2.65: N = 48 3.20 – 3.65: N = 37 4.20 – 4.65: N = 25 5.20 – 5.65: N = 12	Described in the field as a greyish brown clayey sandy gravel. Encountered directly beneath the Made Ground.
London Clay Formation	10.00m+ (4.25m+)	Soft to firm to stiff consistency SPT 'N' values: 5.20 – 5.65: N = 12 6.70 – 7.15: N = 15 8.20 – 8.65: N = 17 9.55 – 10.00: N = 19	Described in the brown and grey clay. Recorded below the Lynch Hill Gravel Member.

6.2.3 Groundwater was not encountered within the borehole at 4.60mbgl rising to 4.00mbgl after a 20-minute monitoring period. Groundwater levels were recorded at 3.14mbgl during the groundwater monitoring visit.

6.3 Foundations

6.3.1 The Made Ground in its current setting would not be suitable for the construction of shallow foundations due to the risk of unacceptable total and differential settlement occurring. These soils are present in a weak and variable condition such that excessive total and or differential settlement could occur under moderately light surface loading.

6.3.2 Considering the basement, it is anticipated that foundations will need to be placed around 3.00mbgl. At this depth it is considered that strip or spread foundations with a minimum width of 1.00m, an allowable increase in stress of 120kN/m² should be achievable, with a factor of safety against general shear failure

of in excess of 3. Settlements at these loading intensities should remain within tolerable limits (<25mm) for the type of structure proposed provided that the underlying soils are carefully inspected immediately after final trimming has taken place. Should any very loose, cohesive or weak material be encountered they should be locally removed and replaced with lean-mix concrete or compacted granular soil. In addition, if the excavations are required to stand open for any period of time then a blinding layer of lean-mix concrete should be placed in the excavation bases. This expedient will reduce loosening of the sub-grade due to the ingress of surface water.

6.3.3 It is recommended that foundations are placed in one soil type to avoid any differential settlement.

6.3.4 At this stage it is not possible to provide advice for the remainder for the building; this will be provided within the Phase II site investigation report due to be carried out at a later date.

6.3.5 Due to the nature of the wider development it may be necessary to support the basement on piles, however that would need to be confirmed following the Phase II site investigation of the whole site.

6.4 Floor Slabs

6.4.1 In accordance with NHBC Standards 2010 (Chapters 4.2, 4.6 and 5.1), and based on proven ground conditions it is considered that ground bearing floor slabs could be utilised where they will be underlain by natural granular soils. Where loose sands are present near to the surface, it is recommended that it is proof rolled prior to constructing floor slabs. Locally suspended floor slabs should be utilised where Made Ground is greater than 600mm thick, where soil swelling may occur (i.e. within the zone of influence of existing or proposed trees or hedges), where the ground has insufficient bearing capacity, or where natural granular soils are thin or absent.

6.4.2 It should be noted that limited deposits of Made Ground were identified at the site during this ground investigation, however if further localised deposits are encountered during construction then the above paragraph should be adhered to.

6.4.3 Ground bearing floorslabs could be utilised provided that the following points are borne in mind:

- The existing subgrade is checked for the presence of any soft spots which, if found, should be removed and replaced with a compacted granular fill;
- Exposed subgrades are not subjected to the detrimental effects of inclement weather; and
- The overlying sub-base construction is suitably proof rolled.

6.4.4 Given the nature of the wider development it may be necessary to pile, therefore if piles are used then a suspended floor slab should also be used in conjunction.

6.5 Concrete

6.5.1 At this stage the concrete classification has not been confirmed due to the nature of the work. This would be confirmed within the Phase II site investigation which would provide detail for the entire site.

6.6 Groundwater and Excavations

6.6.1 Groundwater is likely to represent a particular problem to the construction of the proposed development at this site. It should also be recognized that slight seepages and minor water entries may combine in any long trench excavations to create a significant volume of water which may cause local problems during the construction phase. Any minor groundwater seepages or significant standing water within excavations made upon this site may be removed by using a simple form of de-watering. Such a system could include the excavation of sumps from which the water could be pumped. Advice on Groundwater Control is given in CIRIA Report No 515 – Groundwater Control Design and Practice.

6.6.2 It is recommended that the borehole installation is grouted up during the construction works to prevent it from acting as a future conduit for potential artesian water.

6.6.3 With respect to buoyancy effects / hydrostatic water pressure, in the absence of long term groundwater level monitoring data, it is recommended that a design groundwater level of 0.00mbgl is adopted for basement design purposes. The structural design engineer should check that the stiffness of the floorslab is sufficient to resist bending due to potential groundwater uplift pressures, and that the structure is heavy enough to resist buoyancy effects.

6.6.4 Foundation excavations should be feasible using conventional plant.

6.6.5 The stability of the excavation faces cannot be guaranteed, thus temporary support to the excavation faces may become necessary. Alternatively, subject to space constraints, excavations could be battered back to a suitable angle of repose. However, if there is a requirement to protect nearby structures or services, appropriate supports may still be required. Advice on excavation support is given in CIRIA Report No 97 – Trenching Practice.

6.7 Road Pavement

6.7.1 Any new pavements will require assessment of the existing sub grade in terms of its California Bearing Ratio (CBR) to facilitate the actual pavement design.

6.7.2 It is recommended that CBR testing is carried out at the site along any proposed access roads prior to construction to confirm the CBR design value.

6.8 Sustainable Drainage

6.8.1 In accordance with PPS25 (2007) the Planning Authority are likely to insist that surface water drainage from any new-build or redevelopment complies with current design practices for Sustainable Urban Drainage (SUD's) construction of separate drainage systems for foul and surface water. Surface water shall be required to be attenuated reducing the discharge of water from the site requiring treatment and disposal. A 20% reduction in surface water discharge rates off the site is to be expected – allowing for the 1 in 100 year storm event and allowing for climate change.

6.8.2 Based on the ground conditions encountered it is likely that sustainable drainage would be suitable at the site, however due to the thickness of Made Ground overlying the natural deposits, it may not be practical or feasible. If sustainable drainage is to be considered, it is recommended that soak-away testing is carried out in accordance with BRE 365 at the site to establish the sites suitability for sustainable drainage.

6.9 Existing Structures

6.9.1 Any existing structures and foundations if found should be grubbed up and replaced with a suitable engineered granular backfill and should be compacted in layers.

6.10 Material Re-Use

6.10.1 The largely concrete Made Ground may be suitable for re-cycling, but probably at an off-site specialist facility.

6.10.2 Any site won soils / materials may be available for reuse across the site subject to the appropriate classification, analysis and engineered solution.

7.0 OTHER POTENTIAL DEVELOPMENT CONSIDERATIONS

7.1 Waste Soils Characterisation

7.1.1 Any excavation works may potentially produce waste soils for which appropriate waste management will be required. Any soils requiring removal and disposal from site would require appropriate classification testing prior to disposal and the results would need to be confirmed with the landfill operator. Isolated hotspots if encountered may need to be taken off as Non-Hazardous or Hazardous waste. Any off-site disposal of soil requires careful management and due consideration of appropriate legislation, guidance and Duty of Care responsibilities.

7.1.2 A Hazardous Waste Assessment should be carried out on any materials requiring removal and disposal from site. Waste Acceptance Criteria (WAC) testing may also be required and the results of the Hazardous Waste Assessment and WAC testing (if appropriate) should be presented to the landfill operator for their confirmation of waste category.

7.2 Imported Fill

7.2.1 Any imported fill will be subject to specific quality requirements, particularly in any proposed areas of landscaping. Allowance should be made for the testing of imported fill materials prior to emplacement to ensure suitability should the materials be delivered with no testing certification.

7.3 Construction Activities

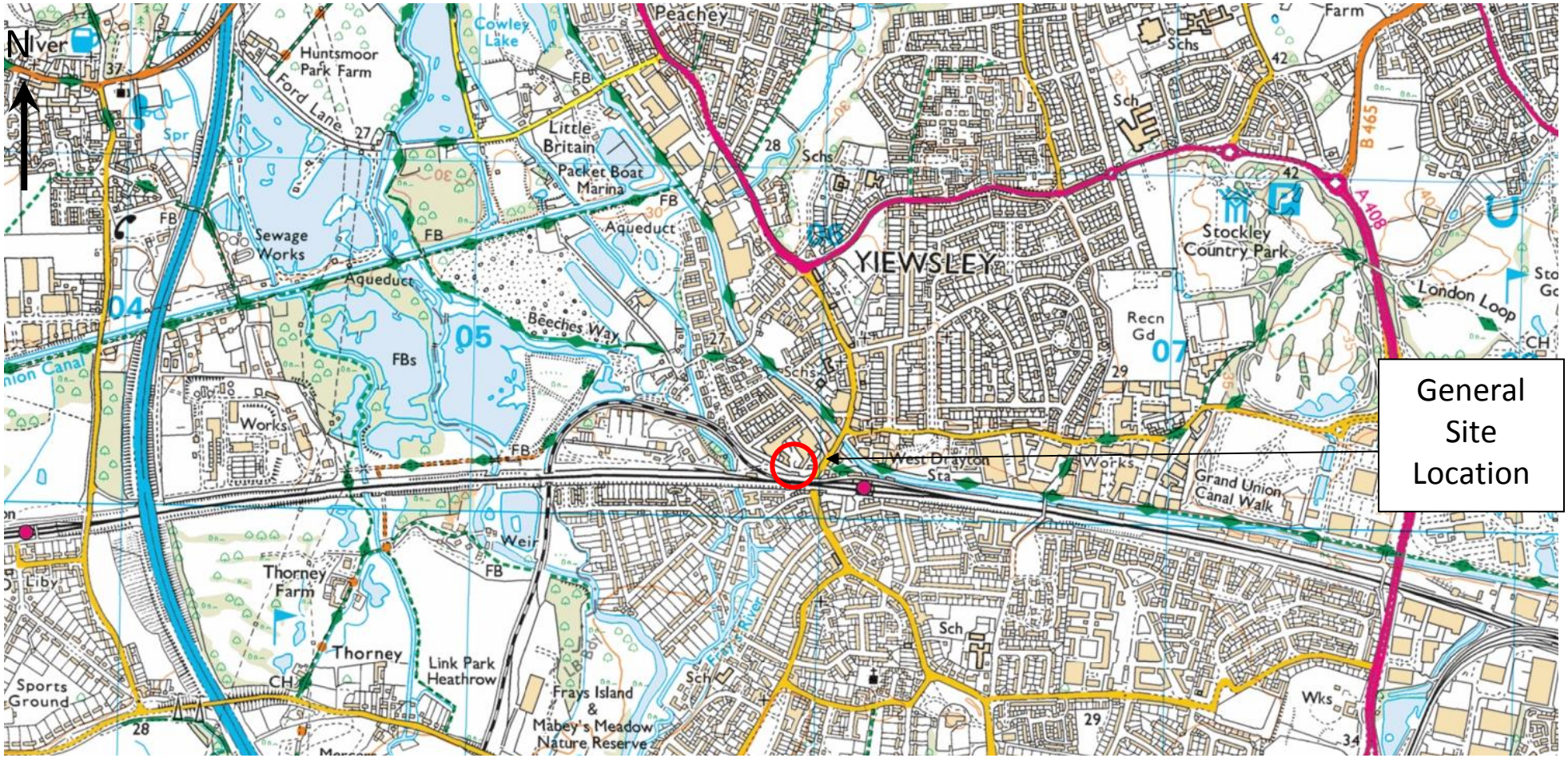
7.3.1 Due consideration should be given to the suppression of noise, dust and vibration emissions from the site during construction.

8.0 REFERENCES

- *AGS: A clients guides and tool kit*
- *Atkins: At Risk Soil Screening Values and Water Screening Values*
- *British Geological Survey (BGS): 1:50'000 geological maps of the area*
- *British Geological Survey (BGS): Open geoscience online mapping tool*
- *BS 5930: code of Practise for Site Investigation Amendment 2*
- *BS 10175: Code of Practise for the Investigation of Potentially Contaminated Sites*
- *BRE 211 Radon: Guidance on protective measures for new buildings*
- *CIRIA 552: Contaminated Land Risk Assessment; A Guide to Good Practise 2001*
- *CIRIA 665: Assessing the Risks Posed by Hazardous Ground Gases for Buildings 2007*
- *Coal Authority: Coal authority mining report and Cheshire brine subsidence report*
- *Contaminated Land: Applications in Real Environments (CL:AIRE): 'The Soil Generic Assessment Criteria for Human Health Risk Assessment' GAC's.*
- *David Norbury: Soil and Rock Descriptions in Engineering Practise*
- *Department of the Environment: DOE industry profiles*
- *EN ISO 14688-1: Geotechnical investigation and testing -- Identification and classification of soil -- Part 1: Identification and description*
- *EN ISO 14688-2: Geotechnical investigation and testing -- Identification and classification of soil -- Part 2: Principles for a classification*
- *EN ISO 14689: Geotechnical investigation and testing -- Identification and classification of rock -- Part 1: Identification and description*
- *Environment Agency (EA): EA Online & What's in my back yard*
- *Environment Agency (EA): Soil Guideline Values (SGVs)*
- *Land Quality Management (LQM): Generic Screening Criteria (GACs)*
- *Landmark: Envirocheck report and Envirocheck analysis online historical mapping tool.*
- *Ordnance survey: OS Landranger map for the area; OS open data online mapping tool*
- *Planning Policy 23: Planning and Pollution Control, Office of The Deputy Prime Minister 2004*
- *R&D Publication CLR 8: Assessment of risks to human health from land contamination.*
- *R&D Publication CLR 10: The Contaminated Land Exposure Model (CLEA)*
- *R&D Publication CLR 11: Model Procedure for the Management of Contaminated Land DEFRA 2004*
- *UK Specification for Ground Investigation Second Edition 2012*

APPENDIX A

DRAWINGS



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SITE NAME/CONTRACT	DRAWING NO.	SCALE
Tavistock Road, Yiewsley	GSI1059/01	N.T.S
TITLE	**DATE**	**DRAWN BY**
Site Location Plan	December 2018	JL

Legend:

⊕ Cable Percussion Borehole Location

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SITE NAME/CONTRACT	DRAWING NO.	SCALE
Tavistock Road, Yiewsley	GSI 1059/02	N.T.S
TITLE	**DATE**	**DRAWN BY**
Exploratory Hole Location Plan	December 2019	MS

APPENDIX B

CABLE PERCUSSION BOREHOLE LOG

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CABLE PERCUSSION BOREHOLE LOG

Project				BOREHOLE No
Tavistock Road, Yiewsley				**BH01**
Project ID: GSI 1059	Date: 27-11-19 27-11-19	Ground Level (m):	Co-Ordinates:	
Contractor: Red Row Homes Plc.				Sheet: 1 of 1

SAMPLES & TESTS			STRATA						
Depth	Type No	Test Result	Water	Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	Geology	Instrument & Backfill
						0.30	MADE GROUND: Grey CONCRETE.	MG	
						0.50	MADE GROUND: Dark brown sandy GRAVEL with frequent cobbles. Gravel is subangular to subrounded, fine to coarse of brick, sandstone and concrete. Cobbles are angular to subangular of concrete and sandstone.	MG	
						(0.70)	0.30 - 0.50 Petrochemical odour.	MG	
						1.20	MADE GROUND: Black sandy GRAVEL. Gravel is angular to subrounded, fine to coarse of brick, sandstone and mudstone.		
1.20		N42					Medium dense to dense greyish brown clayey sandy GRAVEL. Gravel is subangular to rounded, fine to coarse of sandstone, flint, and chalk. (LYNCH HILL GRAVEL MEMBER)		
2.20		N48							
3.20		N37				(4.10)		LHGR	
4.20		N25	1						
			1						
5.20		N12				5.30			
						5.75	Firm brown CLAY. (LONDON CLAY FORMATION)	LC	
							Firm to stiff grey CLAY. (LONDON CLAY FORMATION)		
6.70		N15							
						(4.25)		LC	
8.20		N17							
9.55		N19				10.00			

Boring Progress and Water Observations

Date	Time	Depth	Casing Depth	Casing Dia. mm	Water Depth
27-11-19	08.00	0.00	5.50	150.00	
27-11-19	12.30	4.60			4.00
27-11-19	16.30	10.45			4.00

Chiselling

From	To	Hours

Water Added

From	To

GENERAL REMARKS

Location cleared of buried services. Handpit dug to 1.20 mbgl. Groundwater encountered at 4.60 mbgl rising to 4.00mbgl. Borehole terminated at target depth.

All dimensions in metres Scale 1:65.625	Client: Linea Homes Ltd	Method / Plant Used: Dando 2000	Logged By: Matt Styles