



UNIVERSAL DESTINATIONS & EXPERIENCES UK PROJECT

Former Kempston Hardwick Brickworks
and adjoining land, Bedford

Environmental Statement Volume 3

Appendix 11.3 - Mineral Resource Assessment

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CONTENTS

EXECUTIVE SUMMARY

1	INTRODUCTION AND OBJECTIVES	1
1.1	INTRODUCTION	1
1.2	SCOPE OF WORKS	2
2	SITE DESCRIPTION AND PROPOSED DEVELOPMENT	4
2.1	SITE DESCRIPTION	4
2.2	PROPOSED DEVELOPMENT	4
3	MINERAL PLANNING POLICY REVIEW	5
3.1	NATIONAL PLANNING POLICY	5
3.2	LOCAL PLANNING POLICY	5
4	NATURE OF THE EXISTING MINERAL	8
4.1	GEOLOGY	8
4.2	LAKE ZONE, WEST GATEWAY AND CORE ZONE GROUND INVESTIGATIONS	9
4.3	HYDROLOGY	11
4.4	MINERAL RESOURCE PRESENCE	13
4.5	MINERAL RESOURCE SIZE AND QUALITY	17
5	PRACTICABILITY AND VIABILITY OF PRIOR EXTRACTION	19
5.2	REMAINING UNWORKED MINERALS	19
5.3	CURRENT EXTRACTION STATUS	19
5.4	OTHER SITES IN PROXIMITY	19
5.5	SITE SPECIFIC CONSIDERATIONS	20
6	CONCLUSIONS AND RECOMMENDATIONS	22

TABLES

Table 4-1 - Geology Summary	8
Table 4-2 - BGS Borehole Summary	8
Table 4-3 - Groundwater Encountered	12
Table 4-4 - Deposit Details	14
Table 5-1 - Existing Planning Permissions on-Site	19
Table 5-2 - Local Allocated Sites for Brick Clay	20

INSERTS

Insert 1 - Identified Mineral Resources – Oxford Clay MSA	1
Insert 2 - Permitted and Allocated sites. Site shown as red line	21

APPENDICES

ANNEX 1

FIGURES

ANNEX 1.1

WSP FIGURES

ANNEX 1.2

THIRD PARTY FIGURES

ANNEX 2

LIMITATIONS

ANNEX 3

EXPLORATORY LOGS

ANNEX 3.1

BGS EXPLORATORY HOLE LOGS



ANNEX 3.2

LAKE ZONE EXPLORATORY HOLE LOGS

ANNEX 3.3

CORE ZONE EXPLORATORY HOLE LOGS

ANNEX 3.4

WEST GATEWAY ZONE EXPLORATORY HOLE LOGS

ANNEX 4

ATTERBERG TEST CERTIFICATES

ANNEX 5

PARTICLE SIZE DISTRIBUTION TESTS CERTIFICATES

EXECUTIVE SUMMARY

WSP has prepared this Minerals Resource Assessment (MRA) on behalf of UDX to accompany the planning proposal for the proposed commercial end use development of the site.

It has been identified that the majority of the Site lies within a Minerals Safeguarding Area (MSA) for Oxford Clay within the Minerals and Waste Policies Map Location Plan, found within the Mineral and Waste Local Plan: Strategic Sites and Policies (MWLP: SSP), January 2014¹. The Site area includes Peterborough Member of the Oxford Clay Formation (brick clay resource) across the entire site.

Three ground investigations have been completed at the Site, within the Lake Zone and the Core Zone by Arcadis in March and April 2023 and West Gateway Zone by Endeavour Drilling Limited in June 2024.

Policy Mineral Strategic Policy 12 of the MWLP: SSP¹ allows the surface development of sites in MSAs provided that the “*mineral concerned is proven to be of no economic value as a result of the undertaking of the Mineral Resource Assessment*”. The Policy also includes other exceptions which are that the development will not inhibit extraction if required in the future, or there is an overriding need for the development and prior extraction cannot be reasonably undertaken, or that the mineral can be extracted prior to the development taking place. Only one of these policy tests needs to be satisfied to comply with the policy.

This MRA addresses the requirement to demonstrate that the mineral is of no economic value, primarily due to:

- The permitted extraction of the remaining minerals on-Site will not go ahead as the mineral is deemed of no economic value due to the carbon and sulphur content within the Peterborough Member which means production cannot comply with UK Air Quality Standards²;
- Existing sites and allocated brick clay extraction sites (specific to Oxford Clay extraction) are estimated to contain 38.7 million cubic meters off-Site across six sites within 5km of the Site. It is identified that demand for brick clay has been very limited, therefore, these sites enable the area to meet any unforeseen demand to be met; and
- Following investigation, the entire Site is designated in “Zone 1” (a designation given by WSP which is outlined in section 4) and deposits have been shown to be unsuitable for extraction as the material doesn’t comply with a typical brick earth specification comprising a sand content of 35-50%, a silt content of 20-35% and a clay content 20-30%.

The **Planning Statement (Document Reference 6.1.0)** submitted with this planning proposal should be read in conjunction with this MRA to demonstrate how relevant planning policy on minerals is met.

¹ Bedford Borough Council, Central Bedfordshire Council and Luton Borough Council (2014) *Minerals and Waste Local Plan: Strategic Sites and Policies*. Available at: https://www.centralbedfordshire.gov.uk/migrated_images/minerals-waste_tcm3-2120.pdf [Accessed: 10 June 2025].

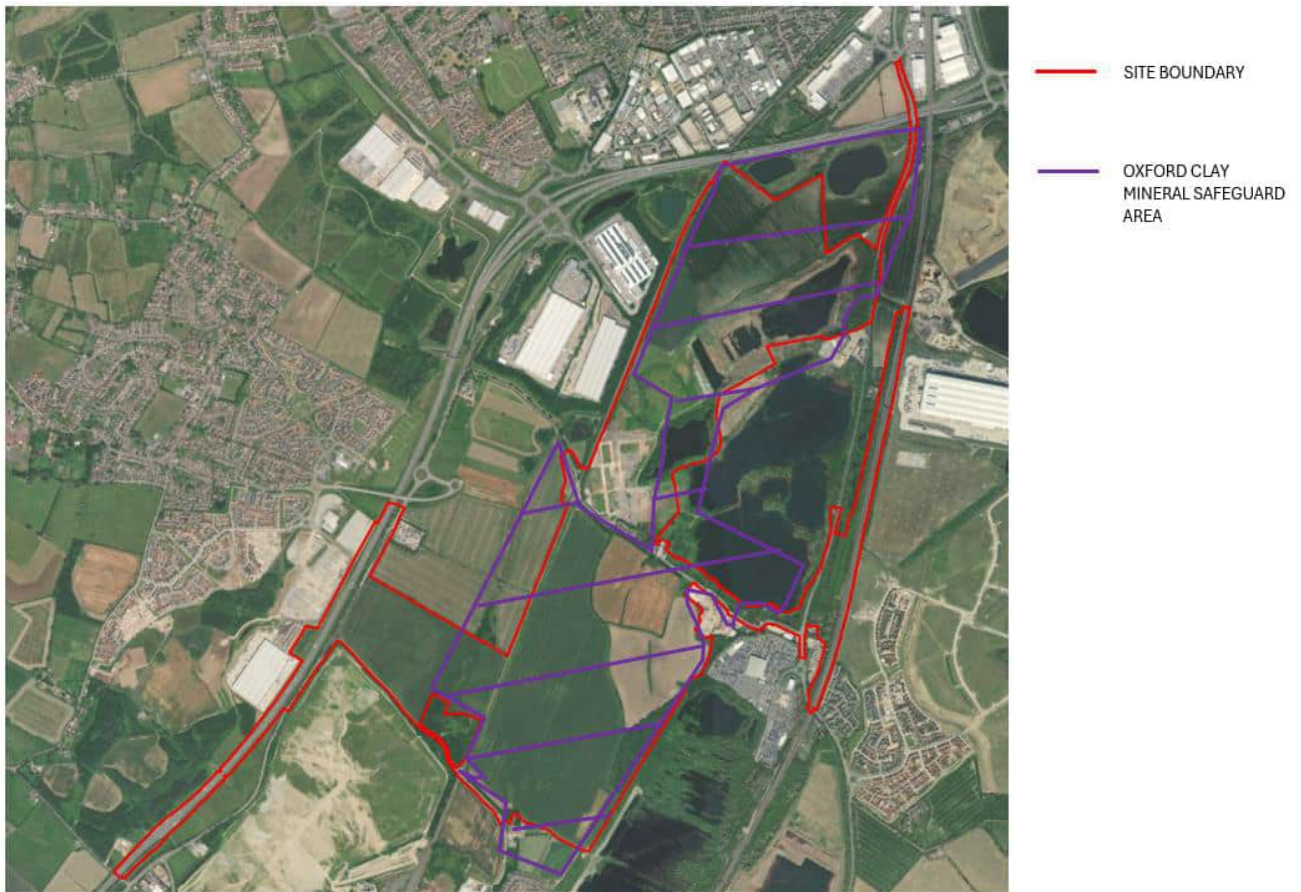
² HM Government (2010) *The Air Quality Standards Regulations 2010*. Available at: <https://www.legislation.gov.uk/uksi/2010/1001/contents> [Accessed: 10 June 2025].

1 INTRODUCTION AND OBJECTIVES

1.1 INTRODUCTION

- 1.1.1. WSP has prepared this Minerals Resource Assessment (MRA) on behalf of UDX to accompany the planning proposal of the proposed commercial end use development of the Site.
- 1.1.2. This report presents a MRA to ascertain whether there are viable mineral reserves and the prospect of prior extraction.
- 1.1.3. It has been identified that the majority of the Site lies within a Minerals Safeguarding Area (MSA) for Oxford Clay within the Minerals and Waste Policies Map Location Plan, found within the Mineral and Waste Local Plan: Strategic Sites and Policies (MWLP: SSP), January 2014¹. The MWLP: SSP incorporates Central Bedfordshire Council (CBC), Bedford Borough Council (BC) and Luton BC. The Site area includes Peterborough Member of the Oxford Clay Formation (brick clay resource) across the majority of the Site as shown on below.

Insert 1 - Identified Mineral Resources – Oxford Clay MSA



1.2 SCOPE OF WORKS

1.2.1. This MRA addresses the following:

- Description of the Site and Proposed Development;
- Site geology and potential for a mineral resource to be present – analysis of British Geological Survey (BGS) mapping data³ and available site borehole records completed in ground investigations required;
- Mineral planning policy review – national and local planning policy;
- The practicability and viability of the prior extraction of the mineral - taking account of site-specific constraints; a market appraisal and effect on the deliverability and viability of the non-minerals development; and
- An assessment of compliance with minerals policy.

1.2.2. This report has been prepared with regard to the following policies and guidance documents:

- Bedfordshire and Luton Minerals and Waste Local Plan, 2005⁴;
- Bedford BC, CBC and Luton BC, MWLP: SSP, January 2014¹;
- CBC and Bedford BC, Mineral Safeguarding Areas – Technical Note on the production of Mineral Resource Assessment, November 2016⁵;
- CBC and Bedford BC, Mineral and Waste Monitoring Report, November 2024⁶;
- BGS, Bedfordshire – A Summary of Mineral Resource Information for Development Plans, 1995⁷;
- Guidance on the planning for mineral extraction in plan making and the application process⁸;

³ British Geological Survey (n.d.) *GeoIndex (onshore)*. Available at: <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/> [Accessed: 11 June 2025].

⁴ Bedfordshire County Council (2005) *Bedfordshire and Luton Minerals and Waste Local Plan 2005*. Available at: https://www.centralbedfordshire.gov.uk/migrated_images/minerals-waste-local_tcm3-2143.pdf [Accessed: 10 June 2025].

⁵ Central Bedfordshire Council and Bedford Borough Council (2016) *Mineral Safeguarding Areas – Technical Note on the production of Mineral Resource Assessments*. Available at: https://www.centralbedfordshire.gov.uk/migrated_images/mineral-safeguarding-areas_tcm3-20290.pdf [Accessed: 10 June 2025].

⁶ Central Bedfordshire Council, Bedford Borough Council and Luton Borough Council (2024) *Minerals and Waste Monitoring Report*. Available at: https://www.centralbedfordshire.gov.uk/info/48/minerals_and_waste/450/development_framework [Accessed: 10 June 2025].

⁷ Sumbler, M.G., Highley, D.E., Cameron, D.G. and Samuel, M.D.A. (1995) *Bedfordshire mineral resources: a summary of mineral resource information for development plans*. Mineral Resources Series. UK: British Geological Survey.

⁸ Ministry of Housing, Communities and Local Government (2014) *Planning practice guidance – Minerals*. Available at: <https://www.gov.uk/guidance/minerals> [Accessed: 10 June 2025].

- BGS - A guide to mineral safeguarding in England, 2024⁹; and
- The National Planning Policy Framework (NPPF), 2024¹⁰.

⁹ British Geological Survey (2024) *Mineral safeguarding in England: good practice advice*. Available at: <https://www.bgs.ac.uk/mineralsuk/download/mineral-safeguarding-in-england-good-practice-advice/> [Accessed: 10 June 2025].

¹⁰ Ministry of Housing, Communities and Local Government (2024) *National Planning Policy Framework*. Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf [Accessed: 10 June 2025].

2 SITE DESCRIPTION AND PROPOSED DEVELOPMENT

2.1 SITE DESCRIPTION

- 2.1.1. The Site comprises 268ha with approximately 196ha included within the MSA. The Site is primarily agricultural or undeveloped land, which is located between the A421 and B530, two rail lines, with the village of Stewartby located to the south and Kempston Hardwick to the east.
- 2.1.2. The Site location plan is provided as **Figure 1a** in **Annex 1.1**.
- 2.1.3. The Site is located on predominantly greenfield agricultural land however the Site boundary includes areas of roads and embankments, large ponds and the historical brickworks site.

2.2 PROPOSED DEVELOPMENT

- 2.2.1. This report has been prepared in support of the planning proposal for the Proposed Development as described in **Chapter 2: Description of the Proposed Development (Volume 1)** of the Environmental Statement.

3 MINERAL PLANNING POLICY REVIEW

3.1 NATIONAL PLANNING POLICY

- 3.1.1. National planning policy for minerals is set out in Section 17 of the NPPF 2024¹⁰, 'Facilitating the sustainable use of minerals'.
- 3.1.2. National policy is clear that *"it is essential that there is a sufficient supply of minerals to provide the infrastructure, buildings, energy and goods that the country needs. Since minerals are a finite natural resource, and can only be worked where they are found, best use needs to be made of them to secure their long-term conservation"* (Paragraph 222 of the NPPF¹⁰). Further Paragraph 225 of the NPPF¹⁰ adds that *"local planning authorities should not normally permit other development proposals in mineral safeguarding areas"* where they might constrain potential future use for these purposes.
- 3.1.3. With respect to further guidance on the scope of Mineral Assessments, the Planning Policy Guidance⁸ refers to the detailed advice on Mineral Safeguarding in the BGS report 'Mineral Safeguarding in England: Good Practice Advice' (2011)⁹. This identifies that there are two levels of Mineral Assessment:
1. *"A site-specific desk-based assessment of the existing surface and solid geological mineral resource information, comprising information on the mining and quarrying history, mineral assessments and market appraisals, boreholes, site investigations, geological memoirs, technical reports, mining plans, and the thickness of superficial geological deposits."*
 2. *Analysis of the site-specific information derived from level 1 including:*
 - *An estimate of the economic value (for example quality and quantity) of the mineral resource;*
 - *Its potential for use in the forthcoming development and an assessment of whether it is feasible and viable to extract the mineral resource ahead of development to prevent unnecessary sterilisation; and*
 - *Where prior extraction can be undertaken, an explanation of how this will be carried out as part of the overall development scheme"*⁹.

3.2 LOCAL PLANNING POLICY

BEDFORD BOROUGH COUNCIL, CENTRAL BEDFORDSHIRE COUNCIL AND LUTON BOROUGH COUNCIL, MINERAL AND WASTE LOCAL PLAN: STRATEGIC SITES AND POLICIES, JANUARY 2014;

- 3.2.1. The MWLP: SSP⁴ which was adopted in January 2014 and covers the period to 2028. The MWLP: SSP sets out the Councils (Bedford BC, CBC, and Luton BC) strategic vision and objective for future development and management of mineral and waste.
- 3.2.2. It has been identified that the majority of the Site lies within a MSA within the MWLP: SSP⁴. The area is referred to as the *'Marston Vale Area'* within the MWLP: SSP. Mineral Strategic Policy (MSP) 11 of the MWLP: SSP indicates that *"surface development proposals within a Mineral Safeguarding Area...shall be accompanied by a Mineral Resource Assessment"*⁴.

- 3.2.3. MSP 12 of the MWLP: SSP⁴ indicates that “*surface development will only be permitted within a Mineral Safeguarding Area where it has been demonstrated that*
- *The mineral concerned is proven to be of no economic value as a result of the undertaking of the Mineral Resource Assessment’; or*
 - *The development will not inhibit extraction if required in the future; or*
 - *There is an overriding need for the development and prior extraction cannot reasonably be undertaken; or*
 - *The mineral can be extracted prior to the development taking place”.*
- 3.2.4. The extent of the Mineral Safeguarding Areas for the brick clay resource are defined on the Map extract as shown as **Insert 1**. The current Site area is shown in the Site boundary detail within **Figure 1a** in **Annex 1.1** and has been superimposed as **Insert 1**. The Site is located in Peterborough Member of the Oxford Clay deposits.
- 3.2.5. Section 2.6 of the MWLP: SSP⁴ states “*Oxford Clay has historically been a major brick-making resource, but that use has now ceased*”. The Marston Vale area the MWLP: SSP⁴ is mentioned in Section 6.21 as containing “*large permitted reserves of clay*” however, it is then later stated that “*nationally the brick industry has consolidated in recent years, and there is no longer an operational brick works in the Plan area. Apart from occasional demand for engineering material, there is no demand for large scale clay extraction, and no new sites for clay are allocated in the Plan. No new sites for working brick clay are being pursued for inclusion as part of this process*”. However, Section 7.18 of the MWLP: SSP⁴ states “*proposals occasionally arise for clay extraction for use in engineering works*”.

**CENTRAL BEDFORDSHIRE COUNCIL AND BEDFORD BOROUGH COUNCIL,
MINERAL SAFEGUARDING AREAS – TECHNICAL NOTE ON THE PRODUCTION OF
MINERAL RESOURCE ASSESSMENT, NOVEMBER 2016;**

- 3.2.6. The Mineral Safeguarding Areas - Technical Note on the Production of Mineral Resource Assessments⁵, dated November 2016, states “*it is important to protect mineral resources from needless sterilisation*”. Paragraph 5 and 6 contains information on the appropriate course of action regarding developments on Mineral Safeguarding Areas and guidance when undertaking MRAs:
- “Having regard to the results of this assessment in relation to the quality and quantity of mineral that could be recovered, the practicability of extraction, and the environmental impacts of mineral extraction, there are three possible outcomes:*
- *The application could be refused on the basis that the loss of an important mineral deposit is considered unacceptable;*
 - *All/some of the mineral resource present could be utilised/extracted before the surface development takes place; or*
 - *The development could be allowed leaving the mineral to be sterilised in situ; and*

- *Where prior extraction is deemed appropriate a separate planning application will be required for the extraction of the mineral. Whilst the potential impacts of these options should be explored within a MRA, the consideration of the planning merits and planning policies of pursuing any of these options should take place in the wider context of the development as a whole and be included as part of the general planning statement”⁵.*

3.2.7. Therefore, the brick clay deposits will need to be assessed to determine whether they are regarded as economically important minerals.

3.2.8. In order to determine this the following needs to be taken into account during any assessment:

- The nature and extent of existing minerals; and
- The practicability and viability of prior extraction.

BEDFORD BC, LOCAL PLAN 2030, ADOPTED 15 JANUARY 2020;

3.2.9. The Proposed Development partially lies within Policy 36S (Forest of Marston Vale)¹¹.

3.2.10. The Forest of Marston Vale is one of the 12 Community Forests in England designated by Government as part of a national programme to regenerate degraded landscapes near large urban populations through tree planting. It was established in 1991 to use trees and woodlands to transform 61 square miles (approximately 16,000ha) between Bedford and Milton Keynes, repairing a landscape scarred by decades of clay extraction, brickmaking and landfill. Working with local communities, government and businesses, the 40-year vision is to deliver environmental regeneration that brings forward social and economic regeneration of the area, whilst providing major landscape, recreation, biodiversity, and quality of life benefits.

3.2.11. Any development proposals within the Forest of Marston Vale area will be required to:

- Demonstrate how they will deliver 30% tree cover across their development site. This can be achieved through a combination of new planting of trees, woodlands and hedgerows within development sites;
- Contribute to the environmentally led regeneration of the Forest of Marston Vale, in line with the aims of the Forest Plan; and
- Demonstrate how their proposals reflect relevant design guidance (supplementary planning document) for development within the Forest of Marston Vale.

¹¹ Bedford Borough Council (2020) *Bedford Borough Local Plan 2030*. Available at: <https://www.bedford.gov.uk/files/local-plan-2030.pdf/download?inline> [Accessed: 11 June 2025].

4 NATURE OF THE EXISTING MINERAL

4.1 GEOLOGY

4.1.1. The BGS Map Sheet 203 – Bedford (1:50,000 Series, 2010)¹² and BGS online maps³ have been reviewed, and the underlying geology is presented in **Table 4-1** together with Environment Agency aquifer designations for the relevant geological units.

Table 4-1 - Geology Summary

Geological Unit	Location	Description*	Aquifer Designation
Head	Mainly in the western and northern areas of the Site	Clay, silt and gravel*	Secondary A Aquifer
Alluvium	Follows small unnamed river through the western and northern areas of the Site	Clay and silt*	Secondary Undifferentiated Aquifer
Peterborough Member of the Oxford Clay	Across the Site	Firm to very stiff, dark bluish grey to dark grey, thinly laminated clay with frequent fossilised shells and rare gypsum and pyrite	Unproductive Strata

* BGS description

4.1.2. There are several publicly available BGS borehole records located on-site which confirm the above Site profile. The depth and thickness of the strata encountered has been summarised in **Table 4-2**. The borehole locations are shown on an annotated plan presented as **Figure 2** in **Annex 1.1**. The borehole logs reviewed are presented within **Annex 2.1**.

Table 4-2 - BGS Borehole Summary

Strata	Description	Depth to Base (m bgl*)	Water Strikes (m bgl*)	BGS Borehole
Topsoil	Soil with some pebbles	0.35 – 0.61	None noted	TL04NW10, TL04NW11, TL04NW12, TL04SW28.
Made Ground	Fill, clay, brick rubble	1.5 (proven)	None noted	TL04SW252.

¹² British Geological Survey (2010) *1:50 000 Sheet 203 Bedford (Bedrock and Superficial)*. Available at: <https://webapps.bgs.ac.uk/data/MapsPortal/series.html?series=E50k&collection=PMAP&filter=203&page=1&pageSize=100> [Accessed: 11 June 2025].

Strata	Description	Depth to Base (m bgl*)	Water Strikes (m bgl*)	BGS Borehole
Head	Soft to hard mottle brown and grey sandy silty clay.	2.5 (proven)	None noted	TL04SW260, TL04SW261, TL04SW262.
Peterborough Member (of the Oxford Clay Formation)	North Pale or dark yellowish brown laminated clay with fine crystals of selenite. Becomes olive-grey shaly clay with frequent shells, rare ammonites and some selenite. South Stiff dark grey laminated fissured silty clay with shell traces.	19.57 (proven) 15.00 (proven)	None noted	TL04NW10, TL04NW11, TL04NW12, TL04SW28, TL04SW252, TL04SW253, TL04SW260, TL04SW261, TL04SW262.
Kellaway Beds Kellaway Sand Member Kellaway Clay Member	Dense fine grey silty sand. Hard dark grey fissured laminated fossiliferous silty clay	22.0 (proven)	None noted	TL04SW28, TL04SW252, TL04SW253, TL04SW260, TL04SW261, TL04SW262.
Cornbrash	Weak grey friable limestone	23.0 (proven)	None noted	TL04NW11, TL04NW12, TL04SW252, TL04SW253, TL04SW260, TL04SW261, TL04SW262.
Blisworth Clay Formation	Hard green and brown fissured silty clay	24.6 (proven)	None noted	TL04SW252, TL04SW253, TL04SW260, TL04SW261, TL04SW262.
Blisworth Limestone Formation	Moderately weak grey oolitic shelly limestone	27.6m (not proven)	None noted	TL04SW252, TL04SW253, TL04SW260, TL04SW261, TL04SW262.

* metres below ground level

4.2 LAKE ZONE, WEST GATEWAY AND CORE ZONE GROUND INVESTIGATIONS

- 4.2.1. Ground investigations were undertaken at the Lake Zone and the Core Zone, within the Site, between March and April 2023 by Arcadis. A further ground investigation was undertaken at the West Gateway Zone, within the Site, in June 2024 by Endeavour Drilling Limited. The Zonal boundaries can be seen within **Figure 1b** in **Annex 1.1**.

- 4.2.2. The purpose of the investigation was to identify existing ground conditions within the Site, examine chemical makeup of the underlying soils, consider geotechnical behaviour of the strata influencing settlement, foundation and earthworks design, to provide preliminary geotechnical parameters to inform outline geotechnical design.
- 4.2.3. The ground investigation comprised the advancement of a combined total of 13 boreholes, 29 trial pits, two soakaways and four Cone Penetration Tests (CPTs). The exploratory hole plans for the Lake Zone and Core Zone are presented in **Figure 1** and **Figure 2** in **Annex 1.2** and the exploratory hole plan for the West Gateway Zone is presented **Figure 3** in **Annex 1.1**. The exploratory hole logs are presented in **Annex 2.2 to 2.4**.
- 4.2.4. It should be noted that locations Cable Percussion (CP) 05 to CP07 and Trial Pit (TP) 18 to TP26 from Lake Zone are not included within this assessment as these locations are found within the historical 'Brickworks' site. The 'Brickworks' site is not found within the Oxford Clay MSA, as seen in **Insert 1**. Regarding West Gateway Zone, only the east of the Zone is found within the Oxford Clay MSA. Therefore, locations Borehole (BH) 01, CPT01 to CPT03, TP01 and Soakway (SA) 01 have not been included within this assessment.

GEOLOGY ENCOUNTERED

- 4.2.5. Topsoil was encountered in 36 No. exploratory holes (Lake Zone and Core Zone – CP01 to CP03, CP09 to CP16, TP01, TP03, TP05 and TP17, TP27 to TP36 and TP38. West Gateway Zone – BH02, BH03, CPT04 to CPT07, TP02, TP03, SA02 and SA03) ranging in thickness from 0.10m to 1.00m, and generally comprised a soft dark brown sandy gravelly clay with frequent rootlets. Gravel was subangular fine and medium of flint.
- 4.2.6. Made Ground was encountered in 14 No. locations (Lake Zone and Core Zone – CP04, CP08, TP02, TP05, TP06, TP09 to TP16 and TP37) and ranged in thickness from 0.20m to 5.00m. This deposit was generally described as a loose yellowish brown clayey gravelly sand or soft light grey mottled orangish brown sandy clay with frequent sand pockets, gravels of chert and fossilised shell fragments. Made Ground was encountered from the surface in all twelve locations.
- 4.2.7. Head deposits were encountered within 39 No. locations (CP01 to CP03, CP08 to CP14, TP01, TP03, TP04, TP06, TP09 to TP15 and TP17, TP27 to TP31, TP34, TP37 and TP38. West Gateway Zone – BH02, BH03, CPT04 to CPT07, TP02, TP03, SA02 and SA03) ranging in thickness from 0.10m to 3.00m, and generally comprising soft and loose light yellowish brown sandy gravelly clay or orangish brown clayey silty fine and medium sand or medium dense light brown silty very sandy gravel. Gravel was angular to subangular fine to coarse of flint and rare fossilised shells fragments.
- 4.2.8. The Alluvium was encountered within six locations (Lake Zone and Core Zone – CP03, CP15, TP04, TP17 and TP31. West Gateway Zone – BH02) and ranged in thickness from 0.20m to 1.70m. The unit generally comprised a soft light to dark brown silty sandy gravelly clay with gravels of chert and rare pockets of orange sand and dark grey clay.

- 4.2.9. The Peterborough Member (of the Oxford Clay Formation) was encountered within 40 No. (Lake Zone and Core Zone – CP01 to CP04, CP08 to CP12, CP14, CP16, TP01, TP03 to TP06, TP12A, TP14, TP17, TP27 and TP29 to TP38. West Gateway Zone – BH02, BH03, CPT04 to CPT07, TP02, TP03, SA02 and SA03). The Peterborough Member was often found overlain by a weathered layer, ranging from 0.20m to 2.90m in thickness. The weathered Peterborough Member comprised soft light brownish grey clay with rare thin laminations, lithified wood fragments and frequent fossilised shells. The unweathered layer of the Peterborough Member ranged in thickness from 4.75m to 15.95m and generally comprised firm to very stiff dark bluish grey to dark grey thinly laminated sandy silty slightly gravelly clay with frequent fossilised shells and rare gypsum and pyrite. The gravel was subangular fine and medium of mudstone.
- 4.2.10. The Kellaways Formation is subdivided into the Kellaways Sand Member (KIS) and the Kellaways Clay Member (KIC). The KIS was encountered within 15 No. locations (Lake Zone and Core Zone – CP01 to CP04 and CP08 to CP16. West Gateway Zone – BH02 and BH03) ranging in thickness from 1.00m to 4.80m, and generally comprised very dense to very stiff dark grey clayey silty slightly gravelly fine sand with occasional fossilised shell fragments. Gravel was subangular fine and medium of mudstone. The KIC was encountered within eight locations (Lake Zone and Core Zone – CP01 to CP03, CP08, CP10, CP12, CP14 and CP16. West Gateway Zone – BH02 and BH03) ranging in thickness from 0.30 to 4.65m and generally comprised very stiff thinly laminated dark grey silty slightly sandy clay with occasional shell fragments.
- 4.2.11. The Cornbrash Formation was encountered within three locations (Lake Zone and Core Zone – CP04, CP10 and CP14) and ranged from 1.85m to 3.50m thick comprising strong light grey limestone with medium spaced, sub-horizontal, clean, undulating, rough fractures.
- 4.2.12. The Forest Marble Formation was encountered within three locations (Lake Zone and Core Zone – CP04, CP10 and CP14) and ranged from 1.20m to 2.40m thick comprising stiff to very stiff dark grey and yellow fissured clay with occasional fossilised shell fragments and pyritic pockets. Fissures were very closely spaced, smooth undulating planar.
- 4.2.13. The Blisworth Clay Formation was encountered within three locations (Lake Zone and Core Zone – CP04, CP10 and CP14) and ranged from 0.35m to 1.10m thick and comprising very stiff yellow mottled grey clay.
- 4.2.14. The Blisworth Limestone Formation was encountered within three locations (Lake Zone and Core Zone – CP04, CP10 and CP14) ranging in thickness from 5.50m to 7.45m, comprising strong light grey limestone. Fractures are close to medium spaced, clean, undulating rough.
- 4.2.15. The Rutland Formation was encountered within two locations (Core Zone – CP10 and CP14) ranging from 0.85m to 1.4m thick and comprising very stiff dark grey clay with localised fossilised shell fragments and frequent organic matter/peat pockets.

4.3 HYDROLOGY

- 4.3.1. Information on groundwater encountered during the investigations is summarised in **Table 4-3**

Table 4-3 - Groundwater Encountered

Location	Depth of Strike		Total Rise after 20 mins		Strata	Description of Stike
	m bgl*	m AOD**	m bgl*	m AOD**		
Lake Zone						
CP01	0.80	28.96	-	-	Head	-
CP01	9.60	20.16	7.20	22.56	KIS	-
CP02	0.80	28.91	-	-	Head	-
CP02	6.00	23.71	-	-	Peterborough Member	-
CP03	4.60	25.70	-	-	Peterborough Member	-
CP03	8.00	22.30	7.40	22.90	KIS	-
CP03	13.90	16.4	12.50	17.80	KIC	-
CP04	0.70	32.83	1.10	32.34	Made Ground	-
TP01	1.30	28.09	-	-	Head	Very fast seepage
TP02	1.20	28.59	-	-	Made Ground	Fast seepage
TP03	1.00	29.05	-	-	Head	Fast seepage
TP04	1.00	29.01	-	-	Head	Very fast seepage
TP12A	1.00	29.84	-	-	Head	Slight seepage
TP13	2.00	25.40	-	-	Made Ground	Slight seepage
Core Zone						
CP08	11.60	21.43	9.70	23.33	KIS	-
CP09	17.00	18.25	14.90	20.35	KIS	-
CP10	13.80	19.30	11.50	21.60	KIS	-
CP11	12.90	23.35	-	-	Peterborough Member	-
CP11	17.80	18.45	16.80	19.45	KIS	-

Location	Depth of Strike		Total Rise after 20 mins		Strata	Description of Stike
	m bgl*	m AOD**	m bgl*	m AOD**		
CP12	9.50	25.09	2.50	32.09	Peterborough Member	-
CP12	15.50	19.09	13.30	21.29	KIS	-
CP13	16.80	15.94	15.90	16.84	KIS	-
CP15	14.00	19.56	8.90	24.66	KIS	-
CP16	14.00	19.56	13.00	20.56	KIS	-
TP27	2.20	30.88	-	-	Head	Slow seepage
TP28	2.70	32.73	-	-	Head	Moderately fast seepage
TP29	1.30	33.13	-	-	Head	Slight seepage from sand pockets
TP30	3.90	30.57	-	-	Peterborough Member	Ery slow seepage
TP36	1.60	31.52	-	-	Weathered Peterborough Member	Slight seepage
TP37	1.50	33.52	-	-	Head	Slow seepage
West Gateway Zone						
BH02	1.30	32.34	1.19	32.44	Head	-
BH02	13.59	20.04	11.80	21.74	Peterborough Member	-
BH03	13.10	30.84	12.00	21.94	Peterborough Member	-
SA02	2.00	31.67	-	-	Head/Peterborough Member	Slight seepage

* metres below ground level

** metres above ordnance datum

4.4 MINERAL RESOURCE PRESENCE

- 4.4.1. It has been identified that the majority of the Site lies within a MSA within the MWLP: SSP⁴ as shown in **Insert 1**. The underlying minerals consist of the Peterborough Member of the Oxford Clay Formation (brick clay).

4.4.2. WSP has zoned the Site according to the following parameters.

- Zone 1 – Peterborough Member of the Oxford Clay deposits noted however show to be unsuitable for extraction due to either:
 - Being overlain by Overburden >2 m;
 - Bands of material being weathered;
 - Not complying with a typical brick earth specification comprising a sand content of 35-50%, a silt content of 20-35% and a clay content 20-30%;
 - Suitable bands of deposits are <2 m thick; and
 - Shallow groundwater encountered within the deposit.
- Zone 2 – Suitable deposits that could be commercially extracted (little overburden, sufficient expected brick earth content).
- Zone 3 – Potentially suitable deposits that could be removed prior to development however further clarification required.

4.4.3. **Table 4-4** below shows details with regards to the brick clay (Peterborough Member of the Oxford Clay Formation) encountered during the works including thickness, details on clay content and in turn which zone each intrusive location has been assigned. It should be noted only limited assessment and testing has been undertaken at the Site.

4.4.4. 425µm (%) Atterberg information is included to demonstrate that material encountered is of fine sands, silts and clays, with Particle Size Distribution (PSD) results also included to show sand/silt/clay percentages.

Table 4-4 - Deposit Details

Borehole Location	Deposit Thickness (m)	Base of Stratum Proven (m bgl*)	Overburden Thickness (m)	Passing 425µm (%)	Sand/Silt/Clay (PSD)	Allocated Zone	Comments
Lake Zone							
CP01	7.60	9.50	1.90	91	-	1	Sample taken at 1.20 to 1.70m below ground level (bgl) Sample taken in Head Deposits
CP02	6.50	7.50	1.00	97	-	1	Sample taken at 2.00m to 2.45m bgl Sample taken in Peterborough Member
CP03	4.75	7.20	2.45	100	-	1	Sample taken at 3.00m to 3.45 bgl Sample taken in Peterborough Member

Borehole Location	Deposit Thickness (m)	Base of Stratum Proven (m bgl*)	Overburden Thickness (m)	Passing 425µm (%)	Sand/Silt/Clay (PSD)	Allocated Zone	Comments
CP04	9.30`	14.30	5.00	100	3/48/49	1	Sample taken at 6.50m to 6.95m bgl. PSD sample taken at 5-6.5m bgl. Sample taken in the Peterborough Member
TP03	1.5	NP**	1.5	78	-		Sample taken at 2m to 3m bgl Sample taken in the Peterborough Member. Inorganic clays of high plasticity
TP04	1.4	NP**	1.6	95	-		Sample taken at 2.5m to 3m bgl Sample taken in the Peterborough Member. Inorganic clays of high plasticity
Core Zone							
CP08	9.60	11.60	2.00	100	-	1	Sample taken at 2.45m to 2.50m bgl Sample taken within the Peterborough Member
CP09	14.90	16.50	1.60	-	-	-	-
CP10	12.15	16.50	1.65	100	3/37/60	1	Sample taken at 1.65m to 2.00m bgl PSD sample taken at 6.5 – 8m bgl Sample taken within the Peterborough Member
CP11	13.45	15.95	2.50	-	-	1	-
CP12	14.60	15.50	1.90	-	-	-	-
CP13	10.80	13.80	3.00	100	22/47/31	1	Sample taken at 1.00m to 2.45m bgl PSD sample taken at 15.50 to 15.95m Sample taken within the Peterborough Member

Borehole Location	Deposit Thickness (m)	Base of Stratum Proven (m bgl*)	Overburden Thickness (m)	Passing 425µm (%)	Sand/Silt/Clay (PSD)	Allocated Zone	Comments
CP14	12.80	14.00	2.20	100	-	1	Sample taken at 3.00m to 4.00m bgl, 6.50m to 8.00m bgl and 12.50m to 14.00m bgl Samples taken within the Peterborough Member
CP15	11.40	13.20	1.80	100	-	1	Sample taken at 1.70m to 2.00m bgl, 5.00m to 5.45m bgl and 9.50m bgl Samples taken within the Peterborough Member
CP16	13.40	14.00	0.60	-	-	-	-
TP33	3.5	NP**	0.5	100	3/36/61	1	Samples taken at 1.7m to 2.3m bgl Sample taken in the Peterborough Member. Inorganic clays of high plasticity
TP35	3.6	NP**	0.4	100	6/36/58 3/36/61	1	Samples taken at 0.5m to 1m bgl. 2 nd PSD sample taken at 3.0 – 4.0m bgl. Sample taken in the Peterborough Member. Inorganic clays of high plasticity
TP36	3.6	NP**	0.4	100	5/38/57	1	Sample taken at 1m to 2m bgl Sample taken in the Peterborough Member. Inorganic clays of high plasticity
West Gateway Zone							
BH02	11.30	13.50	2.20	100	-	1	Sample taken at 3.00m to 3.45m bgl, 5.00m to 5.45m bgl and 10.50m to 10.85m bgl Samples taken within the Peterborough Member

Borehole Location	Deposit Thickness (m)	Base of Stratum Proven (m bgl*)	Overburden Thickness (m)	Passing 425µm (%)	Sand/Silt/Clay (PSD)	Allocated Zone	Comments
BH03	11.30	13.10	1.80	100	-	-	Samples taken at 2.00m to 2.45m bgl, 4.00m to 4.45m bgl, 7.50m to 7.95m bgl and 10.50 to 10.95m bgl Samples taken within the Peterborough Member

* metres below ground level

** Not proven

4.4.5. Cross sections of the deposits for Lake Zone and Core Zone are shown in **Figures 3 to 6** in **Annex 1.2**.

4.5 MINERAL RESOURCE SIZE AND QUALITY

4.5.1. Brick clay of the Peterborough Member of the Oxford Clay Formation underlies the entire Site. These deposits are, for the most part, located at the near surface. The Site has been divided into three sections (Lake Zone, Core Zone and West Gateway Zone) and summaries of the brick clay mineral resource in each area are detailed below.

LAKE ZONE

- 4.5.2. Nineteen locations were advanced in Lake Zone (CP01 to CP04, TP01 to TP06 and TP09 to TP17). The maximum depth of the clay deposit was proven in four locations (CP01 to CP04) with a maximum depth of 14.30m bgl within CP04. The proven thickness of the deposits varied from 4.75m to 9.30m, with all four locations showing a thickness greater than 2m thick.
- 4.5.3. The thickness of the overburden deposits was ranged from 0.90m to 5.00m and comprised a mixture of topsoil with Alluvium or Head or sometimes both. This was the case except in CP04, TP05 and TP14 where overburden deposits entirely consisted of Made Ground and in TP06 and TP12A where overburden deposits consist of Made Ground underlain by Head deposits.
- 4.5.4. Atterberg tests carried out passing 425 µm % ranging from 78-100%. In addition, 15 No. trial pits were undertaken in the across the zone respectively.
- 4.5.5. In addition, one PSD test was undertaken (CP04) which showed a clay content of 49.0%. A uniform coefficient could not be established due to clay nature of the soils.
- 4.5.6. All samples were classified as Zone 1.
- 4.5.7. Exploratory hole logs are shown in **Annex 2.2**.
- 4.5.8. Atterberg test certificates are shown in **Annex 3**.
- 4.5.9. The PSD grading certificate is shown in **Annex 4**.

CORE ZONE

- 4.5.10. Twenty-one locations were advanced in Core Zone (CP08 to CP16 and TP27 to TP37). The maximum depth of the clay deposit was only proven in nine locations. The proven thickness of the deposits varied from 9.60m to 14.90m, with all nine locations showing a thickness greater than 2m thick.

- 4.5.11. The thickness of the overburden deposits ranged from 0.20m to 3.00m and usually comprised topsoil or Made Ground over Head deposits.
- 4.5.12. Atterberg tests were carried out across the samples with passing 425 µm % all achieving 100%.
- 4.5.13. Six PSD tests were undertaken within samples of the Peterborough Member in CP10, CP13, TP33, TP36 and two in TP35 which showed a clay content ranging from 57.0% to 61.0%, with a result of 15.0% in CP13. A uniform coefficient could not be established due to clay nature of the soils. The results identified high clay content across the zone.
- 4.5.14. All samples were classified as Zone 1.
- 4.5.15. Exploratory hole logs are shown in **Annex 2.3**.
- 4.5.16. Atterberg test certificates are shown in **Annex 3**.
- 4.5.17. The PSD grading certificate is shown in **Annex 4**.

WEST GATEWAY ZONE

- 4.5.18. Ten locations were advanced in West Gateway Zone (BH02, BH03, TP02, TP03, SA02, SA03 and CPT04 to CPT07). The maximum depth of the clay deposit was only proven in two locations within the zone. The proven thickness of these deposits was 11.0m, with both locations showing a thickness greater than 2m thick.
- 4.5.19. The thickness of the overburden deposits ranged from 1.8m to 3.30m within the zone and typically comprised topsoil deposits underlain by Head deposits.
- 4.5.20. All samples were classified as Zone 1.
- 4.5.21. Atterberg tests were carried out across the samples with passing 425 µm % achieving results of 100%.
- 4.5.22. No PSD tests were undertaken on samples of the Peterborough Member within the zone therefore no clay content can be derived.
- 4.5.23. The Atterberg test results infer that sand content is likely to be low in this area as per the other zones.
- 4.5.24. Exploratory hole logs are shown in **Annex 2.4**.
- 4.5.25. Atterberg test certificates are shown in **Annex 3**.
- 4.5.26. The PSD grading certificate is shown in **Annex 4**.

SUMMARY

- 4.5.27. The Peterborough Member of the Oxford Clay Formation deposits were encountered across the Site, to varying depths with results identifying a high clay content across the Site which is not in line with the required brick earth specifications (comprising a sand content of 35-50%, a silt content of 20-35% and a clay content 20-30%). The entire Site has been defined as Zone 1. This is supported by further overriding factors discussed in Section 5.

5 PRACTICABILITY AND VIABILITY OF PRIOR EXTRACTION

- 5.1.1. The following section focuses on the practicability and viability of the prior extraction of the potential Minerals across the Site prior to development.
- 5.1.2. Findings of the Site investigation discussed in the previous section, which demonstrated the poor suitability of the deposits.

5.2 REMAINING UNWORKED MINERALS

- 5.2.1. Ignoring site specific constraints, viable mineral deposits are likely to be found underlying the Site. This is evident from the ground investigation findings that have been undertaken and the history of clay extraction in the area.
- 5.2.2. Existing planning permissions still remain on the Site as shown in **Table 5-1**.

Table 5-1 - Existing Planning Permissions on-Site

Quarry/Brickworks	Distance from Site	Planning Number	Comments
Kempston Hardwick	On-Site (Lakes Zone)	1913/9/82	Anticipated 5,100,000m ³ of deposits. Location 1 on Insert 2.
Coronation (Broadmead) Pit	On-Site (Core Zone)	Part of 4/1980	Anticipated 9,600,000m ³ of deposits. Location 2 on Insert 2.

5.3 CURRENT EXTRACTION STATUS

The sites listed above are unlikely to ever be worked following the cease of production of bricks in the area in 2008, as emissions produced do not comply with UK air quality standards due to the high carbon and sulphur content of the Peterborough Member.

5.4 OTHER SITES IN PROXIMITY

- 5.4.1. The Minerals and Waste Monitoring Report for CBC, Bedford BC and Luton BC, published in November 2024⁶ contained a review of the MWLP: SSP (2014)⁴. The report states that:
“Historically, clay from the Marston Vale supported the brick manufacturing industry, however since the closure of Stewartby brickworks demand for clay has been very limited. Occasionally proposals arise for clay extraction for use in engineering works”⁶.
- 5.4.2. The report also identified several active and potential allocated sites within 5km of the Site area with large resources of extractable material. The allocated clay extraction sites (specific to Oxford Clay extraction) are estimated to contain 38.7 million cubic metres across six sites. These sites are presented below in **Table 5-2**.
- 5.4.3. It is identified in the report that *“in addition to the six sites...there are also significant unpermitted resources of clay within the Marston Vale area...and as such there is the potential to deliver substantially more clay in the future, should an economic reason arise”⁶.*

Table 5-2 - Local Allocated Sites for Brick Clay

Quarry/Brickworks	Distance from Site	Planning Number	Comments
Quest Pit, Stewartby	750m	Part of 4/1980	Anticipated 640,000m ³ of deposits. Location 3 on Insert 2.
Elstow South Quarry	850m	Part of 4/1980	Anticipated 347,000m ³ of deposits. Location 4 on Insert 2.
Land at Houghton Conquest	1.25km	Part of 4/1980	Anticipated 7,000,000m ³ of deposits. Location 5 on Insert 2.
Rookery Pit (Stewartby)	3km	Part of 4/1980	Anticipated 1,100,000m ³ of deposits. Location 6 on Insert 2.
Escheat/Thrupp End	3.75km	Part of 2/1981	Anticipated 16,900,000m ³ of deposits. Location 7 on Insert 2.
Brogborough 2	4.5km	Part of 2/1981	Anticipated 12,500,000m ³ of deposits. Location 8 on Insert 2.

5.5 SITE SPECIFIC CONSIDERATIONS

- 5.5.1. There is a large, allocated volume of suitable materials within 5km of the Site (discussed in Section 5.4) which could be used if required. It is deemed unlikely that additional sites will ever be allocated in the area.
- 5.5.2. Further information (from the recent ground investigations) shows that the material underlying the Site may also be unsuitable for extraction due as it doesn't comply with a typical brick earth specification comprising a sand content of 35-50%, a silt content of 20-35% and a clay content 20-30%.
- 5.5.3. A theme park and associated uses development is proposed at the Site. Prior commercial extraction is not considered necessary at the Site and therefore the only material movements would be the removal of overburden that is likely to be removed during the development plateau creation alongside excavation for any proposed drainage solutions and utility corridors. Material excavated can be reused within the development if shown to be geotechnically and chemically suitable.
- 5.5.4. WSP considers that there are strong material considerations to indicate that the need for the development overrides the presumption for mineral safeguarding such that sterilisation of the mineral can be permitted. It is also noted that the material on-Site is not suitable.

Insert 2 - Permitted and Allocated sites. Site shown as red line

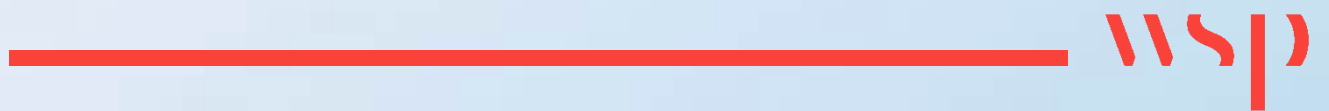


6 CONCLUSIONS AND RECOMMENDATIONS

- 6.1.1. WSP has prepared this MRA on behalf of UDX to accompany the planning proposal for the proposed commercial end use development of the Site.
- 6.1.2. This MRA addresses the requirement to demonstrate that the mineral is of no economic value, primarily due to:
- The permitted extraction of the remaining minerals on-Site will not go ahead as the mineral is deemed of no economic value due to the carbon and sulphur content within the Peterborough Member which means production cannot comply with UK Air Quality Standards²;
 - Existing sites and allocated brick clay extraction sites (specific to Oxford Clay extraction) are estimated to contain 38.7 million cubic meters off-Site across six sites within 5km of the Site. It is identified that demand for brick clay has been very limited, therefore, these sites enable the area to meet any unforeseen demand to be met; and
 - Following investigation, the entire Site is designated in “Zone 1” (a designation given by WSP which is outlined in section 4) and deposits have been shown to be unsuitable for extraction as the material doesn’t comply with a typical brick earth specification comprising a sand content of 35-50%, a silt content of 20-35% and a clay content 20-30%.
- 6.1.3. The **Planning Statement (Document Reference 6.1.0)** submitted with this planning proposal should be read in conjunction with this MRA to demonstrate how relevant planning policy on minerals is met.

ANNEX 1

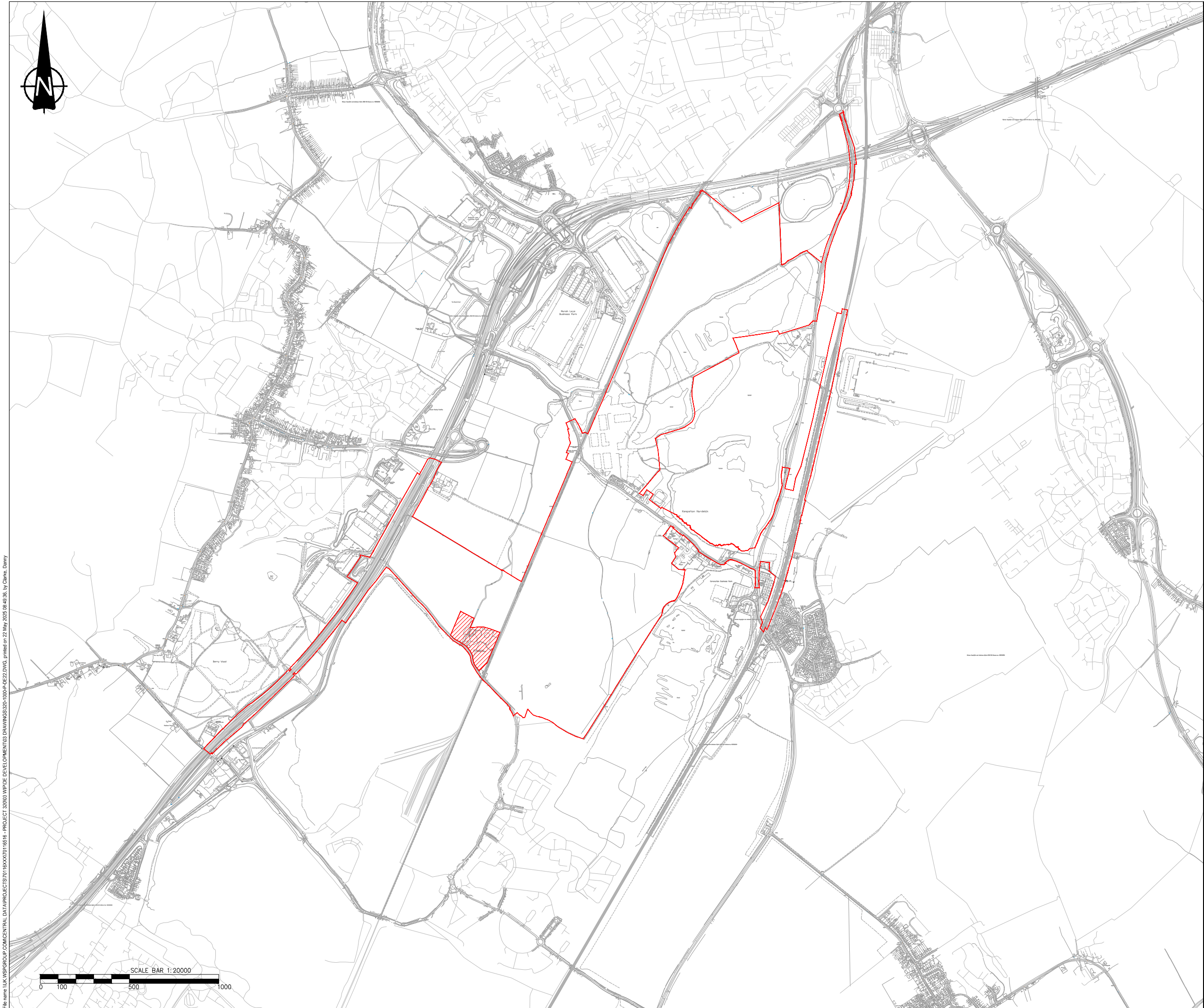
FIGURES



ANNEX 1.1

WSP FIGURES





ARCHITECT/ENGINEER STAMP:

Approved by: **se**

Drawn by: **pc**

Latest Revision Date: 21/05/2025

Issuance and Revision History

Rev.	Date	Issuance and Revision Description
00	21/05/2025	First Issue

Legend

Site Boundary

Excluded from Site Boundary

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Project Name: Universal Destinations & Experiences UK Project

Site Address: Former Kempston Hardwick Brickworks and adjoining land, Bedford

Scale: 1:20,000 © A3

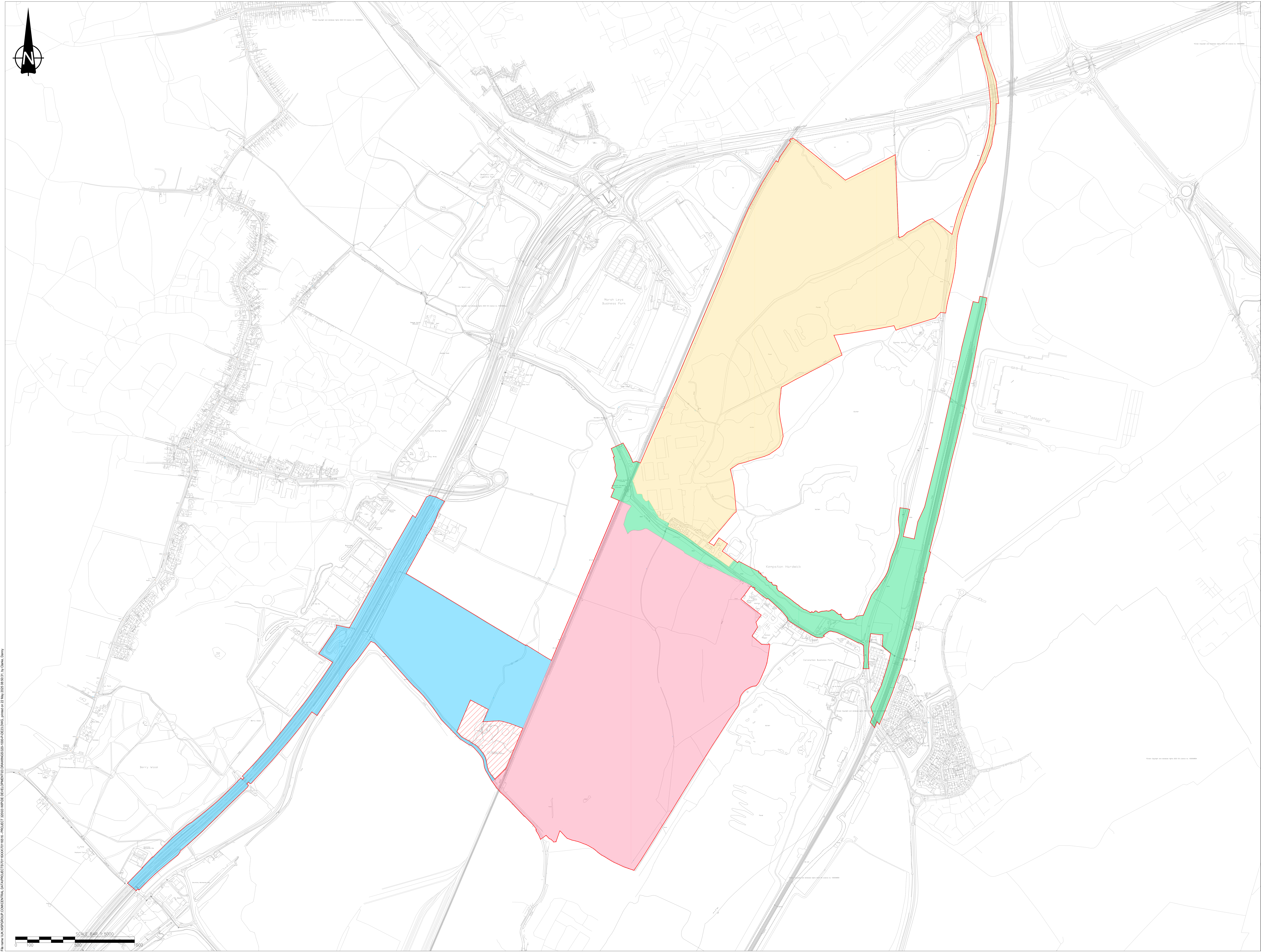
Project Locator: 320 – 100 – SDO

Sheet Name: Figure 1a - Site Location Plan

Sheet No.: 1.6.0

Rev #:

File name: LUK_WSPGROUP_COM\CENTRAL DATA\PROJECTS\7016\00\7016516 - PROJECT 320\3 WIP\DEVELOPMENT\3 DRAWINGS\320-100-P-QEZZ.DWG, printed on 22 May 2025 08:45:35, by Clarke, Danny



ARCHITECT/ENGINEER STAMP:

Approved by: apDrawn by: pc

Latest Revision Date: 21/05/2025

Issuance and Revision History

Rev	Date	Issuance and Revision Description
00	21/05/2025	First Issue

Legend

Site Boundary

Excluded from Site Boundary

Core Zone

Lake Zone

East Gateway Zone

West Gateway Zone

Project Name: Universal Destinations & Experiences UK Project

Site Address: Former Kempston Hardwick Brickworks and adjoining land, Bedford

Scale: 1:5,000 @ A0

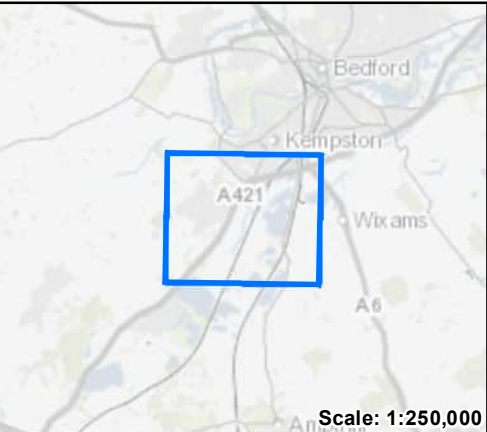
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Sheet Name: Figure 1b - Zonal Plan

Sheet No.: 1.8.0

Rev #:

File name: UKAS\SDO\04\CONS\CENTRAL_C\A\PROJECTS\320\100000\181616 - PROJECT 32000 MPDE DEVELOPMENT\320\A0\SDO\181616.dwg, printed on 21 May 2025 09:03:11 by Gwladys Derry



Key

— Site Boundary

⬮ BGS_Borehole

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P01	PB	AW	AEM	06/11/2024
FIRST DRAFT ISSUE				
REVISION	DRAWN	CHECKED	APPROVED	DATE
DESCRIPTION				



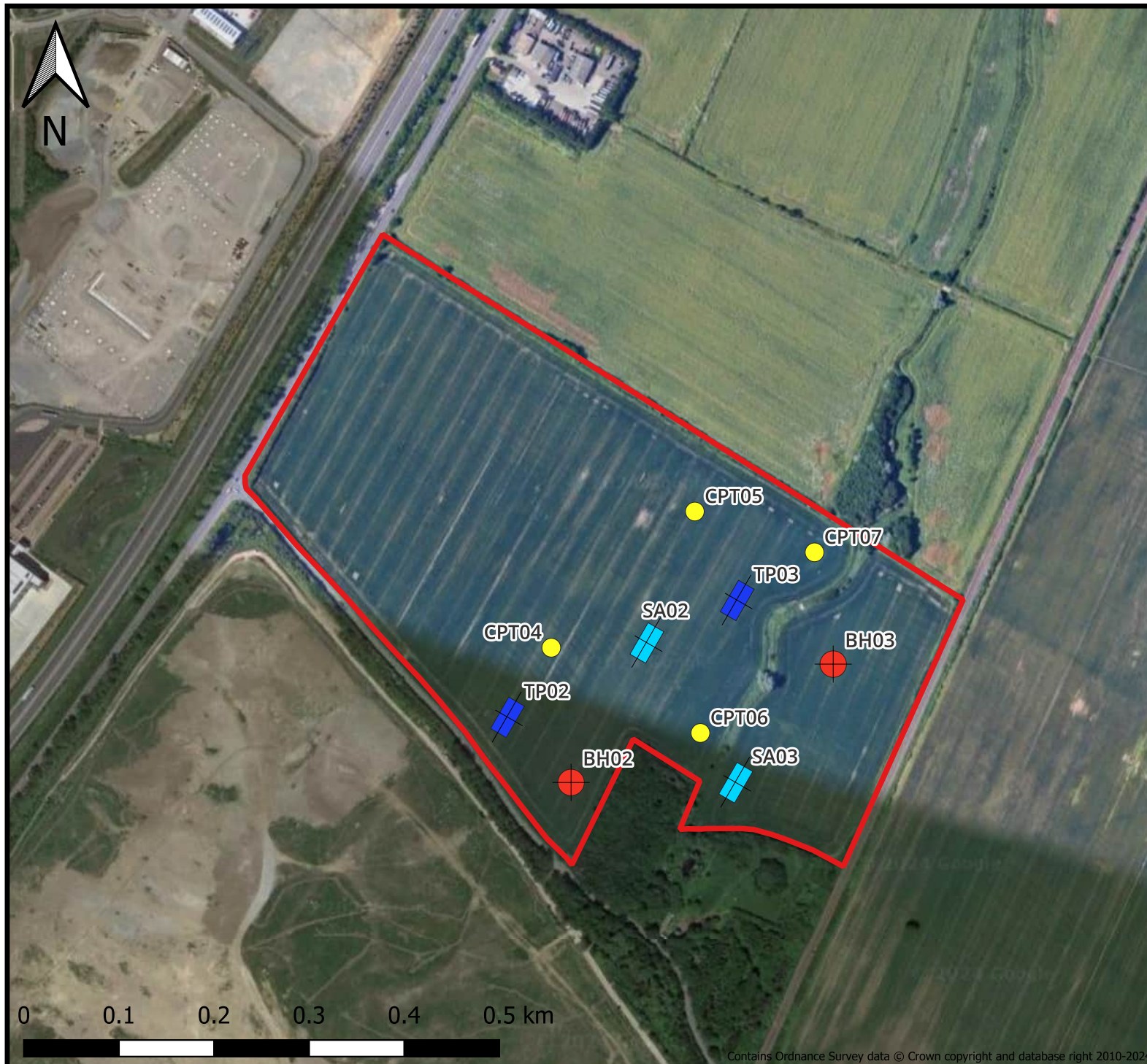
PROJECT TITLE:
UNIVERSAL DESTINATIONS & EXPERIENCES
UK PROJECT

DRAWING TITLE:
BGS BOREHOLE PLAN

CONFIDENTIALITY PUBLIC

DRAWN: PB	CHECKED: AW	APPROVED: AEM	AUTHORISED: AEM
SCALE @ A3 SIZE: 1:15,000		DATE: 06/11/2024	REVISION: P01

DRAWING NUMBER:
FIGURE 2



Legend

Trial Pits



Trial Pits incl. Soakaway



Cone Penetration Tests



Cable Percussion Boreholes



West Gateway Zone Parcel D RLB



Client:

UDX

Project:

UNIVERSAL DESTINATIONS & EXPERIENCES
UK PROJECT

Drawing Title:

Figure 3: West Gateway Zone - Parcel D
Exploratory Hole Plan

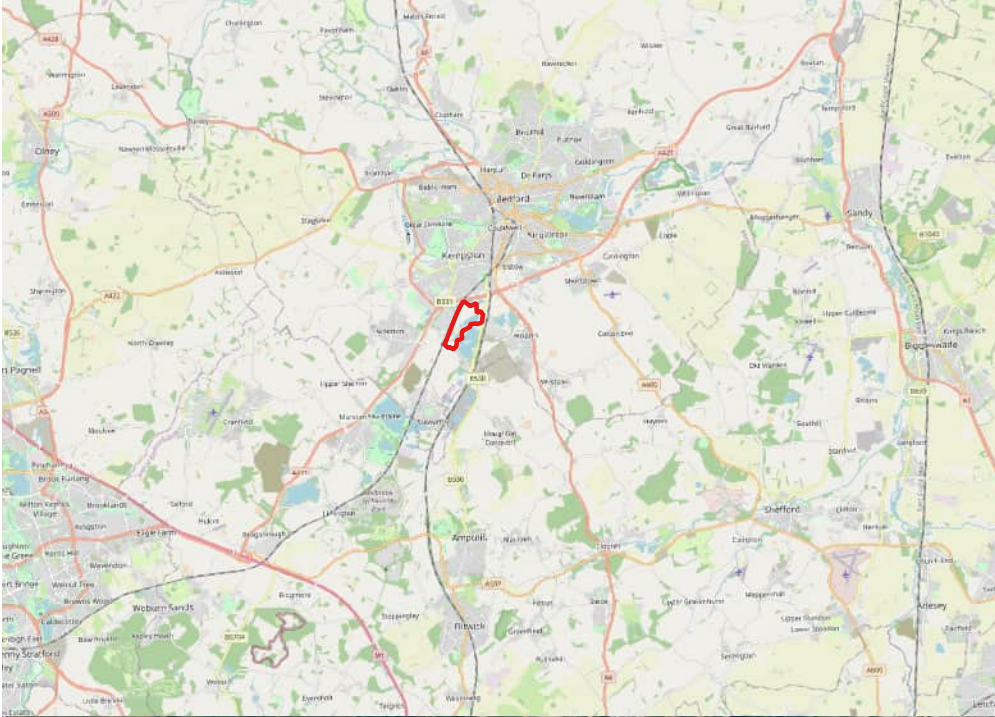
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M Cameron 31 July 2024 13:35

ANNEX 1.2

THIRD PARTY FIGURES





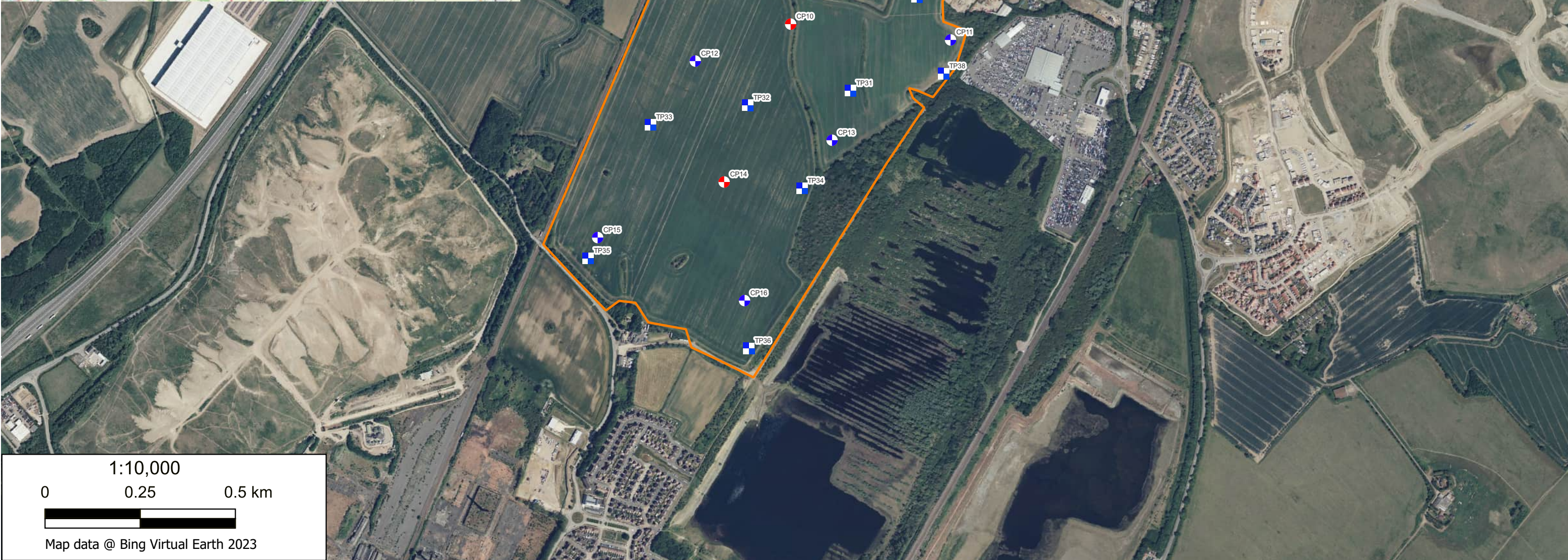
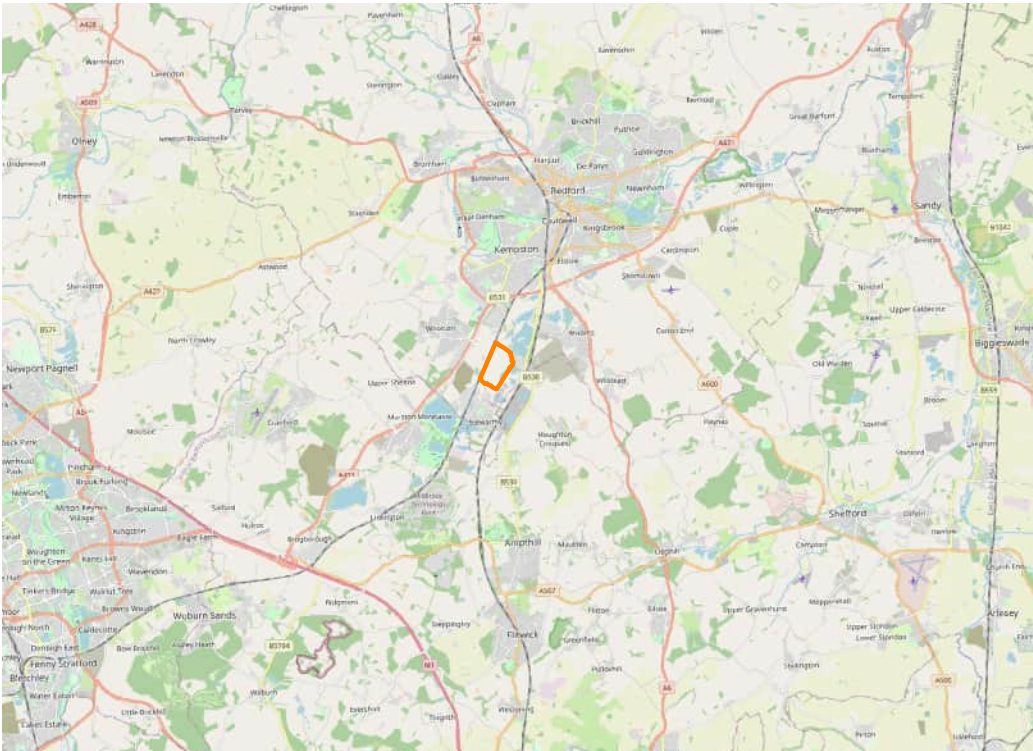
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REV	Date	Description	Drawn	Check	Approved

- Legend**
- Inspection Pits
 - Rotary Core
 - Window sample
 - Site location



Issued for Information			
Design	T. Lipscomb	17/05/2023	Signed
Drawn	N. Rane	17/05/2023	Signed
Checked	S. Frith	17/05/2023	Signed
Approved	G. Shaw	17/05/2023	Signed
Scale	1:10000	Datum:	AOD
Original Size	A3	Grid:	OS
Suitability Code:		Project Number	30174974

PROJECT:	 ARCADIS	Registered office:	Co-Ordinating office:
Project 320			
TITLE:			
Figure 1: Exploratory Hole Location Plan Parcel A		Arcadis 80 Fenchurch St, London EC3M 4B	Arcadis 103 Colmore Row, Birmingham, B3 3AG
		Drawing Number: 30174974-ARC-P01-XX-DR-GE-00001	



1:10,000

0

0.25

0.5 km

Map data @ Bing Virtual Earth 2023

0	17/05/2023	Exploratory Hole Location Plan	NR	SF	GS
REV	Date	Description	Drawn	Check	Approved

Legend

Inspection Pits

Rotary Core

Window sample

Site location

N

Issued for Information

Design	T. Lipscomb	17/05/2023	Signed
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Scale	1:10000	Datum:	AOD
Original Size	A3	Grid:	OS
Suitability Code:		Project Number	30174974

PROJECT:

Project 320

TITLE:

Figure 2:
Exploratory Hole Location Plan-
Parcel B

Registered office:

Arcadis
80 Fenchurch St,
London EC3M 4B

Co-ordinating office:

Arcadis
103 Colmore Row,
Birmingham, B3 3AG

Drawing Number:
30174974-ARC-P01-XX-DR-GE-00002

Figure 3 - Observational Engineering Ground Model: Parcel A – SW-NE

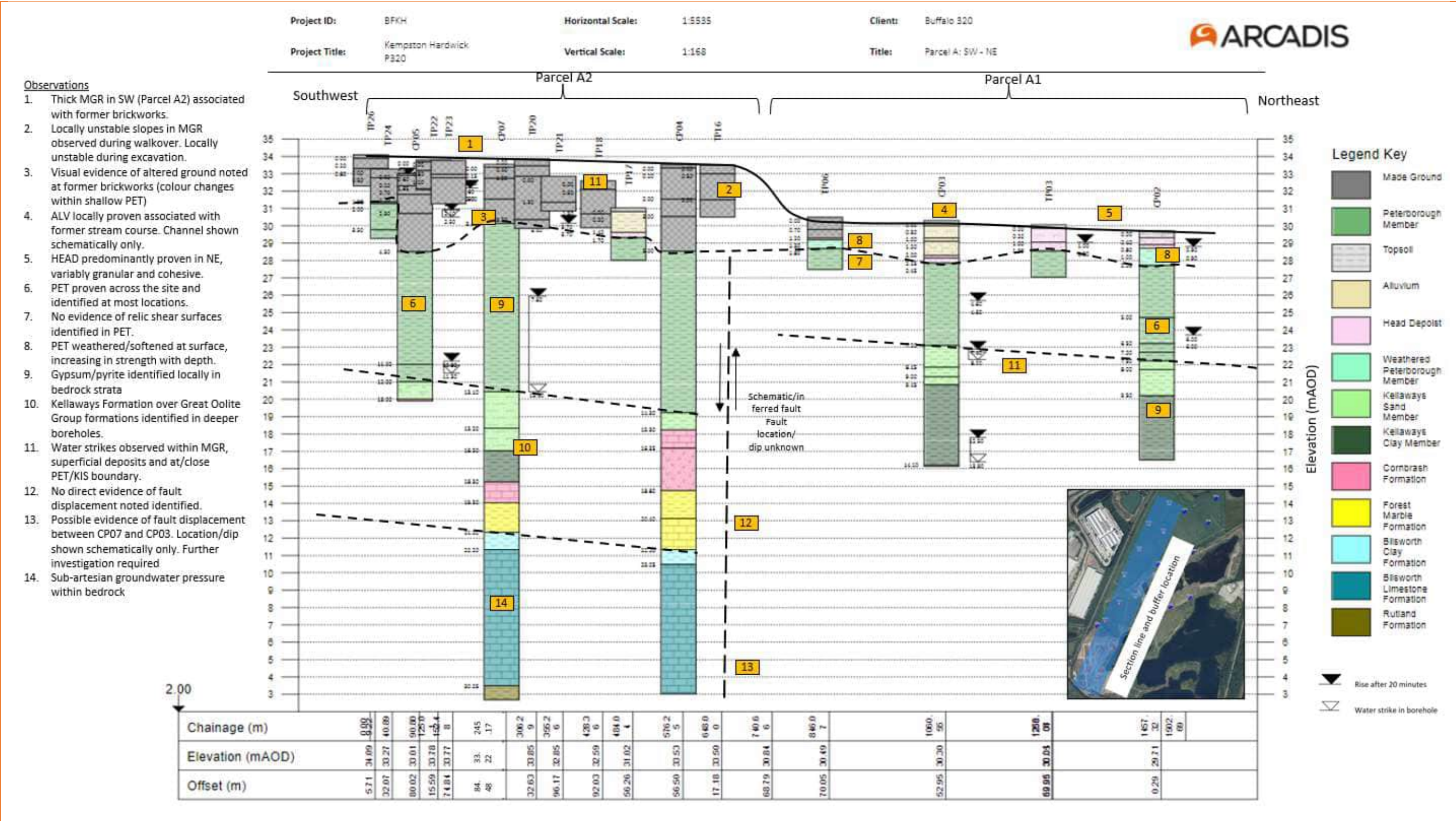


Figure 4 - Observational Engineering Ground Model: Parcel A – NW-SE

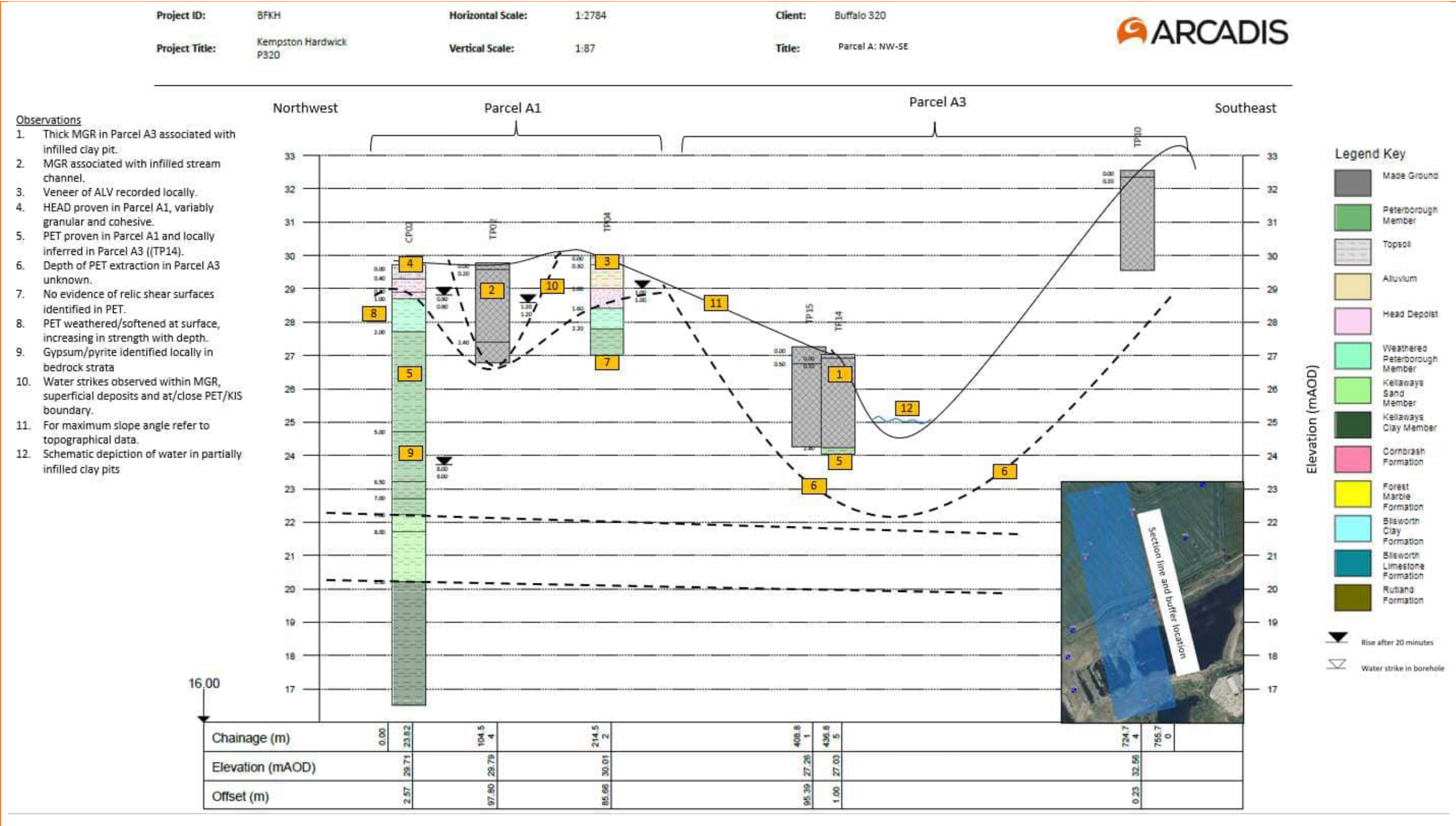


Figure 5 - Observational Engineering Ground Model: Parcel B – NE -SW

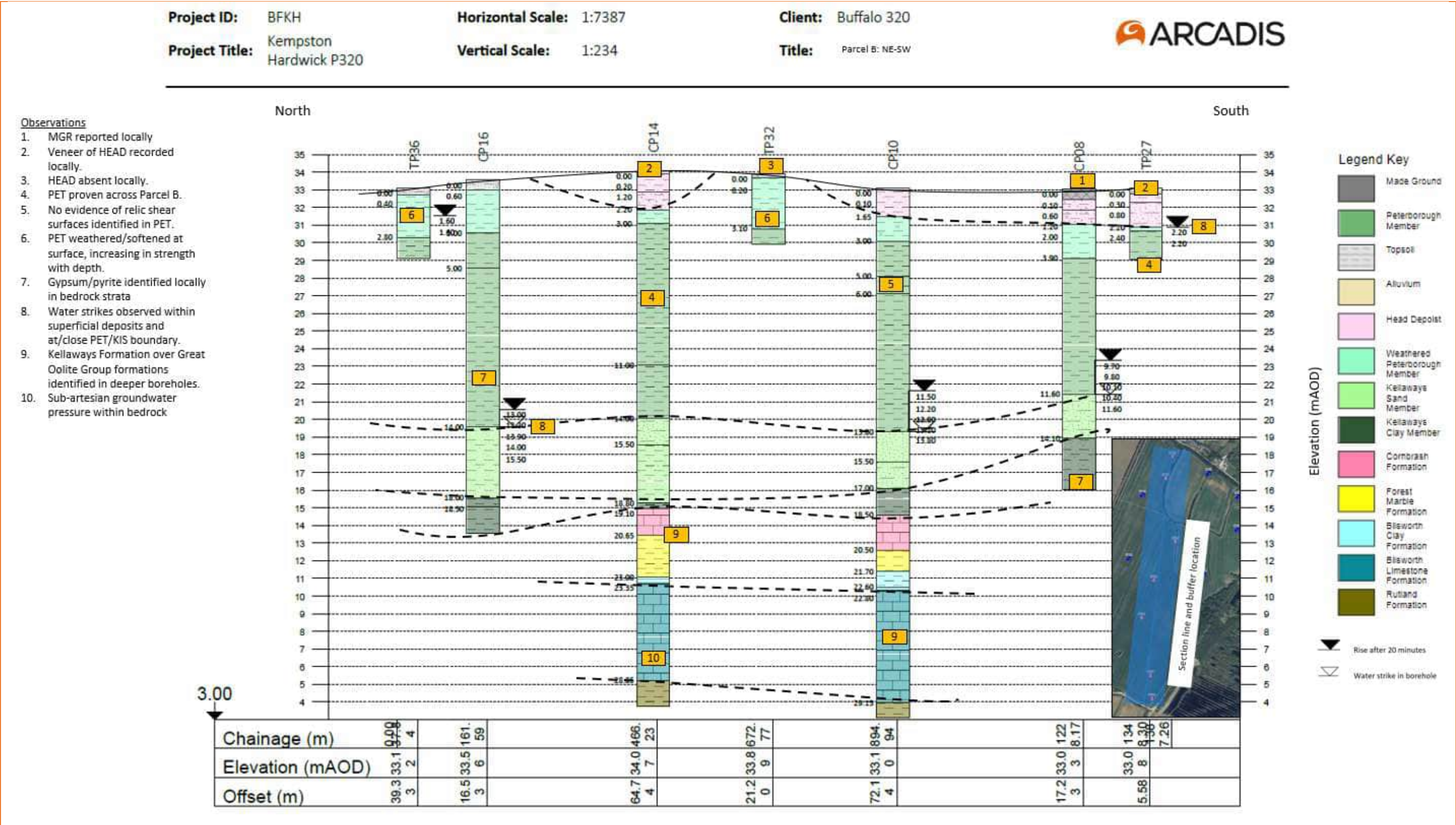
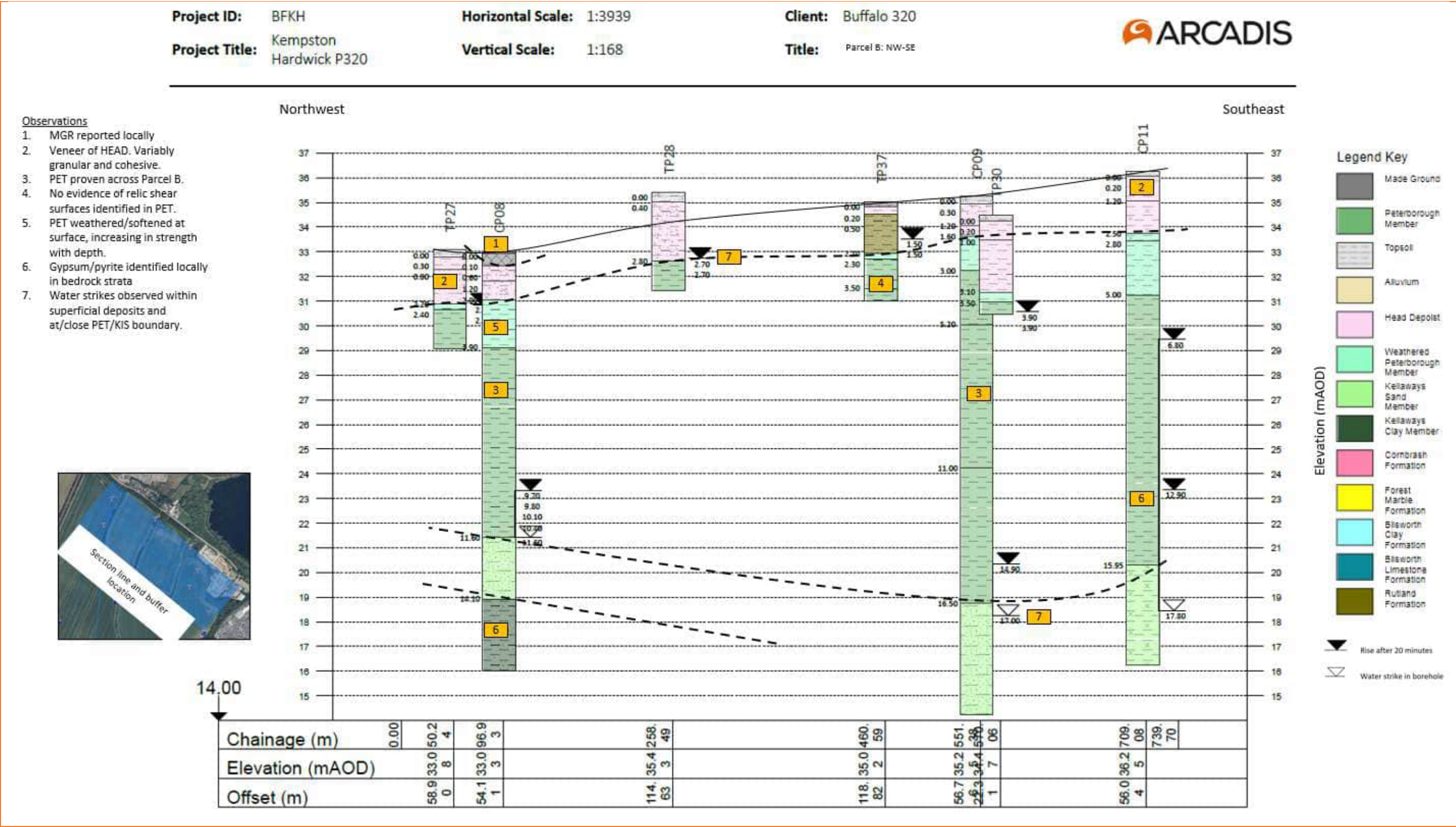
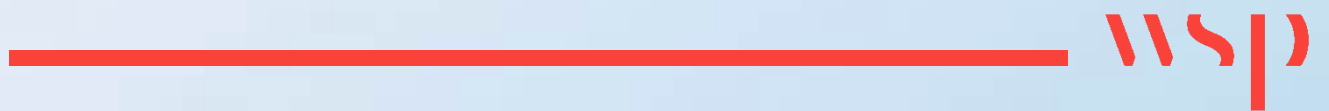


Figure 6 - Observational Engineering Ground Model: Parcel B – NW-SE



ANNEX 2

LIMITATIONS





REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

GENERAL

1. WSP UK Limited has prepared this report solely for the use of the UDX and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed and outlined in the body of the report.
2. Unless explicitly agreed otherwise, in writing, this report has been prepared under WSP UK Limited standard Terms and Conditions as included within our proposal to the UDX.
3. Project specific appointment documents may be agreed at our discretion and a charge may be levied for both the time to review and finalise appointments documents and also for associated changes to the appointment terms. WSP UK Limited reserves the right to amend the fee should any changes to the appointment terms create an increase risk to WSP UK Limited.
4. The report needs to be considered in the light of the WSP UK Limited proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

PHASE 1 GEO ENVIRONMENTAL AND PRELIMINARY RISK ASSESSMENTS

Coverage: *This section covers reports with the following titles or combination of titles: phase 1; desk top study; geo environmental assessment; development appraisal; preliminary environmental risk assessment; constraints report; due diligence report; geotechnical development review; environmental statement; environmental chapter; project scope summary report (PSSR), program environmental impact report (PEIR), geotechnical development risk register; and, baseline environmental assessment.*

5. The works undertaken to prepare this report comprised a study of available and easily documented information from a variety of sources (including the UDX), together with (where appropriate) a brief walk over inspection of the Site and correspondence with relevant authorities and other interested parties. Due to the short timescales associated with these projects responses may not have been received from all parties. WSP UK Limited cannot be held responsible for any disclosures that are provided post production of our report and will not automatically update our report.
6. The opinions given in this report have been dictated by the finite data on which they are based and are relevant only for the purpose for which the report was commissioned. The information reviewed should not be considered exhaustive and has been accepted in good faith as providing true and representative data pertaining to site conditions. Should additional information become available which may affect the opinions expressed in this report, WSP UK Limited reserves the right to review such information and, if warranted, to modify the opinions accordingly.
7. It should be noted that any risks identified in this report are perceived risks based on the information reviewed. Actual risks can only be assessed following intrusive investigations of the site.
8. WSP UK Limited does not warrant work / data undertaken / provided by others.

INTRUSIVE INVESTIGATION REPORTS

Coverage: *The following report titles (or combination) may cover this category of work: geo environmental site investigation; geotechnical assessment; GIR (Ground Investigation reports); preliminary environmental and geotechnical risk assessment; and, geotechnical risk register.*



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

9. The investigation has been undertaken to provide information concerning either:
 - i. The type and degree of contamination present at the site in order to allow a generic quantitative risk assessment to be undertaken; or
 - ii. Information on the soil properties present at the site to allow for geotechnical development constraints to be considered.
10. The scope of the investigation was selected on the basis of the specific development and land use scenario proposed by the UDX and may be inappropriate to another form of development or scheme. If the development layout was not known at the time of the investigation the report findings may need revisiting once the development layout is confirmed.
11. For contamination purposes, the objectives of the investigation are limited to establishing the risks associated with potential contamination sources with the potential to cause harm to human health, building materials, the environment (including adjacent land), or controlled waters.
12. For geotechnical investigations the purpose is to broadly consider potential development constraints associated with the physical property of the soils underlying the site within the context of the proposed future or continued use of the site, as stated within the report.
13. The amount of exploratory work, soil property testing and chemical testing undertaken has necessarily been restricted by various factors which may include accessibility, the presence of services; existing buildings; current site usage or short timescales. The exploratory holes completed assess only a small percentage of the area in relation to the overall size of the Site, and as such can only provide a general indication of conditions.
14. The number of sampling points and the methods of sampling and testing do not preclude the possible existence of contamination where concentrations may be significantly higher than those actually encountered or ground conditions that vary from those identified. In addition, there may be exceptional ground conditions elsewhere on the site which have not been disclosed by this investigation and which have therefore not been taken into account in this report.
15. The inspection, testing and monitoring records relate specifically to the investigation points and the timeframe that the works were undertaken. They will also be limited by the techniques employed. As part of this assessment, WSP UK Limited has used reasonable skill and care to extrapolate conditions between these points based upon assumptions to develop our interpretation and conclusions. The assumption made in forming our conclusions is that the ground and groundwater conditions (both chemically and physically) are the same as have been encountered during the works undertaken at the specific points of investigation. Conditions can change between investigation points and these interpretations should be considered indicative.
16. The risk assessment and opinions provided are based on currently available guidance relating to acceptable contamination concentrations; no liability can be accepted for the retrospective effects of any future changes or amendments to these values. Specific assumptions associated with the WSP UK Limited risk assessment process have been outlined within the body or associated appendix of the report.
17. Additional investigations may be required in order to satisfy relevant planning conditions or to resolve any engineering and environmental issues.
18. Where soil contamination concentrations recorded as part of this investigation are used for commentary on potential waste classification of soils for disposal purposes, these should be classed as indicative only. Due consideration should be given to the variability of contaminant concentrations taken from targeted samples versus bulk excavated soils and the potential variability of contaminant concentrations between sampling locations. Where major waste disposal operations are considered, targeted waste classification investigations should be designed.
19. The results of the asbestos testing are factually reported and interpretation given as to how this relates to the previous use of the site, the types of ground encountered and site conceptualisation. This does not however constitute a formal asbestos assessment. These results should be treated cautiously and should not be relied



REPORT LIMITATIONS - GROUND RISK AND REMEDIATION

upon to provide detailed and representative information on the delineation, type and extent of bulk ACMs and / or trace loose asbestos fibres within the soil matrix at the site.

20. If costs have been included in relation to additional site works, and / or site remediation works these must be considered as indicative only and must be confirmed by a qualified quantity surveyor.

EUROCODE 7: GEOTECHNICAL DESIGN

21. On 1st April 2010, BS EN 1997-1:2004 (Eurocode 7: Geotechnical Design – Part 1) became the mandatory baseline standard for geotechnical ground investigations.
22. In terms of geotechnical design for foundations, slopes, retaining walls and earthworks, EC7 sets guidance on design procedures including specific guidance on the numbers and spacings of boreholes for geotechnical design, there are limits to methods of ground investigation and the quality of data obtained and there are also prescriptive methods of assessing soil strengths and methods of design. Unless otherwise explicitly stated, the work has not been undertaken in accordance with EC7. A standard geotechnical interpretative report will not meet the requirements of the Geotechnical Design Report (GDR) under Eurocode 7. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. The report is likely to represent a Ground Investigation Report (GIR) under the Eurocode 7 guidance.

DETAILED QUANTITATIVE RISK ASSESSMENTS AND REMEDIAL STRATEGY REPORTS

23. These reports build upon previous report versions and associated notes. The scope of the investigation, further testing and monitoring and associated risk assessments were selected on the basis of the specific development and land use scenario proposed by the UDX and may not be appropriate to another form of development or scheme layout. The risk assessment and opinions provided are based on currently available approaches in the generation of Site Specific Assessment Criteria relating to contamination concentrations and are not considered to represent a risk in a specific land use scenario to a specific receptor. No liability can be accepted for the retrospective effects of any future changes or amendments to these values, associated models or associated guidance.
24. The outputs of the Detailed Quantitative Risk Assessments are based upon WSP UK Limited manipulation of standard risk assessment models. These are our interpretation of the risk assessment criteria.
25. Prior to adoption on site they will need discussing and agreeing with the Regulatory Authorities prior to adoption on site. The regulatory discussion and engagement process may result in an alternative interpretation being determined and agreed. The process and timescales associated with the Regulatory Authority engagement are not within the control of WSP UK Limited. All costs and programmes presented as a result of this process should be validated by a quantity surveyor and should be presumed to be indicative.

GEOTECHNICAL DESIGN REPORT (GDR)

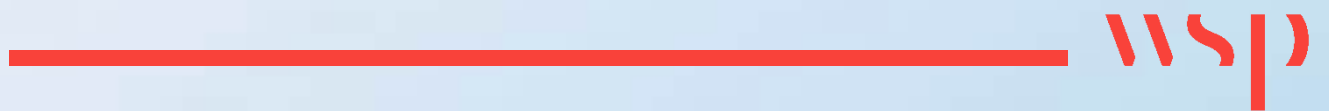
26. The GDR can only be prepared following confirmation of all structural loads and serviceability requirements. All the relevant information needs to be provided to allow for a GDR to be produced.

MONITORING (INCLUDING REMEDIATION MONITORING REPORTS)

27. These reports are factual in nature and comprise monitoring, normally groundwater and ground gas and data provided by contractors as part of an earthworks or remedial works.
28. The data is presented and will be compared with assessment criteria.

ANNEX 3

EXPLORATORY LOGS



Annex 3.1

BGS EXPLORATORY HOLE LOGS





page 1/2

GEOLOGICAL SURVEY OF GREAT BRITAIN
RECORD OF SHAFT OR BORE FOR MINERALS

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner:
kempston K/B

For whom made

Town or Village kempston County Bedfordshire

Exact site _____ { Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Trial

Ground Level at shaft bore relative to O.D. 114' 6" If not ground level give O.D. of beginning of shaft bore

Made by _____ Date of sinking 1963

Information from _____ Date received _____

Examined by _____

(For Survey use only)
6-inch Map Registered No.
TL04NW10

Nat. Grid Reference
0371.4549

1" N.S. Map No.	1" O.S. Map No.	Confidential or not
<u>203</u>		

SPECIMEN NUMBERS AND ADDITIONAL NOTES

(For Survey use only) ROCK UNIT NO. Geological CLASSIFICATION		DESCRIPTION OF STRATA		CORE LENGTH			
				Thickness		DEPTH	
				FT	IN.	FT	IN.
K/B1		Soil and Downwash		2	0		
K/B2		Moderate yellowish brown laminated clay with fine crystals of selenite.		2	4	5	0
K/B3		As K/B2		3	6	10	0
K/B4		As K/B2		0	10		
K/B5		light olive grey clay with abundant shells & some selenite		3	8	15	0
K/B6		olive grey shaly clay with abundant shells.		4	6	20	0
K/B7		As K/B 6		4	4	25	0
K/B8		Hard olive grey shaly clay with abundant shells; pyrite bed at base		5	0	30	0
K/B9		As K/B 8; pyrite band at top		1	10		
K/B10		As K/B 8 but rather more shaly some ammonites.		3	0	35	0
K/B11		As K/B10		5	0	40	0
K/B12		As K/B10		4	9	45	0
K/B13		As K/B10		5	0	50	0
K/B14		As K/B10; shell & pyrite bed at base.		3	6		
K/B15		Alt. of dark greenish grey sand and olive grey clay.		1	0		
K/B16		Greenish grey shelly sandstone		0	7	55	0
K/B17		Sandy clay, much broken by coring		2	0	60	0

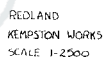
255023/1 1985 4m 11/61 XL

Name of Shaft or Bore given by Geological Survey:

6-inch Map
Registered
No.

tered 0371-4549
TL104NW110

GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	THICKNESS		DEPTH	
		FT	IN.	FT	IN.
K/B 18	Dark greenish grey argillaceous sand with much internal distribution,	2	4	(19.8m) 65	0
K/B 19	As K/B 18, becoming more argillaceous downwards.	2	10		
K/B 20	Dark greenish grey homogenous clay.	2	2	(21.3m) 70	0
K/B 21	As K/B 20, more shaly	2	10		





page 1/2

GEOLOGICAL SURVEY OF GREAT BRITAIN
RECORD OF SHAFT OR BORE FOR MINERALS

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner:

kempston k/c

For whom made

Town or Village kempston

County Beds

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made T'nal

Ground Level at shaft relative to O.D. ? c30m If not ground level give O.D. of beginning of shaft bore

Made by Sumner & Dakin limited Brick co

Date of sinking 1963

Information from

Date received

Examined by

(For Survey use only)

6-inch Map Registered No.

TL04NW11

Nat. Grid Reference

0392 - 4566

1" N.S. Map No.

203

1" O.S. Map No.

Confidential or not

SPECIMEN NUMBERS AND ADDITIONAL NOTES

ROCK UNIT NO.

CORE LENGTH

(For Survey use only) GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	THICKNESS		DEPTH	
		FT	IN.	FT	IN.
KC1	Soil, some pebbles	1	5		
" 2	Pale yellowish brown and greyish orange laminated clay	2	0	(1.52m)	
" 3	Dark yellowish brown clay with selenite and fossils	1	6		
4	Dusky yellowish brown laminated clay	0	11	(3.05m)	
5	As 3	1	10	10	0
6	olive grey shaly clay with abundant shells	4	10	(4.57m)	
7	As 6	1	8	15	0
8	As 6	4	10	(5.10m)	
9	As 6	3	10	(7.62m)	
10	olive-grey shaly clay with few shells, rare ammonites	3	6	(9.14m)	
11	As 10	5	0	35	0
12	As 10	2	5	(12.19m)	
13	shell bed with much granule pyrite	0	5	(13.00m)	
14	olive grey clay with beds of olive grey sand	0	10	(13.72m)	
X	Dark greenish grey argillaceous sand	2	7	45	0
KC	As 15	2	1	(15.24m)	
16	As 15	2	1	50	0
17	As 15 more argillaceous	3	0	(16.76m)	
V	greenish grey sandy clay	1	8	60	0
				(18.29m)	

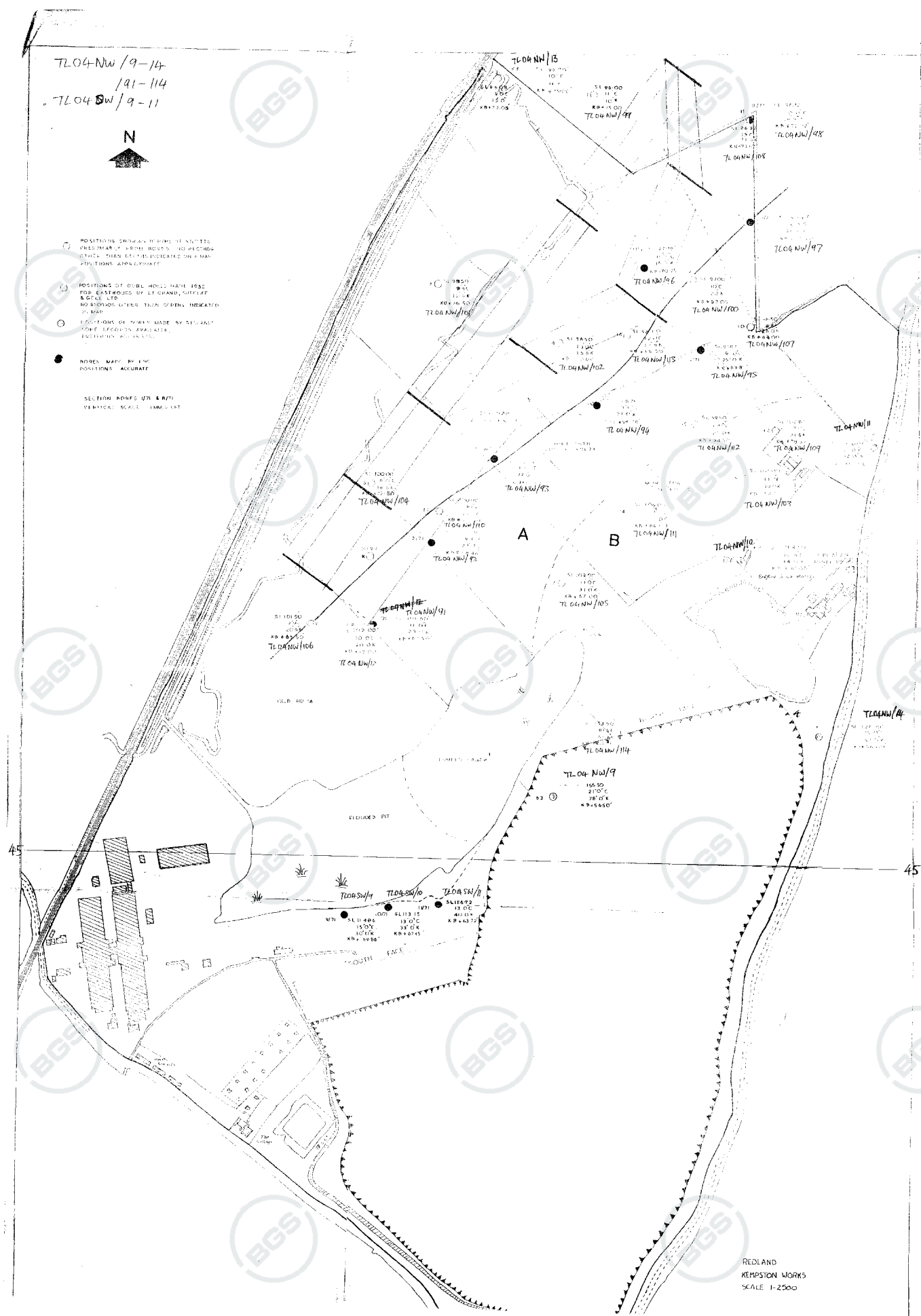
TL04NW11 11/19/11 11/19/11 11/19/11

page 2 / 2

Name of Shaft or Bore given by Geological Survey:

6-inch Map
Registered No. 0392.4566
TL104NW111

Rock unit NO. GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	CORE LENGTH Thickness		DEPTH	
		FT	IN.	FT	IN.
19	Dark greenish grey shaly clay	3	4		
KIC 20	As 19 with comminuted shells abundant.	0	7		(19.81m)
X Cb 21	Limestone	0	10	65	0





page 1/2

GEOLOGICAL SURVEY OF GREAT BRITAIN
RECORD OF SHAFT OR BORE FOR MINERALS

Name of Shaft or Bore given by Geological Survey:

Name and Number given by owner:

kempston K/D 8

For whom made

Town or Village kempston

County Beds

Exact site

Attach a tracing from a map, or a sketch-map, if possible.

Purpose for which made Trial

Ground Level at shaft relative to O.D. 101 ft 30 72 If not ground level give O.D. of beginning of shaft bore

Made by Dorking & Surrey United Brick Co.

Date of sinking 1963

Information from

Date received

Examined by

(For Survey use only)

6-inch Map Registered No.

TL04NW12

Nat. Grid Reference

0313 04536

1" N.S. Map No.

203

1" O.S. Map No.

Confidential or not

SPECIMEN NUMBERS AND ADDITIONAL NOTES

CORE LENGTH

(For Survey use only) ROCK UNIT NO. Geological Classification	DESCRIPTION OF STRATA	Thickness		Depth	
		FT	in.	FT	in.
K/D	1 Soil	1	6		
	2 Moderate yellowish brown clayey sand	1	10		
	3 Pale yellowish brown sandy clay with fragments of chalk	1	2		
	4 light olive grey homogeneous clay	0	8	5	0
	5 Dark yellowish brown clay with selenite	3	7	10	0
	6 Olive grey shaly chalky clay with abundant shells	4	5	15	0
	7 As 6	2	9		
	8 olive grey shaly clay with rare ammonites	2	6	20	0
	9 As 8 very flat lamination	5	0	25	0
	10 As 8	5	0	30	0
	11 As 8, as base highly pyrite shell bed	2	2	32	0
	12 Alt. 1 cm beds of olive-grey clay and dark greenish grey sand	0	5	35	0
	13 Greenish grey argillaceous sand	1	3	40	0
	14 As 13	4	6	45	0
	15 As 13	3	0	48	0
	16 As 13, more argillaceous	1	6	50	0

2030203/1 1005 4m 11/61 XL

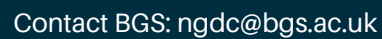
page 2/2

Name of Shaft or Bore given by Geological Survey:

6-inch Map
Registered
No.

0313.4536
TL04NW12

Rock Unit No GEOLOGICAL CLASSIFICATION	DESCRIPTION OF STRATA	Core length THICKNESS		DEPTH	
		FT	IN.	FT	IN.
K/K/O 17	As 15	1	0		
X 18	Greenish black shaly clay			(16.76m)	
K/C	with rare shells	4	0	55	0
X 19	As 18 with shell fragments.	0	6	(18.29m)	
Ob 20	limestone	3	6	60	0





Drilling Method.

Rotary Core-Water flush.

GROUND LEVEL.

METRES

34.12

FEET

110.62

MAP REFERENCE.

16SE 5022224365

SOUNDING.

22

THE AREA.

TL 04 SW/28

Stewartby L Field

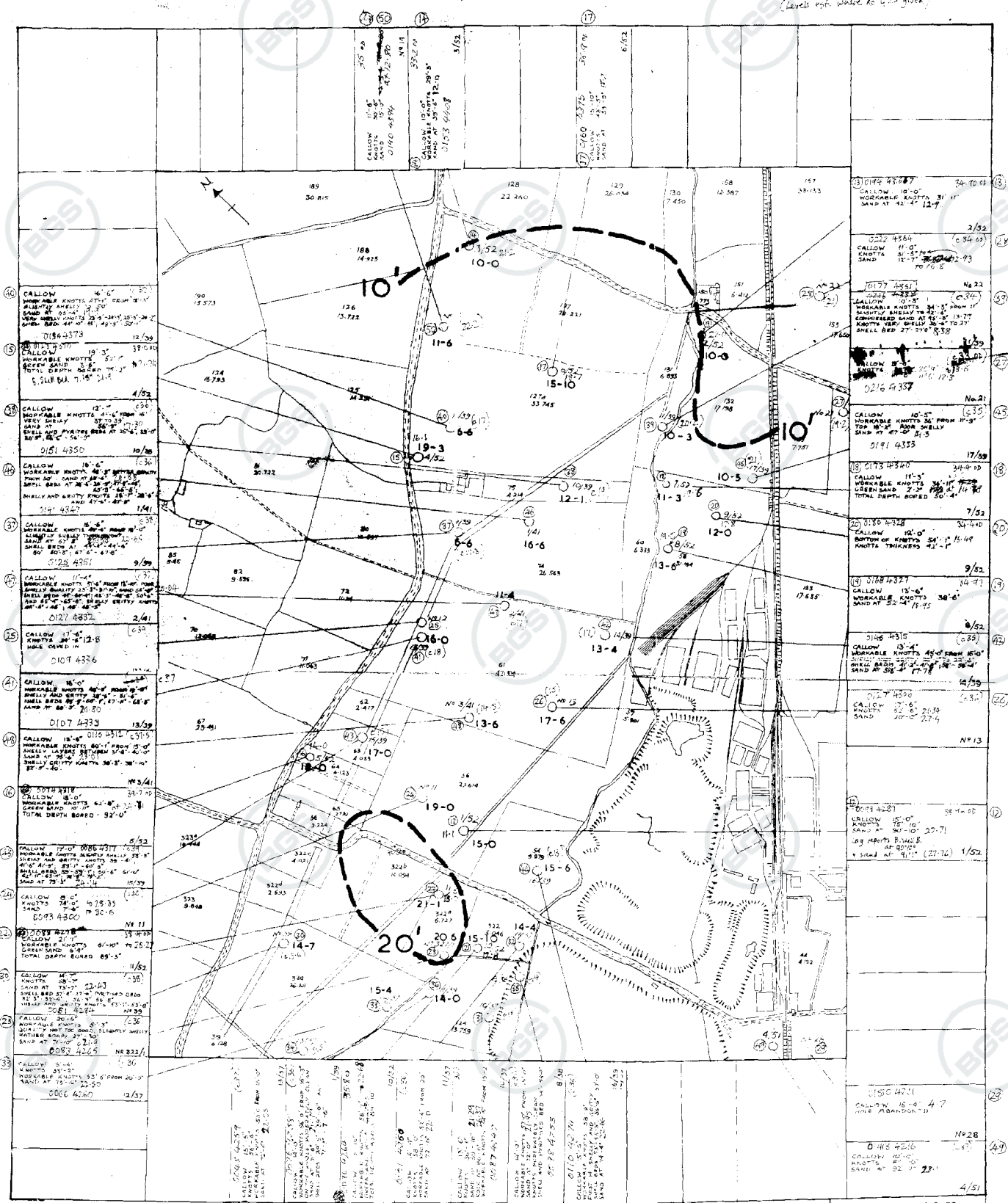
DEPTH.		DESCRIPTION OF STRATA.	PERMEABILITY.	O.D. LEVEL.		SYNTH. LOG.
METRES	FEET			METRES	FEET	
0	0	Soft and brown weathered clay.				
to	to					
35m	11'0"					
35m	11'	Stiff blue-grey laminated				
to	to					
43m	42'5"	clay				
43m	42'5"	dense blue-grey sand and clay.				
to	to					
76m	55'					

lower part of clay
X
always
8 feet

TL 04.5W/12-49

VICARAGE FARM AND L-FIELD AREA.

BGS 1:10,000 Record System No. 0
(All are TL 04 SW)
Levels of base: LSWC m DP (Est. G.L.)
(Levels exp. where no G.L. given)



SCALE 1:5000

CALLOW THICKNESS

10.9.52
RETEC. STEWARTBY
GEOLOGICAL LAB.
DRAWING NO.442

BOREHOLE LOG

TL 04 SW 1 252

4

LOCATION S.2666 ELSTON 0814 4397 BOREHOLE No.
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (22.0 m); Rotary Drilling (22.0 - 27.6 m)
GROUND LEVEL 35.78 m A.O.D.
DATE 20th - 23rd September 1972, 13th - 14th October 1972
SCALE 1 : 100
DIAMETER 150 mm

FIG. 7

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	L.L.	P.L.	N	C/φ
FILL, clay, brick rubble.	1 ●	◇						
	2 ●	◇	1.5m				113	
Loxc SOFT to FIRM pale brown shelly silty CLAY.	3 ●	x -	29					29/0°
	4	x -	30					
	5 ●	x -	32					
	6	x -	4.5m 22					34/0°
STIFF dark grey fissured laminated shelly silty CLAY.	7 ●	x -	26					
	8	x -	29					105/4°
	9 ●	x -	25					
	10	x -	28					UNTESTABLE
	11 ●	x -	29					
	12	x -	25					112/5°
	13 ●	x -						
	14 ●	x -	28				142	
	15 ●	x -						
	16 ●	x -	33				150	
	17 ●	x -						
	18 ●	x -	28				161	
	19 ●	x -						
	20 ●	x -	31				163	
	21 ●	x -	16.5m				149	
CONTINUED ON FIG 8								

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
◇ BULK DISTURBED SAMPLE

BOREHOLE LOG

TL 04 SW /252

4

(contd)

LOCATION S.2666 ELSTOW

BOREHOLE No.

CLIENT

Central Electricity Generating Board

FIG. 3

DRILLING METHOD

Shell and Auger (22.0m); Rotary Drilling (22.0 - 27.6 m)

GROUND LEVEL

35.78 m A.O.D.

DATE

20th - 23rd September, 1972 ; 13th - 14 th October 1972.

SCALE 1 :

100

DIAMETER

150 mm & H.

	DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	L.L.	P.L.	N	C/φ
LDXC			X-X	16.5m					
KIS	DENSE fine silty SAND	22	X-X	19.0m					
MC	STIFF grey sandy silty laminated CLAY.	23	X-X	20					
		24	X-X						
		25	X-X	16					
		26	X-X	22.0m					
26	MODERATELY WEAK grey shelly LIMESTONE			23.0m					
BUL	Alternative bands of grey shelly LIMESTONE (50-150mm thick) and HARD dark grey shelly silty CLAY (100-200mm thick)	27		24.0m					
BUL	HARD dark grey shelly silty CLAY			25.0m					
BUL	MODERATELY STRONG grey shelly oolitic LIMESTONE; occasional fresh sub-vertical fissure	28		27.6m					
MB 1991				END OF BOREHOLE					

Note: Ground water was encountered at 16.5 m and rose quickly to 14.7 m below ground level.
Piezometer was installed at 17.0 m below ground level.

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

⊙ DISTURBED SAMPLE
| UNDISTURBED SAMPLE
⊙ BULK DISTURBED SAMPLE

TL04SW/249 - 254
note: depths in metres



Confidential

249 ELSTON (Coronation Pit) No 1

Content = S

NGR Accuracy = 5

Inclin = 1

Date: 13.9.72

Purpose = S

Client = CEGB

Driller

Depth Reli = 2

Start = S

Water struck = WS

Reli of OBL = 2

No samples held

Consult. = GKN

Drill method = C

					Lithostrat Reli
1.0 m	MGRD				1
1.5 RH	DRFT				2
3.0	CLAY SLMD	LOXC	"laminated, silty		2
5.3	SLMD	"	" with selenite		1
17.9	SLMD	"	" fossiliferous		1
18.5	CLAY SLMD	KLS	" sandy RWL 18.5m		1
20.5	SILT	"			1
24.4	CLAY SLMD	KLC	"laminated, shelly, sandy, silty		2
25.5	LMST SLMD	CB	"shelly, sandy		1
28.35	SLMD	BWC	"laminated clay with limestone bands"		2
32.5 TD	LMST SLMD	BWL	"shelly, sandy		2

250

No 2

as 249

1.0 RH	DRFT				1
17.8	SLMD	LOXC	"laminated, fossiliferous RWL 18.0		2
19.0	CLAY SLMD	KLS	"sandy, silty clay	WS 18.0	2
23.0	" SLMD	KLB	"sandy, silty, lam, shelly KLC + KLS?"		4
24.5	LMST	CB	"shelly		1
24.6	SLMD	BWC			2
25.3	LMST	"	"shelly limestone bed		2
25.35	SLMD	"			2
29.2 TD	LMST	BWL	"shelly		2

251 No 3
as 249

0.4	MGRD				1
1.0	RH	DRFT			2
4.9	CLAY	LOXC	silty, lam, foss. ironstone nod.		1
18.5	SLMD	"	lam, foss	RWL 14.6	1
20.4	SAND	KLS	silty, dense	WS 18.8	1
25.0	SLMD	KLC	lam, foss		1
27.1	LMST	CB	thin clay bed		1
28.0	SLMD	BWC			2
33.7	TD LMST	BWL	oolitic, shelly, with clay layers		2

252 No 4
as 249

1.5	MGRD				1
4.5	CLAY	LOXC	shelly, silty		2
16.5	SLMD	"	lam, shelly		1
19.0	SAND	KLS	dense, silty		1
22.0	CLAY	KLE	sandy silty laminated		1
23.0	LMST	CB	shelly		1
25.0	CLAY	BWC	with limestone beds		2
27.6	TD LMST	BWL	shelly, oolitic		2

253 No 5
as 249

0.4	RH				
13.9	SLMD	LOXC	shelly		1
17.0	SILT	KLS	clayey		1
19.5	CLAY	KLC	lam silty, shelly		1
21.2	LMST	CB	shelly, sandy, with clay bed		1
23.1	SLMD	BWC	lam		2
27.3	TD LMST	BWL	shelly, oolitic		2

254 No 6 as 249

2.5	MGRD				1
14.8	SLMD	LOXC	laminated, same shells		1
16.5	SILT	KLS	sandy		1
20.0	SLMD	KLC	sandy, silty, laminated		1
21.8	LMST	CB	shelly, clay 40 mm clay bed		1
24.0	SLMD	BWC	thin limestone bands below 23.5		2
27.4	TD LMST	BWL	oolitic, shelly		2



BOREHOLE LOG

TL04SW/253

5

LOCATION S.2666 ELSTOW

0284 4355

BOREHOLE No.

CLIENT Central Electricity Generating Board

FIG. 5

DRILLING METHOD Shell and Auger (19.5m); Rotary Drilling (19.2 - 27.3 m)

GROUND LEVEL 34.06 m A.O.D.

DATE 20th - 27th September, 1972; 12th October 1972

SCALE 1 : 100

DIAMETER 150 mm & H.

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	LL	P.L.	N	C/φ
Loxc STIFF mottled brown and grey silty shelly CLAY.			1.5m					
STIFF dark grey silty fissured CLAY, some shells.			13.9m					
15 DENSE grey clayey SILT.	1 ● 2 ● 3 ●		17.0m				141 148	KIB 5.6
CONTINUED ON FIG 10								

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
- UNDISTURBED SAMPLE
● BULK DISTURBED SAMPLE

BUCKHOLE LOG

TL 04 SW / 253

5

LOCATION S.2666 ELSTOW

BOREHOLE No.

(contd)

CLIENT Central Electricity Generating Board

FIG.

DRILLING METHOD Shell and Auger (19.5m) Rotary Drilling (19.2 = 27.3 m)

GROUND LEVEL 34.06 m A.O.D.

DATE 20th - 27th September, 1972; 12th October 1972

SCALE 1 : 100

DIAMETER 150 mm & H.

	DESCRIPTION OF STRATA	SAM- PLE	LEG. END	DEPTH	M/C	L.L.	P.L.	N	C / Ø
KC	Very STIFF grey laminated silty CLAY, shell traces.	4 ●	x - x	27					
		5 ●	x - x	27				155	
		6 ●	x - x	31					
		7 ●	x - x	39.5m				150 (50 mm penetration only)	
CB	Grey shelly sandy LIMESTONE								
	HARD grey shelly silty CLAY angular limestone fragments at base.	91		19.5m					
	Grey fissured shelly LIMESTONE	92		21.2m					
	CLAY band 75mm at 20.7, 20mm at 21.0m.								
BWC	HARD dark grey laminated silty CLAY	94	x - x	23.1m					
BWL	MODERATELY STRONG grey shelly oolitic LIMESTONE; occasional thin (10mm) clay partings.	94							
		96		27.3m					
NR 787		END	OF	BORAHOLE					

Note: Ground water was encountered at 13.9 m and rose quickly to 12.4 m below ground level.
Water level 24 hours after completion of soft ground boring was 6.9 m below ground level.
Piezometer was installed at 15.0 m below ground level.

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

☒ DISTURBED SAMPLE
☐ UNDISTURBED SAMPLE
☐ BULK DISTURBED SAMPLE

TL04SW/249 - 254
note: depths in metres



Confidential

249 ELSTON (Coronation Pit) No 1

Content = S

NGR Accuracy = 5

Inclin = 1

Date: 13.9.72

Purpose = S

Client = OEGFB

Driller

Depth Reli = 2

Start = S

Water struck = WS

Reli of OBL = 2

No samples held

Consult. = GKN

Drill method = C

					Lithostrat Reli
1.0 m	MGRD				1
1.5 RH	DRFT				2
3.0	CLAY SLMD	LOXC	"laminated, silty		2
5.3	SLMD	"	" with selenite		1
17.9	SLMD	"	" fossiliferous		1
18.5	CLAY SLMD	KLS	" sandy RWL 18.5m		1
20.5	SILT	"			1
24.4	CLAY SLMD	KLC	"laminated, shelly, sandy, silty		2
25.5	LMST SLMD	CB	"shelly, sandy		1
28.35	SLMD	BWC	"laminated clay with limestone bands"		2
32.5 TD	LMST SLMD	BWL	"shelly, sandy		2

250

No 2

as 249

1.0 RH	DRFT				1
17.8	SLMD	LOXC	"laminated, fossiliferous RWL 18.0		2
19.0	CLAY SLMD	KLS	"sandy, silty clay	WS 18.0	2
23.0	" SLMD	KLB	"sandy, silty, lam, shelly KLC + KLS?"		4
24.5	LMST	CB	"shelly		1
24.6	SLMD	BWC			2
25.3	LMST	"	"shelly limestone bed		2
25.35	SLMD	"			2
29.2 TD	LMST	BWL	"shelly		2



251 No 3
as 249

0.4	MGRD				1
1.0	RH	DRFT			2
4.9	CLAY	LOXC	silty, lam, foss. ironstone nod.		1
18.5	SLMD	"	lam, foss	RWL 14.6	1
20.4	SAND	KLS	silty, dense	WS 18.8	1
25.0	SLMD	KLC	lam, foss		1
27.1	LMST	CB	thin clay bed		1
28.0	SLMD	BWC			2
33.7	TD LMST	BWL	oolitic, shelly, with clay layers		2

252 No 4
as 249

1.5	MGRD				1
4.5	CLAY	LOXC	shelly, silty		2
16.5	SLMD	"	lam, shelly		1
19.0	SAND	KLS	dense, silty		1
22.0	CLAY	KLE	sandy silty laminated		1
23.0	LMST	CB	shelly		1
25.0	CLAY	BWC	with limestone beds		2
27.6	TD LMST	BWL	shelly, oolitic		2

253 No 5
as 249

0.4	RH				
13.9	SLMD	LOXC	shelly		1
17.0	SILT	KLS	clayey		1
19.5	CLAY	KLC	lam silty, shelly		1
21.2	LMST	CB	shelly, sandy, with clay bed		1
23.1	SLMD	BWC	lam		2
27.3	TD LMST	BWL	shelly, oolitic		2

254 No 6 as 249

2.5	MGRD				1
14.8	SLMD	LOXC	laminated, same shells		1
16.5	SILT	KLS	sandy		1
20.0	SLMD	KLC	sandy, silty, laminated		1
21.8	LMST	CB	shelly, clay 40 mm clay bed		1
24.0	SLMD	BWC	thin limestone bands below 23.5		2
27.4	TD LMST	BWL	oolitic, shelly		2



BOREHOLE LOG

TL04SW/260

12

LOCATION S.2666 ELSTOW 0274 4462 BOREHOLE No. FIG. 20
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (15.9m); Rotary Drilling (15.9 - 23.5 m)
GROUND LEVEL 32.89 m A.O.D.
DATE 25th August - 1st September, 1972; 23rd - 24th September, 1972
SCALE 1 : 100
DIAMETER 150 mm & H

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	LL	P.L.	N	C/φ
HARD mottled brown and grey SANDY silty CLAY.	1 ●		1.0m	12				
SOFT mottled brown and grey SANDY silty CLAY.	2			20				25/2°
	3 ●		2.3m					
SOFT friable silty CLAY, fossil traces.	4 ●			42				
	5 ●		3.0m	42				25/1°
STIFF grey fissured laminated fossiliferous silty CLAY.	6 ●			27				
	7			15				93/0°
	8 ●							
	9		6.0m	16				99/0°
HARD dark grey fissured laminated fossiliferous silty CLAY.	10 ●			33				
	11			32				90/0°
	12 ●			27				
	13			29				130/0°
	14 ●		10.0m	28				
DENSE fine grey silty SAND.	15 ●						136	
	16 ●							
	17 ●						154 (150 mm penetration)	
HARD dark grey fissured laminated fossiliferous silty CLAY.	18 ●		12.5m					
	19 ●			15				
	20 ●			15			153	
	21 ●			15				
	22 ●							
	23 ●			15			132	
WEAK grey friable limestone; thin CLAY layer (50 mm) at 16.5m.	24 ●		15.7m	19				
	25 ●						150 (37 mm penetration only)	
CONTINUED ON FIG 21								

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
▽ BULK DISTURBED SAMPLE



BOREHOLE LOG

TL 04 SW / 260

12

(contd)

LOCATION S.2666 ELSTOW

BOREHOLE No.

FIG. 21

CLIENT Central Electricity Generating Board

DRILLING METHOD Shell and Auger (15.9 m); Rotary Drilling (15.9 - 23.5 m)

GROUND LEVEL 32.89 m A.O.D.

DATE 25th August - 1st September, 1972; 23rd - 24th September, 1972

SCALE 1 : 100

DIAMETER 150 mm & H

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	LL	P.L.	N	C / ϕ
BWC HARD green and brown fissured silty CLAY.	96%		17.2m					
			18.9m					
BWL MODERATELY WEAK grey oolitic shelly LIMESTONE; very SHELLY bands; thin CLAY layer (50 mm) at 20.5 m.	90%		19	40 (CI)	22			
			23.5m					
MR 1987 END OF BOREHOLE								

Note: Ground water was encountered at 10.2 m, rose quickly to 9.3 m and was sealed off at 12.9 m below ground level.
Water level 24 hours after completion of soft ground boring was 6.3 m below ground level.

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

⊙ DISTURBED SAMPLE
| UNDISTURBED SAMPLE
⊕ BULK DISTURBED SAMPLE

259

No 11

N.B. Start Point = S

1.4 RH	DRFT			1
18.8	SLMD	LOXC	laminated, shelly	1
20.9	SAND	KLS	silty	1
23.4	SLMD	KLC	laminated	1
25.2	LMST	CB	shelly, 20mm clay band	1
27.1	SLMD	BWC	lam. sandy	1
31.0 TD	LMST	BWL	shelly, oolitic	1

260

No 12

S.P = S

2.3 RH	DRFT			
3.0	CLAY	LOXC	silty, foss	1
10.0	SLMD		lam, foss	1
12.5	SAND	KLS	silty	1
15.7	SLMD	KLC	lam, foss	1
17.2	LMST	CB	with 50mm clay bed	1
18.9	SLMD	BWC	lam, foss	1
23.5 TD	LMST	BWL	oolitic, shelly	1

261

No 13

S.P = S

2.2 RH	DRFT			
11.5	SLMD	LOXC	laminated, foss	1
12.8	"	KLS	sandy, could be LOXC	4
14.3	SAND	KLS	silty; sandstone at base	1
17.3	SLMD	KLS	sandy, lam. ? partly KLC	4
18.3	SLMD	KLC	lam, foss	1
19.6	LMST	CB	shelly	1
22.0	LMST	BWC	thin limestone bed near top	2
26.0 TD	LMST	BWL	oolitic, shelly	

BOREHOLE LOG

TL 04 SW/261

13

LOCATION S.2566 ELSTON 0268 4425 BOREHOLE No.
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (18.5m); Rotary Drilling (18.5 - 26.0m)
GROUND LEVEL 32.53 m A.O.D.
DATE 14th-15th September; 25th - 26th September, 1972
SCALE 1 : 100
DIAMETER 150 mm & H

FIG. 22

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	L.L.	P.L.	N	C/φ
Drift Brown friable sandy silty CLAY.	1 ●	— x —	1.0m					
Fine to medium yellow/brown clayey SAND.	2 ●	— x —						
	3 ●	— x —	2.2m					
LDxc STIFF dark grey laminated fissured silty CLAY, shell traces. (FIRM at surface).	4 ●	— x —		38				
	5 ●	— x —		40				47/0°
	6 ●	— x —		36				
	7 ●	— x —		36				
	8 ●	— x —		30				
	9 ●	— x —						80/0°
	10 ●	— x —		19				
	11 ●	— x —		28			1 38	
	12 ●	— x —						
	13 ●	— x —					1 41	
	14 ●	— x —		28				
	15 ●	— x —					1 50	
	16 ●	— x —	11.5m	23				
? LDxc STIFF dark grey laminated sandy silty CLAY.	17 ●	— x —		14			1 53	
	18 ●	— x —	12.8m	19				
KIS DENSE dark grey fine silty SAND, thin SANDSTONE band or lens at base.	19 ●	— x —					1 40	
	20 ●	— x —	14.3m					
KIS (KIC?) STIFF dark grey laminated sandy silty CLAY	21 ●	— x —		14			1 51	
	22 ●	— x —		13				KIS ss
	23 ●	— x —		12			1 64	
	24 ●	— x —	17.3m	13				
CONTINUED ON FIG 25								

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
◇ BULK DISTURBED SAMPLE

BOREHOLE LOG

TL 04 SW/261

13

(contd)

FIG. 25

LOCATION S.2666 ELSTOW BOREHOLE No.
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (18.5m); Rotary Drilling (18.5 - 26.0 m)
GROUND LEVEL 32.53 m A.O.D.
DATE 14th-15th September, 25th - 26th September, 1972
SCALE 1 : 100
DIAMETER 150 mm and H

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	L.L.	P.L.	N	C/φ
STIFF grey laminated silty CLAY, shell traces.	25● 26●	X X	18.3m 22	26			161	
Grey massive shelly LIMESTONE.	92%		19.6m				30 (No penetration)	
HARD grey shelly fissured CLAY. Grey shelly LIMESTONE.		X X	20.0m					
HARD green and yellow fissured silty CLAY.	100%	X X	22.0m					
MODERATELY COMPACT grey oolitic shelly LIMESTONE; prominent very SHELLY bands.	100%		26.0m					
END OF BOREHOLE								

Note: Ground water was encountered at 11.9 m, rose quickly to 11.6 m and was sealed off at 12.3 m below ground level.
Water was again encountered at 13.4 m and rose quickly to 13.1 m below ground level.
Water level 24 hours after completion of soft ground boring was 6.4 m below ground level.

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
⊕ BULK DISTURBED SAMPLE

259

No 11

N.B. Start Point = S

1.4 RH	DRFT			1
18.8	SLMD	LOXC	laminated, shelly	1
20.9	SAND	KLS	silty	1
23.4	SLMD	KLC	laminated	1
25.2	LMST	CB	shelly, 20mm clay band	1
27.1	SLMD	BWC	lam. sandy	1
31.0 TD	LMST	BWL	shelly, oolitic	1

260

No 12

S.P = S

2.3 RH	DRFT			
3.0	CLAY	LOXC	silty, foss	1
10.0	SLMD		lam, foss	1
12.5	SAND	KLS	silty	1
15.7	SLMD	KLC	lam, foss	1
17.2	LMST	CB	with 50mm clay bed	1
18.9	SLMD	BWC	lam, foss	1
23.5 TD	LMST	BWL	oolitic, shelly	1

261

No 13

S.P = S

2.2 RH	DRFT			
11.5	SLMD	LOXC	laminated, foss	1
12.8	"	KLS	sandy, could be LOXC	4
14.3	SAND	KLS	silty; sandstone at base	1
17.3	SLMD	KLS	sandy, lam. ? partly KLC	4
18.3	SLMD	KLC	lam, foss	1
19.6	LMST	CB	shelly	1
22.0	LMST	BWC	thin limestone bed near top	2
26.0 TD	LMST	BWL	oolitic, shelly	



TL 04 SW/262

14

LOCATION S.2666 ELSTOW 0261 4389 BOREHOLE No.
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (19.2m); Rotary Drilling (19.2m - 27.1 m)
GROUND LEVEL 34.28 m A.O.D.
DATE 4th-6th September; 27th - 28th September, 1972
SCALE 1 : 100
DIAMETER 150 mm and H

FIG.

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	LL	P.L.	N	C / ϕ
Drfr HARD brown sandy silty CLAY.	1 ●	— x —						
	2 ●	— x —			(CH)			
SOFT light grey sandy CLAY.	3	— x —	1.0m	29	55	28		18/L°
Loxc STIFF brown laminated silty CLAY, shell traces.	4 ●	— x —	1.5m	25	60	33		
	5 ●	— x —	2.5m		(MH)			
STIFF dark grey laminated fissured silty CLAY, shell traces.	6	— x —		23	73	37		22/0°
	7 ●	— x —			(MH)			
	8	— x —		27				19/0°
	9 ●	— x —						
	10	— x —		27	69	37		70/0°
	11 ●	— x —			(MH)			
	12 ●	— x —						
	13 ●	— x —		19			1 37	
	14 ●	— x —						
	15 ●	— x —					1 43	
	16 ●	— x —						
	17 ●	— x —		20	60	34	1 45	
Loxc ? KIB STIFF grey sandy silty CLAY, shell traces.	18 ●	— x —			(MH)			
	19 ●	— x —					1 47	
KIS Very DENSE grey fine silty SAND	20 ●	— x —	3.0m	21	46	23		
	21 ●	— x —			(MH)			
	22 ●	— x —		16			1 33	
	23 ●	— x —	5.0m					
	24 ●	— x —					1 52	KIB
	25 ●	— x —	6.5m					3.9
CONTINUED ON FIG 25								

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
○ BULK DISTURBED SAMPLE



+ 100m
TL 04 SW 262
BOREHOLE No.

14
(contd)
FIG. 25

LOCATION S.2666 ELSTON
CLIENT Central Electricity Generating Board
DRILLING METHOD Shell and Auger (19.2m); Rotary Drilling (19.2 - 27.1 m)
GROUND LEVEL 34.28 m A.O.D.
DATE 4th-6th September; 27th - 28th September, 1972
SCALE 1 : 100
DIAMETER 150 mm and H

KIS

KIC

CB

BWC

BWL

MB

1987

DESCRIPTION OF STRATA	SAM- PLE	LEG- END	DEPTH	M/C	L.L.	P.L.	N	C/φ
		X X X	16.5m					
STIFF grey laminated sandy silty CLAY, shell traces.	26	X	24	59 (CH)	25		147	
	27	X	23					
	28	X	25				154	
	29	X	18.9m	25				
MODERATELY WEAK grey shelly LIMESTONE; thin CLAY band (100 mm) at 20.4 m.	30						130 (12 mm penetration only)	
	90		20.8m	(CH)				
HARD green fissured silty CLAY, becoming dark grey and shelly with depth.		X X	18	65	34			
		X X	18	66	36			
		X X	22.7m					
MODERATELY STRONG grey oolitic shelly LIMESTONE; thin CLAY band (50 mm) at 26.3 m; occasional fresh sub-vertical joints.								
	93							
	93							
			27.1m					
			END OF BOREHOLE					

Note: Ground water was encountered at 7.2 m, rose quickly to 7.0 m and was sealed off at 7.4 m below ground level.
Water was again encountered at 14.1 m and rose quickly to 13.8 m below ground level.
Water level 24 hours after completion of soft ground boring was 6.2 m below ground level.

G.K.N. FOUNDATIONS LTD.,
SITE INVESTIGATION DEPARTMENT

● DISTURBED SAMPLE
| UNDISTURBED SAMPLE
○ BULK DISTURBED SAMPLE

262 - 265

262

No 4

S. P = S

1.5 RH	DRFT			
13.4	SLMD	LOXC	lam, foss	1
15.0	SLMD	KLS	sandy; could be LOXC	3
16.5	SAND	"	silty	1
18.9	SLMD	KLC	sandy, lam, foss	2
20.8	LMST	CB	with 100mm clay band	1
22.3	SLMD	BWC	shelly at base	1
27.1 TD	LMST	BWL	oolitic, shelly	2

263

15

S. P = S

1.0	MGRD			
2.3 RH	DRFT			
14.3	SLMD	LOXC	lam, shelly	1
15.5	SILT	KLS	sandy	1
16.1	LMST	"	sandy	2
20.3	SLMD	KLC	lam	1
22.1	LMST	CB	shelly; 100mm clay band	1
23.1	SLMD	BWC	lam	1
23.7	LMST	BWC	clayey, shelly; could be BWL	4
27.1	"	BWL	shelly, oolitic; 80mm clay band	4
27.4 TD	SLMD	"	lam	4

264

16

S. P = S

1.0 RH	DRFT			
2.1	CLAY	LOXC	silty	1
12.0	SLMD	"	lam, foss	1
13.0	CLAY	KLS	sandy; could be LOXC	2
15.1	SAND	"	silty	1
18.7	SLMD	KLC	sandy, lam; partly KLS?	2
19.9	LMST	CB	shelly; 20mm clay band	1
21.7	SLMD	BWC	shelly at depth	2
25.3 TD	LMST	BWL	oolitic, shelly	2

Annex 3.2

LAKE ZONE EXPLORATORY HOLE LOGS



Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503654.50

Ground Level (mAOD)
29.39
Northing (OS mN)
246109.20

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25

Sheet 1 of 1

SAMPLES	TESTS			STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result			Description	Legend			
(ES1) 0.10	PID	0.10m	<1ppm	TOPSOIL. Soft dark brown sandy CLAY with frequent rootlets and rare subrounded fine to medium gravel of chert and brick. Sand is fine to coarse.		(0.30)	29.08	
(B2) 0.30-1.30 (D7) 0.30-1.30				Soft light brown to light yellowish brown very gravelly very sandy CLAY with rare subrounded fine gravel of chert. Sand is fine to coarse. [HEAD DEPOSIT]		0.30		
						(1.00)		
(B3) 1.30-1.60 (D6) 1.30-1.60				Loose light creamish greyish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse chert. [HEAD DEPOSIT]		1.30 (0.30)		
				Soft to firm brown to light to dark bluish grey slightly sandy CLAY with frequent fossilised shells and rare pyrite. Sand is fine to medium. [PETERBOROUGH MEMBER]		1.60		
(B4) 2.50-3.00 (D5) 2.50-3.00						(1.40)		
						3.00	26.38	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Unstable at the sand and gravel</div><div>Long Axis Orientation:</div><div>135.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		03/04/2023 15:36	1.30	1.30		Very fast seepage			
		REMARKS							
		Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503425.40

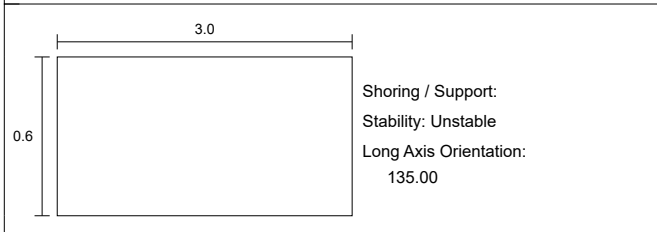
Ground Level (mAOD)
29.79
Northing (OS mN)
246010.10

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B3) 1.00-2.00 (D5) 1.00-2.00		MADE GROUND. Grass over soft dark brown sandy CLAY with frequent rootlets and rare brick fragments. Sand is fine to medium.		(0.20)	29.59	
		MADE GROUND: Soft dark brown to dark grey sandy CLAY with frequent subrounded fine to medium gravel of chert and brick and occasional decaying wood fragments. Sand is fine to coarse.		0.20		
(B4) 2.00-3.00 (D6) 2.00-3.00 (ES1) 2.10	PID 2.10m <1ppm	very large decaying logs, approx 10'30cm 2-2.2m bgl		(2.20)		
(ES2) 3.00	PID 3.00m <1ppm	MADE GROUND: Soft brown mottled dark bluish grey to black slightly sandy, slightly gravelly CLAY with rare cobbles of bricks and frequent decaying wood and fossilised shells. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse chert and brick. Strong organic odour noted.		2.40	27.39	
				(0.60)		
				3.00	26.79	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks
03/04/2023 14:55	1.20	1.20		Fast seepage

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated due to unstable pit below water table. Made Ground from GL to 0.2m acting as a Topsoil as a result of infilling of the river channel.

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503162.30

Ground Level (mAOD)
30.05
Northing (OS mN)
245912.20

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description		Legend				
(ES1) 0.10-0.20	PID 0.15m <1ppm	TOPSOIL. Soft dark brown sandy CLAY with frequent rootlets. Sand is fine to medium.				(0.20)	29.85	
		Loose light yellowish orangish brown clayey fine to medium SAND with occasional subrounded fine to medium gravel of chert. [HEAD DEPOSIT]				0.20		
(B2) 1.00-1.50 (D4) 1.00-1.50		Loose light creamish brown SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse chert. [HEAD DEPOSIT]				(0.80)	29.05	▼
		Soft to firm dark grey to dark bluish grey CLAY with frequent fossilised shells and rare pyrite throughout. [PETERBOROUGH MEMBER] clays appear to be weathered a slightly lighter grey colour 1.5-2m bgl				1.00		
(B3) 2.00-3.00 (D5) 2.00-3.00						1.50	28.55	
						(1.50)		
						3.00	27.05	

PLAN DETAILS				WATER OBSERVATIONS				INSTRUMENTS		
				Date/Time	Strike	Rest	Mins	Remarks	Name	Type
				03/04/2023 12:49	1.00	1.00		Fast seepage		
				REMARKS						
				Service clearance was completed prior to excavation. Terminated at scheduled depth						








Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503273.40

Ground Level (mAOD)
30.01
Northing (OS mN)
245859.60

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result			Description	Legend			
(ES1) 0.20 (B2) 0.30-1.00 (D5) 0.30-1.00	PID	0.20m	<1ppm	TOPSOIL. Grass over soft dark brown sandy gravelly CLAY with frequent rootlets and rare brick fragments. Sand is fine to medium. Gravel is angular to subrounded fine to coarse chert and brick.		(0.30)	29.71	
				Soft dark orangish brown gravelly slightly sandy CLAY. Sand is fine to medium. Gravel is subangular fine to coarse of chert. [ALLUVIUM]		0.30 (0.70)		
(B3) 1.00-1.60 (D6) 1.00-1.60				Loose light creamish brown slightly clayey silty SAND and GRAVEL. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of chert. [HEAD DEPOSIT]		1.00 (0.60)	29.01	
				Soft light brownish grey CLAY with frequent fossilised shells. [WEATHERED PETERBOROUGH MEMBER]		1.60 (0.60)	28.41	
(B4) 2.50-3.00 (D7) 2.50-3.00				Soft to firm dark bluish grey slightly sandy CLAY with frequent fossilised shells and rare lithified wood. Sand is fine to coarse. [PETERBOROUGH MEMBER]		2.20 (0.80)	27.81	
						3.00	27.01	

Project
Project 320
Client
Buffalo 320

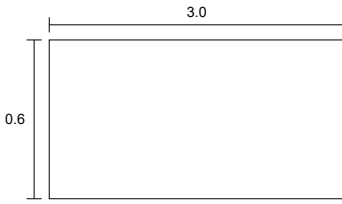
Project No.
30174974
Easting (OS mE)
503236.80

Ground Level (mAOD)
30.02
Northing (OS mN)
245621.00

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B4) 0.20-0.90 (D6) 0.20-0.90		MADE GROUND: Soft dark brown sandy CLAY with frequent rootlets and rare subangular fine to medium gravel of brick. Sand is fine.		(0.20)		
		MADE GROUND: Loose light orangish brown clayey fine SAND with occasional black and reddish orange sand pockets and rare fine gravel of brick.		0.20	29.82	
(ES1) 0.50	PID 0.50m <1ppm			(0.70)		
(B3) 0.90-2.00 (D7) 0.90-2.00		Soft light grey mottled orangish brown slightly sandy CLAY with rare fossilised shells. Sand is fine to coarse. [WEATHERED PETERBOROUGH MEMBER]		0.90	29.12	
				(1.10)		
(B5) 2.00-3.00 (D8) 2.00-3.00		Firm thinly laminated brown to dark bluish grey slightly sandy CLAY with frequent fossilised shells and rare pyrite. Sand is fine. [PETERBOROUGH MEMBER]		2.00	28.02	
				(1.00)		
(D2) 3.00		Band of frequent pyrite		3.00	27.02	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		REMARKS							
		Service clearance was completed prior to excavation. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320








Project No.
30174974
Easting (OS mE)
502991.80


Ground Level (mAOD)
30.49
Northing (OS mN)
245537.20

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25

Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend					
(D4) 0.70-1.20 (B2) 0.81-1.00 (ES1) 1.01	PID 1.00m <1ppm PID 1.01m <1ppm	MADE GROUND: Grass over soft dark brown sandy CLAY with frequent rootlets. Sand is fine to medium.		(0.70)	29.79			
		MADE GROUND: Loose light orangish yellowish brown clayey gravelly fine to medium SAND with rare orange sand pockets and light grey clay pockets. Gravel is subangular to subrounded fine to medium chert.		0.70				
		clay drainage pipe, contained water 1-1.1m bgl		(0.50)				
		Loose yellowish brown sandy subangular to subrounded fine to coarse GRAVEL of chert. Sand is fine to coarse. [HEAD DEPOSIT]		1.20 (0.10)	29.29			
		Soft light grey CLAY with frequent fossilised shells and rare lithified wood (10mm thickness). [WEATHERED PETERBOROUGH MEMBER]		1.30	29.19			
(B3) 2.50-3.00 (D5) 2.50-3.00		Soft to firm dark bluish grey CLAY with frequent fossilised shells and rare lithified wood (10mm thickness). [PETERBOROUGH MEMBER]		(0.50)				
				1.80	28.69			
				(1.20)				
				3.00	27.49			

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AG
 <p>Shoring / Support: Stability: Stable Long Axis Orientation: 0.00</p>		<p style="text-align: center;">REMARKS</p> <p>Service clearance was completed prior to excavation. Terminated at scheduled depth</p>							


Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503245.30

Ground Level (mAOD)
25.77
Northing (OS mN)
245423.60

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(ES5) 0.30	PID 0.30m <1ppm	MADE GROUND: Soft brownish grey CLAY with occasional coarse sand pockets, roots (20mm in diameter) and rootlets.		(0.50)		
		MADE GROUND: Soft to firm friable brown mottled dark grey slightly sandy CLAY with occasional gravel of brick and mudstone fragments and rare orangish fine sand pockets.		0.50	25.27	
(B2) 2.00-2.50 (D1) 2.00-2.50				(2.50)		
(B3) 2.50-3.00 (D4) 2.50-3.00				3.00	22.77	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div></div><div>3.0</div></div><div><div>0.6</div><div></div></div></div> <div>Shoring / Support: Stability: Stable Long Axis Orientation: 135.00</div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
	REMARKS								
	Service clearance was completed prior to excavation. Terminated at scheduled depth								

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503478.30

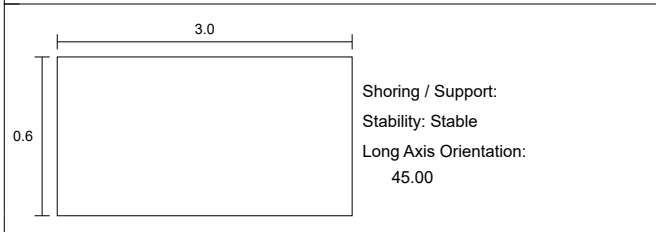
Ground Level (mAOD)
32.56
Northing (OS mN)
245384.50

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
		MADE GROUND: Grass over soft gravelly CLAY with frequent rootlets. Gravel is angular to subrounded fine to coarse brick.		(0.20)	32.36	
		MADE GROUND: Soft brown mottled light greyish greenish brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse brick.		0.20		
(B2) 2.50-3.00 (D3) 2.50-3.00				(2.80)		
(ES1) 3.00	PID 3.00m <1ppm			3.00	29.56	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated at scheduled depth



Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503333.70

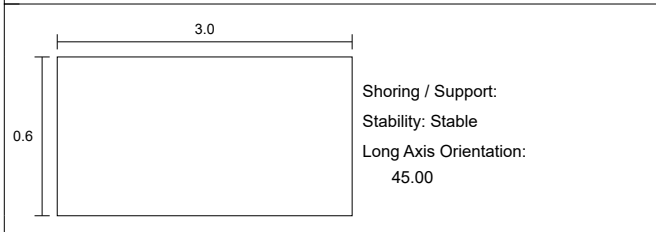
Ground Level (mAOD)
33.45
Northing (OS mN)
245313.60

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B2) 0.50-1.00 (D4) 0.50-1.00 (ES1) 0.50	PID 0.50m <1ppm	MADE GROUND: Grass over soft dark brown sandy CLAY with occasional angular fine to medium gravel of brick and frequent rootlets. Sand is fine to coarse.		(0.10) 0.10	33.35	
		MADE GROUND: Loose dark reddish brown very sandy very gravelly COBBLES. Sand is fine to coarse. Gravel is very angular to subrounded fine to coarse brick, metal, plastic, metal wires and sandstone. Large cobbles of brick.		(1.10)		
(B3) 2.00-3.00 (D5) 2.00-3.00		MADE GROUND: Soft light grey mottled orangish brown sandy CLAY with frequent orange sand pockets and fossilised shells. Sand is coarse.		1.20	32.25	
				(1.80)		
				3.00	30.45	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated at scheduled depth






Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503074.60

Ground Level (mAOD)
30.84
Northing (OS mN)
245383.80

Start Date
03/04/2023
End Date
03/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B1) 0.20-0.50 (D5) 0.20-0.50		MADE GROUND: Grass over very loose dark brown clayey fine SAND with frequent roots (1cm diameter) and rootlets.		(0.20)		
		MADE GROUND: Loose light orangish brown clayey gravelly fine to coarse SAND with frequent orange and black fine sand pockets. Gravel is subangular fine to coarse chert.		0.20	30.64	
(ES2) 0.50	PID 0.50m <1ppm			(0.80)		
(B3) 1.00-1.20 (D7) 1.00-1.20		Loose light yellowish orangish brown slightly clayey silty very sandy GRAVEL. Sand is medium to coarse. Gravel is angular to subrounded fine to medium of chert. [HEAD DEPOSIT]		1.00 (0.20)	29.84	▼
		Soft brown to light bluish grey to dark bluish grey CLAY with frequent fossilised shells and a slight organic odour. [WEATHERED PETERBOROUGH MEMBER]		1.20	29.64	
				(1.80)		
(B4) 2.50-3.00 (D6) 2.50-3.00		Darker bluish grey clay.		3.00	27.84	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Stable</div><div>Long Axis Orientation:</div><div>135.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		03/04/2023 09:55	1.00	1.00		Slight seepage			
		REMARKS							
		Service clearance was completed prior to excavation. Terminated at scheduled depth. Position relocated due to access restrictions to original location of TP12							



Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503222.30

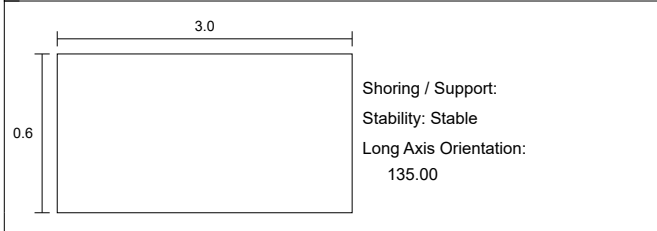
Ground Level (mAOD)
27.40
Northing (OS mN)
245533.20

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
		MADE GROUND: Grass over soft dark brown sandy CLAY with frequent rootlets and occasional orange sand pockets. Sand is fine to medium.		(0.10)	27.30	
		MADE GROUND: Soft dark grey and orangish brown slightly sandy gravelly CLAY with frequent bands and pockets of dark orange sand, frequent fossilised shell fragments, rare pyrite and occasional pockets of light grey clay. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse brick and chert.		0.10		
				(2.90)		
				3.00	24.40	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks
04/04/2023 11:59	2.00	2.00		Slight seepage

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated at scheduled depth



Project
Project 320
Client
Buffalo 320

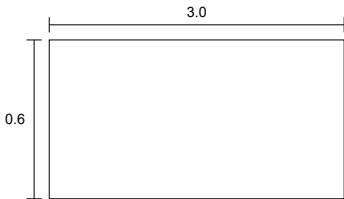
Project No.
30174974
Easting (OS mE)
503410.50

Ground Level (mAOD)
27.03
Northing (OS mN)
245664.30

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(ES3) 1.30	PID 1.30m <1ppm	MADE GROUND: Grass over soft dark brown sandy CLAY with frequent rootlets and rare fine gravels of brick. Sand is fine to coarse.		(0.10) 0.10	26.93	
		MADE GROUND: Soft light grey mottled dark orangish brown sandy CLAY with occasional subangular to subrounded fine to coarse gravel of chert and brick and occasional fine orange sand pockets.		(2.70)		
(B2) 2.80-3.00 (D1) 2.80-3.00		Stiff locally friable thinly laminated dark bluish grey CLAY with frequent fossilised shells and pyrite. [PETERBOROUGH MEMBER]		2.80 (0.20) 3.00	24.23 24.03	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
 <p>Shoring / Support: Stability: Stable Long Axis Orientation: 45.00</p>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		REMARKS							
		Service clearance was completed prior to excavation. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503495.50

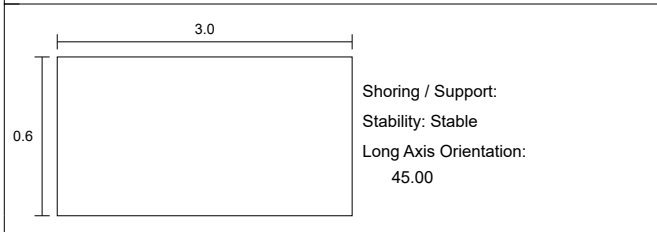
Ground Level (mAOD)
27.26
Northing (OS mN)
245714.00

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B2) 0.00-0.50 (D3) 0.00-0.50		MADE GROUND: Firm friable dark bluish grey CLAY with frequent fossilised shells and rootlets and rare fine gravels of brick.		(0.50)		
(ES1) 0.30	PID 0.30m <1ppm			0.50	26.76	
		MADE GROUND: Stiff friable dark bluish grey slightly sandy CLAY with frequent fossilised shells and rare pyrite.		(2.50)		
(B4) 2.50-3.00 (D5) 2.50-3.00				3.00	24.26	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated at scheduled depth

Project
Project 320
Client
Buffalo 320






Project No.
30174974
Easting (OS mE)
502958.00

Ground Level (mAOD)
33.50
Northing (OS mN)
245335.00

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25

Sheet 1 of 1

SAMPLES	TESTS			STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result			Description	Legend			
(ES1) 0.75 (B2) 1.00-2.00 (D3) 1.00-2.00 (B4) 2.00-3.00 (D5) 2.00-3.00	PID	0.75m	<1ppm	MADE GROUND: Grass over soft dark brown sandy gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium brick and chert.		(0.50)	33.00	
				MADE GROUND: Soft dark orangish brown mottled light grey sandy slightly gravelly CLAY with rare rootlets and frequent reddish brown fine sand pockets and fossilised shell fragments. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium brick and chert.		0.50		
					(1.50)			
					2.00	31.50		
					(1.00)			
	3.00	30.50						
								
								

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Stable</div><div>Long Axis Orientation:</div><div>90.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AG
	REMARKS								
		Service clearance was completed prior to excavation. Terminated at scheduled depth							





Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502854.60

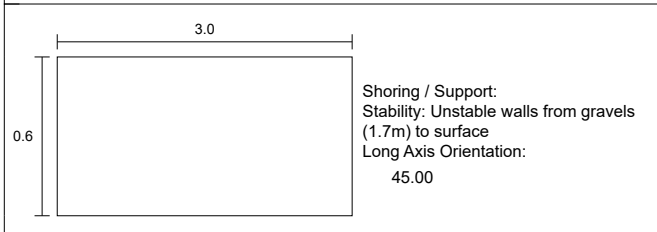
Ground Level (mAOD)
31.02
Northing (OS mN)
245201.90

Start Date
04/04/2023
End Date
04/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill	
Depth - Type	Type - Depth - Result	Description	Legend				
(B1) 0.50-1.00 (D4) 0.50-1.00		TOPSOIL. Grass over soft dark brown sandy CLAY with frequent roots (10mm diameter) and rootlets.		(0.20)	30.82		
		Soft dark orangish brown sandy CLAY with occasional fine gravel of chert and orange fine sand pockets. Sand is fine to coarse. [ALLUVIUM]		0.20			
		(B2) 1.40-1.70 (D5) 1.40-1.70	Loose light orangish brown very clayey very gravelly fine to coarse SAND. Gravel is subangular to subrounded fine to coarse chert. [HEAD DEPOSIT]		(1.20)		29.62
					1.40		
(B3) 2.00-3.00 (D6) 2.00-3.00		Soft to firm locally friable thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]		(0.30)	29.32		
				1.70			
				(1.30)	28.02		
3.00							

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Terminated at scheduled depth

Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)



Equipment Used
JCB

Termination Depth
3.00m

Logged By
TL

Checked By
SF

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503602.10

Ground Level (mAOD)
29.76
Northing (OS mN)
245931.10

Start Date
31/03/2023
End Date
04/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B1) 0.00-0.30	PID 0.20m <1ppm			TOPSOIL. Vegetation over soft dark brown slightly gravelly sandy CLAY with frequent rootlets. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded chert.			(0.30)	29.46	
	(B3) 0.40-1.00				Very soft yellowish brown slightly gravelly slightly sandy silty CLAY. Sand is fine to coarse. Gravel is fine to medium subrounded to rounded chert.			(0.50)		
	(B2) 0.50-0.70	PID 0.65m <1ppm			[HEAD DEPOSIT]			0.80	28.96	
	(ES38) 0.65				Soft brown mottled grey slightly gravelly sandy silty CLAY. Gravel is fine to medium subrounded to rounded chert and occasional fossilised shell fragments.			(0.90)		
	(B4) 1.20-1.70				[HEAD DEPOSIT]			1.70	28.06	
	(B6) 1.70-1.90				Medium dense brown gravelly SAND with occasional dark grey clay pockets. Sand is fine to medium. Gravel is fine to medium subangular to well rounded chert and fossilised shells.			(0.20)	27.86	
	(D5) 1.70				[HEAD DEPOSIT]			1.90		
	(B7) 1.90-2.20				Firm to stiff dark grey and brown CLAY with frequent fossilised shells.					
	(D25) 2.20-2.65	SPT(S) 2.20m N=14 (1,2/3,3,4,4)			[PETERBOROUGH MEMBER]					
	(SPTLS8) 2.20-2.65	Depth water: Damp								
	(B9) 2.70-3.20									
	(D10) 3.20-3.50									
	(UT11) 3.20-3.60									
	(B12) 3.70-4.20							(3.70)		
	(D26) 4.20-4.65	SPT(S) 4.20m N=18 (2,3/4,4,5,5)								
	(SPTLS13) 4.20-4.65	Depth water: Dry								
	(B14) 4.70-5.20									
	(D27) 5.20-5.70									
	(UT15) 5.20-5.60									
	(B16) 6.00-6.50				Firm to stiff brownish grey CLAY with occasional fossilised shell fragments.			5.60	24.16	
					[PETERBOROUGH MEMBER]			(0.40)		
					Stiff to very stiff thinly laminated dark grey CLAY with occasional white silt pockets and fossilised shell fragments			6.00	23.76	
					[PETERBOROUGH MEMBER]					
	(D28) 7.00-7.45	SPT(S) 7.00m N=27 (3,4/5,7,7,8)								
	(SPTLS17) 7.00-7.45	Depth water: Damp								
	(B29) 7.50-8.00							(3.50)		
	(B31) 8.50-9.00									
	(D30) 8.50-9.00									
	(B32) 9.60-10.00									
	(D33) 10.00-10.45	SPT(S) 10.00m N=30			Stiff to very stiff dark grey silty sandy CLAY. Sand is fine.			9.50	20.26	
					[KELLAWAYS SAND]					

DRILLING TECHNIQUE			HOLE / CASING DIAMETER			CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED			
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	16.20	Cable Percussion			200 150	3.00 13.50	15.80 16.00	16.00 16.20	00:30 00:30	27/03/2023 15:54 03/04/2023 16:00	0.80 9.60	0.80 7.20	20	1.10 3.00	10.50							

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP01_S	Standpipe	0.000	CP01_S	0.50	1.90	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strikes at 0.8m and 9.6m bgl.				
CP01_D	Standpipe	0.000	CP01_D	11.60	15.80	50					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503602.10

Ground Level (mAOD)
29.76
Northing (OS mN)
245931.10

Start Date
31/03/2023
End Date
04/04/2023

Scale
1:50
Sheet 2 of 2

Progress		Samples		Tests and Measurements						Strata							Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details			TCR SCR ROD			Description						
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
15.80m

Logged By
MV

Checked By
SF

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503308.70

Ground Level (mAOD)
29.71
Northing (OS mN)
246064.60

Start Date
30/03/2023
End Date
03/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements			Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend			
	(B1) 0.00-0.30 (ES30) 0.20	PID 0.20m <1ppm			TOPSOIL. Vegetation over dark brown clayey fine to medium SAND with frequent rootlets and rare ceramic fragments.		(0.40)		
	(B2) 0.50-0.60 (ES31) 0.50	PID 0.50m <1ppm			Soft light yellowish brown slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded chert.		0.40	29.31	
	(B3) 0.80 (ES32) 1.00	PID 1.00m <1ppm			[HEAD DEPOSIT] Loose light creamish grey/brown slightly clayey sandy GRAVEL. Sand is fine to coarse. Gravel is fine to medium subangular to subrounded chert and fossilised shells.		0.80 (0.20) 1.00	28.91 28.71	
	(B4) 1.20-2.00 (UT6) 1.20-1.65				[HEAD DEPOSIT] Soft thinly laminated brownish grey CLAY with occasional fossilised shells.		(1.00)		
	(D7) 1.65-1.75				[WEATHERED PETERBOROUGH MEMBER]				
	(B5) 2.00-3.00 (D8) 2.00-2.45 (SPTLS8) 2.00-2.45	SPT(S) 2.00m N=9 (2,2,2,2,2,3)			Firm thinly laminated dark grey and dark brown CLAY with frequent fossilised shells.		2.00	27.71	
	(B16) 3.00-4.00 (UT9) 3.00-3.45								
	(D10) 3.45-3.55						(3.00)		
	(B12) 4.00-5.00 (SPTLS11) 4.00-4.45	SPT(S) 4.00m N=15 (1,3/3,4,4,4)							
	(B15) 5.00-6.50 (UT14) 5.00-5.45				Firm to stiff thinly laminated greyish brown CLAY with frequent fossilised shells.		5.00	24.71	
	(D13) 5.45-5.55				[PETERBOROUGH MEMBER]		(1.50)		
	(B18) 6.50-7.50 (SPTLS17) 6.50-6.95	SPT(S) 6.50m N>50 (6,8/10,13,27 for 30mm)			Very stiff thinly laminated dark grey mottled reddish brown slightly sandy CLAY with frequent fossilised shells and occasional gypsum and pyrite. Sand is fine.		6.50	23.21	
					[PETERBOROUGH MEMBER]		(0.50)		
					Very stiff thinly laminated dark greyish CLAY with occasional fossilised shells and rare gypsum and pyrite		7.00	22.71	
					[PETERBOROUGH MEMBER]		(0.50)		
	(B19) 7.50-8.00				Very dense dark bluish grey clayey fine SAND with frequent fossilised shells.		7.50	22.21	
					[KELLAWAYS SAND]		(0.50)		
	(B20) 8.00-9.50 (SPTLS26) 8.00-8.45	SPT(S) 8.00m N>50 (4,7/9,10,16,16 for 74mm)			Very stiff thinly laminated dark grey sandy CLAY. Sand is fine.		8.00	21.71	
					[KELLAWAYS SAND]		(1.50)		
	(B21) 9.50-10.50 (SPTLS27) 9.50-9.95	SPT(S) 9.50m N>50 (6,11/18,19,13 for 35mm)			Very stiff dark grey CLAY with occasional fossilised shells.		9.50	20.21	
	(B22) 10.00-11.00				[KELLAWAYS CLAY]				

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	13.20	Cable Percussion			200 150	3.00 12.00				27/03/2023 15:40 30/03/2023 16:13	0.90 6.00	0.90 6.00										

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS														
Name	Type	m AGL	Well Name	From	To	Dia.															
CP02_S	Standpipe	0.000	CP02_S	1.00	3.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated due to refusal. Groundwater strikes at 0.9m and 6m bgl.														
CP02_D	Standpipe piezometer	0.000	CP02_D	9.20	9.50	19															

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503308.70

Ground Level (mAOD)
29.71
Northing (OS mN)
246064.60

Start Date
30/03/2023
End Date
03/04/2023

Scale
1:50
Sheet 2 of 2

Progress			Samples		Tests and Measurements					Strata							Depth (Thickness)	Level	Install/ Backfill	
Date / Time Casing / DTW			Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD	Description					Legend				
			(B23) 11.00-12.00 (D24) 11.45-11.55 <																	

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503096.10

Ground Level (mAOD)
30.30
Northing (OS mN)
245725.40

Start Date
03/04/2023
End Date
04/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B1) 0.00-0.30 (ES38) 0.20	PID 0.20m <1ppm			TOPSOIL. Grass over very soft dark brown sandy CLAY with frequent roots and rootlets.			(0.30)		
	(B2) 0.40-0.60 (ES39) 0.50	PID 0.50m <1ppm			Loose light brown very clayey fine to medium SAND with frequent rootlets. [ALLUVIUM]			0.30 (0.70)	30.00	
	(B3) 1.00-1.20 (ES40) 1.10 (UT9) 1.20-1.65	PID 1.10m <1ppm			Soft light yellowish brown very sandy slightly gravelly CLAY with occasional orange sand pockets. Sand is fine to medium. Gravel is subrounded fine to medium chert. [ALLUVIUM]			1.00 (0.20) 1.20	29.30 29.10	
	(B4) 2.00-2.15 (SPTLS6) 2.00 (B5) 2.20-2.45	SPT(C) 2.00m N=12 (3,3/4,2,3,3) Depth water: 1.30m			Medium dense light brown sandy GRAVEL with occasional subangular cobbles of chert. Sand is fine to coarse. Gravel is subangular fine to medium chert. [HEAD DEPOSIT]			2.00 (0.15) 2.15	28.30 28.14	
	(UT10) 3.00-3.45				Soft light brown sandy CLAY with frequent subangular fine gravel of chert. Sand is fine to medium. [HEAD DEPOSIT]			(0.30)	27.84	
	(D11) 3.45-3.50				Firm to stiff thinly laminated dark grey slightly sandy CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]					
	(B8) 4.00-4.45 (D35) 4.00-4.45 (SPTLS7) 4.00-4.45	SPT(S) 4.00m N=14 (2,2/2,4,3,3) Depth water: Dry								
	(UT12) 5.00-5.45							(4.75)		
	(D13) 5.45-5.50									
	(B14) 6.00-6.45									
	(B15) 6.50-6.65 (D36) 6.50-6.95 (SPTLS17) 6.50-6.95	SPT(S) 6.50m N=38 (4,5/6,10,10,10) Depth water: Dry								
	(B16) 7.20-7.65				Stiff dark grey sandy CLAY with occasional fossilised shells and rare white silt pockets. Sand is fine. [KELLAWAYS SAND]			7.20 (1.25)	23.10	
	(D18) 8.00-8.45 (SPTLS37) 8.00-8.45	SPT(S) 8.00m N=43 (6,15/12,10,9,12) Depth water: Dry								
	(B19) 9.00-9.45				Very stiff dark grey sandy CLAY. Sand is fine. [KELLAWAYS SAND]			8.45 (0.55)	21.84	
	(B21) 9.50-9.95 (D30) 9.50-9.95 (SPTLS20) 9.50-9.95	SPT(S) 9.50m N=50 (5,6/10,11,18,11) Depth water: 4.30m			Very stiff dark grey CLAY/SILT. [KELLAWAYS SAND]			9.00 (0.45)	21.30	
					Very stiff to stiff thinly laminated dark grey CLAY. [KELLAWAYS CLAY]			9.45	20.84	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER			CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED			
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	14.10	Cable Percussion			200 150	3.00 13.60	8.50 14.10	8.70 14.10	00:30 00:20	03/04/2023 11:00 03/04/2023 16:00 04/04/2023 14:00	4.60 8.00 13.90	4.60 7.40 12.50	20 20									

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS			
Name	Type	m AGL	Well Name	From	To	Dia.				
CP03_S	Standpipe	0.000	CP03_S	1.00	3.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strikes at 4.6m, 8m and 13.9m bgl.			
CP03_D	Standpipe	0.000	CP03_D	8.00	14.10	50				


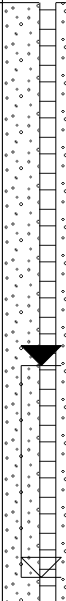




Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503096.10

Ground Level (mAOD)
30.30
Northing (OS mN)
245725.40

Start Date
03/04/2023
End Date
04/04/2023

Scale
1:50
Sheet 2 of 2

Progress			Samples		Tests and Measurements						Strata						Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW			Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD		Description				Legend			
			(B22) 10.50-10.95								Very stiff to stiff thinly laminated dark grey CLAY. [KELLAWAYS CLAY]						(4.65)		
			(B24) 11.00-11.45 (D31) 11.00-11.45 (SPTLS23) 11.00-11.45		SPT(S) 11.00m N=38 (4,5/7,8,10,13) Depth water:5.00m						Band of fine sand						14.18		
			(B25) 12.00-12.45								Strong light grey fossiliferous LIMESTONE. [CORNBRAH FORMATION]						16.20 16.14		
			(B27) 12.50-12.95 (D32) 12.50-12.95 (SPTLS26) 12.50-12.95		SPT(S) 12.50m N=29 (3,5/6,7,8,8) Depth water:9.70m														
			(B28) 13.50-13.95																
			(D33) 14.00-14.15 (SPTLS29) 14.00-14.15 (C34) 14.10-14.11		SPT(S) 14.00m N>50 (25 for 50mm/50 for 20mm) Depth water:12.50m SPT(C) 14.10m N>50 (25 for 40mm/50 for 30mm) Depth water:11.60m														

DRILLING TECHNIQUE			HOLE / CASING DIAMETER			CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS			WATER ADDED				
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	14.10	Cable Percussion			200 150	3.00 13.60	8.50 14.10	8.70 14.10	00:30 00:20	03/04/2023 11:00 03/04/2023 16:00 04/04/2023 14:00	4.60 8.00 13.90	4.60 7.40 12.50	20 20									

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS																
Name	Type	m AGL	Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strikes at 4.6m, 8m and 13.9m bgl.															
CP03_S	Standpipe	0.000	CP03_S		1.00	3.00	50																
CP03_D	Standpipe	0.000	CP03_D		8.00	14.10	50																


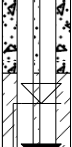



Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502995.40

Ground Level (mAOD)
33.53
Northing (OS mN)
245239.20

Start Date
27/03/2023
End Date
06/04/2023

Scale
1:50
Sheet 1 of 4

Progress		Samples		Tests and Measurements						Strata						Depth (Thickness)	Level	Install/ Backfill						
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result		Fracture Details		TCR SCR ROD		Description			Legend											
2023/03/27 17:25 8.00 / - 2023/03/28 08:51 8.00 / -		(B1) 0.40-0.50 (ES30) 0.45 (B2) 0.60-0.80 (ES31) 0.70		PID 0.45m <1ppm						MADE GROUND: Grass over soft dark brown sandy CLAY with frequent rootlets. Sand is fine to medium. MADE GROUND: soft greyish yellowish brown to light grey slightly sandy gravelly CLAY with frequent roots and rootlets and rare orange fine sand pockets (possible brick sand). Gravel is fine to medium subangular to rounded chert, quartzite and fossilised shells.						(0.20) 0.20		33.33						
		(B3) 1.00-1.20 (ES32) 1.10 (B4) 1.20-2.00 (SPTLS9) 1.20-1.65		PID 1.10m <1ppm SPT(S) 1.20m N=7 (1,1/1,1,2,3)												(1.80)								
		(B5) 2.00-3.00 (UT5) 2.00-2.45 (D11) 2.45-2.55														MADE GROUND: Very soft dark bluish grey to brown to black slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded chert and fossilised shells. Organic matter including roots and decaying wood with a strong organic odour. Occasional silt bands.						2.00 (1.00)		31.53
		(B6) 3.00-4.00 (SPTLS10) 3.00-3.45		SPT(S) 3.00m N=8 (1,2/1,2,2,3)						MADE GROUND: Soft bluish grey mottled with light brown slightly gravelly CLAY. Gravel is fine subangular fossilised shells. Frequent white silt pockets (possible gypsum).												3.00 (2.00)		30.53
		(B7) 4.00-5.00 (UT6) 4.00-4.45 (D12) 4.45-4.55														(5.00)								
		(B8) 5.00-6.50		SPT(S) 5.00m N=9 (2,1/2,2,2,3)												Stiff thinly laminated dark bluish grey mottled reddish brown CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]						5.00 (9.30)		28.53
		(B14) 6.50-8.00 (UT7) 6.50-6.95 (D13) 6.95-7.05																						
		(B16) 8.00-9.50 (SPTLS15) 8.00-8.45		SPT(S) 8.00m N=44 (7,8/9,10,12,13)																				
		(B17) 9.50-11.00																						
		DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS					FLUSH DETAILS				WATER ADDED			
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres		
0.00	15.30	Cable Percussion Rotary Core			200 150	6.20 15.30				27/03/2023 11:11	0.70	1.10												
INSTRUMENTS			WELL SCREEN DESIGN						REMARKS															
Name		Type	m AGL		Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 0.7m bgl.														
CP04_S CP04_D		Standpipe Standpipe piezometer	0.000 0.000		CP04_S CP04_D		1.00 28.50	5.00 29.50	50 19															

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502995.40

Ground Level (mAOD)
33.53
Northing (OS mN)
245239.20

Start Date
27/03/2023
End Date
06/04/2023

Scale
1:50
Sheet 2 of 4

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B18) 11.00-12.50 (D21) 11.00-11.50 (SPTLS21) 11.00-11.45	SPT(S) 11.00m N=40 (6,6/9,9,9,13) Depth water: dry			Stiff thinly laminated dark bluish grey mottled reddish brown CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]					
	(B19) 12.50-14.00 (UT25) 12.50-12.95 (UT8) 12.50-12.95 (D22) 12.95-13.05									
	(B20) 14.00-15.30 (SPTLS23) 14.00-14.45	SPT(S) 14.00m N>50 (7,9/10,15,25,5 for 25mm) Depth water: dry			Very stiff dark bluish grey very sandy CLAY. Sand is fine. [KELLAWAYS SAND]			14.30	19.23	
	(SPTLS24) 15.30-15.75 (C) 15.60-16.25	SPT(S) 15.30m N>50 (25 for 0mm/0 for 0mm) Depth water:13.50m			Interbedded strong light grey LIMESTONE and extremely weak grey SANDSTONE. [CORNBRAH FORMATION]			15.30	18.23	
	(C) 16.25-17.75			TCR 84 SCR 53 RQD 53	15.60 - 15.80m: Non-intact					
	(C) 17.75-19.20			TCR 100 SCR 0 RQD 0	16.25 - 16.35m: Non-intact			16.35	17.18	
	(C) 19.20-20.60 (D) 19.50			TCR 100 SCR 0 RQD 0	Dark grey silty fine to medium SAND. [CORNBRAH FORMATION]			(2.45)		
				TCR 96 SCR 14 RQD 8	Very stiff dark grey fissured CLAY with occasional shell fossilised fragments. Fissures are very closely spaced, smooth undulating planar. [FOREST MARBLE FORMATION]			18.80	14.73	
								(1.60)		

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	15.30	Cable Percussion Rotary Core			200	6.20				27/03/2023 11:11	0.70	1.10										
15.30	30.50				150	15.30																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP04_S	Standpipe	0.000	CP04_S	1.00	5.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 0.7m bgl.				
CP04_D	Standpipe piezometer	0.000	CP04_D	28.50	29.50	19					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502995.40

Ground Level (mAOD)
33.53
Northing (OS mN)
245239.20

Start Date
27/03/2023
End Date
06/04/2023

Scale
1:50
Sheet 3 of 4

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(C) 20.60-22.10				Very stiff dark grey fissured CLAY with occasional shell fossilised fragments. Fissures are very closely spaced, smooth undulating planar. [FOREST MARBLE FORMATION]			20.40	13.13	
	(CC3) 21.47			TCR 100 SCR 83 RQD 76	Strong light grey LIMESTONE. Fractures are closely to medium spaced, subhorizontal, clean, undulating rough. [FOREST MARBLE FORMATION] 20.40 - 20.85m: Shelly 20.85 - 20.95m: Extremely weak calcareous mudstone 20.95 - 21.50m: Occasional calcite pockets (up to 20x10x10mm)			(1.80)		
	(C) 22.10-23.60				21.75 - 22.20m: Very stiff dark grey clay with abundant shell fragments and occasional pyritic pockets (up to 10x10x5mm)			22.20	11.33	
				TCR 100 SCR 33 RQD 30	Very stiff yellow mottled grey CLAY. [BLISWORTH CLAY FORMATION]			(0.85)		
	(C) 23.60-25.10				Strong light grey LIMESTONE. Fractures are closely to medium spaced, clean, undulating rough. [BLISWORTH LIMESTONE FORMATION] 23.05 - 25.25m: Light grey and dark grey banded			23.05	10.48	
				TCR 100 SCR 100 RQD 100	24.60 - 25.20m: Frequent subvertical calcite veins (1-2mm thick)					
	(C) 25.10-26.60 (CC4) 25.10				25.20 - 25.25m: Recovered as firm grey clay 25.25 - 25.50m: Extremely weak calcareous mudstone					
				TCR 100 SCR 96 RQD 96	25.50 - 25.90m: Dark grey, shelly					
	(C) 26.60-28.10				27.15 - 28.70m: Shelly			(7.45)		
				TCR 100 SCR 100 RQD 95						
	(C) 28.10-29.60				28.70 - 29.05m: Extremely weak dark grey mudstone 29.05 - 29.10m: Recovered as firm dark grey clay					
				TCR 100 SCR 93 RQD 93						
	(C) 29.60-30.50 (CC1) 29.60				29.90 - 30.10m: Dark grey, shelly 30.10 - 30.50m: Very stiff dark grey clay with frequent light grey sand lenses					
				TCR 100 SCR 61 RQD 61						

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	15.30	Cable Percussion Rotary Core			200 150	6.20 15.30				27/03/2023 11:11	0.70	1.10										

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP04_S	Standpipe	0.000	CP04_S	1.00	5.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 0.7m bgl.				
CP04_D	Standpipe piezometer	0.000	CP04_D	28.50	29.50	19					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502995.40

Ground Level (mAOD)
33.53
Northing (OS mN)
245239.20

Start Date
27/03/2023
End Date
06/04/2023

Scale
1:50
Sheet 4 of 4

Progress		Samples		Tests and Measurements					Strata							Depth (Thickness)		Level		Install/ Backfill			
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD		Description					Legend							
											Strong light grey LIMESTONE. Fractures are closely to medium spaced, clean, undulating rough. [BLISWORTH LIMESTONE FORMATION]							30.50		3.03			

ANNEX 3.3

CORE ZONE EXPLORATORY HOLE LOGS



Start Date
11/04/2023
End Date
12/04/2023

Clays become very stiff

REMARKS

A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m
Terminated due to refusal. Groundwater strike at 9.7m bgl.


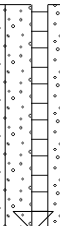
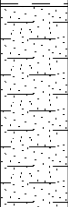
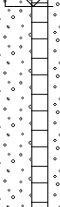
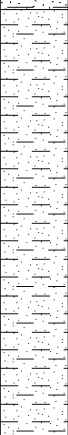

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502658.80

Ground Level (mAOD)
33.03
Northing (OS mN)
244469.60

Start Date
11/04/2023
End Date
12/04/2023

Scale
1:50
Sheet 2 of 2

Progress		Samples		Tests and Measurements					Strata							Depth (Thickness)		Level		Install/ Backfill			
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR RGD		Description					Legend							
2023/04/12 12:00 - / -				SPT(S) 11.00m N>50 (3,13/27,23,0 for 0mm) Depth water: dry							Firm to Stiff becoming very stiff dark grey CLAY with frequent fossilised shells and occasional pockets of light grey silt. [PETERBOROUGH MEMBER]							11.60		21.43			
		(D20) 11.00 (SPTLS22) 11.00-11.25																					
		(B37) 11.60-11.90									Very dense dark brownish grey slightly clayey fine SAND. [KELLAWAYS SAND]												
		(D39) 12.00																					
		(SPTLS42) 12.50-12.82		SPT(S) 12.50m N>50 (6,13/18,23,9 for 18mm) Depth water:3.20m														(2.50)					
		(B40) 13.00-13.30 (D41) 13.00																					
		(D38) 14.00 (SPTLS43) 14.00-14.38 (B44) 14.10-14.90		SPT(S) 14.00m N>50 (5,11/13,16,20,1 for 2mm) Depth water:4.60m							Very stiff dark grey slightly sandy CLAY with frequent fossilised shells. [KELLAWAYS CLAY]							14.10		18.93			
		(D45) 15.00																					
		(D46) 15.50-15.87 (SPTLS56) 15.50-15.87		SPT(S) 15.50m N>50 (4,7/15,18,17 for 68mm) Depth water:7.90m														(2.90)					
		(B47) 16.00-16.50 (B59) 16.00-16.50 (D48) 16.00 (D58) 16.00																					
				SPT(S) 17.00m N>50 (25 for 0mm/50 for 0mm) Depth water:16.40m														17.00		16.03			
DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED			
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	17.00	Cable Percussion			200 150	3.00 16.90				11/04/2023 14:40	11.60	9.70	20	3.00									
INSTRUMENTS				WELL SCREEN DESIGN						REMARKS													
Name		Type	m AGL	Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 9.7m bgl.														
CP08_S CP08_D		Standpipe Standpipe	0.000 0.000	CP08_S CP08_D		2.00 10.00	3.00 13.00	50 50															



Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
17.00m

Logged By
TL

Checked By
SF









Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503084.00

Ground Level (mAOD)
35.25
Northing (OS mN)
244274.60

Start Date
13/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 1 of 3

Progress			Samples			Tests and Measurements					Strata							Depth (Thickness)	Level	Install/ Backfill		
Date / Time Casing / DTW			Type - Depth (m)			Type - Depth (m) - Result			Fracture Details		TCR SCR ROD		Description				Legend					
			(ES38) 0.50-0.60			SPT(S) 1.20m N=12 (2,3/3,3,3,3) Depth water: -					TOPSOIL. Loose light brown silty SAND with occasional rootlets. Sand is fine to medium					(0.30)	34.95					
											Soft light orangish brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is subrounded fine to medium chert. [HEAD DEPOSIT]					(0.30)						
																(0.90)						
																1.20						
																(0.40)						
																1.60						
																(1.40)						
			(SPTLS1) 1.20-1.65 (ES39) 1.50-1.60 (B21) 1.60-2.00 (B22) 2.00-3.00 (UT14) 2.00-2.45 (D2) 2.45-2.55			SPT(S) 3.00m N=11 (2,3/3,3,2,3) Depth water: -					Soft yellowish brown sandy CLAY with occasional fine orangish brown sand pockets. [HEAD DEPOSIT]					1.20	34.05					
											Firm dark grey mottled brown sandy CLAY with occasional fossilised shell fragments. [WEATHERED PETERBOROUGH MEMBER]					(0.40)						
																1.60						
																(1.40)						
																3.00						
																(2.20)						
																(2.20)						
			(B23) 3.00-4.00 (SPTLS39) 3.00-3.45 (24) 4.00-5.00 (UT15) 4.00-4.45 (D3) 4.45-4.55			SPT(S) 5.00m N=33 (4,5/5,8,10,10) Depth water: -					Firm becoming stiff dark grey slightly sandy CLAY with frequent white silt pockets and fossilised shells. [PETERBOROUGH MEMBER]					3.00	32.25					
																(2.20)						
																5.20						
																(5.80)						
																(5.80)						
			(B25) 5.00-6.50 (SPTLS4) 5.00-5.45 (B26) 6.50-8.00 (UT16) 6.50-6.95 (D5) 6.95-7.05 (D6) 6.95-7.05			SPT(S) 8.00m N=31 (4,4/5,5,8,13) Depth water: -					Stiff thinly laminated dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]					5.20	30.05					
																(5.80)						
DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS					FLUSH DETAILS				WATER ADDED			
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	21.45	Cable Percussion			200 150	11.00 19.50					17.00	14.90	20									
INSTRUMENTS			WELL SCREEN DESIGN							REMARKS												
Name		Type	m AGL	Well Name			From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 17m bgl												
CP09		Standpipe	0.000	CP09			17.00	16.70	19													

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503084.00

Ground Level (mAOD)
35.25
Northing (OS mN)
244274.60

Start Date
13/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 2 of 3

Progress		Samples		Tests and Measurements				Strata								Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result		Fracture Details		TCR SCR RGD		Description				Legend				
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Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
21.00m

Logged By
TL

Checked By
SF

Scale
1:50

Sheet 3 of 3

Progress	Samples	Tests and Measurements			Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR ROD	Description	Legend			
	(SPTLS37) 21.00-21.45	SPT(S) 21.00m N>50 (11,14 for 70mm/14,16,15,5 for 30mm) Depth water:20.00m			Very dense dark grey mottled light grey clayey SAND. Sand is fine to medium. [KELLAWAYS SAND]		21.00	14.25	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	21.45	Cable Percussion			200 150	11.00 19.50					17.00	14.90	20									

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS
Name	Type	m AGL	Well Name	From	To	Dia.	
CP09	Standpipe	0.000	CP09	17.00	16.70	19	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 17m bgl



Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502717.90

Ground Level (mAOD)
33.10
Northing (OS mN)
244129.70

Start Date
04/04/2023
End Date
12/04/2023

Scale
1:50
Sheet 1 of 3

Progress		Samples		Tests and Measurements						Strata						Depth (Thickness)	Level	Install/ Backfill					
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD		Description				Legend								
		(BB1) 0.00-1.20 (D1) 0.00-1.20 (DD1) 0.00-1.20 (ESES1) 0.20		SPT(S) 1.20m N=17 (3,4/4,3,5,5)							TOPSOIL. Soft dark brown slightly sandy CLAY with frequent rootlets and rare medium to coarse gravel of chert. Soft to firm friable yellowish brown sandy CLAY with rare angular to subangular fine gravel of chert. Sand is fine to coarse. [HEAD DEPOSIT]						0.10	33.00					
		(SPTLS1) 1.20-1.65															(1.55)						
		(BB2) 1.65-2.00 (D2) 1.65-2.00 (DD2) 1.65-2.00 (BB3) 2.00-3.00 (D3) 2.00-3.00 (DD3) 2.00-3.00 (UT5) 2.00-2.45															1.65	31.45					
		(BB4) 3.00-4.00 (D4) 3.00-4.00 (DD4) 3.00-4.00 (SPTLS39) 3.00-3.45															(1.35)						
		(BB5) 4.00-5.00 (D5) 4.00-5.00 (DD5) 4.00-5.00 (UT6) 4.00-4.45															3.00	30.10					
		(BB6) 5.00-6.50 (DD6) 5.00-6.50 (SPTLS3) 5.00-5.45															(2.00)						
		(BB7) 6.50-8.00 (BB7) 6.50-8.00 (D7) 6.50-8.00 (DD7) 6.50-8.00 (UT7) 6.50-6.95															5.00	28.10					
		(BB8) 8.00-9.50 (D8) 8.00-9.50 (DD8) 8.00-9.50 (SPTLS9) 8.00-8.45															(1.00)						
		(BB9) 9.50-11.00 (D9) 9.50-11.00 (DD9) 9.50-11.00 (UT8) 9.50-9.95															6.00	27.10					
																	SPT(S) 8.00m N=30 (6,6/6,7,7,10)						
DRILLING TECHNIQUE		HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS			WATER ADDED					
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	18.50	18.50 30.00	Cable Percussion Rotary Core			200 150	5.00 16.70				05/04/2023 00:00	13.80	11.50	20	6.00								
INSTRUMENTS				WELL SCREEN DESIGN						REMARKS													
Name		Type	m AGL	Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 13.8m bgl.														
CP10_S CP10_D		Standpipe Standpipe piezometer	0.000 0.000	CP10_S CP10_D		11.80 28.00	14.80 29.00	50 19															

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502717.90

Ground Level (mAOD)
33.10
Northing (OS mN)
244129.70

Start Date
04/04/2023
End Date
12/04/2023

Scale
1:50
Sheet 2 of 3

Progress	Samples	Tests and Measurements			Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend			
	(BB10) 11.00-12.50 (D10) 11.00-12.50 (DD10) 11.00-12.50 (SPTLS19) 11.00-11.45	SPT(S) 11.00m N=41 (5,7/8,10,10,13)			Stiff to very stiff thinly laminated dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER] <i>Clays become very stiff</i>				
	(BB11) 12.50-13.00 (DD11) 12.50-13.00 (UT19) 12.50-12.95								
	(B12) 13.80-15.50 (BB12) 13.80-15.50 (SPTLS40) 13.80-14.25	SPT(S) 13.80m N>50 (10,10/15,15,10,10 for 65mm)			Very dense light grey SAND. Sand is fine. Unit is wet saturated. [KELLAWAYS SAND] <i>Band of strong dark grey fossiliferous limestone (14.2m-14.3m)</i>		13.80	19.30	
	(BB13) 15.50-17.00 (D13) 15.50-17.00 (DD13) 15.50-17.00 (SPTLS41) 15.50-15.95	SPT(S) 15.50m N>50 (10,15/15,15,15,5 for 25mm)			Very dense dark grey very clayey SAND. Sand is fine. Unit is wet. [KELLAWAYS SAND]		(1.70)		
	(B14) 17.00-18.50 (BB14) 17.00-18.50 (D14) 17.00-18.50 (DD14) 17.00-18.50 (UT42) 17.00-17.45				Very stiff thinly laminated dark grey CLAY with frequent fossilised shells. [KELLAWAYS CLAY]		15.50	17.60	
	(ES36) 18.50 (SPTLS36) 18.50	SPT(S) 18.50m N>50 (25 for 60mm/50 for 10mm)			Strong light grey LIMESTONE. Fractures are closely to medium spaced subhorizontal clay infilled. [CORNBRASH FORMATION]		(1.50)		
	(C) 18.90-20.40				<i>18.90 - 19.20m: Shelly</i>		17.00	16.10	
	(CC9) 19.57		If: min:60 av:220 max:520	TCR 86 SCR 74 RQD 74			(2.00)		

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	18.50	Cable Percussion Rotary Core			200	5.00				05/04/2023 00:00	13.80	11.50	20	6.00								
18.50	30.00				150	16.70																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS														
Name	Type	m AGL	Well Name	From	To	Dia.															
CP10_S	Standpipe	0.000	CP10_S	11.80	14.80	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 13.8m bgl.														
CP10_D	Standpipe piezometer	0.000	CP10_D	28.00	29.00	19															

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502717.90

Ground Level (mAOD)
33.10
Northing (OS mN)
244129.70

Start Date
04/04/2023
End Date
12/04/2023

Scale
1:50
Sheet 3 of 3

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(C) 20.40-21.70				Strong light grey LIMESTONE. Fractures are closely to medium spaced subhorizontal clay infilled. [CORNBRAH FORMATION]			20.50	12.60	
	(C14) 20.80-21.30				20.25 - 20.35m: Very stiff dark grey clay with frequent shell fragments					
				TCR 63 SCR 5 RQD 0	Stiff dark grey fissured CLAY with abundant fossilised shell fragments and frequent pyritic pockets (up to 8x5x5mm). Fissures are closely spaced, subhorizontal, undulating smooth.			(1.20)		
	(C) 21.70-22.80				[FOREST MARBLE FORMATION]			21.70	11.40	
				TCR 100 SCR 0 RQD 0	Very stiff yellowish brown and grey CLAY. [BLISWORTH CLAY FORMATION]			(0.90)		
	(C) 22.80-24.10				Very stiff greyish black fissured CLAY with frequent fossilised shell fragments. Fissures are very closely spaced, subhorizontal, undulating smooth.			22.60 (0.20) 22.80	10.50	
				TCR 100 SCR 70 RQD 70	[BLISWORTH CLAY FORMATION] Strong light grey LIMESTONE. Fractures are closely to medium spaced, subhorizontal, clean, undulating rough. [BLISWORTH LIMESTONE FORMATION] 22.80 - 23.80m: Light grey and dark grey banded 23.80 - 24.15m: Non-intact, extremely weak, shelly				10.30	
	(C) 24.10-25.60				24.35 - 24.45m: Very stiff dark grey calcareous clay with abundant shell fragments 24.45 - 24.85m: Shelly					
				TCR 100 SCR 83 RQD 83						
	(CC11) 25.13									
	(C) 25.60-27.10									
				TCR 86 SCR 74 RQD 56						
	(C) 27.10-28.50									
				TCR 100 SCR 85 RQD 75	27.20 - 28.20m: Shelly 27.65 - 27.75m: Non-intact 27.90 - 28.00m: Non-intact					
	(C) 28.50-30.00 (C12) 28.50-29.00 (CC12) 28.50									
				TCR 100 SCR 43 RQD 36	29.00 - 29.15m: Dark grey, shelly Very stiff dark grey CLAY with abundant fossilised shell fragments and frequent pockets organic matter (up to 5x5x5mm). [RUTLAND FORMATION]			29.15	3.95	
								(0.85)		
								30.00	3.10	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	18.50	Cable Percussion Rotary Core			200	5.00				05/04/2023 00:00	13.80	11.50	20	6.00								
18.50	30.00				150	16.70																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP10_S	Standpipe	0.000	CP10_S	11.80	14.80	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strike at 13.8m bgl.				
CP10_D	Standpipe piezometer	0.000	CP10_D	28.00	29.00	19					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503137.70

Ground Level (mAOD)
36.25
Northing (OS mN)
244088.30

Start Date
11/04/2023
End Date
13/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(BB1) 0.10-0.80 (ESES1) 0.10				TOPSOIL. Crops over soft dark brown slightly sandy CLAY, with frequent rootlets. Soft light yellowish brown slightly sandy CLAY with Rare subangular to subrounded fine to medium gravels of chert. Sand is fine to coarse. [HEAD DEPOSIT]			(0.20) 0.20	36.05	
	(BB2) 0.80-1.20 (ESES2) 0.80							(1.00)		
	(B3) 1.20-1.65 (BB3) 1.20-1.65 (D43) 1.20-1.65 (SPTLS42) 1.20-1.65	SPT(S) 1.20m N=6 (1,1/1,1,2,2)			Soft to firm light grey slightly silty CLAY with frequent fragmented white fossilised shells and frequent pockets of light brown Sand. Sand is fine to coarse. [HEAD DEPOSIT]			1.20	35.05	
	(UT3) 2.00-2.45							(1.30)		
	(D44) 2.80				Firm dark brownish grey silty CLAY with frequent fragmented white fossilised shells. [WEATHERED PETERBOROUGH MEMBER]			2.50 (0.30)	33.75	
	(BB4) 3.00-3.45	SPT(S) 3.00m N=9 (1,2/2,2,2,3)			Firm yellowish brownish grey slightly sandy CLAY with occasional white silt pockets. Sand is fine. [WEATHERED PETERBOROUGH MEMBER]			2.80	33.45	
	(UT7) 4.00-4.45							(2.20)		
	(BB5) 5.00-5.45 (D8) 5.00-5.45 (SPTLS12) 5.00-5.45	SPT(S) 5.00m N=17 (2,3/3,4,5,5)			Firm to stiff dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]			5.00	31.25	
	(BB6) 6.00-6.45									
	(UT11) 6.50-6.95									
	(BB7) 7.50-7.95									
	(BBy8) 8.00-8.45 (D14) 8.00-8.45 (SPTLS16) 8.00-8.45	SPT(S) 8.00m N=26 (2,4/6,6,7,7)								
	(BB9) 9.00-9.45									
	(UT17) 9.50-9.95									

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	20.00	Cable Percussion			200 150	3.00 17.60				12/04/2023 16:00	12.90 17.80	6.80		10.50 17.80								

INSTRUMENTS			WELL SCREEN DESIGN			REMARKS														
Name	Type	m AGL	Well Name	From	To	Dia.														
CP11	Standpipe	0.000	CP11	14.00	20.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. Groundwater strikes at 12.9m and 17.8m bgl.													





Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503137.70

Ground Level (mAOD)
36.25
Northing (OS mN)
244088.30

Start Date
11/04/2023
End Date
13/04/2023

Scale
1:50
Sheet 2 of 2

Progress		Samples		Tests and Measurements					Strata							Depth (Thickness)		Level		Install/ Backfill		
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD	Description						Legend						
		(B18) 10.50-10.95		SPT(S) 11.00m N=35 (6,7/7,7,9,12)						Firm to stiff dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]							(10.95)					
		(D19) 11.00-11.45 (SPTLS20) 11.00-11.45																				
		(B21) 12.00-12.45																				
		(UT22) 12.50-12.95																				
		(B23) 13.50-15.95																				
		(D24) 14.00-14.45 (SPTLS25) 14.00-14.45																				
		(B33) 15.00-15.45																				
		(UT34) 15.50-15.95																				
		(B35) 16.50-16.95																				
		(B42) 17.00-17.45 (D36) 17.00-17.45 (SPTLS37) 17.00-17.45																				
		(B38) 18.00-18.45																				
		(B40) 18.50-18.95 (D43) 18.50-18.95 (SPTLS39) 18.50-18.95																				
(B42) 19.50-19.95		SPT(S) 17.00m N>50 (10,11/24,26,0 for 0mm)						Very stiff grey silty CLAY with occasional pockets of light grey fine sand. [KELLAWAYS SAND]							15.95 20.30							
(D44) 20.00-20.45 (SPTLS41) 20.00-20.45																						



Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
20.00m

Logged By
TL

Checked By
SF






Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502467.40

Ground Level (mAOD)
34.59
Northing (OS mN)
244032.80

Start Date
17/04/2023
End Date
19/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
2023/04/17 12:39 - / -	(B1) 0.00-0.40 (D2) 0.00-0.40 (ES3) 0.00-0.40 (B) 0.40 (B4) 0.40-1.20 (D5) 0.40-1.20 (ES6) 0.40-1.20	PID 0.20m <1ppm			TOPSOIL. Grass over soft dark orangish brown very sandy gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse chert.			(0.40)	34.19	
		PID 1.00m <1ppm			Medium dense light orangish brown clayey very gravelly fine to coarse SAND with rare rootlets and rare light grey very clayey fine sand pockets. Gravel is subangular to subrounded fine to coarse chert. [HEAD DEPOSIT]			0.40		
	(B11) 1.20-2.00 (SPTLS8) 1.20-1.65	SPT(S) 1.20m N=11 (2,2/2,2,3,4)						(1.50)		
	(B12) 2.00-3.00 (ES7) 2.00-2.45 (UT14) 2.00-2.45 (D9) 2.45-2.55	PID 2.00m <1ppm			Soft to firm light grey and greyish brown CLAY with frequent fossilised shells. [WEATHERED PETERBOROUGH MEMBER]			1.90	32.69	
								(1.70)		
	(B13) 3.00-4.00 (SPTLS10) 3.00-3.45	SPT(S) 3.00m N=10 (2,3/2,3,2,3)						3.60	30.99	
	(B18) 4.00-5.00 (UT15) 4.00-4.45 (D16) 4.45-4.55				Stiff to very stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER] <i>stiff clays are slightly friable 4-5.3m bgl</i>			(1.70)		
								5.30	29.29	
	(B19) 5.00-6.50 (SPTLS17) 5.00-5.45	SPT(S) 5.00m N=31 (5,6/6,8,8,9)			Very stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]					
	(B20) 6.50-8.00 (UT40) 6.50-6.95									
2023/04/18 11:01 - / 3.20	(B23) 8.00-9.50 (SPTLS21) 8.00-8.45	SPT(S) 8.00m N=33 (4,5/8,8,8,9)								
	(B24) 9.50-11.00 (UT22) 9.50-9.95				<i>shell frequency decreases to occasional 10-11.5m bgl</i>					

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	20.00	Cable Percussion			200 150	11.00 18.00				18/04/2023 14:41 18/04/2023 16:21	9.50 15.50	9.50 13.30										

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP12_S	Standpipe	0.000	CP12_S	0.40	1.90	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Water in well on start of second day possible from shallow sands. Terminated due to refusal. Groundwater strikes at 9.5m and 15.5m bgl.				
CP12_D	Standpipe piezometer	0.000	CP12_D	15.50	17.00	19					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502467.40

Ground Level (mAOD)
34.59
Northing (OS mN)
244032.80

Start Date
17/04/2023
End Date
19/04/2023

Scale
1:50
Sheet 2 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B26) 11.00-12.50 (SPTLS25) 11.00-11.45	SPT(S) 11.00m N=31 (4,6/7,8,8,8)			Very stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]					
	(B29) 12.50-14.00 (UT27) 12.50-12.95				band of occasional pyrite 12-12.5m bgl			(10.20)		
	(D28) 12.95-13.05									
	(B31) 14.00-15.50 (SPTLS30) 14.00-14.45	SPT(S) 14.00m N=47 (6,8/10,10,12,15)			band of frequent pyrite 15-15.1m bgl					
	(B33) 15.50-17.00 (SPTLS32) 15.50-15.95	SPT(S) 15.50m N>50 (12,12/15,25,10 for 70mm) Depth water:13.50m			Very dense dark grey very clayey fine SAND with occasional fossilised shells. [KELLAWAYS SAND]			15.50	19.09	
	(B37) 17.00-18.50 (SPTLS34) 17.00-17.45	SPT(S) 17.00m N>50 (12,13 for 60mm/15,15,20 for 55mm) Depth water:14.00m			Very stiff dark grey very sandy CLAY with rare fossilised shells. Sand is fine. [KELLAWAYS SAND]			(1.50)		
	(B38) 18.50-20.00 (UT35) 18.50-18.95				Very stiff thinly laminated dark bluish grey CLAY with occasional fossilised shells. [KELLAWAYS CLAY]			17.00	17.59	
	(D36) 18.95-19.05							(1.50)		
	(SPTLS39) 20.00-20.45	SPT(S) 20.00m N>50 (5,8/50 for 70mm)						18.50	16.09	
								(1.50)		
2023/04/19 10:31 - / -								20.00	14.59	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	20.00	Cable Percussion			200 150	11.00 18.00				18/04/2023 14:41 18/04/2023 16:21	9.50 15.50	9.50 13.30										

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS
Name	Type	m AGL	Well Name	From	To	Dia.	
CP12_S	Standpipe	0.000	CP12_S	0.40	1.90	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Water in well on start of second day possible from shallow sands. Terminated due to refusal. Groundwater strikes at 9.5m and 15.5m bgl.
CP12_D	Standpipe piezometer	0.000	CP12_D	15.50	17.00	19	

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502826.50

Ground Level (mAOD)
32.74
Northing (OS mN)
243825.10

Start Date
05/04/2023
End Date
11/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(BB1) 0.00-1.20				TOPSOIL. Soft dark brown slightly sandy CLAY with frequent rootlets.			0.10	32.64	
	(ES37) 0.40	PID 0.40m <1ppm			Soft yellowish/orangish brown sandy CLAY with rare angular to subangular fine to medium gravel of chert. Sand is fine to coarse.			(1.10)		
	(UT2) 1.20-1.65							1.20	31.54	
	(D27) 1.80				Soft yellowish brown sandy CLAY with occasional light grey sand pockets. Sand is fine to medium.					
	(B2) 2.00-2.45 (BB2) 2.00-2.45 (D28) 2.00-2.45 (SPTLS7) 2.00-2.45	SPT(S) 2.00m N=6 (1,1/1,1,2,2) Depth water: Damp			[HEAD DEPOSIT]			(1.80)		
	(UT4) 3.00-3.45				Firm to stiff locally friable thinly laminated dark grey CLAY with frequent fossilised shells.			3.00	29.74	
					Clays are friable					
	(BB3) 4.00-4.45 (D29) 4.00-4.45 (SPTLS8) 4.00-4.45	SPT(S) 4.00m N=25 (3,4/6,7,5,7) Depth water: Dry								
	(UT6) 5.00-5.45							(4.50)		
	(BB4) 6.00-6.45									
	(BB5) 6.50-6.95 (D30) 6.50-6.95 (SPTLS11) 6.50-6.95	SPT(S) 6.50m N=26 (3,4/4,6,8,8) Depth water: Dry								
	(BB6) 7.50-7.95							7.50	25.24	
	(UT12) 8.00-8.45				Very stiff thinly laminated dark grey CLAY with frequent fossilised shells					
	(BB7) 9.00-9.45				[PETERBOROUGH MEMBER]					
	(BB8) 9.50-9.95 (D31) 9.50-9.95 (SPTLS16) 9.50-9.95	SPT(S) 9.50m N=32 (4,6/6,8,8,10) Depth water: Dry								

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	17.00	Cable Percussion			200 150	1.70 16.70	16.80	17.00	00:30	06/04/2023 10:00	16.80	15.90	20	16.70								

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP13_S	Standpipe	0.000	CP13_S	1.00	3.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 16.8m bgl.				
CP13_D	Standpipe	0.000	CP13_D	13.00	16.80	50					




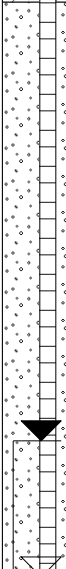


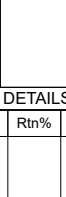
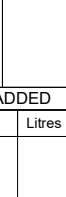
Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502826.50

Ground Level (mAOD)
32.74
Northing (OS mN)
243825.10

Start Date
05/04/2023
End Date
11/04/2023

Scale
1:50
Sheet 2 of 2

Progress	Samples	Tests and Measurements							Strata							Depth (Thickness)	Level	Install/ Backfill					
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result				Fracture Details		TCR SCR ROD	Description					Legend									
	(BB9) 10.50-10.95	SPT(S) 12.50m N=44 (4,8/11,10,11,12) Depth water:9.20m							Very stiff thinly laminated dark grey CLAY with frequent fossilised shells [PETERBOROUGH MEMBER]							(6.30)							
	(UT18) 11.00-11.45								Dense dark grey clayey fine to medium SAND. [KELLAWAYS SAND]												13.80	18.94	
	(BB10) 12.00-12.45																						
	(B11) 12.50-12.95 (BB11) 12.50-12.95 (D32) 12.50-12.95 (SPTLS19) 12.50-12.95																						
	(BB12) 13.50-13.95	SPT(S) 15.50m N=32 (4,5/6,7,8,11) Depth water: Dry							Dense dark grey clayey fine to medium SAND. [KELLAWAYS SAND]							(3.00)							
	(UT23) 14.00-14.45																						
	(B24) 15.00-15.45																						
	(B25) 15.50-15.95 (D33) 15.50-15.95 (SPTLS34) 15.50-15.95																						
	(B26) 16.50-16.95	SPT(C) 16.80m N>50 (25 for 30mm/50 for 30mm) Depth water:15.90m SPT(C) 17.00m N>50 (25 for 10mm/50 for 10mm) Depth water:15.80m							Strong bluish grey coarse grained LIMESTONE. [CORNBRASH FORMATION]							16.80 (0.20) 17.00	15.94 15.74						
	(SPTLS35) 16.80-17.25 (SPTLS36) 17.00-17.45																						
DRILLING TECHNIQUE		HOLE / CASING DIAMETER			CHISELLING			WATER OBSERVATIONS					FLUSH DETAILS			WATER ADDED							
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	17.00	Cable Percussion			200 150	1.70 16.70	16.80	17.00	00:30	06/04/2023 10:00	16.80	15.90	20	16.70									
INSTRUMENTS			WELL SCREEN DESIGN						REMARKS														
Name		Type	m AGL		Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 16.8m bgl.													
CP13_S		Standpipe	0.000		CP13_S		1.00	3.00	50														
CP13_D		Standpipe	0.000		CP13_D		13.00	16.80	50														



Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
17.00m

Logged By
TL

Checked By
SF

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502543.10

Ground Level (mAOD)
34.07
Northing (OS mN)
243715.00

Start Date
11/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 1 of 4

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B6) 0.10-0.80 (D7) 0.10-0.80 (ES44) 0.10	PID 0.10m <1ppm			TOPSOIL. Soft dark brown sandy CLAY with frequent rootlets. Sand is fine to coarse. Soft light yellowish brown sandy CLAY with rare angular to subrounded fine to medium gravel of chert. [HEAD DEPOSIT]			(0.20) 0.20	33.87	
	(B8) 0.80-1.20 (D9) 0.80-1.20 (ES45) 0.80	PID 0.80m <1ppm						(1.00)		
	(B10) 1.20-2.00 (D11) 1.20-2.00 (SPTLS1) 1.20-1.65	SPT(S) 1.20m N=9 (1,2/1,2,3,3) Depth water: 0.80m			Soft light brown slightly sandy slightly gravelly CLAY with frequent light grey clay pockets. Sand is fine to coarse. Gravel is angular to subrounded fine to medium chert. [HEAD DEPOSIT]			1.20 (1.00)	32.87	
	(B12) 2.00-3.00 (D13) 2.00-3.00 (UT42) 2.00-2.45 (D43) 2.45-2.55				Firm dark greyish brown slightly sandy CLAY with frequent fossilised shells and occasional pockets of light brown silt and sand. Sand is fine. [WEATHERED PETERBOROUGH MEMBER]			2.20 (0.80)	31.87	
	(B14) 3.00-4.00 (D15) 3.00-4.00 (SPTLS2) 3.00-3.45	SPT(S) 3.00m N=12 (1,2/3,3,3,3) Depth water: Dry			Firm to very stiff frequent fossilised shells and occasional light grey silt pockets. [PETERBOROUGH MEMBER]			3.00	31.07	
	(B17) 4.00-5.00 (UT36) 4.00-4.45 (D37) 4.45-4.55									
	(B18) 5.00-6.50 (D19) 5.00-6.50 (SPTLS3) 5.00-5.45	SPT(S) 5.00m N=17 (3,4/4,4,4,5) Depth water: Dry								
	(B20) 6.50-8.00 (D21) 6.50-8.00 (UT34) 6.50-6.95 (D35) 6.95-7.05							(8.00)		
	(B22) 8.00-9.50 (D23) 8.00-9.50 (SPTLS4) 8.00-8.45	SPT(S) 8.00m N=32 (4,5/6,8,8,10) Depth water: Dry								
	(B24) 9.50-11.00 (D25) 9.50-11.00 (UT38) 9.50-9.95 (D39) 9.95-10.05									

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	18.80	Cable Percussion			200	3.00																
18.80	30.25	Rotary Core			150	16.00																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP14_S	Standpipe	0.000	CP14_S	11.00	17.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. No groundwater strikes encountered.				
CP14_D	Standpipe piezometer	0.000	CP14_D	28.30	29.30	19					

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502543.10

Ground Level (mAOD)
34.07
Northing (OS mN)
243715.00

Start Date
11/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 2 of 4

Progress	Samples	Tests and Measurements			Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend			
	(B26) 11.00-12.50 (D27) 11.00-12.50 (SPTLS5) 11.00-11.45	SPT(S) 11.00m N>50 (5,6/8,11,12,19 for 65mm) Depth water: Dry			Firm to very stiff frequent fossilised shells and occasional light grey silt pockets. [PETERBOROUGH MEMBER]		11.00	23.07	
	(B28) 12.50-14.00 (D29) 12.50-14.00 (UT40) 12.50-12.95 (D41) 12.95-13.05				Very stiff dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]		(3.00)		
	(B30) 14.00-15.50 (D31) 14.00-15.50 (SPTLS45) 14.00-14.45	SPT(S) 14.00m N>50 (11,14 for 70mm/15,15,20 for 60mm) Depth water: 11.00m			Very dense dark grey clayey fine SAND with rare fossilised shells. [KELLAWAYS SAND]		14.00	20.07	
	(B33) 15.50-17.00 (D34) 15.50-17.00 (UT46) 15.50-15.95				Very stiff dark bluish grey slightly sandy CLAY with rare fossilised shells. Sand is fine. [KELLAWAYS SAND]		(1.50)		
	(B48) 17.00-18.50 (SPTLS47) 17.00-17.45	SPT(S) 17.00m N=44 (10,8/10,10,10,14) Depth water: Dry					15.50	18.57	
	(UT49) 18.50-18.95 (C) 18.80-20.30						(3.30)		
					Very stiff dark grey CLAY. [KELLAWAYS CLAY] 18.80 - 18.90m: Frequent shell fragments		18.80	15.27	
					Strong light grey LIMESTONE. Fractures are medium spaced, subhorizontal, clean, undulating rough. [CORNBRAH FORMATION]		(0.30)	14.97	
				TCR 100 SCR 83 RQD 83			(1.55)		

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	18.80	Cable Percussion Rotary Core			200	3.00																
18.80	30.25				150	16.00																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS
Name	Type	m AGL	Well Name	From	To	Dia.	
CP14_S	Standpipe	0.000	CP14_S	11.00	17.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. No groundwater strikes encountered.
CP14_D	Standpipe piezometer	0.000	CP14_D	28.30	29.30	19	

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502543.10

Ground Level (mAOD)
34.07
Northing (OS mN)
243715.00

Start Date
11/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 3 of 4

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(C) 20.30-21.85		If: min:0 av:350 max:600		Strong light grey LIMESTONE. Fractures are medium spaced, subhorizontal, clean, undulating rough. [CORNBRAH FORMATION]			20.65	13.42	
				TCR 100 SCR 0 RQD 0	20.35 - 20.65m: Non-intact, locally calcareous clay					
					Very stiff red and yellow mottled dark grey CLAY. [FOREST MARBLE FORMATION]					
					21.00 - 23.00m: Yellow mottled dark grey					
	(C) 21.85-23.35							(2.35)		
	(D) 22.00									
				TCR 100 SCR 0 RQD 0						
					Extremely weak dark grey MUDSTONE. [BLISWORTH CLAY FORMATION]			23.00 (0.35)	11.07	
	(C) 23.35-24.85				Strong light grey LIMESTONE. Fractures are closely to medium spaced, subhorizontal, clean, undulating rough. [BLISWORTH LIMESTONE FORMATION]			23.35	10.72	
				TCR 100 SCR 100 RQD 100	23.55 - 23.90m: Dark grey, shelly					
	(CC10) 24.14 (CC14) 24.14									
	(C) 24.85-26.40				24.80 - 25.25m: Shelly					
				TCR 100 SCR 100 RQD 100	25.45 - 25.50m: Medium strong, partially weathered					
			If: min:170 av:300 max:590					(5.50)		
	(C) 26.40-27.90				26.15 - 26.50m: Shelly					
				TCR 100 SCR 100 RQD 100	At 27.23m: Clay infilled fracture					
	(CC13) 27.75 (C) 27.90-29.40				28.15 - 28.23m: Strong grey sandstone					
				TCR 100 SCR 56 RQD 53	28.55 - 28.85m: Weak dark grey mudstone, locally shelly, locally non-intact.			28.85	5.22	
					Very stiff grey CLAY with frequent pockets of peat (up to 10x10x10mm) with localised pyrite crystals. [RUTLAND FORMATION]					
	(D) 29.10				29.35 - 29.45m: Abundant shell fragments					
	(C) 29.40-30.25				29.40 - 30.25m: Locally firm (drilling induced)			(1.45)		
				TCR 100 SCR 0 RQD 0	29.45 - 30.25m: Frequent light grey sand lenses					

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	18.80	Cable Percussion			200	3.00																
18.80	30.25	Rotary Core			150	16.00																

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS
Name	Type	m AGL	Well Name	From	To	Dia.	
CP14_S	Standpipe	0.000	CP14_S	11.00	17.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated at scheduled depth. No groundwater strikes encountered.
CP14_D	Standpipe piezometer	0.000	CP14_D	28.30	29.30	19	

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502543.10

Ground Level (mAOD)
34.07
Northing (OS mN)
243715.00

Start Date
11/04/2023
End Date
14/04/2023

Scale
1:50

Sheet 4 of 4

Progress	Samples	Tests and Measurements			Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend			
					Very stiff grey CLAY with frequent pockets of peat (up to 10x10x10mm) with localised pyrite crystals. [RUTLAND FORMATION]		30.30	3.77	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS							FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	18.80	Cable Percussion			200	3.00																	
18.80	30.25	Rotary Core			150	16.00																	

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS
Name	Type	m AGL	Well Name	From	To	Dia.	
CP14_S	Standpipe	0.000	CP14_S	11.00	17.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m
CP14_D	Standpipe piezometer	0.000	CP14_D	28.30	29.30	19	Terminated at scheduled depth. No groundwater strikes encountered.

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502210.90

Ground Level (mAOD)
33.56
Northing (OS mN)
243569.70

Start Date
13/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 1 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/ Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B1) 0.00-0.80 (D2) 0.00-0.80 (D3) 0.00-0.80 (ES4) 0.00-0.80				TOPSOIL. Soft dark brown slightly sandy CLAY with frequent rootlets.			0.10	33.46	
	(B6) 0.80-1.20 (D7) 0.80-1.20 (ES9) 0.80-1.20 (UT11) 1.20-1.65				Soft dark brownish grey slightly gravelly CLAY with frequent pockets of light brown fine to coarse sand and rare roots. Gravel is subangular to subrounded fine to coarse chert. [ALLUVIUM]			(0.70)		
	(D12) 1.65-1.70 (B13) 1.70-2.00 (D20) 1.70-2.00 (SPTLS14) 2.00-2.45	SPT(S) 2.00m N=11 (1,2/2,3,3,3) Depth water: dry			Soft dark brownish grey slightly gravelly CLAY with occasional light brown silty sand pockets and rare roots. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium chert. [ALLUVIUM]			0.80 (1.00)	32.76	
	(B15) 2.50-2.80 (D16) 2.90 (UT17) 3.00-3.45				Firm to stiff thinly laminated dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]			1.80	31.76	
	(D18) 3.45-3.50 (B19) 3.50-3.80 (B21) 3.50-3.80 (D22) 3.50-3.80 (SPTLS23) 4.00-4.45	SPT(S) 4.00m N=27 (3,4/5,7,7,8) Depth water: dry						(3.00)		
	(B24) 4.50-4.80 (D25) 4.90 (UT26) 5.00-5.45				Stiff to very stiff thinly laminated dark grey CLAY with frequent fossilised shells. Shells becoming less frequent with depth. [PETERBOROUGH MEMBER]			4.80	28.76	
	(D27) 5.45-5.50 (B28) 5.50-5.80 (D29) 6.00 (SPTLS30) 6.50-6.95	SPT(S) 6.50m N=30 (4,5/7,5,8,10) Depth water: dry						(8.40)		
	(B31) 7.00-7.30 (D32) 7.50 (UT33) 8.00-8.45 (D34) 8.45-8.50 (B35) 8.70-9.00									
	(D36) 9.50 (D37) 9.50-9.93 (B38) 10.00-10.30	SPT(S) 9.50m N>50 (7,9/12,13,15,10 for 54mm) Depth water: dry								

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	14.00	Cable Percussion			200 150	3.00 14.00				13/04/2023 16:16	14.00	8.90										

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS				
Name	Type	m AGL	Well Name	From	To	Dia.					
CP15_S	Standpipe	0.000	CP15_S	1.00	2.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 14m bgl.				
CP15_D	Standpipe	0.000	CP15_D	9.00	14.00	50					


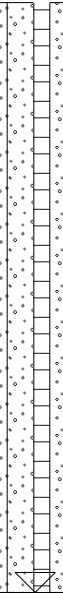


Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502210.90

Ground Level (mAOD)
33.56
Northing (OS mN)
243569.70

Start Date
13/04/2023
End Date
14/04/2023

Scale
1:50
Sheet 2 of 2

Progress			Samples		Tests and Measurements						Strata						Depth (Thickness)	Level	Install/ Backfill				
Date / Time Casing / DTW			Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR RGD		Description				Legend							
			(D39) 10.50								Stiff to very stiff thinly laminated dark grey CLAY with frequent fossilised shells. Shells becoming less frequent with depth. [PETERBOROUGH MEMBER]												
			(B40) 11.70-12.00																				
			(D41) 12.50																				
			(B42) 13.20-13.50		SPT(S) 12.50m N=44 (5,7/9,10,12,13) Depth water: dry		Very dense dark grey very clayey SAND with occasional fossilised shells. Sand is fine to medium. [KELLAWAYS SAND]						13.20	20.36									
			(D43) 13.50										13.50	20.06									
(SPTLS44) 14.00-14.45		SPT(S) 14.00m N=44 (5,7/9,10,11,14) Depth water: dry						Very stiff dark grey silty CLAY. [KELLAWAYS SAND]						(0.50)									
														14.00	19.56								
DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS			WATER ADDED				
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	14.00	Cable Percussion			200 150	3.00 14.00				13/04/2023 16:16	14.00	8.90											
INSTRUMENTS				WELL SCREEN DESIGN						REMARKS													
Name		Type	m AGL	Well Name			From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 14m bgl.													
CP15_S CP15_D		Standpipe Standpipe	0.000 0.000	CP15_S CP15_D			1.00 9.00	2.00 14.00	50 50														




Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502596.70

Ground Level (mAOD)
33.56
Northing (OS mN)
243404.30

Start Date
17/04/2023
End Date
21/04/2023

Scale
1:50
Sheet 1 of 2

Progress		Samples		Tests and Measurements					Strata							Depth (Thickness)	Level	Install/ Backfill					
Date / Time Casing / DTW		Type - Depth (m)		Type - Depth (m) - Result			Fracture Details		TCR SCR ROD		Description				Legend								
2023/04/17 15:33 - / -		(B1) 0.00-0.60 (D2) 0.00-0.60 (ES3) 0.00-0.60		PID 0.30m <1ppm						TOPSOIL. Grass over soft dark brown sandy CLAY with frequent rootlets and occasional gravel of chert. Sand is fine to coarse.					(0.60)	32.96							
		Firm to stiff light grey mottled light orangish brown CLAY with frequent fossilised shells and occasional white silt pockets. [WEATHERED PETERBOROUGH MEMBER]									0.60												
										(2.40)													
		(B10) 1.20-2.00 (SPTLS7) 1.20-1.65								SPT(S) 1.20m N=10 (2,2/2,2,3,3)								(3.00)	30.56				
		(UT8) 2.00-2.45								SPT(S) 3.00m N=33 (3,3/5,8,10,10)													
		(D9) 2.45-2.55																					
		(B12) 3.00-4.00 (SPTLS11) 3.00-3.45																(2.00)					
		(B15) 4.00-5.00 (UT13) 4.00-4.45																		SPT(S) 5.00m N=32 (4,5/7,7,9,9)			
(D14) 4.45-4.55																							
(B27) 5.00-6.50 (SPTLS16) 5.00-5.45									(5.00)	28.56													
(B30) 6.50-8.00 (UT28) 6.50-6.95											SPT(S) 8.00m N=38 (6,7/9,9,8,12)												
(D29) 6.95-7.05																							
(B23) 8.00-9.50 (SPTLS31) 8.00-8.45									(9.00)														
(D24) 9.50-11.00 (UT22) 9.50-9.95																							
(D17) 9.95-10.05																							
									Clays become very stiff 11-14m bgl														
DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS					FLUSH DETAILS				WATER ADDED				
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres	
0.00	20.00	Cable Percussion			200 150	8.00 18.20				20/04/2023 13:07	14.00	13.00	20										
INSTRUMENTS				WELL SCREEN DESIGN						REMARKS													
Name		Type	m AGL	Well Name		From	To	Dia.	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 14m bgl.														
CP16_S CP16_D		Standpipe Standpipe piezometer	0.000 0.000	CP16_S CP16_D		1.00 15.20	3.00 15.50	50 19															



Unless otherwise stated:
Depth (m), Diameter (mm), Time (hhmm),
Thickness (m), Level (mAOD),
Height Above Ground Level (m AGL)

Equipment Used
Dando 2000

Termination Depth
20.00m

Logged By
TL

Checked By
SF

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502596.70

Ground Level (mAOD)
33.56
Northing (OS mN)
243404.30

Start Date
17/04/2023
End Date
21/04/2023

Scale
1:50
Sheet 2 of 2

Progress	Samples	Tests and Measurements				Strata		Depth (Thickness)	Level	Install/Backfill
Date / Time Casing / DTW	Type - Depth (m)	Type - Depth (m) - Result	Fracture Details	TCR SCR RQD	Description	Legend				
	(B25) 11.00-12.50 (SPTLS18) 11.00-11.45	SPT(S) 11.00m N=49 (6,8/9,10,10,20)			Stiff to very stiff thinly laminated dark bluish grey CLAY with frequent to occasional fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]					
	(B26) 12.50-14.00 (UT21) 12.50-12.95									
	(D20) 12.95-13.05									
	(B32) 14.00-15.50 (SPTLS19) 14.00-14.45	SPT(S) 14.00m N>50 (9,12/19,27,4 for 5mm)			Very stiff dark grey very sandy CLAY. Sand is fine. [KELLAWAYS SAND] <i>Recovered as very wet sand 14-15.5m bgl</i>			14.00	19.56	
	(B35) 15.50-17.00 (SPTLS33) 15.50-15.95	SPT(S) 15.50m N=36 (6,7/10,10,9,7)								
	(B36) 17.00-18.00 (SPTLS34) 17.00-17.45	SPT(S) 17.00m N>50 (6,8/12,18,20 for 70mm)								
	(B37) 18.00-18.50				Very stiff thinly laminated dark bluish grey sandy CLAY with rare shells. Sand is fine. [KELLAWAYS CLAY]			18.00	15.56	
	(B40) 18.50-20.00 (UT38) 18.50-18.95				Very stiff thinly laminated dark bluish grey CLAY with occasional fossilised shells. [KELLAWAYS CLAY]			18.50	15.06	
	(D39) 18.95-19.05									
	(SPTLS41) 20.00-20.45	SPT(S) 20.00m N>50 (15,10 for 30mm/50 for 0mm)								
2023/04/20 15:58 - / -								20.00	13.56	

DRILLING TECHNIQUE			HOLE / CASING DIAMETER				CHISELLING			WATER OBSERVATIONS						FLUSH DETAILS				WATER ADDED		
From	To	Type	Hole Dia.	Depth	Casing Dia.	Depth	From	To	Duration	Date/Time	Strike	Rest	Mins	Casing	Sealed	From	To	Rtn%	Type	From	To	Litres
0.00	20.00	Cable Percussion			200 150	8.00 18.20				20/04/2023 13:07	14.00	13.00	20									

INSTRUMENTS			WELL SCREEN DESIGN				REMARKS			
Name	Type	m AGL	Well Name	From	To	Dia.				
CP16_S	Standpipe	0.000	CP16_S	1.00	3.00	50	A service clearance was completed prior to excavation and a service clearance hand pit was excavated to a minimum of 1.2m Terminated due to refusal. Groundwater strike at 14m bgl.			
CP16_D	Standpipe piezometer	0.000	CP16_D	15.20	15.50	19				






Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502692.30

Ground Level (mAOD)
33.08
Northing (OS mN)
244587.20

Start Date
12/04/2023
End Date
12/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B2) 1.00-2.00 (D3) 1.00-2.00 (ES1) 1.00	PID 1.00m <1ppm	TOPSOIL. Grass over soft dark brown slightly sandy CLAY with occasional subrounded fine to medium gravel of chert and frequent rootlets. Sand is fine to coarse.		(0.30)	32.78	
		Soft dark orangish brown sandy CLAY with occasional subrounded fine to medium gravel of chert. Sand is fine to medium. [HEAD DEPOSIT]		0.30 (0.50)		
		Loose light orangish brown mottled light grey very clayey fine to medium SAND with occasional bands of subrounded fine gravel of chert. [HEAD DEPOSIT]		0.80	32.28	
				(1.40)		
		Soft friable light grey CLAY with frequent fossilised shells. [WEATHERED PETERBOROUGH MEMBER]		2.20 (0.20)	30.88	
		Soft to firm dark bluish grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]		2.40	30.68	
(B4) 3.00-4.00 (D5) 3.00-4.00	HV(1) 3.50m 78 (kPa) HV(2) 3.50m 76 (kPa) HV(3) 3.50m 69 (kPa)			(1.60)		
				4.00	29.08	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.5</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Unstable between 1.8-2.2m bgl</div><div>Long Axis Orientation:</div><div>135.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		12/04/2023 13:33	2.20	2.20		Slow seepage			
		REMARKS							
		Service clearance was completed prior to excavation. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320


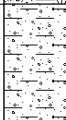
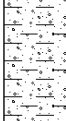
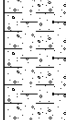
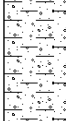

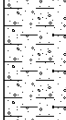
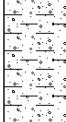
Project No.
30174974
Easting (OS mE)
502890.20

Ground Level (mAOD)
35.43
Northing (OS mN)
244501.70

Start Date
12/04/2023
End Date
12/04/2023

Scale
1:25

Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type		Type - Depth - Result		Description	Legend			
(ES1) 0.30	PID	0.30m	<1ppm	TOPSOIL. Crop over soft dark to light brown slightly sandy CLAY with frequent rootlets and occasional subrounded fine to medium gravel of chert.		(0.40)	35.03	
				Soft dark orangish brown mottled light grey very sandy gravelly CLAY with frequent fine to medium orange sand pockets. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse chert. [HEAD DEPOSIT]		0.40		
(B3) 1.00-2.00 (D4) 1.00-2.00								
						(2.40)		
(D2) 3.50				Soft to firm friable dark bluish grey CLAY with frequent fossilised shells and occasional pockets of black clays (20mm diameter) with a slight organic odour. [PETERBOROUGH MEMBER]		2.80	32.63	
				Lenses of black clay with slight organic odour 3.5m bgl		(1.20)		
						4.00	31.43	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AG
<p>3.0</p> <p>0.6</p> <p>Shoring / Support: Stability: Stable, slight local instability in sand pockets Long Axis Orientation: 135.00</p>		12/04/2023 12:13	2.70	2.70		Moderately fast seepage			
	REMARKS								
	Service clearance was completed prior to excavation. Terminated at scheduled depth								











Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502534.20

Ground Level (mAOD)
34.43
Northing (OS mN)
244377.00

Start Date
12/04/2023
End Date
12/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(ES1) 0.20	PID 0.20m <1ppm	TOPSOIL. Grass over soft dark brown slightly sandy CLAY with frequent subrounded fine to medium gravel of chert and chalk. Sand is fine to coarse.		(0.30)		
		Soft dark greenish brown sandy CLAY with occasional subrounded gravel of chert and rare large (20'20cm) orangish brown sand pockets of fine to coarse sand and fine gravel of chert. Sand is fine to coarse. [HEAD DEPOSIT]		0.30	34.13	
				(1.00)		
		Soft to firm thinly laminated light bluish grey CLAY with occasional white silt pockets and frequent fossilised shells. [WEATHERED PETERBOROUGH MEMBER]		1.30	33.13	▼
		Clays becoming firm				
(B2) 1.90-2.90 (D3) 1.90-2.90	HV(1) 2.00m 72 (kPa) HV(2) 2.00m 64 (kPa) HV(3) 2.00m 62 (kPa)			(1.30)		
		Firm to stiff dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]		2.60	31.83	
(B4) 3.00-4.00 (D5) 3.00-4.00		Clays are friable between 2.9-3.1m bgl				
				(1.40)		
	HV(1) 4.00m 98 (kPa) HV(2) 4.00m 80 (kPa) HV(3) 4.00m 82 (kPa)			4.00	30.43	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Stable</div><div>Long Axis Orientation:</div><div>135.00</div></div></div>	Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL	
	12/04/2023 14:39	1.30	1.30		Slight seepage from sand pockets				
	REMARKS								
	Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth								







Project
Project 320
Client
Buffalo 320

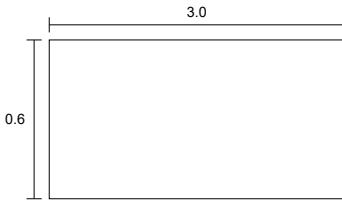
Project No.
30174974
Easting (OS mE)
503049.60

Ground Level (mAOD)
34.47
Northing (OS mN)
244201.00

Start Date
12/04/2023
End Date
12/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result			Description	Legend			
(ES1) 0.10	PID 0.20m <1ppm			TOPSOIL. Crops over soft dark brown slightly sandy CLAY with occasional subrounded fine gravel of chert and frequent rootlets and rare roots (20mm in diameter).		(0.20)	34.27	
(B4) 0.20-1.00 (D5) 0.20-1.00				Soft light greenish brown mottled light grey and orangish brown sandy CLAY with occasional subrounded fine to medium gravel of chert. Sand is fine to medium. [HEAD DEPOSIT]		0.20		
						(0.80)		
				Soft light grey mottled dark orangish brown very sandy CLAY with rare fossilised shell fragments and occasional orangish brown fine to medium sand pockets. [HEAD DEPOSIT]		1.00	33.47	
						(2.10)		
				Soft thinly laminated light bluish grey CLAY with frequent fossilised shells and occasional pockets of small (20mm diameter) back clays with slight organic odour. [WEATHERED PETERBOROUGH MEMBER]		3.10	31.37	
						(0.40)		
(B2) 3.50-4.00 (D3) 3.50-4.00				Firm to friable thinly laminated dark bluish grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]		3.50	30.97	
	HV(1) 3.60m 66 (kPa) HV(2) 3.60m 60 (kPa) HV(3) 3.60m 56 (kPa)					(0.50)		
	HV(1) 3.90m 69 (kPa) HV(2) 3.90m 63 (kPa) HV(3) 3.90m 79 (kPa)					4.00	30.47	

PLAN DETAILS		WATER OBSERVATIONS				INSTRUMENTS		
 <p>Shoring / Support: Stability: Stable Long Axis Orientation: 90.00</p>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type
		12/04/2023 10:29	3.90	3.90		Very slow seepage		
		REMARKS						
		Service clearance was completed prior to excavation. Terminated at scheduled depth						

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502874.84

Ground Level (mAOD)
32.49
Northing (OS mN)
243955.00

Start Date
11/04/2023
End Date
11/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result		Description	Legend				
(ES1) 0.30	PID	0.30m	<1ppm	TOPSOIL. Crop over soft brown slightly silty slightly sandy slightly gravelly CLAY with frequent rootlets. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium chert and brick.		(0.30)		
				Soft brown slightly slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium chert. [ALLUVIUM]		0.30 (0.20)	32.19	
				Soft orangish grey mottled sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse chert. [HEAD DEPOSIT]		0.50	31.99	
						(0.70)		
				Firm light grey slightly silty CLAY with frequent fossilised shells and rare pockets of black clay with a slight organic odour. [WEATHERED PETERBOROUGH MEMBER]		1.20	31.29	
						(1.50)		
		Stiff thinly laminated dark grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]		2.70	29.79			
				(1.30)				
				4.00	28.49			

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		REMARKS							
		Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth							

















Project
Project 320
Client
Buffalo 320

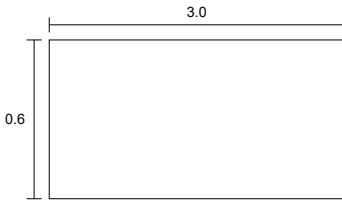
Project No.
30174974
Easting (OS mE)
502605.00

Ground Level (mAOD)
33.89
Northing (OS mN)
243916.80

Start Date
13/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description		Legend				
(ES1) 0.10	PID 0.10m <1ppm	TOPSOIL. Grass over soft dark brown slightly sandy CLAY with frequent subrounded fine to medium gravel of brick and chert and frequent rootlets.				(0.20)	33.69	
		Soft to firm light bluish grey CLAY with frequent fossilised shells and white silt pockets and occasional greenish to orangish brown thinly laminated clay pockets. [WEATHERED PETERBOROUGH MEMBER]				0.20		
(B2) 2.00-3.00 (D3) 2.00-3.00	HV(1) 2.00m 48 (kPa) HV(2) 2.00m 62 (kPa) HV(3) 2.00m 48 (kPa)					(2.90)		
								
								
								
(B4) 3.10-4.00 (D5) 3.10-4.00	HV(1) 3.00m 50 (kPa) HV(2) 3.00m 65 (kPa) HV(3) 3.00m 60 (kPa)					3.10	30.79	
								
								
								
		Stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells and occasional pyrite. [PETERBOROUGH MEMBER]				(0.90)		
								
						4.00	29.89	
								
								
								

PLAN DETAILS		WATER OBSERVATIONS				INSTRUMENTS		
 <p>Shoring / Support: Stability: Stable Long Axis Orientation: 135.00</p>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type
		REMARKS						
		Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth						

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502349.40

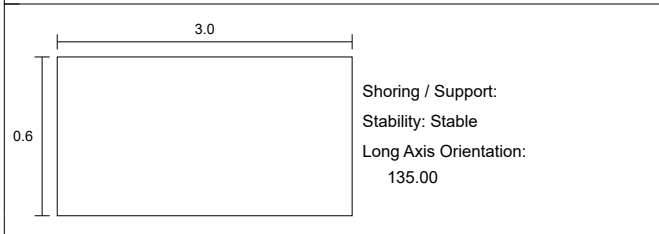
Ground Level (mAOD)
34.84
Northing (OS mN)
243866.10

Start Date
13/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type		Type - Depth - Result		Description	Legend			
(ES1) 0.80		PID 0.80m <1ppm		TOPSOIL. Grass over soft dark to light brown sandy CLAY with rare subrounded fine gravel of chert and brick and frequent rootlets.		(0.50)		
				Soft light grey mottled light orangish brown CLAY with frequent fossilised shells and white silt pockets and occasional black clay pockets with a slight organic odour. [WEATHERED PETERBOROUGH MEMBER]		0.50	34.34	
						(1.20)		
(B2) 1.70-2.30 (D3) 1.70-2.30		HV(1) 1.00m 62 (kPa) HV(2) 1.00m 50 (kPa) HV(3) 1.00m 64 (kPa)		Firm dark brownish grey CLAY with frequent fossilised shells and white silt pockets and rare organic material. [WEATHERED PETERBOROUGH MEMBER]		1.70	33.14	
						(0.60)		
(B4) 3.00-4.00 (D5) 3.00-4.00		HV(1) 2.00m 60 (kPa) HV(2) 2.00m 65 (kPa) HV(3) 2.00m 62 (kPa)		Firm to stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite [PETERBOROUGH MEMBER]		2.30	32.54	
		HV(1) 3.00m 74 (kPa) HV(2) 3.00m 78 (kPa) HV(3) 3.00m 70 (kPa)				(1.70)		
						4.00	30.84	

PLAN DETAILS



WATER OBSERVATIONS

Date/Time	Strike	Rest	Mins	Remarks

INSTRUMENTS

Name	Type	m AGL

REMARKS

Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502747.50

Ground Level (mAOD)
32.97
Northing (OS mN)
243699.20

Start Date
13/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(B2) 0.50-1.00 (D3) 0.50-1.00 (ES1) 0.50	PID 0.50m <1ppm	TOPSOIL. Grass over soft dark brown slightly sandy CLAY with rare subrounded fine gravel of chert and brick and frequent rootlets. sand is fine to coarse.		(0.20)	32.77	
		Soft to firm light grey and dark orangish brown very sandy slightly gravelly CLAY with occasional bands of fine sand. Sand is fine to medium. Gravel is subrounded fine to medium chert. [HEAD DEPOSIT]		0.20		
		Clays become firm		(1.10)		
		Thin band of rounded medium gravels of chert 1.25-1.3m bgl		1.30		
(B4) 2.00-3.00 (D5) 2.00-3.00	HV(1) 1.00m 90 (kPa) HV(2) 1.00m 76 (kPa) HV(3) 1.00m 82 (kPa)	Firm to stiff light bluish grey CLAY with frequent fossilised shells. [WEATHERED PETERBOROUGH MEMBER]		1.30	31.67	
				(1.90)		
				3.20		
		Stiff friable thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]		(0.80)		
				4.00	28.97	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<p>Shoring / Support: Stability: Slightly unstable from GL to 1.3m bgl Long Axis Orientation: 135.00</p>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		REMARKS							
		Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502185.90

Ground Level (mAOD)
33.50
Northing (OS mN)
243515.30

Start Date
13/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA			Legend	Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description								
(ES1) 0.20 (B2) 0.50-1.00 (D3) 0.50-1.00 										




Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
502608.30

Ground Level (mAOD)
33.12
Northing (OS mN)
243279.00

Start Date
12/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS	STRATA		Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description	Legend			
(ES1) 0.30	PID 0.30m <1ppm	TOPSOIL. Grass over soft dark brown sandy CLAY with frequent rootlets and subangular fine gravel of brick and chert. Sand is fine to coarse.		(0.40)		
(B2) 1.00-2.00 (D3) 1.00-2.00		Soft to firm friable light grey mottled orangish brown CLAY with frequent fossilised shells and rare pockets of black clay with a slight organic odour. [WEATHERED PETERBOROUGH MEMBER] <div>Clays are soft from 0.4-2.2m bgl</div>		0.40	32.72	
				(2.40)		▼
(B4) 3.00-4.00 (D5) 3.00-4.00		Stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]		2.80	30.32	
				(1.20)		
				4.00	29.12	

PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: Stable</div><div>Long Axis Orientation:</div><div>135.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
		12/04/2023 16:02	1.60	1.60		Slight seepage			
		REMARKS							
		Service clearance was completed prior to excavation. Topsoil was logged as Topsoil, however, rare anthropogenic materials have been identified as a result of farming practices. Terminated at scheduled depth							

Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503051.30

Ground Level (mAOD)
35.02
Northing (OS mN)
244379.60

Start Date
12/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES		TESTS		STRATA			Depth (Thickness)	Level	Install/ Backfill
Depth - Type	Type - Depth - Result	Description			Legend				
(ES1) 0.00-0.20	PID 0.10m <1ppm	MADE GROUND: Grass over loose dark brown clayey gravelly SAND with frequent fine to medium cobbles of brick, concrete and chert, frequent rootlets and rare angular medium gravels of slate. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse brick and chert.				(0.20)	34.82		
		Soft light orangish brown sandy CLAY with rare subrounded fine gravel of chert and frequent rootlets. Sand is fine to coarse. [HEAD DEPOSIT]				0.20			
(B2) 0.50-2.10 (D3) 0.50-2.10		Soft light grey mottled dark orangish brown very sandy CLAY with occasional subrounded medium gravel of chert. Sand is fine to coarse. [HEAD DEPOSIT]				(0.30)	34.52		
						0.50			
						(1.60)			
		Large (100-200mm diameter) pockets of orangish brown sand and gravel containing water 1.5-2.1m bgl							
		Soft thinly laminated light bluish grey CLAY with frequent fossilised shells and white silt pockets. [WEATHERED PETERBOROUGH MEMBER]				2.10	32.92		
						(0.20)			
		Firm friable thinly laminated dark bluish grey CLAY with frequent fossilised shells and rare pyrite. [PETERBOROUGH MEMBER]				2.30	32.72		
						(1.20)			
(B4) 3.00-4.00 (D5) 3.00-4.00		Stiff thinly laminated dark bluish grey CLAY with frequent fossilised shells. [PETERBOROUGH MEMBER]				3.50	31.52		
						(0.50)			
	HV(1) 4.00m 101 (kPa) HV(2) 4.00m 107 (kPa) HV(3) 4.00m 97 (kPa)					4.00	31.02		
						</			











Project
Project 320
Client
Buffalo 320

Project No.
30174974
Easting (OS mE)
503119.40

Ground Level (mAOD)
34.68
Northing (OS mN)
243999.80

Start Date
12/04/2023
End Date
13/04/2023

Scale
1:25
Sheet 1 of 1

SAMPLES	TESTS			STRATA		Depth (Thickness)	Level	Install/ Backfill	
Depth - Type	Type - Depth - Result			Description	Legend				
(B3) 2.00-3.00 (D2) 2.00-3.00 (ES1) 2.00	PID	2.00m	<1ppm	TOPSOIL. Crop over soft dark brown slightly sandy CLAY with frequent rootlets and rare roots (20mm diameter). Sand is fine to medium.		(0.20)	34.48		
				Soft light yellowish brown slightly sandy CLAY with rare subangular to subrounded fine to medium gravel of chert. Sand is fine to coarse. [HEAD DEPOSIT]		0.20			
						(1.00)	33.48		
									
				Soft light grey mottled dark orange sandy CLAY with occasional orange fine to medium fine sand pockets and rare greenish brown thinly laminated clay inclusions and rare 10mm diameter wood fragments. Sand is fine to medium. [HEAD DEPOSIT]		1.20			
(B5) 3.00-3.80 (D4) 3.00-3.80				Soft to firm dark greenish brown to light bluish grey CLAY with frequent fossilised shell fragments and rare white silt pockets. [WEATHERED PETERBOROUGH MEMBER]		3.00	31.68		
						(0.80)	30.88		
									
				Firm thinly laminated dark bluish grey CLAY with frequent fossilised shell fragments and rare pyrite. [PETERBOROUGH MEMBER]		3.80 (0.20)	30.88		
						4.00	30.68		


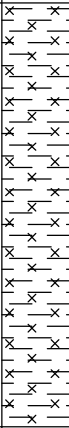
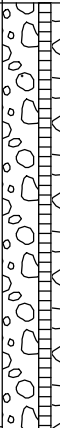
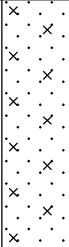

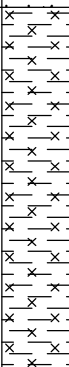



PLAN DETAILS		WATER OBSERVATIONS					INSTRUMENTS		
<div><div><div>3.0</div><div>0.6</div></div><div><div>Shoring / Support:</div><div>Stability: stable</div><div>Long Axis Orientation:</div><div>90.00</div></div></div>		Date/Time	Strike	Rest	Mins	Remarks	Name	Type	m AGL
	REMARKS								
	Service clearance was completed prior to excavation. Terminated at scheduled depth								

ANNEX 3.4













WEST GATEWAY ZONE EXPLORATORY HOLE LOGS




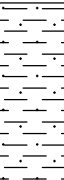



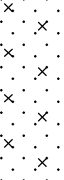

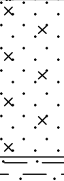

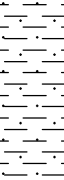

20 WSP BH LOG PROJECT 320_PARCEL D_V8.01.GPJ WSPTEMPLATE8.00.GDT 15/7/24


<div> WSP Telephone: Email:</div>		BOREHOLE LOG				Hole No. BH02						
		Project West Gateway Zone - Parcel D				Sheet 2 of 2						
Job No UK-70116516_1		Client UDX				Date Start: 10-06-24 End: 11-06-24						
Contractor/Driller Endeavour Drilling Ltd		Method/Plant Used Dando 2000, Hand Tools		Logged By Leigh Allan		Co-Ordinates () E: 501874.40 N: 243885.33		Ground Level (m) 33.540				
SAMPLES & TESTS						STRATA						
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	Install / Backfill
12.00	SPT	5,6,8 10,11,11 N=40						(6.10)	Stiff to very stiff dark grey silty CLAY with frequent shell fragments. (continued)		PET	
13.50	SPT	6,9,11 11,11,11 N=44					20.04	13.50	Very dense grey silty fine SAND.		KLB	
15.00	SPT	9,16,23 27 N=50/ 150mm					17.94	15.60	Very stiff dark grey silty CLAY with occasional shell fragments.		KLB	
18.00	SPT	6,6,8 8,11,12 N=39					14.94	18.60	Dark grey subrounded COBBLES of sandstone with gravelly. Gravel is subrounded fine to coarse of sandstone.		KLB	
									Reached scheduled depth			
Boring Progress						Water Strikes						
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing	
10-06-24	00.00	19.00	16.50			10-06-24	00.00	13.50	20	11.80	3.00	
Chiselling					Water Added		General Remarks Hole service clearance undertaken by subcontractor. Groundwater striked recorded at 1.30m and 13.50m. No visual/olfactory evidence of contamination. Monitoring response zones at 0.50-2.20 and 9.00-16.00 m bgl.					
From	To	Hours	Tool	From	To							
Scale 1:62.5		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.										

20 WSP BH LOG PROJECT 320_PARCEL D_V8.01.GPJ WSPTEMPLATE8.00.GDT 15/7/24

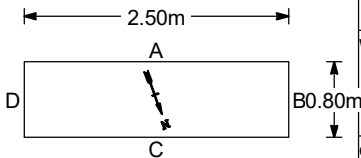
<div> WSP Telephone: Email:</div>		BOREHOLE LOG					Hole No. BH03					
		Project West Gateway Zone - Parcel D					Sheet 1 of 2					
Job No UK-70116516_1		Client UDX					Date Start: 06-06-24 End: 07-06-24					
Contractor/Driller Endeavour Drilling Ltd		Method/Plant Used Dando 2000, Hand Tools		Logged By Katy Woodhouse		Co-Ordinates () E: 502147.37 N: 244015.09		Ground Level (m) 33.939				
SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
0.30-0.60	B	2,1,1 2,2,2 N=7	<0.1				33.64	0.30	Soft brown slightly gravelly slightly sandy CLAY with frequent crop debris. Gravel is subangular fine and medium of flint. (REWORKED).		TS	
0.50-0.50	ES						33.24	0.70	Firm orangish brown very sandy slightly gravelly CLAY. Gravel is subangular fine of flint.		HD	
0.70-0.90	B						32.94	1.00	Firm light grey and orangish brown slightly gravelly slightly sandy CLAY with occasional organics. Gravel is subangular fine and medium of flint.		HD	
1.00-1.20	B						32.14	1.80	Soft grey and brown sandy slightly gravelly CLAY with occasional shell fragments. Gravel is subangular to subrounded fine of flint.		HD	
1.20-1.65	D-SPT									(0.80)		
1.50-1.50	ES	2,3,5 5,10,10 N=30	<0.1				32.14	1.80	Soft to firm dark brownish grey silty CLAY with frequent shell fragments.		PET	
1.80	D						31.64	2.30				
2.00-2.45	UT									(0.50)		
2.30-2.60	B						29.44	4.50	Firm dark grey sandy silty CLAY with frequent shell fragments.		PET	
2.45	D											
3.45	SPT	2,3,5 5,10,10 N=30	<0.1					(2.20)			PET	
3.70	D											
4.00-4.45	UT											
4.45	D						27.94	6.00	Stiff grey sandy slightly gravelly silty CLAY with frequent shell fragments. Gravel is subangular fine and medium of mudstone.			PET
4.50-5.00	B											
5.45	SPT	2,3,5 6,10,9 N=30	<0.1					(1.50)			PET	
5.70	D											
6.45	SPT						26.94	7.00	Stiff to very stiff dark grey slightly sandy silty CLAY with frequent shell fragments.			PET
6.60-7.00	B											
7.50-7.95	UT											
7.95	D	4,6,7 7,10,10 N=34	<0.1							PET		
8.50	D											
9.45	SPT											
Boring Progress						Water Strikes						
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing	
Chiselling				Water Added		General Remarks Hole service clearance undertaken by subcontractor. Groundwater strikes at 13.10m and 18.00m. No visual/olfactory evidence of contamination. Monitoring response zones at 2.00-3.00 and 10.00-18.00 m bgl.						
From	To	Hours	Tool	From	To							
Scale 1:62.5		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.										


20 WSP BH LOG PROJECT 320_PARCEL D_V8.01.GPJ WSPTEMPLATE8.00.GDT 15/7/24










<div> WSP Telephone: Email:</div>		BOREHOLE LOG					Hole No. BH03					
		Project West Gateway Zone - Parcel D					Sheet 2 of 2					
Job No UK-70116516_1		Client UDX					Date Start: 06-06-24 End: 07-06-24					
Contractor/Driller Endeavour Drilling Ltd		Method/Plant Used Dando 2000, Hand Tools		Logged By Katy Woodhouse		Co-Ordinates () E: 502147.37 N: 244015.09		Ground Level (m) 33.939				
SAMPLES & TESTS							STRATA					
Depth	Type	Test Result	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick-ness)	Description	Legend	Geology	Install / Backfill
10.00	D							(6.10)	Stiff to very stiff dark grey slightly sandy silty CLAY with frequent shell fragments. (continued)		PET	
10.50-10.95	UT											
10.95	D											
11.50-12.00	B											
12.45	SPT	5,7,13 13,15,9 N=50/ 250mm										
13.10-13.30	B						20.84	13.10	Very dense grey slightly gravelly silty fine and medium SAND with abundant shell fragments. Gravel is subangular fine and medium of mudstone.		KLB	
13.95	SPT	22,3,25 25 N=50/ 75mm						(1.60)				
14.70	D						19.24	14.70	Very dense grey very silty fine SAND with abundant shell fragments.		KLB	
15.45	SPT	7,8,16 17,17 N=50/ 225mm						(1.30)				
16.00	D						17.94	16.00	Very stiff dark grey slightly sandy silty CLAY with occasional shell fragments.		KLB	
16.50-16.95	UT											
16.95	D							(2.00)				
17.50	D											
18.00	D						15.94	18.00	Reached scheduled depth			
18.00-18.45	D-SPT	25,50 N=50/ 0mm										
Boring Progress						Water Strikes						
Date	Time	Depth	Casing Dpt	Dia. (mm)	Water Dpt	Date	Time	Strike	Minutes	Standing	Casing	
06-06-24	17.00	15.00	15.00		8.00	06-07-24	00.00	13.10	20	12.00	1.50	
07-06-24	00.00	18.00	16.50		9.20							
Chiselling				Water Added		General Remarks Hole service clearance undertaken by subcontractor. Groundwater strikes at 13.10m and 18.00m. No visual/olfactory evidence of contamination. Monitoring response zones at 2.00-3.00 and 10.00-18.00 m bgl.						
From	To	Hours	Tool	From	To							
Scale 1:62.5		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.										

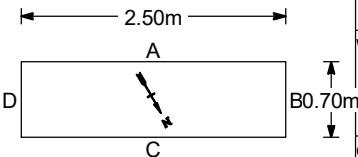
<div> WSP Telephone: Fax:</div>	TRIAL PIT LOG			Hole No. SA02
	Project West Gateway Zone - Parcel D			Sheet 1 of 1
Job No UK-70116516_1	Client UDX			Date Start: 04-06-24 End: 04-06-24
Contractor / Driller Endeavour Drilling Ltd	Method/Plant Used Excavator (Tracked 360°)	Logged By Katy Woodhouse	Co-Ordinates () E 501952.521 N 244032.498	Ground Level (m) 33.670


SAMPLES & TESTS						STRATA					
Depth	Type	PID (ppm V)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thick- ness)	Description	Legend	Geology	Install / Backfill
0.00-0.20	ES						(0.30)	Very soft dark brown slightly gravelly slightly sandy CLAY with frequent crop debris. Gravel is fine to medium sub-angular of flint. Moderate fertiliser odours (REWORKED TOPSOIL)		TS	
						33.37	0.30	Orangish brown slightly gravelly very clayey fine and medium SAND. Gravel is subrounded fine and medium of flint.		HD	
							(0.90)				
1.00-1.00	ES					32.47	1.20	Orangish brown mottled light yellowish brown slightly gravelly clayey fine and medium SAND. Gravel is subrounded and subrounded fine and medium of flint.		HD	
							(0.80)				
						31.67	2.00	Firm very dark brownish grey very sandy silty CLAY.		PET	
						31.37	2.30	Stiff dark grey sandy slightly gravelly CLAY with occasional shell fragments. Gravel is subrounded fine of mudstone.		PET	
						(0.70)					
					30.67	3.00	Stiff dark grey gravelly slightly sandy CLAY with frequent shell fragments. Gravel is subangular fine to coarse of mudstone.		PET		
						(0.50)					
					30.17	3.50					

	Length 2.50m	Shoring/Support: None	Water Strikes					
	Width 0.80m		Date 04-06-24	Time 13.05	Strike 2.00	Minutes	Standing	Remarks Slight seepage
	Orientation 20 degrees from north	Stability: Moderate	General Remarks Hole service clearance undertaken by subcontractor. No groundwater strikes. No visual/olfactory evidence of contamination. Soil infiltration testing undertaken between 1.03m and 1.90m bgl.					
Scale 1:31.25	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

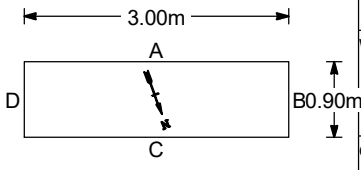
 WSP Telephone: Fax:	TRIAL PIT LOG		Hole No. SA03
	Project West Gateway Zone - Parcel D		Sheet 1 of 1
Job No UK-70116516_1	Client UDX		Date Start: 06-06-24 End: 06-06-24
Contractor / Driller Endeavour Drilling Ltd	Method/Plant Used Excavator (Tracked 360°)	Logged By Katy Woodhouse	Co-Ordinates () E 502048.980 N 243887.803
		Ground Level (m) 35.161	


SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	
0.00-0.20 0.00-0.20	B ES	<0.1				34.86	(0.30) 0.30	Very soft brown slightly gravelly sandy CLAY with frequent crop debris. Gravel is subangular fine to coarse of flint. Moderate fertiliser odours. (REWORKED)		TS	
0.50-1.00 0.50-0.50	B D		67			34.06	(0.80) 1.10	Soft grey mottled brownish brown slightly gravelly silty CLAY with rare shell fragments. Gravel is subrounded fine and medium of flint.		HD	
1.50-2.00 1.50-1.50 1.50-0.00	B D ES	<0.1	112			33.16	(0.90) 2.00	Firm light grey and orangish brown gravelly slightly sandy silty CLAY with frequent shell fragments. Gravel is subrounded fine and medium of chalk and flint.		HD	
2.00-2.50	B										
2.50-2.50	D		101				(1.30)			HD	
2.80-3.20	B										
3.50-3.80 3.50-3.50	B D					31.36	(0.50) 3.80	Stiff dark grey slightly gravelly silty CLAY with frequent shell fragments. Gravel is subangular fine and medium of mudstone.		PET	









	Length 2.50m	Shoring/Support: None	Water Strikes					
	Width 0.70m		Date	Time	Strike	Minutes	Standing	Remarks
	Orientation 30 degrees from north	Stability: Good	General Remarks Hole service clearance undertaken by subcontractor. No groundwater strikes. No visual/olfactory evidence of contamination. Soil infiltration testing undertaken between 0.52m and 1.10m bgl.					
Scale 1:31.25	Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

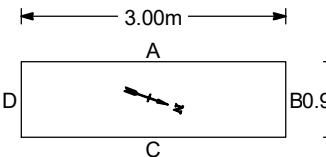
 WSP Telephone: Fax:	<h1>TRIAL PIT LOG</h1>		Hole No. TP02	
	Project West Gateway Zone - Parcel D		Sheet 1 of 1	
Job No UK-70116516_1		Client UDX		Date Start: 04-06-24 End: 04-06-24
Contractor / Driller Endeavour Drilling Ltd	Method/Plant Used Excavator (Tracked 360°)	Logged By Katy Woodhouse	Co-Ordinates () E 501807.644 N 243951.487	Ground Level (m) 34.581

SAMPLES & TESTS						STRATA					Install / Backfill
Depth	Type	PID (ppmV)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology	
0.40-0.40	ES					34.28	(0.30)	Very soft brown slightly sandy slightly gravelly silty CLAY with frequent crop debris. Gravel is fine to coarse subangular of flint. (REWORKED)		TS	
						34.08	0.50	Soft orangish brown very sandy slightly gravelly silty CLAY with occasional crop debris. Gravel is subrounded fine and medium of flint. (REWORKED)		HD	
1.00-1.00	ES		10796				(0.80)	Firm light grey and orangish brown sandy slightly gravelly CLAY with occasional shell fragments. Gravel is subrounded fine of chalk and flint.		HD	
						33.28	1.30	Stiff light grey occasionally brown gravelly slightly sandy CLAY with frequent shell fragments. Gravel is subrounded fine and medium of chalk and flint.		HD	
						32.48	2.10	Stiff very dark brownish grey very gravelly CLAY with occasional shell fragments. Gravel is subangular to subrounded fine to coarse of mudstone.		PET	
			119			30.78	3.80				

	Length	3.00m	Shoring/Support:	Water Strikes							
	Width	0.90m		Stability:	Date	Time	Strike	Minutes	Standing	Remarks	
	Orientation	20 degrees from north	Goild		General Remarks Hole service clearance undertaken by subcontractor. No groundwater strikes. No visual/olfactory evidence of contamination.						
	Scale 1:31.25			Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.							

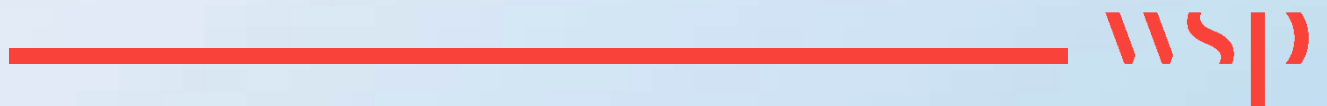
 WSP Telephone: Fax:	TRIAL PIT LOG		Hole No. TP03	
	Project West Gateway Zone - Parcel D		Sheet 1 of 1	
Job No UK-70116516_1		Client UDX		Date Start: 05-06-24 End: 05-06-24
Contractor / Driller Endeavour Drilling Ltd	Method/Plant Used Excavator (Tracked 360°)	Logged By Katy Woodhouse	Co-Ordinates () E 502046.551 N 244079.033	Ground Level (m) 33.164

SAMPLES & TESTS						STRATA					Install / Backfill			
Depth	Type	PID (ppm V)	HSV (kN/m2)	P Pen (kN/m2)	Water	Elev. (m)	Depth (Thickness)	Description	Legend	Geology				
0.50-1.00 0.60-0.00 0.60-0.60	B D ES	<0.1				32.76	0.40 (0.40)	Very soft brown sandy slightly gravelly CLAY with abundant crop debris. Gravel is subangular fine to coarse of flint. (REWORKED)		TS				
									31.96	(0.80)		Soft orangish brown very sandy silty CLAY.		HD
1.20-1.50 1.40-1.40	B D								31.66	(0.30) 1.50		Firm light orangish brown and light yellowish grey very gravelly clayey medium and coarse SAND. Gravel is subangular fine to coarse of flint.		HD
2.00-2.50 2.50-2.50	B D								30.36	(1.30) 2.80		Stiff dark grey slightly sandy silty CLAY with occasional shell fragments.		PET
3.00-3.20	B					29.96	(0.40) 3.20	Stiff dark grey friable slightly gravelly CLAY with frequent shell fragments. Gravel is subangular fine and medium of mudstone.		PET				
														

	Length	3.00m	Shoring/Support:	Water Strikes						
	Width	0.90m		Stability:	Date	Time	Strike	Minutes	Standing	Remarks
	Orientation	70 degrees from north	Good		General Remarks Hole service clearance undertaken by subcontractor. No groundwater strikes. No visual/olfactory evidence of contamination.					
Scale 1:31.25		Notes: All dimensions in metres. Logs should be read in accordance with the provided Key. Descriptions are based on visual and manual identification.								

ANNEX 4

ATTERBERG TEST CERTIFICATES



SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP01	7	D	0.30	1.30	13			27	13	14	59	Low Plasticity CL
TP02	5	D	1.00	2.00	20			52	23	29	71	High Plasticity CH
TP02	4	B	2.00	3.00	35		2.35					
TP03	2	B	1.00	1.50	34		2.49					
TP03	5	D	2.00	3.00	26			61	26	35	78	High Plasticity CH
TP04	2	B	0.30	1.00	26			57	25	32	87	High Plasticity CH
TP04	7	D	2.50	3.00	35			75	31	44	95	Very High Plasticity CV
TP05	7	D	0.90	2.00	31							
TP05	8	D	2.00	3.00	25							
TP09	1	D	2.00	2.50	43			81	33	48	100	Very High Plasticity CV
TP09	2	B	2.00	2.50	43		2.52					
TP10	3	D	2.50	3.00	31			68	29	39	91	High Plasticity CH
TP11	2	B	0.50	1.00	35		2.67					
TP11	5	D	2.00	3.00	23			54	24	30	97	High Plasticity CH
TP12A	7	D	1.00	1.20	9.7				NP			
TP12A	6	D	2.50	3.00	41							
TP13	2	D	2.00	2.50	32			62	27	35	84	High Plasticity CH
TP15	4	B	2.50	3.00	30		2.65					
TP15	5	D	2.50	3.00	30			80	33	47	100	Very High Plasticity CV

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site A

Contract No:

PSL23/2536

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP16	3	D	1.00	2.00	25							
TP16	5	D	2.00	3.00	18							
TP17	4	D	0.50	1.00	30							
TP17	5	D	1.40	1.70	11							
TP17	6	D	2.00	3.00	33							
TP18	4	D	1.50	1.90	32							
TP19	2	D	0.50		14	11						
TP19	3	D	1.00		21							
TP19	4	D	1.50		17							
TP20	6	D	3.50		23							
TP20	7	D	4.00		22							
TP21	3	D	1.50	2.00	30							
TP22	4	D	1.70		31	12						
TP23	1	D	0.50		30							
TP24	6	D	0.50		21	5.1		34	18	16	69	Low Plasticity CL
TP24	7	D	1.00		28		2.67	41	25	16	49	Intermediate Plasticity CI
TP24	8	D	1.50		24							
TP24	9	D	2.00		31							
TP24	10	D	2.50		35	13		67	28	39	97	High Plasticity CH

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320- Site A

Contract No:

PSL23/2536

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Project 320 - Site A

Contract No:

PSL23/2536

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP01	2	B	0.50	0.70	36							
CP01	4	B	1.20	1.70	39			52	24	28	91	High Plasticity CH
CP01	15	UT	5.20	5.60	27							
CP01	18	SPTLS	10.00	10.45	19				NP			
CP01	22	SPTLS	13.50	13.95	21			57	25	32	100	High Plasticity CH
CP01	24	B	14.50	15.00	28			65	28	37	100	High Plasticity CH
CP02	6	UT	1.20	1.65	16							
CP02	8	D	2.00	2.45	35			68	30	38	97	High Plasticity CH
CP02	9	UT	3.00	3.45	33							
CP02	14	UT	5.00	5.45	32							
CP03	10	UT	3.00	3.45	31			69	30	39	100	High Plasticity CH
CP04	9	SPTLS	1.20	1.65	34							
CP04	5	UT	2.00	2.45	31			44	23	21	100	Intermediate Plasticity CI
CP04	10	SPTLS	3.00	3.45	38			66	29	37	100	High Plasticity CH
CP04	6	UT	4.00	4.45	39							
CP04	12	D	4.45	4.55	46							
CP04	7	UT	6.50	6.95	30			75	32	43	100	Very High Plasticity CV
CP04	15	SPTLS	8.00	8.45	32							
CP04	21	D	11.00	11.50	35			72	30	42	100	Very High Plasticity CV

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site A

Contract No:

PSL23/2537

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP08	31	D	0.10	0.60	17			32	15	17	97	Low Plasticity CL
CP08	34	D	0.60	1.20	19	4.3		28	14	14	91	Low Plasticity CL
CP08	1	D	1.20	1.65	24							
CP08	3	D	1.90	1.90	27			41	19	22	98	Intermediate Plasticity CI
CP08	5	D	2.45	2.50	39			74	31	43	100	Very High Plasticity CV
CP08	6	SPTLS	3.00	3.45	37							
CP08	8	D	3.90	3.90	29							
CP08	13	D	6.00	6.00	29							
CP08	21	D	8.00	8.00	32							
CP08	18	D	9.95	10.00	27							
CP08	45	D	15.00	15.00	17			37	18	19	100	Intermediate Plasticity CI
CP09	1	SPTLS	1.20	1.65	19	7.9						
CP09	21	B	1.60	2.00	35		2.62					
CP09	2	D	2.45	2.55	37							
CP09	3	D	4.45	4.55	28							
CP09	5	D	6.95	7.05	35							
CP09	8	D	9.95	10.05	24							
CP09	10	D	12.95	13.05	27							
CP10	1	D	0.00	1.20	18			40	18	22	96	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP10	1	SPTLS	1.20	1.65	19							
CP10	2	D	1.65	2.00	21			44	21	23	100	Intermediate Plasticity CI
CP10	3	D	2.00	3.00	35							
CP10	4	D	3.00	4.00	29							
CP10	5	D	4.00	5.00	32							
CP10	3	SPTLS	5.00	5.45	41							
CP10	7	D	6.50	8.00	27							
CP10	8	D	8.00	9.50	29							
CP10	9	D	9.50	11.00	26							
CP10	10	D	11.00	12.50	25							
CP10	14	D	17.00	18.50	24			72	30	42	100	Very High Plasticity CV
CP11	12	SPTLS	5.00	5.45	27							
CP11	16	SPTLS	8.00	8.45	28							
CP11	20	SPTLS	11.00	11.45	26							
CP11	25	SPTLS	14.00	14.45	30							
CP13	7	SPTLS	2.00	2.45	37			84	33	51	100	Very High Plasticity CV
CP13	2	B	2.00	2.45			2.64					
CP13	8	SPTLS	4.00	4.45	29							
CP13	11	SPTLS	6.50	6.95	26							

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP13	16	SPTLS	9.50	9.95	32							
CP13	19	SPTLS	12.50	12.95	24							
CP14	7	D	0.10	0.80	12			29	14	15	83	Low Plasticity CL
CP14	9	D	0.80	1.20	14							
CP14	1	SPTLS	1.20	1.65	16							
CP14	11	D	1.20	2.00	17			27	13	14	95	Low Plasticity CL
CP14	12	B	2.00	3.00	48		2.43					
CP14	13	D	2.00	3.00	46							
CP14	43	D	2.45	2.55	33							
CP14	15	D	3.00	4.00	30			70	29	41	100	Very High Plasticity CV
CP14	2	SPTLS	3.00	3.45	32							
CP14	37	D	4.45	4.55	27							
CP14	3	SPTLS	5.00	5.45	26							
CP14	21	D	6.50	8.00	27			74	31	43	100	Very High Plasticity CV
CP14	25	D	9.50	11.00	25							
CP14	5	SPTLS	11.00	11.45	26							
CP14	29	D	12.50	14.00	34			70	31	39	100	Very High Plasticity CV
CP14	31	D	14.00	15.50	22							
CP15	2	D	0.00	0.80	31			59	26	33	100	High Plasticity CH

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
CP15	6	B	0.80	1.20	27		2.65					
CP15	7	D	0.80	1.20	27							
CP15	12	D	1.65	1.70	45			80	33	47	100	Very High Plasticity CV
CP15	20	D	1.70	2.00	46			73	30	43	100	Very High Plasticity CV
CP15	14	SPTLS	2.00	2.45	34							
CP15	16	D	2.90	2.90	26							
CP15	18	D	3.45	3.50	28							
CP15	22	D	3.50	3.80	30							
CP15	23	SPTLS	4.00	4.45	30							
CP15	25	D	4.90	4.90	28							
CP15	26	UT	5.00	5.45	27			75	31	44	100	Very High Plasticity CV
CP15	27	D	5.45	5.50	26							
CP15	29	D	6.00	6.00	31							
CP15	32	D	7.50	7.50	23							
CP15	36	D	9.50	9.50	25			62	26	36	100	High Plasticity CH
CP15	39	D	10.50	10.50	28							
TP27	3	D	1.00	2.00	23			31	17	14	80	Low Plasticity CL
TP27	5	D	3.00	4.00	32							
TP28	4	D	1.00	2.00	15							

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m ³ Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
TP28	2	D	3.50		31							
TP29	3	D	1.90	2.90	42							
TP29	5	D	3.00	4.00	40							
TP30	5	D	0.20	1.00	26			60	26	34	98	High Plasticity CH
TP30	3	D	3.50	4.00	41							
TP32	3	D	2.00	3.00	29							
TP32	5	D	3.10	4.00	26							
TP33	2	B	1.70	2.30	28		2.64					
TP33	3	D	1.70	2.30	29			67	28	39	100	High Plasticity CH
TP33	5	D	3.00	4.00	30							
TP34	3	D	0.50	1.00	30			49	24	25	94	Intermediate Plasticity CI
TP34	5	D	2.00	3.00	41							
TP35	3	D	0.50	1.00	26	10.4		58	26	32	100	High Plasticity CH
TP35	5	D	3.00	4.00	29							
TP36	2	B	1.00	2.00	32							
TP36	3	D	1.00	2.00	32	12.7		61	27	34	100	High Plasticity CH
TP36	5	D	3.00	4.00	28							
TP37	2	B	0.50	2.10	21		2.69					
TP37	3	D	0.50	2.10	20			45	22	23	91	Intermediate Plasticity CI

SYMBOLS : NP : Non Plastic

* : Liquid Limit and Plastic Limit Wet Sieved.



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Project 320 - Site B

Contract No:

PSL23/2789

Client Ref:

30174974

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Project 320- Site D

Contract No:

PSL24/5371

Client Ref:

24/3985

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

*** : Liquid Limit and Plastic Limit Wet Sieved.**



Project 320- Site D

Contract No:

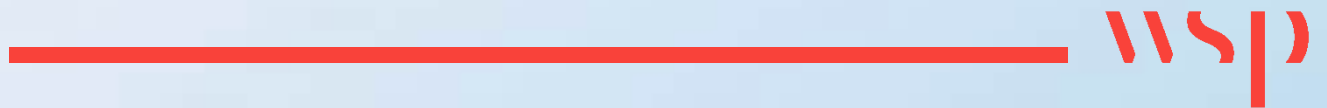
PSL24/6166

Client Ref:

24/3985

ANNEX 5

PARTICLE SIZE DISTRIBUTION TESTS CERTIFICATES



PARTICLE SIZE DISTRIBUTION TEST

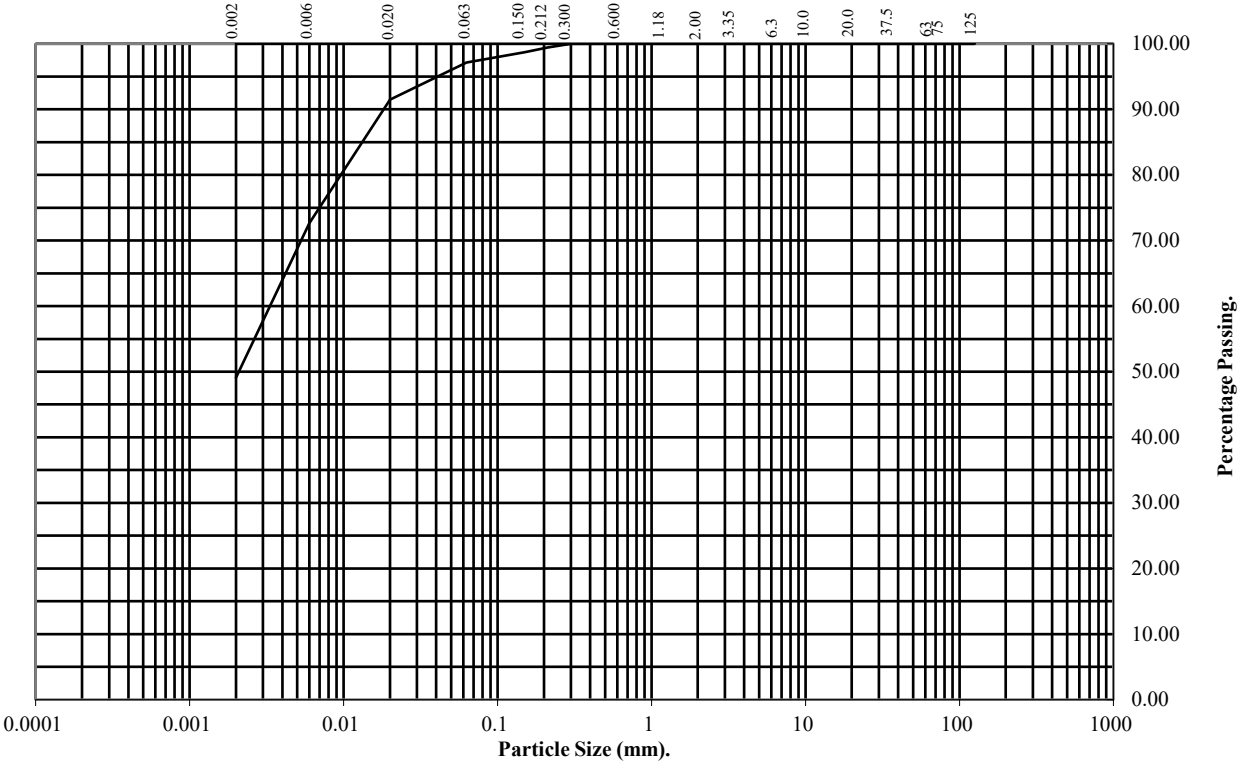
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP04 Top Depth (m): 5.00

Sample Number: 8 Base Depth(m): 6.50

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	100
0.212	99
0.15	99
0.063	97

Particle Diameter	Percentage Passing
0.02	91
0.006	73
0.002	49

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	3
Silt	48
Clay	49

Remarks:
See Summary of Soil Descriptions



Project 320 - Site A

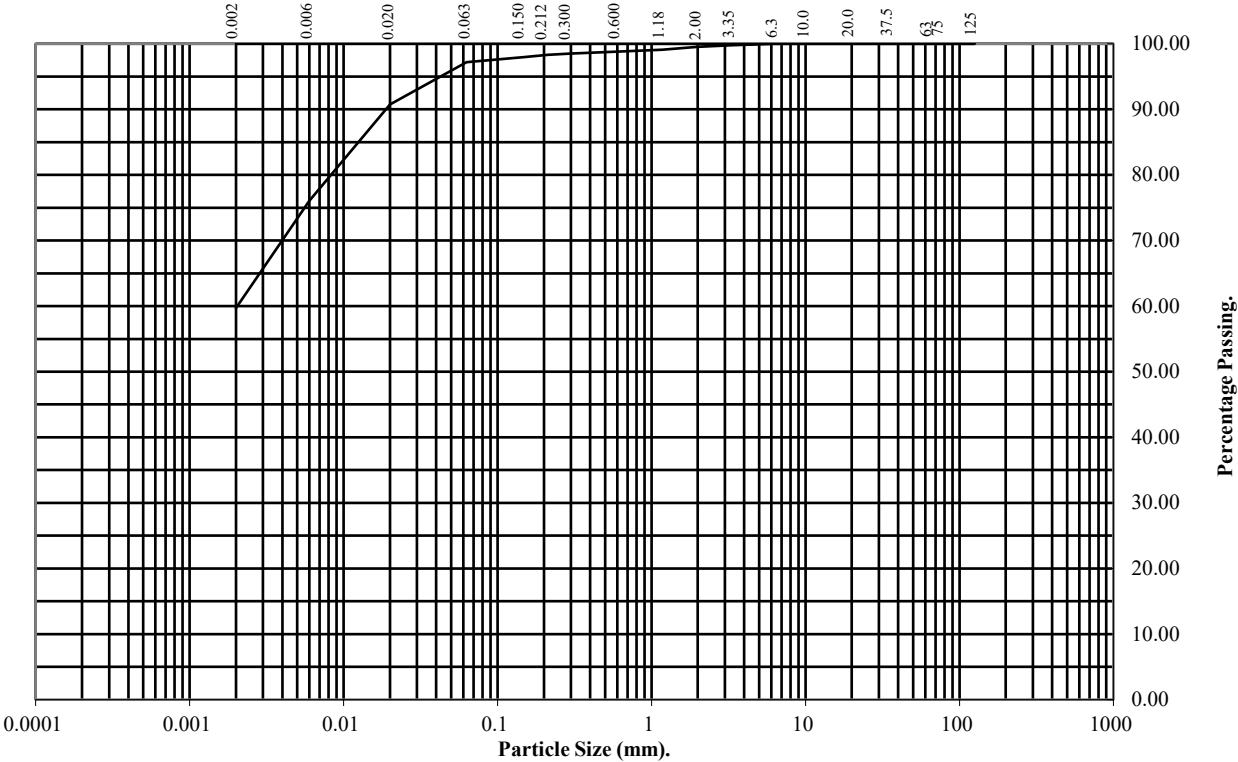
Contract No:
PSL23/2537
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP10 Top Depth (m): 6.50
Sample Number: 7 Base Depth(m): 8.00
Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	99
0.212	98
0.15	98
0.063	97

Particle Diameter	Percentage Passing
0.02	91
0.006	76
0.002	60

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	3
Silt	37
Clay	60

Remarks:
See Summary of Soil Descriptions



Project 320 - Site B

Contract No:
PSL23/2789
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

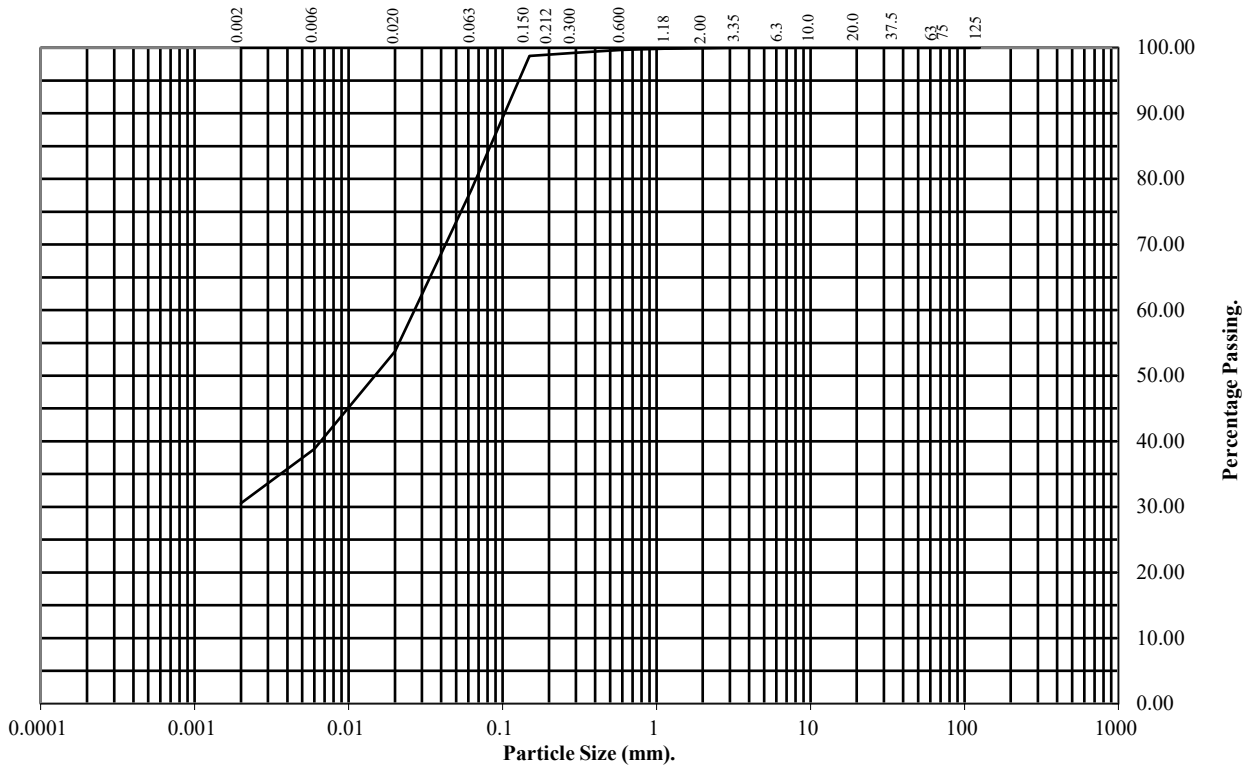
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: CP13 Top Depth (m): 15.50

Sample Number: 25 Base Depth(m): 15.95

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	99
0.15	99
0.063	78

Particle Diameter	Percentage Passing
0.02	54
0.006	39
0.002	31

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	22
Silt	47
Clay	31

Remarks:

See Summary of Soil Descriptions



Project 320 - Site B

Contract No:
PSL23/2789
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

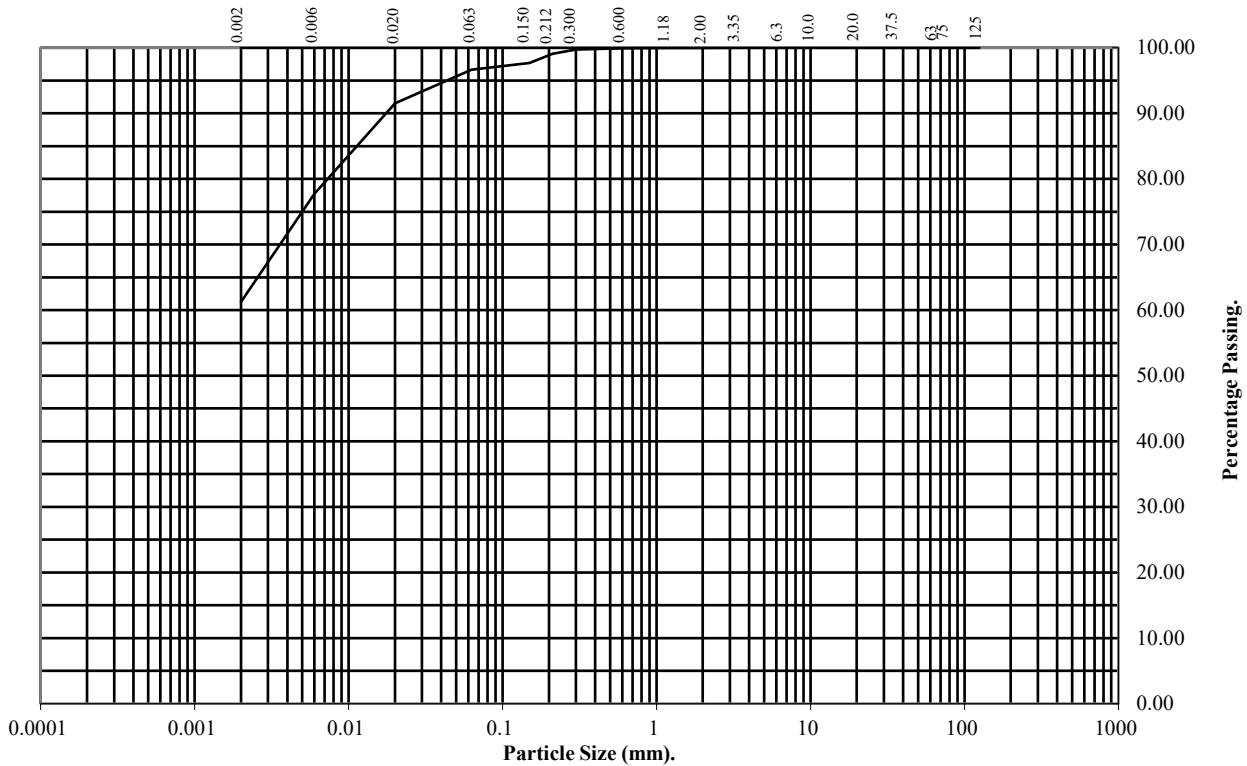
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP33 Top Depth (m): 1.70

Sample Number: 2 Base Depth(m): 2.30

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	100
0.212	99
0.15	98
0.063	97

Particle Diameter	Percentage Passing
0.02	92
0.006	78
0.002	61

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	3
Silt	36
Clay	61

Remarks:

See Summary of Soil Descriptions



Project 320 - Site B

Contract No:
PSL23/2789
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

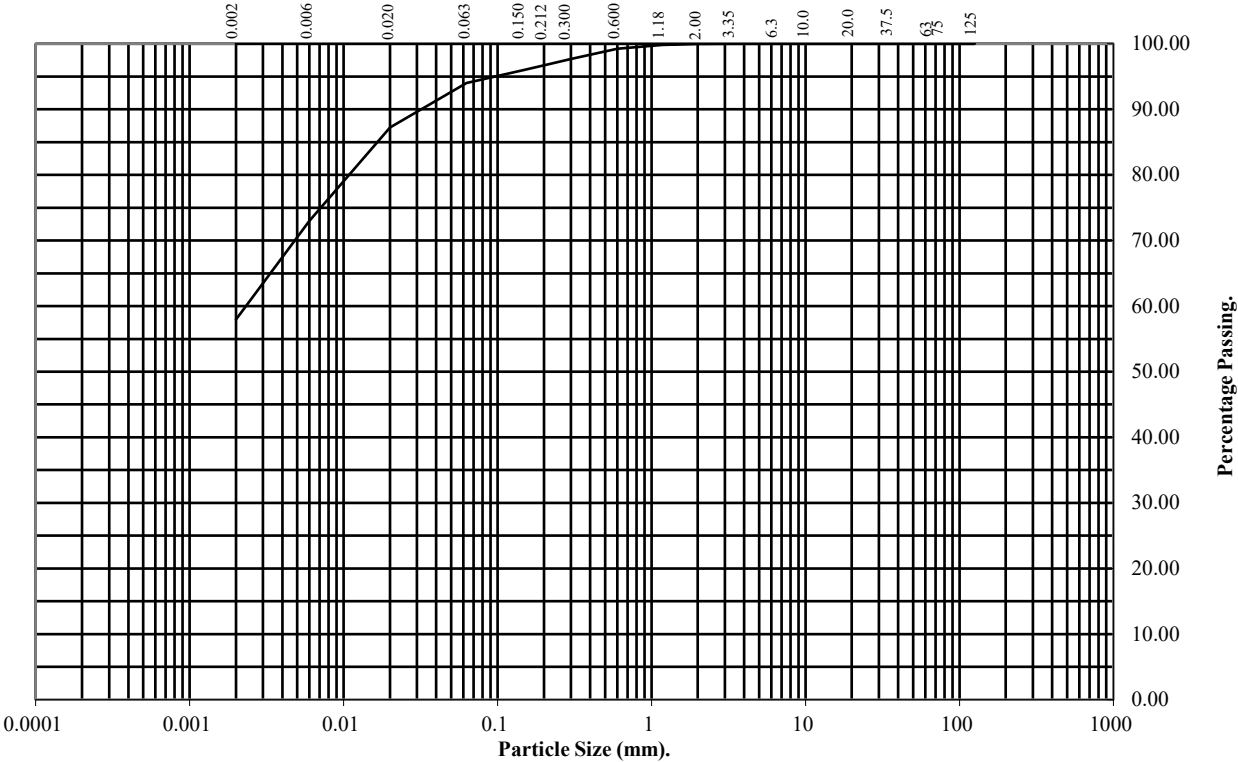
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP35 Top Depth (m): 0.50

Sample Number: 2 Base Depth(m): 1.00

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	99
0.3	98
0.212	97
0.15	96
0.063	94

Particle Diameter	Percentage Passing
0.02	87
0.006	73
0.002	58

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	6
Silt	36
Clay	58

Remarks:
See Summary of Soil Descriptions



Project 320 - Site B

Contract No:
PSL23/2789
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

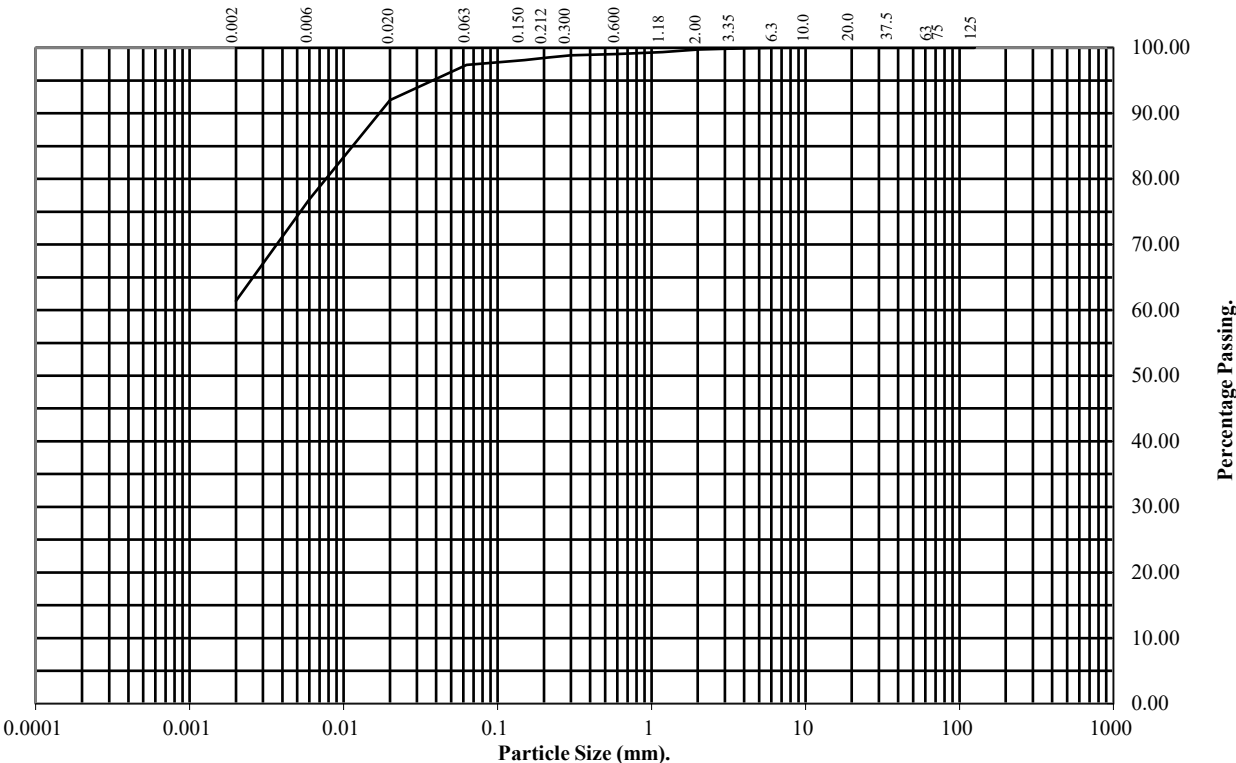
BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP35 Top Depth (m): 3.00

Sample Number: 4 Base Depth(m): 4.00

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	99
0.6	99
0.3	99
0.212	99
0.15	98
0.063	97

Particle Diameter	Percentage Passing
0.02	92
0.006	77
0.002	61

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	3
Silt	36
Clay	61

Remarks:
See Summary of Soil Descriptions



Project 320 - Site B

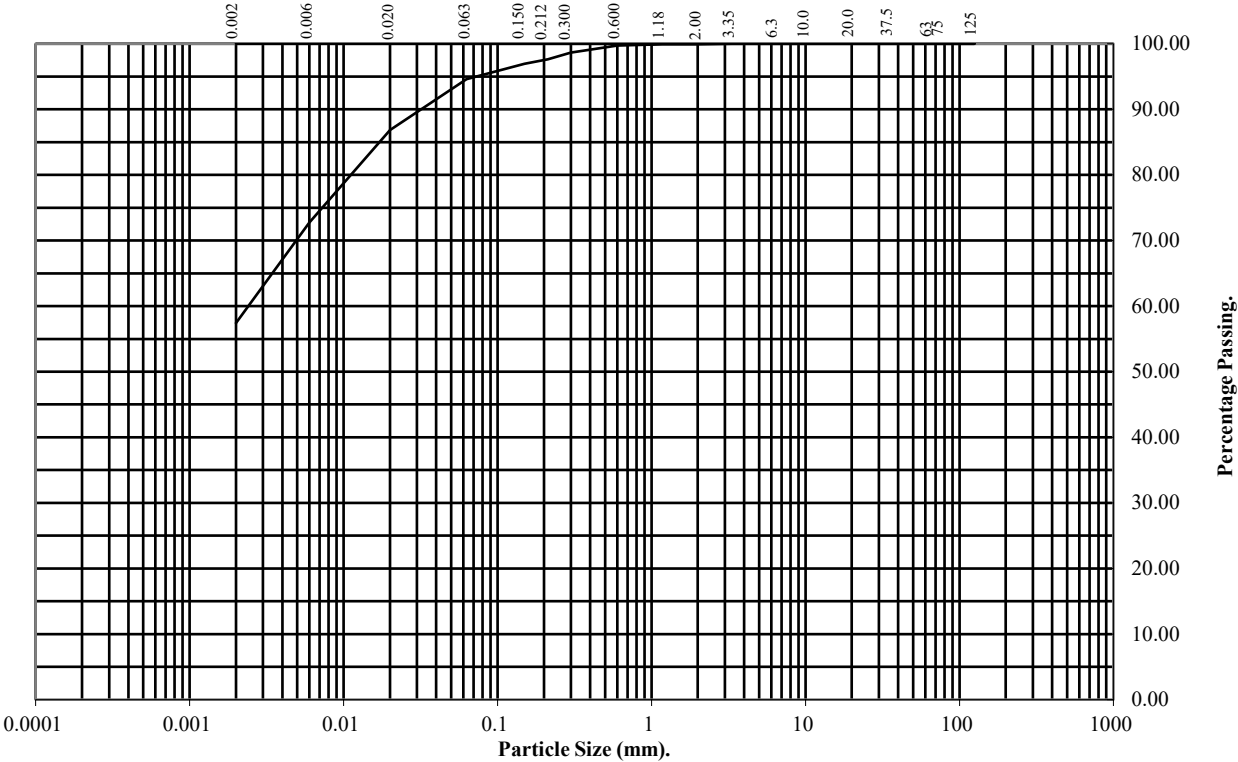
Contract No:
PSL23/2789
Client Ref:
30174974

PARTICLE SIZE DISTRIBUTION TEST

BS1377 : Part 2 : 1990

Wet Sieve & Pipette Analysis, Clause 9.2 & 9.4

Hole Number: TP36 Top Depth (m): 1.00
Sample Number: 2 Base Depth(m): 2.00
Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	100
6.3	100
3.35	100
2	100
1.18	100
0.6	100
0.3	99
0.212	98
0.15	97
0.063	95

Particle Diameter	Percentage Passing
0.02	87
0.006	73
0.002	57

Soil Fraction	Total Percentage
Cobbles	0
Gravel	0
Sand	5
Silt	38
Clay	57

Remarks:
See Summary of Soil Descriptions



Project 320 - Site B

Contract No:
PSL23/2789
Client Ref:
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