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Ground Investigation Report

Proposed LED Floodlit Turf Pitches

Sackville School, East Grinstead

October 2023



Project Details

Site: Sackville School, East Grinstead

Document Title: Ground Investigation Report

Document no.: STV6168-R01 Rev A

Date: October 2023

Client: Notts Sport Ltd

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Document history and status

Revision	Date	Description	Author	Checker	Reviewer
A	October 2023	First Issue	JH	KB	SD



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Non-technical Summary

Topic	Commentary
Site description	Sackville School is located to the east of East Grinstead, with access via Bourg-de-Peage Avenue, to the west. The development site is located to the north and currently comprises a running track. Cutting slopes and embankments are present around the pitch, indicating some cut and fill is likely to have taken place to create a level running track.
Development proposals	Artificial Grass Football Pitch (AGP) to the west and an Artificial Hockey Turf Pitch (HTP) to the east, both with floodlights
Site history	The site was recorded as open fields and allotments until the school was built in the late 1960s. However, the site of the proposed pitch remained undeveloped. A pond and at least one stream were recorded to be present within the eastern development area, likely until construction of the running track or adoption of the area as playing fields.
Ground conditions	Within the western pitch area, a shallow covering of Made Ground was encountered overlying the Wadhurst Clay Formation. Increasing thickness of Made Ground is present to the east, recorded at a maximum thickness of 3.2m. Deep Alluvium is present in the area of a former stream.
Development constraints	Based on information provided by the client, a concrete covered anthrax pit was located in the central grassed area of the running track. This appears to be outside of the proposed pitch locations although Soiltechnics are not aware if the actual extent of the pit is fully known. Deep Made Ground was identified within the footprint of the proposed HTP to the east. Historical maps indicate a pond was present on the southern boundary of the proposed HTP with a stream leading from it trending NE. Alluvium was encountered beneath the Made Ground in the location of the former stream and therefore localised deposits should be anticipated within the footprint of the pond and stream. Historical maps also indicated either streams or boundary features crossing the footprint of the western AGP. Although levels in this area appear to have been reduced to facilitate construction of the existing running track, which may have removed any Alluvium, the presence of such deposits locally is still a possibility.
Floodlight foundation solution	Flood lights for the football AGP to the west can be on shallow pad type foundations supported by the Wadhurst Clay Formation deposits. Foundations may require deepening in close proximity to mature trees/vegetation. There is a possibility that localised Alluvium may be present associated with historical streams. Location specific testing could be undertaken ahead of works, in order to understand and mitigate the risk if needed. Deep Made Ground in the east of the pitch precludes shallow foundations for the hockey HTP and therefore ground improvement or piling is recommended. A concrete class of DS-1 and AC-1s is required.
Pitch Formation	Based on the anticipated founding depth and DCP results, a CBR design value of 3% can be adopted for the western AGP. It is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600. There is a possibility that some Alluvium/Made Ground may be encountered if historical streams were present across the pitch. In such a case, these materials should be removed, or large cobbles of a good quality stone rolled into the formation to stabilise the area. For the eastern HTP, a CBR design value of 2% can be adopted. Due to the composition, variable density/strength and thickness of soils in the eastern section of the site, it is recommended soils are appropriately conditioned to minimise levels of differential settlement. Consideration should be given to excavating, sorting and compacting the initial 1m depth of Made Ground and introducing geosynthetic reinforcement.
Drainage potential	Wadhurst Clay Formation and Made Ground deposits are considered to be effectively impermeable for the purposes of drainage design. On this basis, disposal of stormwater via a soakaway is not considered viable. As an alternative, it is possible that the FTP drainage could key into the existing surface water drainage system currently used by the school.
Recommendation for further works	Western AGP Subject to the flexibility of flood light locations, it is recommended floodlights are avoided in the area of the former pond/stream. Further site investigation may be required to facilitate design of ground improvement techniques, where required. A deep borehole may be required should a piled foundation be proposed.

Topic	Commentary
	If foundations are likely to be in contact with Alluvium, sulphate testing is recommended to confirm the concrete classification of these soils. Eastern HGP Further works are not deemed to be necessary in the western AGP. Location specific testing could be undertaken ahead of works where streams may have historically crossed the site, in order to understand and mitigate the risk. General A covered anthrax pit has been noted within the grassed area towards the centre of the running track and although it appears outside the footprint of the proposed pitches, the exact extent of it is not known although these may be available on records not provided to Soiltechnics. The presence should be recorded in the CDM file in order to ensure it is avoided.

1 Introduction

1.1 Scheme Outline

- 1.1.1 The proposed development is for construction of an Artificial Grass Football Pitch (AGP) and an Artificial Hockey Turf Pitch (HTP) both of which will have floodlights, within the grounds of Sackville School. A site location plan is presented in Figure 2-A.
- 1.1.2 The report is based on the project proposals and information outlined above; should the scheme change then it will be necessary to review the conclusions and recommendations presented in this report.

1.2 Brief

- 1.2.1 This report has been prepared following instructions received from our client, Notts Sport Ltd.
- 1.2.2 The principal objectives of the ground investigation are to establish ground conditions at the site, using windowless sampling methods, sufficient to assess the infiltration potential and provide information necessary to allow design of the artificial sports pitches and floodlight foundations. The report will also advise on abnormal ground conditions and provide recommendations for further investigation works where applicable.
- 1.2.3 In addition to the above, a topographical survey was commissioned for the project, provided under separate cover.

1.3 Limitations

- 1.3.1 Soiltechnics disclaims any responsibility to our Client and others in respect of any matters outside the scope of this report. This report has been prepared with reasonable skill, care and diligence in accordance with the terms of our contract, taking account of the manpower, resources, investigations and testing devoted to it by agreement with our Client. This report is confidential to our Client and Soiltechnics accepts no responsibility of whatsoever nature to third parties to whom this report or any part thereof is made known. Any such party relies upon the report at their own risk.

2 Desk Study

2.1 Sources of information

2.1.1 Reference has been made to the following sources of information:

- British Geological Survey (BGS) GeoIndex – Onshore database.
- BGS Sheet 303 (Scale 1:50 000 and 1:10 000) – *Tunbridge Wells* (1971).
- Ordnance Survey OpenData
- Environment Agency open-source databases
- Google mapping services
- Interrogation of search engines for anecdotal information on the site history and other readily available online resources.

2.2 Site Location and Description

The proposed development lies to the east of East Grinstead, at the following postal address:

Lewes Road
East Grinstead
RH19 3TY

2.2.1 An aerial image showing the approximate site boundary and approximate development footprint is presented below, followed by a table summarising the key site features and a series of site photographs. A site plan is provided within Appendix A.



Figure 2-A: Aerial photograph of site boundary (red) and AGP/HTP footprint (blue)

Theme	Feature
Current site use	The site currently comprises a school with the proposed pitch locations within an existing running track. The school is accessed from Bourg-de-Peage Avenue, to the west.
Local area land use	The site is situated towards the eastern outskirts of East Grinstead and is surrounded by residential housing. Estcots Primary School lies to the west.
Topography	Local topography generally falls in northeasterly direction. Levels across the main school complex fall some 10m in a roughly northerly direction. The running track itself is relatively flat although surrounding levels fall in a northeasterly direction. Consequently, there is a cutting slope along the south-western corner and western boundary of the site (with adjacent buildings and car park up to 2.8m higher than the running track) and a heavily vegetated embankment along the eastern boundary, with the adjacent playing field up to 3.7m lower than the running track.
Buildings, surfacing and other permanent features	The main school complex is located to the southwestern corner of the site and comprises a mixture of one to four storey buildings with surrounding footpaths and soft landscaping. Car parking is present to the north and west of this area. Sports courts are present to the southeast. The majority of the site to the north comprises a Redgra surfaced running track with central grassed areas. Playing fields lie to the east of the site.
Vegetation	Trees and hedgerows are present along site boundaries and sporadically within the school complex to the south. Within the footprint of the proposed FTP, no significant vegetation is present although trees are present immediately north and west of the existing running track.
On-site / adjacent surface water features	Drainage ditches are present to the north, west and east of the existing running track. A ditch is also present along the eastern boundary of the main school site.
Injurious and invasive weeds	None observed
Evidence for ground instability	None observed

Table 2-A: Site Description

- 2.2.2 The observations provided above are made by a Geoenvironmental Engineer, who is not a specialist in asbestos surveying or invasive weed identification. Any associated comments are intended for use by this report only, and not for any other purpose.
- 2.2.3 A selection of site photographs are presented below:



Figure 2-B: View across the existing running track; looking east along the northern boundary.



Figure 2-C: View across the proposed area of the Football Pitch; looking south



Figure 2-D: View across the proposed area of the Hockey Pitch; looking north.

2.3 Site History

2.3.1 An attempt to trace the history of the site has been carried out by reviewing readily available ordnance survey maps. A chronological summary of the site's history is provided below.

Date	On-site	Off-site
Late-1800s to early 1900s	Undeveloped land/open fields. A small pond is present to the south of the proposed pitch area and a stream is recorded from the pond, trending in a north-easterly direction. Further possible watercourses are recorded leading from the pond in westerly and southerly direction, although these could just be boundary features.	Surrounding land is predominantly undeveloped although a road borders the site to the south (Lewes Road).
1910s to 1950s	No significant change until somewhere between the 1940s and 1950s, when the southern part of the site is recorded as allotments.	Some expansion of East Grinstead recorded although area surrounding the site remains predominantly rural.
1960s to 1980s	Sackville School was constructed on site in the 1960s. Mapping shows this comprised a single building and associated sports courts (which remain). Area of proposed development remains unchanged.	No change on mapping but surrounding residential housing likely to have been constructed during this time.
Early-2000s to present day	Sackville School has been expanded and now comprises a number of buildings with surrounding playing fields. Area of proposed development is occupied by a running track, with the layout that of present day.	No significant change.

Table 2-B: Summary of site history

- 2.3.2 In addition, prior to attending site, Notts Sports advised that three **concrete covered anthrax pits** were recorded on historical plans of the school, one within the grassed area of the running track and two others within the wider school site. The approximate location of the pit local to the proposed pitches is shown on Drawing 01 in Appendix A.

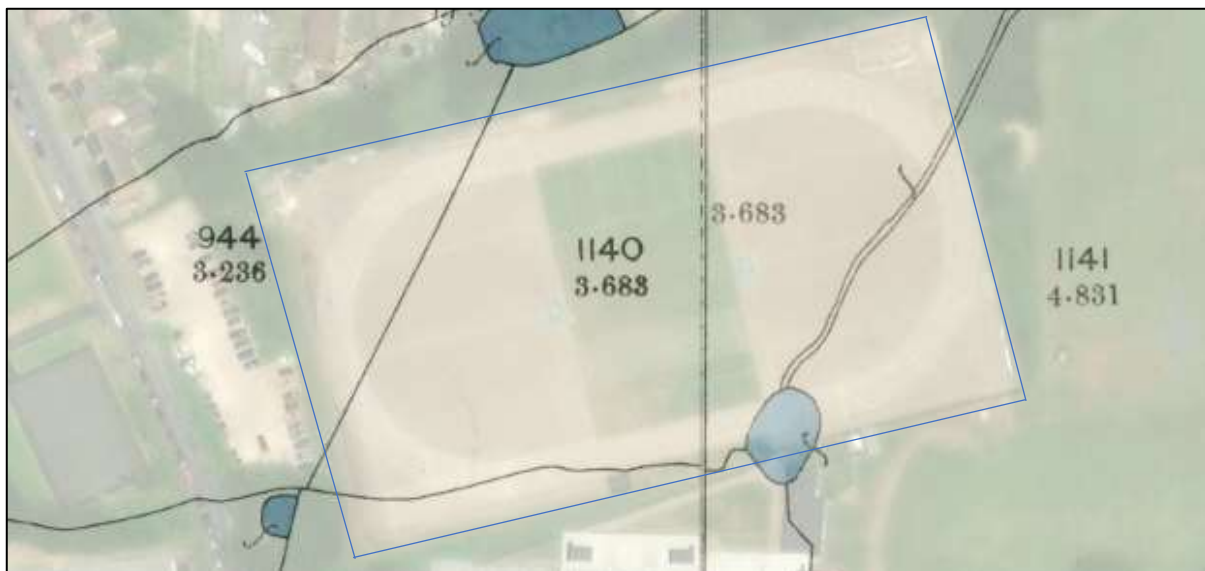


Figure 2-E: 1939 Historical map overlay for the proposed pitch areas

2.4 Anticipated Geology and Hydrogeology

- 2.4.1 Based on a review of available records, the site is anticipated to be underlain by bedrock of the Wadhurst Clay Formation, with local boreholes suggesting weathered clay to approximately 3m before grading into mudstone. No superficial deposits are shown to be present in the area of the site.
- 2.4.2 In addition, due to the presence of suspected cutting slopes to the west and an embankment to the south (based on adjacent topography), it is likely some earthworks have been undertaken in order to form a level running track. Made Ground is therefore likely to be present on site, potentially deepening to the east (3-4m based on the topographical survey for the pitch areas).
- 2.4.3 Historical maps also record a pond and at least one stream crossing the site and therefore localised Alluvium is also anticipated.



Figure 2-F: Bedrock geology

2.4.4 A summary of the anticipated geology below the proposed AGP and HTP is summarised as follows:

Stratum	Bedrock/ superficial	Approximate thickness (m)	Typical soil/rock type	Aquifer Designation	Likely permeability
Made Ground	Superficial	Variable, potentially up to 4m	Variable	-	Variable
Alluvium	Superficial	Variable; possibly 1-3m	Clays, silts and sands	-	Variable
Wadhurst Clay Formation	Bedrock	30-70	Clay and Mudstone	Unproductive Strata	Low

Table 2-C: Summary of anticipated geology and hydrogeology

2.5 Flood Risk

- 2.5.1 The site falls within a Flood Zone 1 area. This designation indicates there is less than a 0.1% chance of flooding from rivers or the sea in any year.
- 2.5.2 There are areas at risk of flooding from surface waters within the site, predominantly along the northern and eastern boundaries and a linear area extending from the northeastern corner into the main school complex. None of these areas are within the locations of the proposed pitches.
- 2.5.3 It should be noted that this information does not constitute a site-specific Flood Risk Assessment and one may be required for the scheme.



Figure 2-G: Extract of EA flood risk mapping for the site

2.6 Mining and Ground Stability

- 2.6.1 Coal Authority mapping data shows the site does not lie within a Coal Mining Reporting Area or a development high risk area. The risk of land instability associated to coal mining affecting the proposed development is considered to be low.
- 2.6.2 Historical and geological maps do not indicate any other evidence of mining/quarrying or ground instability in the area.

2.7 Landfill and infilled ground

- 2.7.1 The site does not lie within 250m of a permitted or historical landfill site and there are no records of infilled ground based on geological mapping.

2.8 Underground Infrastructure

- 2.8.1 Copies of all utility plans obtained are presented as Appendix G. The plans are provided for information only and should not be relied upon to be accurate. In addition, it is worth noting that the public utility plans provided by the asset owners typically exclude private service runs.
- 2.8.2 The plans do not show any mains services to cross the site, although a rising main is present adjacent to the northern boundary of the running track, as shown in the extract below.



Figure 2-H: Extract of Southern Water service plan showing rising main (purple line).

2.9 Unexploded Ordnance (UXO) Hazard Screen

- 2.9.1 A preliminary risk review has been undertaken by a UXO specialist to assess the risk of encountering UXO during ground investigation works undertaken by Soiltechnics only and to identify any precautionary measures required. It should be noted that the risk assessment has not been carried out fully in accordance with CIRIA report C785 'Unexploded Ordnance (UXO) A guide for the construction Industry'.
- 2.9.2 The risk review concluded that there was not a credible risk of encountering UXO during the ground investigation. It should be noted that this preliminary risk review does not consider risks to the construction phase.

3 Ground Investigation

3.1 Objectives

- 3.1.1 The ground investigation scope and location of exploratory holes was determined by Soiltechnics Ltd, based upon the overall brief outlined in Section 1.
- 3.1.2 The objectives of the fieldwork were to:
- a) Establish ground and groundwater conditions at the site.
 - b) Obtain samples for subsequent laboratory testing.

3.2 Fieldwork summary

- 3.2.1 Fieldwork was undertaken on the 29th August 2023.
- 3.2.2 A summary of the works completed is set out in the table below, along with the location of the exploratory records. The exploratory hole location plan is presented within Appendix A.

Exploratory records	Method	Qty	Final Depth Range (m bgl)	Comments
Appendix B	Dynamic windowless sampling boreholes	6	4.45	WLS01 to WLS06 Boreholes terminated at scheduled depth.

Table 3-A: Summary of fieldwork undertaken

- 3.2.3 All soils encountered were described in accordance with BS EN ISO 14688 'Identification and Classification of soil'.

3.3 Unexploded Ordnance (UXO)

- 3.3.1 Soiltechnics commissioned a UXO specialist to undertake a preliminary risk review for the purpose of the ground investigation works phase only.
- 3.3.2 The review concluded that the UXO risk to the ground investigation works is low within the site boundary and therefore no special precautions were required.

3.4 Sampling

- 3.4.1 During the fieldwork, sampling of soil, rock and groundwater for geotechnical purposes has been undertaken in accordance with BS EN ISO 22475-1 'Geotechnical Investigation and testing – sampling by drilling and excavation and groundwater measurements'.
- 3.4.2 Samples collected for chemical analysis have been taken and handled in accordance with BS ISO 18400-105:2017 'Soil quality — Sampling Part 105: Packaging, transport, storage and preservation of samples'.
- 3.4.3 Various sampling and sub-sampling methodologies have been adopted as appropriate, with the primary aim of obtaining the highest quality sample class practicable.
- 3.4.4 Untested chemical and geotechnical samples will be held for a period of 4 weeks from the date of the first report issue, after which they will be disposed of.

3.5 In-situ Testing

3.5.1 The following table summarises the field testing carried out. The results are summarised on individual exploratory hole logs where appropriate and detailed within the Appendices indicated.

Tests	Qty	Applicable standard / guidance	Location of Results
Standard penetration test (SPT)	24	BS EN ISO 22476-3	Included within logs Detailed in Appendix C
Pocket penetrometer	57	Manufacturer's instructions	Included within logs Detailed in Appendix C
Dynamic cone penetrometer (DCP) using TRL probe	6	DMRB: CS229	Detailed in Appendix D
Infiltration testing	2	BRE 365	Detailed in Appendix EAppendix C

Table 3-B: Summary of field testing undertaken

3.6 Investigation Constraints

- 3.6.1 No significant constraints were encountered which limited the design of the scope of works or the undertaking of planned fieldworks.
- 3.6.2 Whilst on site, Soiltechnics were advised that an anthrax pit was recorded on historical plans of the school within the grassed area of the running track. These plans were not made available, but the approximate location as advised is presented on Drawing 01 in Appendix A.
- 3.6.3 This did not pose a constraint to fieldwork as it is located outside of the proposed pitch footprints but, documents confirming the location should be reviewed and consideration given to any impact this may have on the proposed development.

4 Laboratory testing

4.1 Overview

- 4.1.1 Samples obtained from exploratory holes were sent to independent accredited laboratories for testing.

4.2 Geotechnical Testing

- 4.2.1 The geotechnical testing schedule was prepared by Soiltechnics using a targeted and judgemental approach, based upon the scheme proposals and ground conditions encountered.
- 4.2.2 Geotechnical laboratory test results are presented in Appendix D, and the total number of geotechnical tests undertaken is summarised below:

Geological Unit	Test	Quantity
Made Ground	Atterberg limits	1
	BRE SD1 Suite B	1
Wadhurst Clay Formation	Atterberg limits	2
	BRE SD1 Suite B	3
Alluvium	Atterberg limits	1

Table 4-A: Summary of geotechnical laboratory testing

5 Ground Investigation Findings

5.1 Ground Models

5.1.1 Ground conditions encountered were relatively consistent across the development area and were broadly in line with those anticipated from the desk study.

5.1.2 The tables below interpret the geological conditions within the area of the proposed pitches. Unless otherwise stated in subsequent interpretive report sections, this represents the adopted ground model.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)	Water
Redgra Surfacing	Reddish brown, very gravelly, clay. Gravel is limestone.	G.L.	G.L.	0.05-0.20	No
Made Ground – Subbase	Loose, dark grey, clayey gravel. Gravel is limestone.	0.05-0.20	0.20	0.10	No
Made Ground (WS06 only)	Soft orangish grey clay	0.25-0.30	0.30	0.4	No
Wadhurst Clay Formation (Weathered)	Stiff, yellowish brown, mottled grey, gravelly, clay. Gravel is mudstone.	0.15-3.20	0.50	Not proven	Yes

Table 5-A: Ground Model within the AGP footprint to the west

5.1.3 Based on level changes observed across the site, there is a potential for Made Ground to be present to the northwestern corner of the AGP as the extent of cut and fill is unknown. No works were undertaken in this area due to the presence of an anthrax pit, the exact extent of which is unknown.

5.1.4 Historical maps also show possible streams of boundary features along the southern part of the proposed pitch and crossing the pitch diagonally SE-NW (refer to Figure 2-E). If these features are streams, there is a possibility that Made Ground and Alluvium may be present but the extent would be dependent on the depth of cutting that has taken place to form the existing running track.

Stratum	Brief description	Top depth range (m bgl)	Adopted model top depth (m bgl)	Thickness (m)	Water
Redgra Surfacing	Reddish brown, very gravelly, clay. Gravel is limestone.	G.L.	G.L.	0.1-0.2	No
Made Ground – Subbase	Loose, dark grey, clayey gravel. Gravel is limestone.	0.05-0.20	0.20	0.10-0.15	No
Made Ground	Firm, greenish grey, slightly gravelly clay. Gravel is brick and flint.	0.25-0.30	0.30	2.3-3.2	No
Alluvium (WS02 only)	Firm, greenish grey, slightly gravelly clay. Gravel is flint.	2.30	2.30	>2.15 (Not proven)	No
Wadhurst Clay Formation (Weathered)	Stiff, yellowish brown, mottled grey, gravelly, clay. Gravel is mudstone.	2.3-3.20	2.3	Not proven	Yes

Table 5-B: Ground Model within the HTP footprint to the east

- 5.1.5 The Alluvium encountered in WS02 is likely to be associated with the stream recorded to have historically crossed the pitch area in a SE-NW (refer to Figure 2-E) and therefore should be anticipated elsewhere across the site. A pond was also recorded along the southern boundary. WS03 was undertaken in the approximate location of the pond but no Alluvium was encountered. However, given there was no surface evidence of this historic feature, it is possible it was missed and therefore localised deep Made Ground/Alluvium in this area should still be anticipated.
- 5.1.6 Further detail about the ground conditions encountered across the proposed pitch areas is provided in the relevant sub-sections below.

5.2 Redgra Surfacing

- 5.2.1 Surfacing across the running track was encountered to depths between 0.05m and 0.20m in thickness and comprised very soft, reddish brown, very gravelly, clay. Gravel consisted of limestone.
- 5.2.2 A photograph of the typical surfacing encountered is presented below.



Figure 5-A: Redgra Surfacing encountered in WS01

5.3 Made Ground – Subbase

- 5.3.1 Made Ground – Subbase was found in all exploratory holes and extended to depths between 0.10m-0.15m. The Made Ground comprised dark grey, clayey gravel of limestone.
- 5.3.2 A photograph of the typical Made Ground - Subbase encountered is presented below.



Figure 5-B: Made Ground – Subbase encountered in WS03

5.4 Made Ground

- 5.4.1 Made Ground was encountered within the eastern part of the development area, with the deepest deposits in the northeastern corner, which is consistent with the anticipated cut and fill based on local levels. The Made Ground generally comprised firm, greenish grey, occasionally mottled orangish brown, gravelly clay with gravels of flint, brick and occasional ash.
- 5.4.2 Towards the northwestern corner, Made Ground was also encountered to a depth of 0.6m and comprised soft, orangish brown clay.
- 5.4.3 Photographs of the typical Made Ground encountered is presented below.



Figure 5-C: Made Ground encountered in WS03



Figure 5-D: Made Ground excavated from WS01

5.5 Alluvium

- 5.5.1 Alluvium was encountered in WS02, excavated to the east of the development area in the approximate location of the former stream. The base of the Alluvium was not proven but had a minimum thickness of 2.15m BGL.
- 5.5.2 The Alluvium comprised a firm, greenish grey, slightly gravelly clay. Gravel consists of flint.
- 5.5.3 Photographs of the Alluvium encountered are shown below.



Figure 5-E: Alluvium encountered from 2.3m depth in WS02

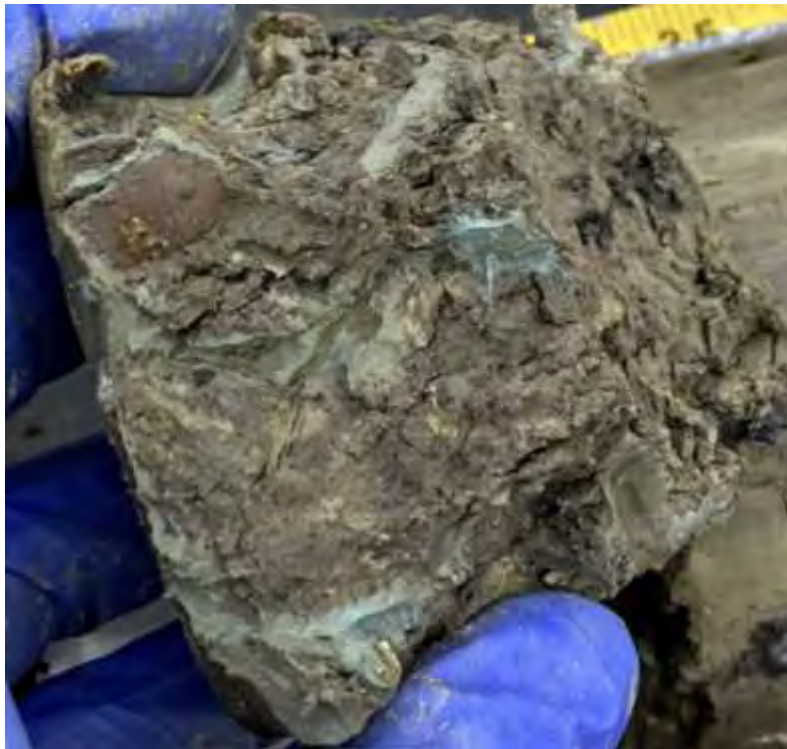


Figure 5-F: Alluvium excavated from WS02

5.6 Wadhurst Clay Formation

- 5.6.1 The Wadhurst Clay Formation was found across the site and extended beyond the termination depths of the boreholes.
- 5.6.2 The Wadhurst Clay Formation typically comprised stiff, yellowish brown, yellowish grey and greenish grey, slightly gravelly, laminated clay. Gravel consisted of mudstone.
- 5.6.3 A photograph of the typical Wadhurst Clay Formation is shown below.



Figure 5-G: Photograph of the Wadhurst Clay Formation encountered in WS04



Figure 5-H: Photograph of the typical Wadhurst Clay Formation encountered in WS05

5.7 Groundwater

5.7.1 A summary of the groundwater level data obtained during the fieldworks phase is presented below.

Exploratory hole ID	Groundwater observation
WS06	Encountered at 4.20m, rising to 4.15m after 20 minutes.

Table 5-C: Summary of groundwater observations during the fieldworks

5.8 Evidence of Possible Contamination

5.8.1 Soiltechnics were advised of the presence of an anthrax pit towards the centre of the running track and this area was avoided.

5.8.2 During the ground investigation works, no significant visual or olfactory evidence of contamination was noted except for the presence of anthropogenic materials contained within the Made Ground (brick and occasional ash), although this generally appeared to be reworked natural soils.

5.9 Obstructions and Instability

5.9.1 The progress of the ground investigation works was not generally affected by below ground obstructions or instability.

6 Geotechnical Discussion

6.1 Scheme Overview

6.1.1 The following assessments are made on the investigatory data presented in the preceding sections of this report and are made with reference to the specific nature of the development. Should scheme proposals change then it is recommended that the validity of the conclusions of this report in relation to the revised scheme are checked.

6.1.2 The proposed development is for construction of an Artificial Grass Floodlit Football Pitch (AGP) and an Artificial Floodlit Hockey Turf Pitch (HTP) with floodlights. In view of the scheme proposals, the geotechnical elements considered in this report are outlined below:

- a) Floodlight and pitch foundations
- b) Drainage

6.2 Key Geotechnical Issues

6.2.1 In view of the ground conditions, the following list summarises the key geotechnical issues that may impact the scheme and will therefore need to be appropriately managed during the lifecycle of the project:

- Variable Soils
- Trees and Vegetation

6.3 Variable Soils

6.3.1 To the east of the site, within the footprint of the proposed HTP, soils comprised Made Ground to depths up to 3.0m. In addition, Alluvium was encountered within WS02, which is likely associated with a former stream that crossed the east of the site in a northeasterly direction. Although not encountered in the investigation, it is possible that deeper Made Ground and Alluvial deposits will also be present to the southwest, in the location of a former pond.

6.3.2 With reference to Figure 2-E, other lines are also present on historical maps on the western half of the site (within the footprint of the proposed AGP), but it is not possible to say if these are field boundaries or smaller streams/drains. An attempt was made to target one of these areas to the south and no Made Ground/Alluvium was encountered. However, there is no indication of any of these historical features on site (likely due to cutting/filling) so there is no certainty that the borehole was situated directly on the feature. Given this area of the site has undergone some cut however, it may also be possible that any Made Ground/Alluvium was removed during formation of the running track.

6.3.3 Made Ground is considered unsuitable for supporting concentrated foundation loads due to their variable and potentially compressible nature. Accordingly, foundations should extend, as a minimum, through such deposits into the Wadhurst Clay at depth. Due to the depth of the Made Ground to the northeast, an alternative foundation solution may be required, if pad foundations in excess of 3m are not considered feasible. This may comprise the use of piles or utilising ground improvement techniques.

6.3.4 The Alluvium within the footprint of the HTP should be limited to the area of the former stream/pond and will therefore be of limited extent, although it is present to depths exceeding 4m. If possible, floodlights should be positioned outside of the location of the pond and channel to avoid these deposits, or, as with the deep Made Ground, the use of piles or ground improvement could be adopted. Alternatively, the Alluvium encountered had a firm to stiff consistency, no obvious organic/highly compressible layers and a shear strength of around 50kN/m^2 . It may therefore be feasible that these soils could support foundations, subject to further investigation and likely inspection of foundation excavations by a geotechnical engineer prior to construction to confirm shear strength.

6.3.5 Similarly, based on historical maps, there is a possibility that streams also crossed the western AGP footprint. Due to the reduction in levels across this part of the site, it is unlikely any Alluvium in this area will be of sufficient depth to impact foundation formation. However, location specific testing could be undertaken ahead of works, in order to understand and mitigate the risk if needed.

6.4 Trees and Vegetation

6.4.1 There are a number of trees just beyond the northern, north-western and north-eastern boundary of the proposed development, which may impact upon the foundation design depth for shallow footings. Piles will extend beyond the zone of shrinkage/swelling and will not be impacted by trees.

6.4.2 It is recommended that a suitably qualified arboriculturist is appointed to undertake a survey such that spread foundations can be designed appropriately. The survey should include the location, species, height (and mature height) and water demand of each tree and major vegetation.

6.5 Foundation Strategy

6.5.1 In view of the geotechnical issues discussed above and the anticipated loadings, the western AGP will be able to utilise spread foundations, whilst the HTP to the east, may require ground improvement or piling in some areas where deep Made Ground or Alluvium precludes the use of spread foundation.

6.6 Pad foundations (Western site area: AGP)

6.6.1 The cohesive Wadhurst Clay Formation will adequately support the proposed floodlight bases on pad foundations. Excavations for foundations are likely to encounter clay deposits as described above. The assessments are therefore based on foundations located within cohesive soils.

6.6.2 Laboratory testing indicates that the soils are of medium volume change potential and thus foundations should extend a minimum of 0.90m depth below the proposed ground level, subject to penetrating the naturally deposited soils by a minimum of 0.30m.

6.6.3 The floodlight foundations will be eccentrically loaded thus stresses imparted to the ground will not be uniform. As a result of the long-term stresses, the settlement in turn may not be uniform in clay soils. Such stresses are likely to be from dead loads only and not from live loads (such as wind), which will be transient and not likely to contribute to settlement. Live loads will increase the eccentricity of loads and thus increase the concentration of stresses potentially to an edge of the foundation.

6.6.4 Based on ground conditions and in-situ pocket penetrometer testing, a conservative undrained shear strength of 90kN/m^2 has been adopted for design purposes. The presumed bearing capacity to limit the effects of eccentricity should not exceed 165kN/m^2 .

- 6.6.5 The results of calculations undertaken to determine the bearing values for pad type foundations in cohesive Wadhurst Clay Formation are presented below;

Plan size of pad (m)	Ultimate bearing value (kN/m ²)	Presumed bearing value (kN/m ²)	Allowable bearing pressure (kN/m ²)
1.0 x 1.0	845	165	160
1.5 x 1.5	800	165	160
2.0 x 2.0	780	165	150

Table 6-A: Bearing values for floodlight foundations

- 6.6.6 The presumed bearing values have been derived from the ultimate bearing value by applying a factor of safety of 3. The presumed bearing capacities given above should not be exceeded in any loading cases.
- 6.6.7 The allowable bearing capacity is derived assuming a constant, uniformly applied load, with a settlement limit of 25mm, limited where necessary for floodlights in cohesive soils in line with above.
- 6.6.8 Differential settlement is dependent upon the variation of loads imposed on the ground and consistency of the foundation supporting ground. Assuming foundation loads are reasonably uniform and in line with the values outlined above, it is estimated that differential settlement is unlikely to exceed say 25mm. It is likely settlement will be substantially achieved within say 10 years of construction.

6.7 Piling and ground improvement (Eastern site area: HTP)

- 6.7.1 Where deep Made Ground or Alluvium is present in the footprint of the HTP to the east, an alternative foundation solution is likely to be required. Piled foundations through said deposits would be necessary, or some form of ground improvement in order to provide suitable support for the proposed floodlights.
- 6.7.2 It is recommended the type, design and installation of piles are determined by a specialist piling contractor who has experience in pile installation in these or similar ground conditions and may be able to interpret the observed ground conditions in a different and potentially more beneficial manner. It is possible that if piled foundations are adopted, a further ground investigation comprising of deeper boreholes will be required on site to establish design parameters ahead of construction.
- 6.7.3 Due to a combination of cost, programme and site constraints, some alternative foundation or ground improvement solutions to minimise settlement below floodlight foundations could be viable for the development. The following solutions may be technically feasible for the site and are discussed in brief below: -
- Controlled Modulus Columns (CMC)
 - Soil Mixing/ lime stabilisation
- 6.7.4 Controlled Modulus Columns (CMC) provide a fast and economical alternative to piling. The technique installs low strength concrete columns (280mm to 500mm) in diameter, utilising a displacement tool attached to a rig. The concrete columns would enhance the bearing capacity beneath proposed floodlights, which would in turn reduce total/differential settlement.

- 6.7.5 Soil mixing involves modifying the properties of weak soils to improve load carrying and permeability characteristics. The process uses a single or multi tool auger to break up the soil, which is then injected at low pressures with a specifically designed binder (typically lime or cement) and mixed within the soils.
- 6.7.6 Should an alternative approach to foundation design be considered, it is recommended the advice of a specialist in the field of the above processes is sought ahead of design. It is also possible that further site investigation would be required to facilitate design of such specialist techniques.

6.8 Artificial Pitch Foundations (Western site area: AGP)

- 6.8.1 It is anticipated that the proposed FTP will be located at or about existing ground levels, with the formation located on Wadhurst Clay Formation.
- 6.8.2 CBR value has been determined for the proposed FTP using in-situ Dynamic Cone Penetrometer testing following the methodology defined by the Highways England Document CS229 Data for Pavement Assessment. The results are presented in Appendix C and the location of test positions are shown on Drawing 01.
- 6.8.3 Based on the anticipated founding depth and DCP results, a CBR design value of 3% can be adopted for the Wadhurst Clay Formation, which are likely to be representative of those which remain at or near pitch formation levels.
- 6.8.4 The Wadhurst Clay Formation are anticipated to exhibit a degree of variability and compaction. It is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600. Such a process will identify any soft/loose areas, which should either be excavated out and backfilled with a suitable well compacted material similar to those exposed in the sides of the resulting excavation, or large cobbles of a good quality stone rolled into the formation to stabilise the 'soft/loose' area.
- 6.8.5 If any deeper Made Ground or Alluvium is encountered in the locations of the possible former streams, consideration should be given to excavating, sorting and compacting the initial 1m depth of Made Ground to achieve consistent levels of compaction across the proposed HTP and minimising the potential effects of differential settlement.
- 6.8.6 In addition, a geosynthetic reinforcement could be used to minimise the potential effects of differential settlement between the differing soil types.

6.9 Artificial Pitch Foundations (Eastern site area: HTP)

- 6.9.1 It is anticipated that the proposed HTP to the east of the site will be located on or about existing ground levels, with the formation located on Made Ground, Alluvium and potentially Wadhurst Clay towards the west.
- 6.9.2 Based on the anticipated founding depth and DCP results, a CBR design value of 2% can be adopted for the Made Ground, which are likely to be representative of those which remain at or near pitch formation levels.
- 6.9.3 Due to the composition, variable density/strength and thickness of soils in the eastern section of the site, it is recommended such soils present at and below formation levels are appropriately conditioned to achieve a more uniform level of compaction and minimise levels of differential settlement which could otherwise manifest across the HTP surfacing.

6.9.4 Consideration should be given to excavating, sorting and compacting the initial 1m depth of Made Ground to achieve consistent levels of compaction across the proposed HTP and minimising the potential effects of differential settlement.

6.9.5 In addition, a geosynthetic reinforcement is recommended to minimise the potential effects of differential settlement between the differing soil types.

6.10 Drainage

6.10.1 In situ permeability testing has been undertaken at the site in accordance with BS EN ISO 22282 Geotechnical investigation and testing – Geohydraulic testing (2012).

6.10.2 The results are presented in Appendix C and in both boreholes, there was insufficient infiltration over 180 minutes to provide a permeability rate.

6.10.3 Based on the results, all soils on site were observed to be of low permeability, consistent with the high clay content, and therefore such soils are considered to be effectively impermeable for the purposes of drainage design.

6.10.4 No existing soakaway features were observed on site during ground investigation works; however, a full drainage survey was not undertaken.

6.10.5 As an alternative, it is possible that the pitches drainage could key into the existing surface water drainage system currently used by the school. If this is considered an option for the development a comprehensive drainage assessment will be required to determine the potential impact on the capacity of the existing systems, to identify the invert levels of existing features, and to confirm drainage gradients achievable across the proposed pitch areas.

6.11 Aggressiveness Of The Ground To Buried Concrete

6.11.1 The aggressiveness of the ground with respect to buried concrete has been assessed in accordance with Building Research Establishment Special Digest 1: Concrete in Aggressive Ground Third Edition (2005).

6.11.2 The site is interpreted to be a greenfield where pyrite is likely to be present.

6.11.3 The proposed foundations will extend into previously undisturbed soils that contain pyrite. Excavating to form a foundation does not create 'disturbed' ground as defined in BRE SD-1. However, any arisings resulting from foundation excavation or replacement piling for example would be classified as 'disturbed' ground. Accordingly, the amount of oxidizable sulphides has also been considered when categorising the strata.

6.11.4 The classification of the strata is tabulated below:

Stratum	Disturbed / Undisturbed	Design sulphate class	Aggressive chemical environment for concrete class
Made Ground	Disturbed	DS-1	AC-1s
Wadhurst Clay Formation	Disturbed	DS-1	AC-1s
	Undisturbed	DS-1	AC-1s

Table 6-B: Summary of the aggressiveness of the ground to buried concrete

- 6.11.5 The Alluvium deposits located in the eastern HTP were similar to that of the Made Ground and Wadhurst Clay Formation and therefore are likely to have a similar classification. However, if foundations are proposed within the footprint of the stream or pond, then testing is recommended to confirm the classification.

7 Chemical Assessment

7.1 General

- 7.1.1 A chemical assessment of the site is outside of the brief. However, consideration with regard to the presence of the anthrax pit towards the centre of the running track and mitigating the risk to construction operatives will be needed.

8 Recommendations for further works

- 8.1.1 Further works are not deemed to be necessary in the western AGP. However, there is a possibility that historical streams crossed the pitch footprint and therefore Alluvium could be present. Location specific testing could be undertaken ahead of works, in order to understand and mitigate the risk if needed.
- 8.1.2 If a piled foundation solution is adopted for the proposed floodlighting within the eastern HTP, it is recommended this investigation is supplemented with further onsite deeper boreholes providing parameters to facilitate design and construction.
- 8.1.3 If ground improvement is utilised in the eastern HTP, potentially allowing adoption of shallow foundations, specialist input at an early stage is recommended.
- 8.1.4 If floodlight foundations are likely to be in contact with Alluvium, sulphate testing is recommended to confirm the concrete classification of these soils.

Appendix A Drawings



Key:

- Development Boundary
- WLS
- Infiltration Testing
- Approximate Anthrax Pit Location
- Site Boundary
- Historic Pond
- Historic Stream
- Potential Historic Stream

Notes

- 1) Base image provided by Google.
- 2) All drawn features are approximate.

Contains OS data © Crown copyright [and database right] [2023]
Map data © 2023 Google

REV	DATE	COMMENT ON VARIATION
A	October 2023	First issue

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Sackville School, East Grinstead

TITLE
Exploratory Hole Location Plan

PROJECT No.	DRAWING	REVISION
STV6168	01	A

Appendix B Exploratory Hole Logs

Key to legends

Composite materials, soils and lithology					
	Topsoil		Made Ground		Boulders
	Clay		Coal		Cobbles
	Gravel		Limestone		Mudstone
	Sand		Sandstone		Silt
					Siltstone
					Peat
					Concrete
					Chalk

Note: Composite soil types are signified by combined symbols.

Key to 'test results' and 'sampling' columns

Test result		Sampling	
Depth	Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)	From (m) To (m)	Records depth of sampling
Result	PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m ²) by applying a factor of 50.		D Disturbed sample
	SV – Hand held shear vane result reported as an undrained shear strength (kN/m ²). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.		B Bulk disturbed sample
	SPT – Standard Penetration Test result (N value) (uncorrected) ^{1,2,3} SPT(c) – Standard Penetration Test result (solid cone) (N value) (uncorrected) ^{1,2,3}		ES Environmental sample
	UT – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample	Type	W Water sample
			U Undisturbed thick-walled sample 100mm diameter sampler
			UT Undisturbed thin walled sample 100mm diameter sampler
			UTF Failed undisturbed sample

Note 1: Seating blows recorded in brackets.

Note 2: Casing depth records depth of casing when SPT or SPT(c) was carried out.

Note 3: Water depth records depth of water when SPT or SPT(c) was carried out.

Water observations

Described at foot of log and shown in the 'water strike' column.

 Water level observed after specified delay in drilling

 Water strike

Installation details

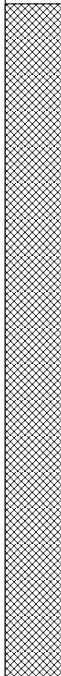
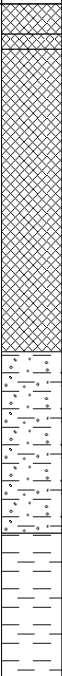
	Gravel filter		Bentonite
	Slotted pipe		Unslotted pipe
	Arisings		Grout
	Extensometer magnet		Vibrating wire piezometer

Density

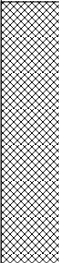
Density recorded in brackets determined by qualitative field assessment or inferred from density testing and soil descriptions from across the site (i.e.: [Medium dense]).

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.20												
	[Loose] dark grey clayey GRAVEL. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND - SUBBASE)	0.30										0.40		D
	Firm greenish grey mottled orange brown CLAY. (MADE GROUND)					S 1.00 - 1.45	(0) 2			PP 0.60	PP=125			
										PP 0.90	PP=75			
										PP 1.30	PP=108			
										PP 1.70	PP=50	1.60		D
						S 2.00 - 2.45	(2) 9			PP 2.20	PP=50			
										PP 2.60	PP=108			
	Firm greenish grey slightly gravelly CLAY. Gravel is fine angular brick, flint and ash. (MADE GROUND)	2.60				S 3.00 - 3.45	(3) 10			PP 2.90	PP=142	2.70		ES
										PP 3.20	PP=192	2.80		ES
	Stiff to very stiff yellowish brown grey CLAY. (WADHURST CLAY FORMATION)	3.20								PP 3.60	PP=150			
						S 4.00 - 4.45	(8) 20			PP 3.90	PP=225			
	BOREHOLE TERMINATED AT 4.45m	4.45												

Notes Borehole terminated at scheduled depth.	Title			Date(s)	
	Dynamic Windowless Sampling record			29/08/2023	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JH	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	80	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	A
	2.00 - 3.00	100			
	3.00 - 4.00	100	Co-ordinates	Checked by	WS01
			-	KB	

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING					
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE			
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.20				S 1.00 - 1.45	(0) 3			PP 0.40	PP=92	0.60		D			
	[Loose] dark grey clayey GRAVEL. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND - SUBBASE)	0.30								PP 0.80	PP=100						
	Firm greenish mottled yellowish grey slightly gravelly CLAY with occasional gravel sized pockets of organic matter. Gravel is fine to medium brick and flint. (MADE GROUND)									PP 1.40	PP=100	1.40		D			
										PP 1.80	PP=67						
		Firm greenish grey slightly gravelly CLAY. Gravel is fine to coarse subangular to subrounded flint. (ALLUVIUM)	2.30				S 2.00 - 2.45			(1) 10			PP 2.20	PP=75	2.60	2.90	ES
													PP 2.60	PP=108			
	Firm to stiff greenish grey CLAY. (ALLUVIUM)	3.50				S 3.00 - 3.45	(3) 9			PP 2.90	PP=100						
										PP 3.40	PP=75						
						S 4.00 - 4.45	(4) 12			PP 3.70	PP=125						
										PP 3.90	PP=100						
	BOREHOLE TERMINATED AT 4.45m	4.45															

Notes Infiltration testing undertaken. Borehole terminated at scheduled depth.	Title Dynamic Windowless Sampling record			Date(s) 29/08/2023	
	Recovery details		Method Windowless sampler	Logged by JH	Sheet number Sheet 1 of 1
	Range (m)	Recovery (%)			
Groundwater observations No groundwater encountered.	0.00 - 1.00	80	Level (m OD) -	Compiled by KD	Revision A
	1.00 - 2.00	75			
	2.00 - 3.00	100	Co-ordinates -	Checked by KB	WS02
	3.00 - 4.00	80			

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.10												
	[Loose] dark grey clayey fine to coarse angular to subangular GRAVEL of limestone. (MADE GROUND - SUBBASE)	0.25								PP 0.50	PP=58			
	Firm light greenish grey slightly gravelly CLAY. Gravel is fine to medium brick and flint. (MADE GROUND)					S 1.00 - 1.45	(0) 8			PP 0.80	PP=75	0.80		D
										PP 1.50	PP=75	1.65	1.75	D
	...between 1.75 and 1.8m depth, red gravel of brick.									PP 1.90	PP=108			
	...from 1.8m, becoming greenish dark grey.					S 2.00 - 2.45	(1) 8			PP 2.30	PP=75	2.20		D
	Firm greenish light grey slightly gravelly CLAY. Gravel is fine to medium flint. (MADE GROUND)	2.00								PP 2.70	PP=133			
	...between 2m and 2.3m depth, relic root recovered.					S 3.00 - 3.45	(5) 27			PP 3.20	PP=225			
	Very stiff greyish yellow slightly gravelly CLAY. Gravel is fine to medium angular to subrounded mudstone. (WADHURST CLAY FORMATION)	3.00								PP 3.60	PP=225	3.60		D
						S 4.00 - 4.45	(9) 38							
	BOREHOLE TERMINATED AT 4.45m	4.45												

Notes Borehole terminated at scheduled depth.	Title Dynamic Windowless Sampling record			Date(s) 29/08/2023	
	Recovery details		Method Windowless sampler	Logged by JH	Sheet number Sheet 1 of 1
	Range (m)	Recovery (%)			
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD) -	Compiled by KD	Revision A
	1.00 - 2.00	60			
	2.00 - 3.00	100	Co-ordinates -	Checked by KB	WS03
	3.00 - 4.00	95			

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.05										0.05	0.10	ES
	[Loose] dark grey clayey fine to coarse angular to subangular GRAVEL of limestone (MADE GROUND - SUBBASE)	0.15								PP 0.30	PP=175			
	Very stiff yellowish brown mottled grey slightly gravelly thickly laminated CLAY. Gravel is fine to coarse angular to subangular mudstone. (WADHURST CLAY FORMATION)					S 1.00 - 1.45	(10) 37			PP 0.70	PP=217	0.70		D
										PP 1.10	PP=225			
										PP 1.40	PP=225			
						S 2.00 - 2.45	(6) 31			PP 1.80	PP=225	1.70		D
										PP 2.20	PP=225			
						S 3.00 - 3.45	(8) 38			PP 2.60	PP=225	2.50		D
										PP 3.10	PP=225			
										PP 3.40	PP=225			
						S 4.00 - 4.45	(10) 55			PP 3.80	PP=225			
	...from 3.1m depth, becoming gravelly.													
	BOREHOLE TERMINATED AT 4.45m	4.45												

Notes Borehole terminated at scheduled depth.	Title Dynamic Windowless Sampling record			Date(s) 29/08/2023	
	Recovery details		Method Windowless sampler	Logged by JH	Sheet number Sheet 1 of 1
	Range (m)	Recovery (%)			
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD) -	Compiled by KD	Revision A
	1.00 - 2.00	100			
	2.00 - 3.00	100			
	3.00 - 4.00	100	Co-ordinates -	Checked by KB	WS04

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.20												
	[Loose] dark grey clayey GRAVEL of fine to coarse angular to subangular limestone. (MADE GROUND - SUBBASE)	0.30								PP 0.50	PP=150	0.50		D
	Firm to stiff yellowish brown mottled light grey slightly sandy thickly laminated CLAY. (WADHURST CLAY FORMATION)	1.10				S 1.00 - 1.45	(3) 19			PP 0.80	PP=150	1.00	1.45	D
	Very stiff yellowish grey slightly gravelly thinly laminated CLAY. Gravel is fine to coarse angular to subangular mudstone. (WADHURST CLAY FORMATION)									PP 1.20	PP=183	1.40		D
										PP 1.50	PP=208	1.50		D
										PP 1.80	PP=225	2.00	2.45	D
										PP 2.50	PP=225	2.50		D
										PP 2.90	PP=225	3.00	3.45	D
										PP 3.30	PP=225	3.50		D
										PP 3.70	PP=225	4.00	4.45	D
	BOREHOLE TERMINATED AT 4.45m	4.45												

Notes Infiltration testing undertaken. Borehole terminated at scheduled depth.	Title Dynamic Windowless Sampling record			Date(s) 29/08/2023	
	Recovery details		Method Windowless sampler	Logged by JH	Sheet number Sheet 1 of 1
	Range (m)	Recovery (%)			
	0.00 - 1.00 1.00 - 2.00 2.00 - 3.00 3.00 - 4.00	100 100 70 100	Level (m OD) - Co-ordinates -	Compiled by KD Checked by KB	Revision A WS05

INSTALL	STRATA				WATER STRIKES	SPT TESTING				OTHER IN SITU TESTING		SAMPLING		
	DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	CASING DEPTH (m)	WATER LEVEL (m)	TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
	Very soft reddish brown very gravelly CLAY. Gravel is fine to coarse angular to subangular limestone. (MADE GROUND)	0.20										0.20		D
	[Loose] dark grey clayey GRAVEL of fine to coarse angular to subangular limestone. (MADE GROUND - SUBBASE)	0.30								PP 0.40	PP=42			
	Soft orangish grey CLAY. (MADE GROUND)	0.70								PP 0.80	PP=125	0.60		D
	Firm yellowish brown mottled grey thickly laminated CLAY with gravel sized pockets of organic matter. (WADHURST CLAY FORMATION)	1.30				S 1.00 - 1.45	(1) 7			PP 1.20	PP=108	1.20		D
	Stiff brownish grey thinly laminated CLAY. (WADHURST CLAY FORMATION)	2.60				S 2.00 - 2.45	(4) 16			PP 1.50	PP=158			
										PP 1.80	PP=183			
										PP 2.20	PP=175	2.20		D
										PP 2.60	PP=225			
										PP 2.90	PP=225			
	Very stiff greyish green thinly laminated CLAY. (WADHURST CLAY FORMATION)	4.45				S 3.00 - 3.45	(8) 30			PP 3.20	PP=225	3.20		D
										PP 3.60	PP=225			
	BOREHOLE TERMINATED AT 4.45m	4.45				S 4.00 - 4.45	(11) 51		4.20					

Notes Borehole terminated at scheduled depth.	Title			Date(s)	
	Dynamic Windowless Sampling record			29/08/2023	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JH	Sheet 1 of 1
Groundwater observations Groundwater encountered at 4.2m depth, filling borehole to 4.15m in 20 minutes.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	A
	2.00 - 3.00	100			
	3.00 - 4.00	100	Co-ordinates	Checked by	WS06
			-	KB	

Appendix C In Situ Test Results

Table summarising Pocket Penetrometer results

* Instrument limit reached.

Location	Start Depth (m)	Results 1-3	Average	Undrained Shear Strength (kN/m ²)
WS01	0.60	2.5/2.5/2.5	2.50	125
WS01	0.90	1.5/1.5/1.5	1.50	75
WS01	1.30	2/2/2.5	2.17	108
WS01	1.70	1/1/1	1.00	50
WS01	2.20	1/1/1	1.00	50
WS01	2.60	2.5/2/2	2.17	108
WS01	2.90	2.5/3/3	2.83	142
WS01	3.20	3.5/4/4	3.83	192
WS01	3.60	3/3/3	3.00	150
WS01	3.90	4.5/4.5/4.5	4.50	225
WS02	0.40	1.5/2/2	1.83	92
WS02	0.80	2/2/2	2.00	100
WS02	1.40	2/2/2	2.00	100
WS02	1.80	1/1.5/1.5	1.33	67
WS02	2.20	1.5/1.5/1.5	1.50	75
WS02	2.60	2/2/2.5	2.17	108
WS02	2.90	2/2/2	2.00	100
WS02	3.40	1.5/1.5/1.5	1.50	75
WS02	3.70	2.5/2.5/2.5	2.50	125
WS02	3.90	2/2/2	2.00	100
WS03	0.50	1/1/1.5	1.17	58
WS03	0.80	1.5/1.5/1.5	1.50	75
WS03	1.50	1.5/1.5/1.5	1.50	75
WS03	1.90	2/2.5/2	2.17	108
WS03	2.30	1.5/1.5/1.5	1.50	75
WS03	2.70	3/2.5/2.5	2.67	133
WS03	3.20	4.5/4.5/4.5	4.50	225
WS03	3.60	4.5/4.5/4.5	4.50	225
WS04	0.30	3/3.5/4	3.50	175
WS04	0.70	4/4.5/4.5	4.33	217
WS04	1.10	4.5/4.5/4.5	4.50	225
WS04	1.40	4.5/4.5/4.5	4.50	225
WS04	1.80	4.5/4.5/4.5	4.50	225
WS04	2.20	4.5/4.5/4.5	4.50	225
WS04	2.60	4.5/4.5/4.5	4.50	225
WS04	3.10	4.5/4.5/4.5	4.50	225
WS04	3.40	4.5/4.5/4.5	4.50	225
WS04	3.80	4.5/4.5/4.5	4.50	225
WS05	0.50	3/3/3	3.00	150

Table summarising Pocket Penetrometer results

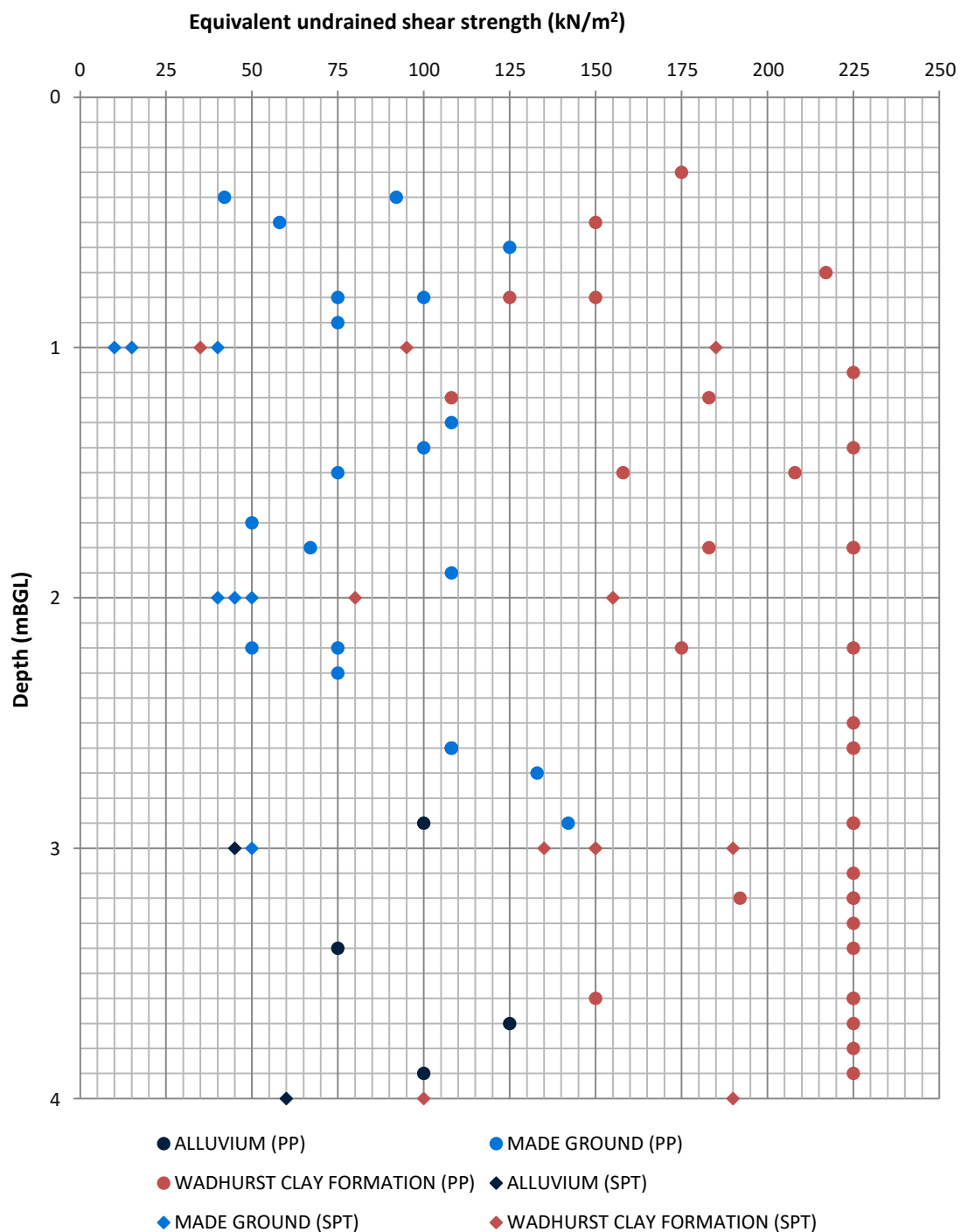
* Instrument limit reached.

Location	Start Depth (m)	Results 1-3	Average	Undrained Shear Strength (kN/m ²)
WS05	0.80	3/3/3	3.00	150
WS05	1.20	3.5/3.5/4	3.67	183
WS05	1.50	4.5/4/4	4.17	208
WS05	1.80	4.5/4.5/4.5	4.50	225
WS05	2.50	4.5/4.5/4.5	4.50	225
WS05	2.90	4.5/4.5/4.5	4.50	225
WS05	3.30	4.5/4.5/4.5	4.50	225
WS05	3.70	4.5/4.5/4.5	4.50	225
WS06	0.40	0.5/1/1	0.83	42
WS06	0.80	2.5/2.5/2.5	2.50	125
WS06	1.20	2.5/2/2	2.17	108
WS06	1.50	3/3.5/3	3.17	158
WS06	1.80	3.5/3.5/4	3.67	183
WS06	2.20	3/3.5/4	3.50	175
WS06	2.60	4.5/4.5/4.5	4.50	225
WS06	2.90	4.5/4.5/4.5	4.50	225
WS06	3.20	4.5/4.5/4.5	4.50	225
WS06	3.60	4.5/4.5/4.5	4.50	225

Table summarising Standard Penetration Test (SPT) results

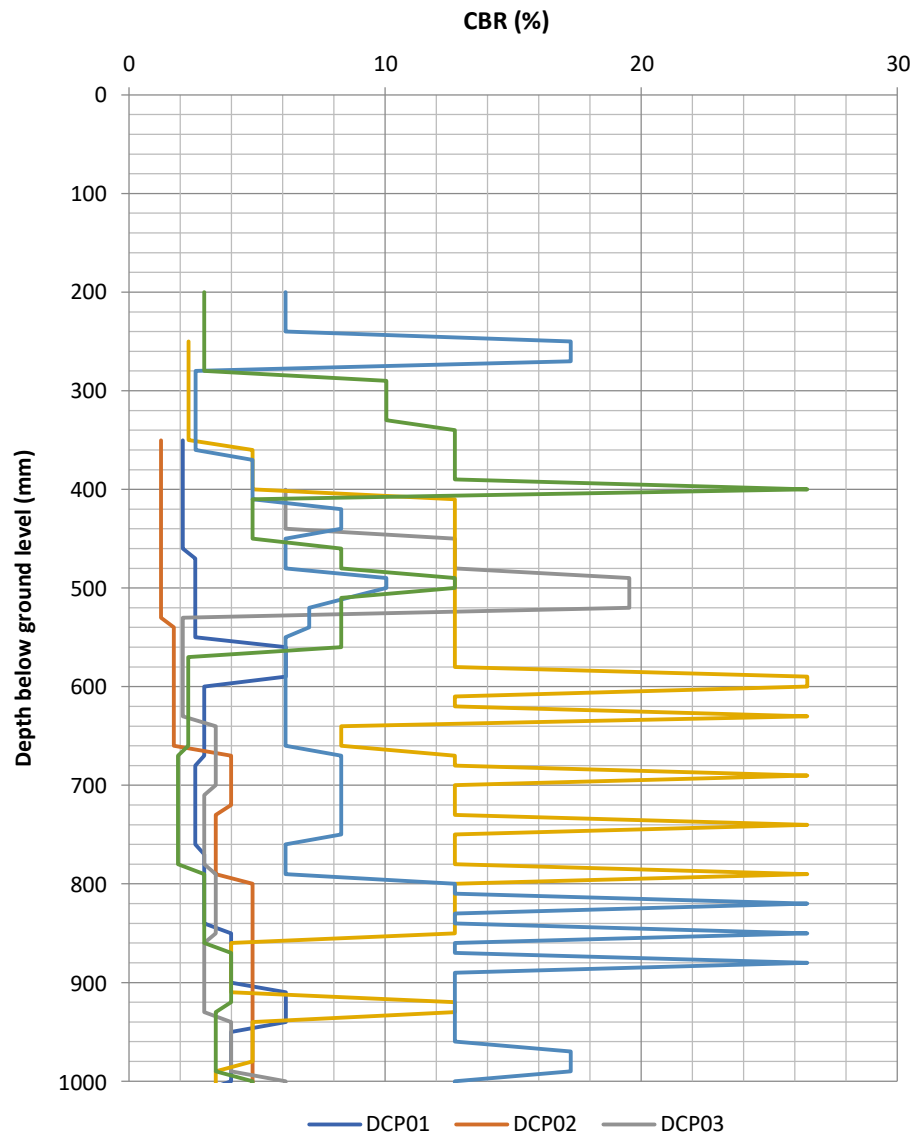
Location	Start Depth (m)	Penetration (mm)					
		Seating 1-2	Main 1-4	Total Seating	Total Main	Total Seating	Total Main
WS01	1.00	0/0	0/0/1/1	0	2	150	300
WS01	2.00	0/2	2/2/2/3	2	9	150	300
WS01	3.00	1/2	2/2/2/4	3	10	150	300
WS01	4.00	4/4	4/4/5/7	8	20	150	300
WS02	1.00	0/0	0/1/1/1	0	3	150	300
WS02	2.00	0/1	2/2/3/3	1	10	150	300
WS02	3.00	1/2	2/2/2/3	3	9	150	300
WS02	4.00	2/2	2/2/2/6	4	12	150	300
WS03	1.00	0/0	1/1/2/4	0	8	150	300
WS03	2.00	0/1	1/1/2/4	1	8	150	300
WS03	3.00	2/3	4/7/7/9	5	27	150	300
WS03	4.00	4/5	7/11/10/10	9	38	150	300
WS04	1.00	4/6	6/8/11/12	10	37	150	300
WS04	2.00	1/5	5/7/8/11	6	31	150	300
WS04	3.00	2/6	7/8/11/12	8	38	150	300
WS04	4.00	2/8	10/11/14/20	10	55	150	300
WS05	1.00	1/2	2/4/7/6	3	19	150	300
WS05	2.00	3/5	6/7/9/9	8	31	150	300
WS05	3.00	2/2	5/7/7/11	4	30	150	300
WS05	4.00	5/6	9/11/14/17	11	51	150	300
WS06	1.00	0/1	1/1/2/3	1	7	150	300
WS06	2.00	2/2	3/3/5/5	4	16	150	300
WS06	3.00	3/5	6/6/9/9	8	30	150	300
WS06	4.00	5/6	9/11/14/17	11	51	150	300

Plot summarising results of combined insitu testing data by geology (mBGL)



Appendix D Dynamic Cone Penetration Test Results

Plot showing CBR (%) against depth summary



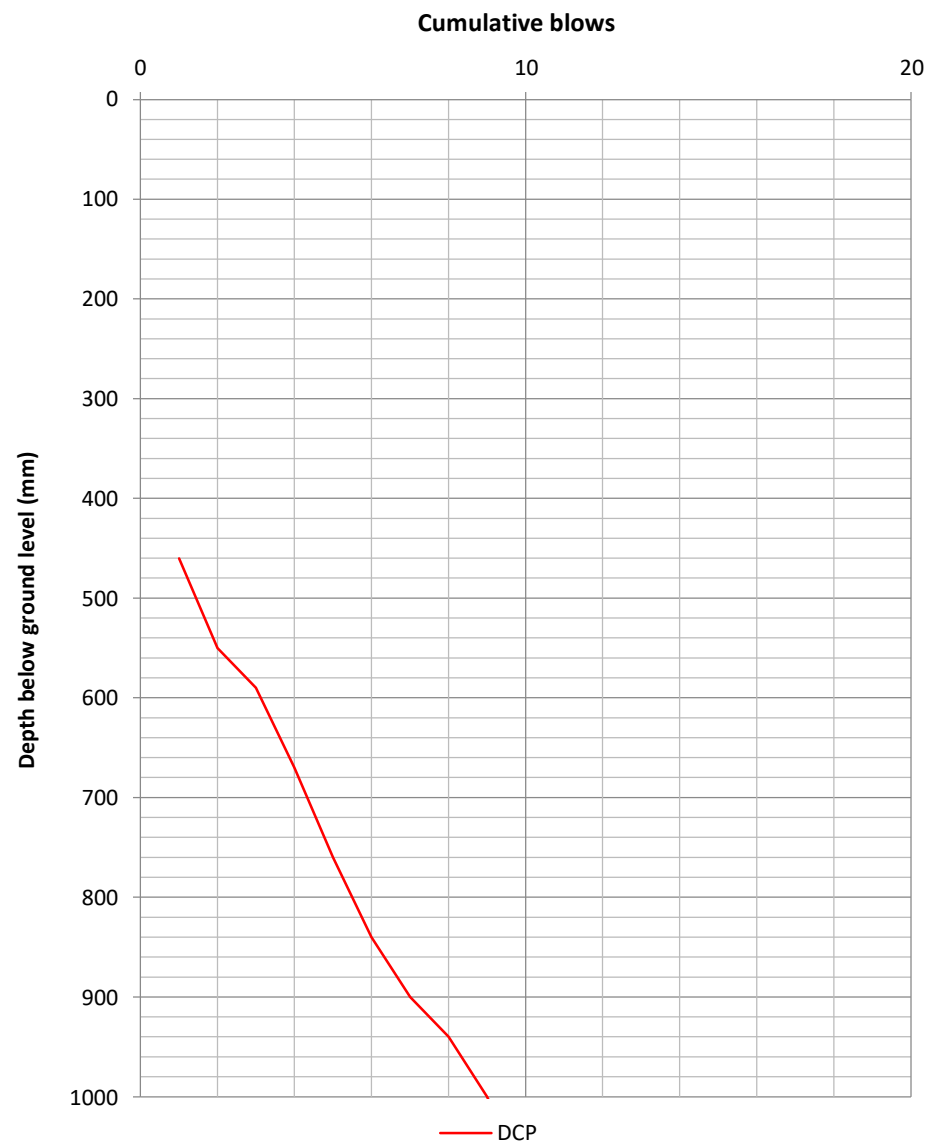
Dynamic Cone Penetrometer (DCP) summary

Location	Layer No.	CBR (%)	Thickness(mm)	Start depth(mmBGL)	Base depth(mmBGL)
DCP01	1	2.3	190	360	550
DCP01	2	5.5	50	550	600
DCP01	3	3.5	380	620	1000
DCP02	1	1.5	300	360	660
DCP02	2	4.4	340	660	1000
DCP03	1	12.7	120	400	520
DCP03	2	3.1	480	520	1000
DCP04	1	3.1	150	250	400
DCP04	2	14.4	400	400	800
DCP04	3	7.1	200	800	1000
DCP05	1	9.8	80	200	280
DCP05	2	6.2	510	280	790
DCP05	3	15.3	210	790	1000
DCP06	1	2.9	80	200	280
DCP06	2	12.7	120	280	400
DCP06	3	7.7	150	400	550
DCP06	4	2.9	450	550	1000

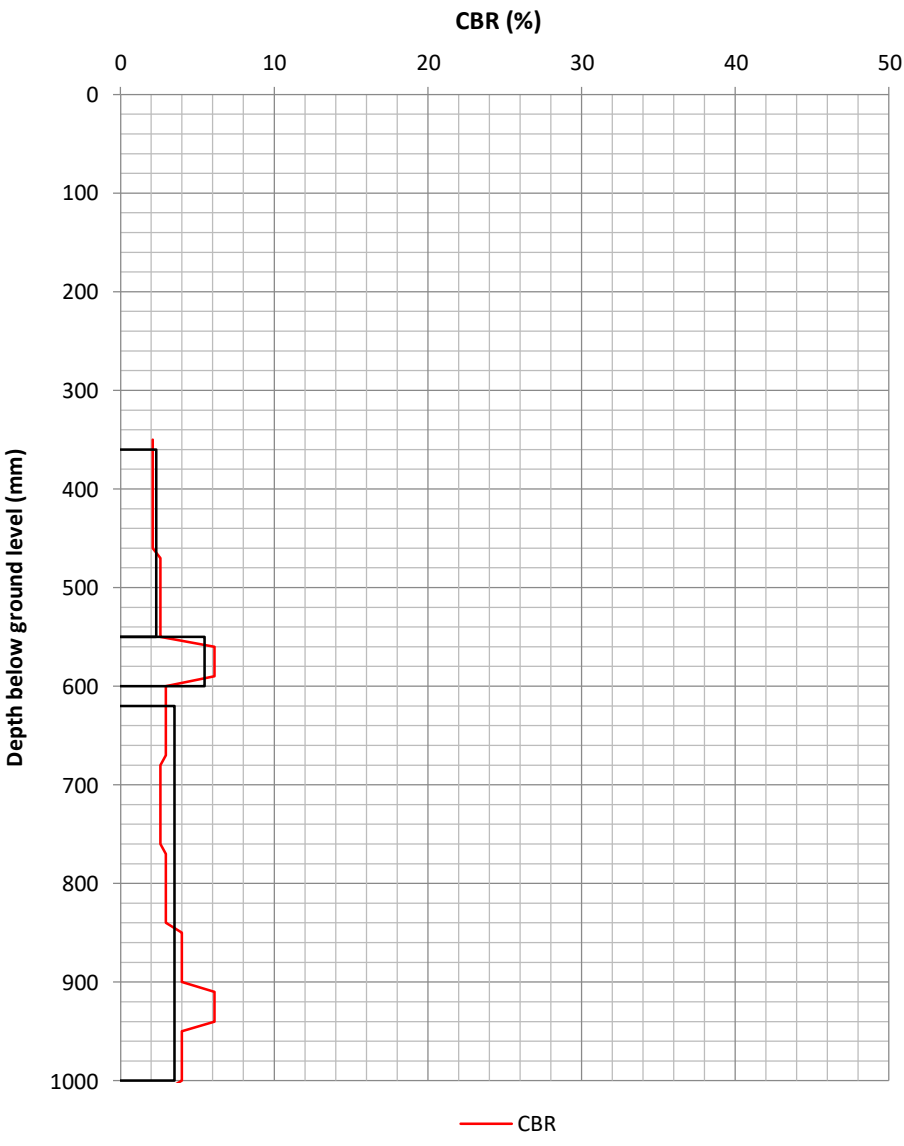
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP01	29/08/2023	350	130	JH

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	2.3	190	360	550
2	5.5	50	550	600
3	3.5	380	620	1000

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

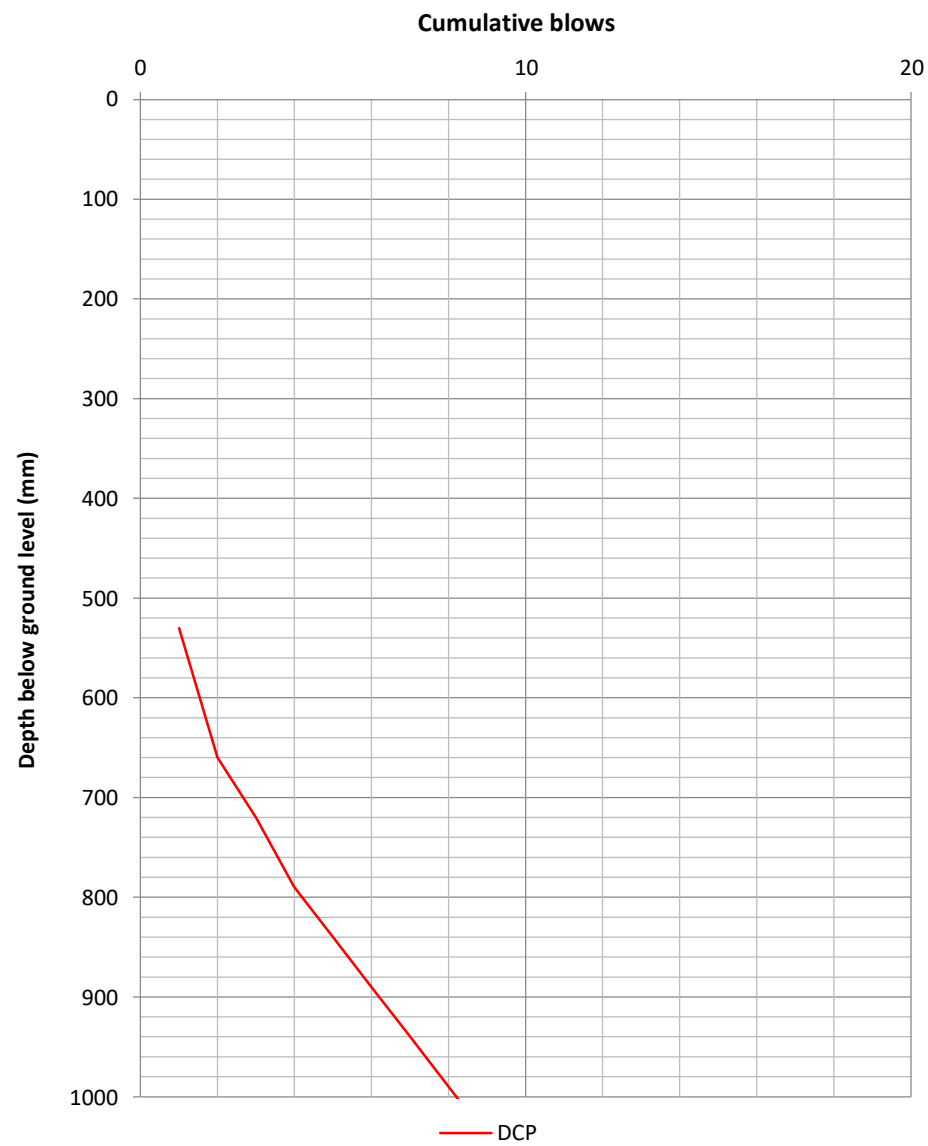
Calculations

$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02	29/08/2023	350	140	JH

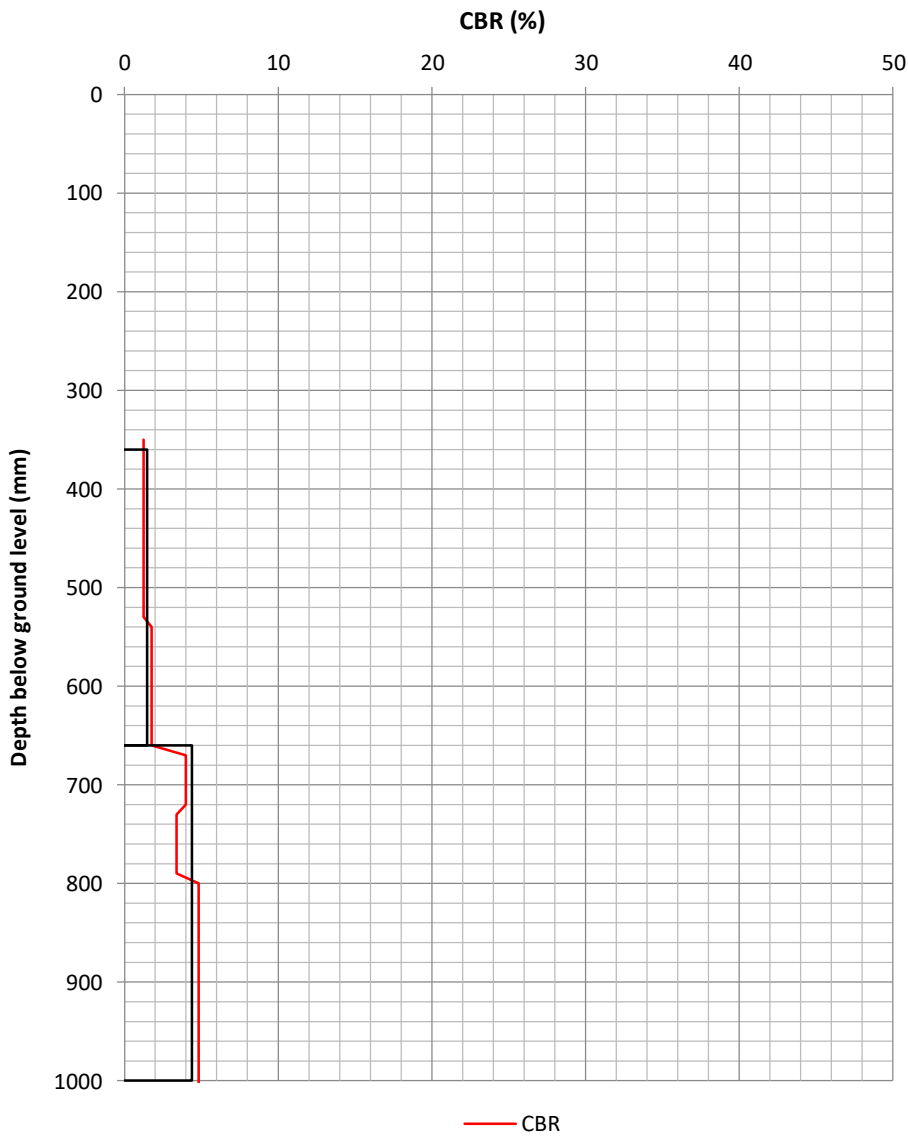
Plot showing number of blows against depth



Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Plot showing CBR (%) against depth



Calculations

$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$

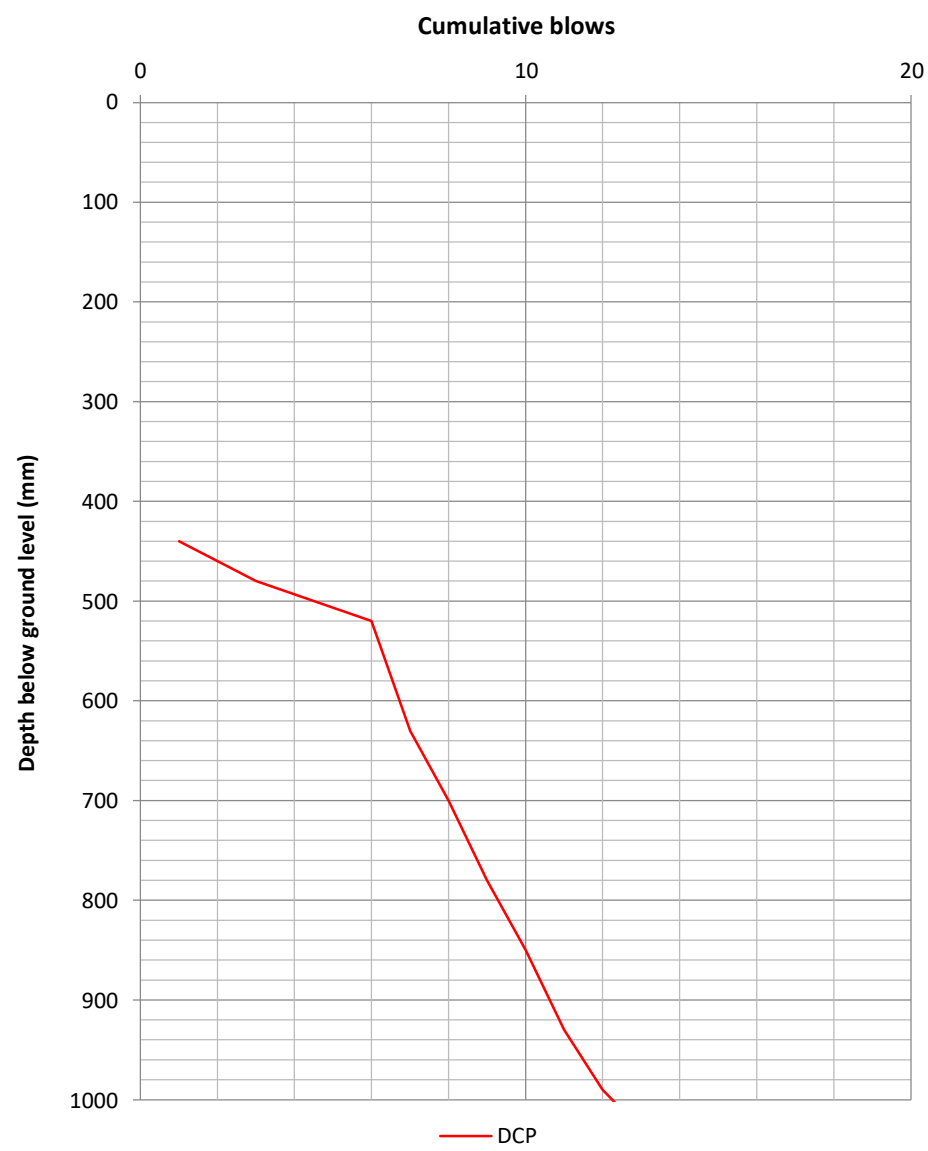
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	1.5	300	360	660
2	4.4	340	660	1000

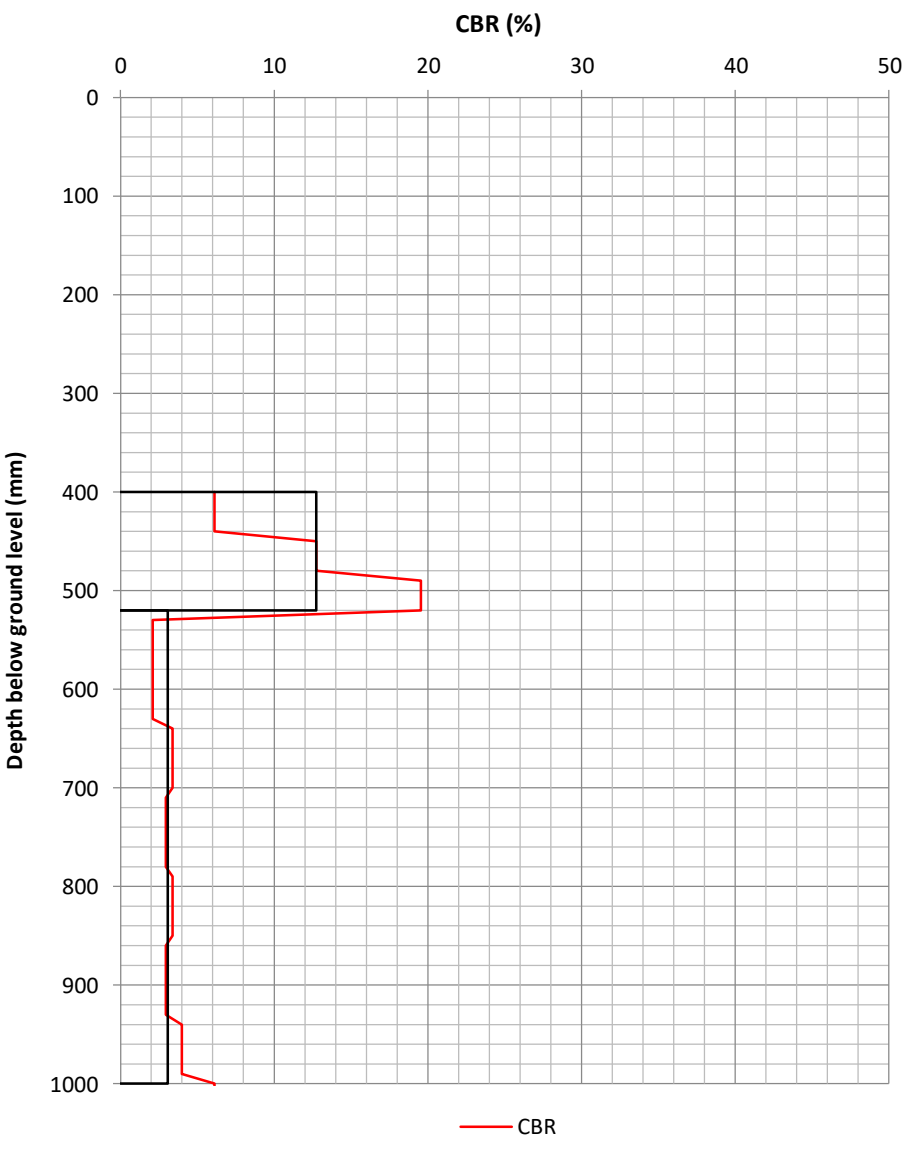
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03	29/08/2023	400	120	JH

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	12.7	120	400	520
2	3.1	480	520	1000

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$

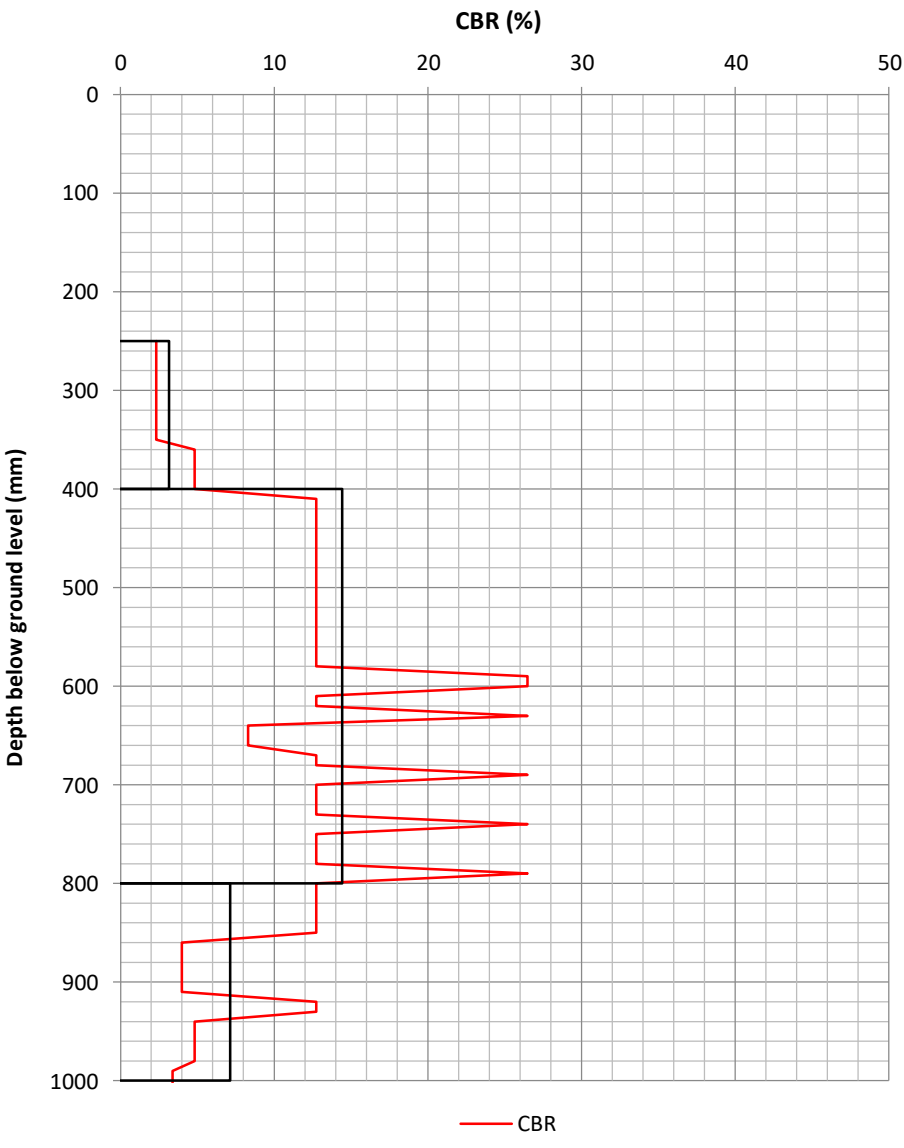
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04	29/08/2023	250	120	JH

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	3.1	150	250	400
2	14.4	400	400	800
3	7.1	200	800	1000

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

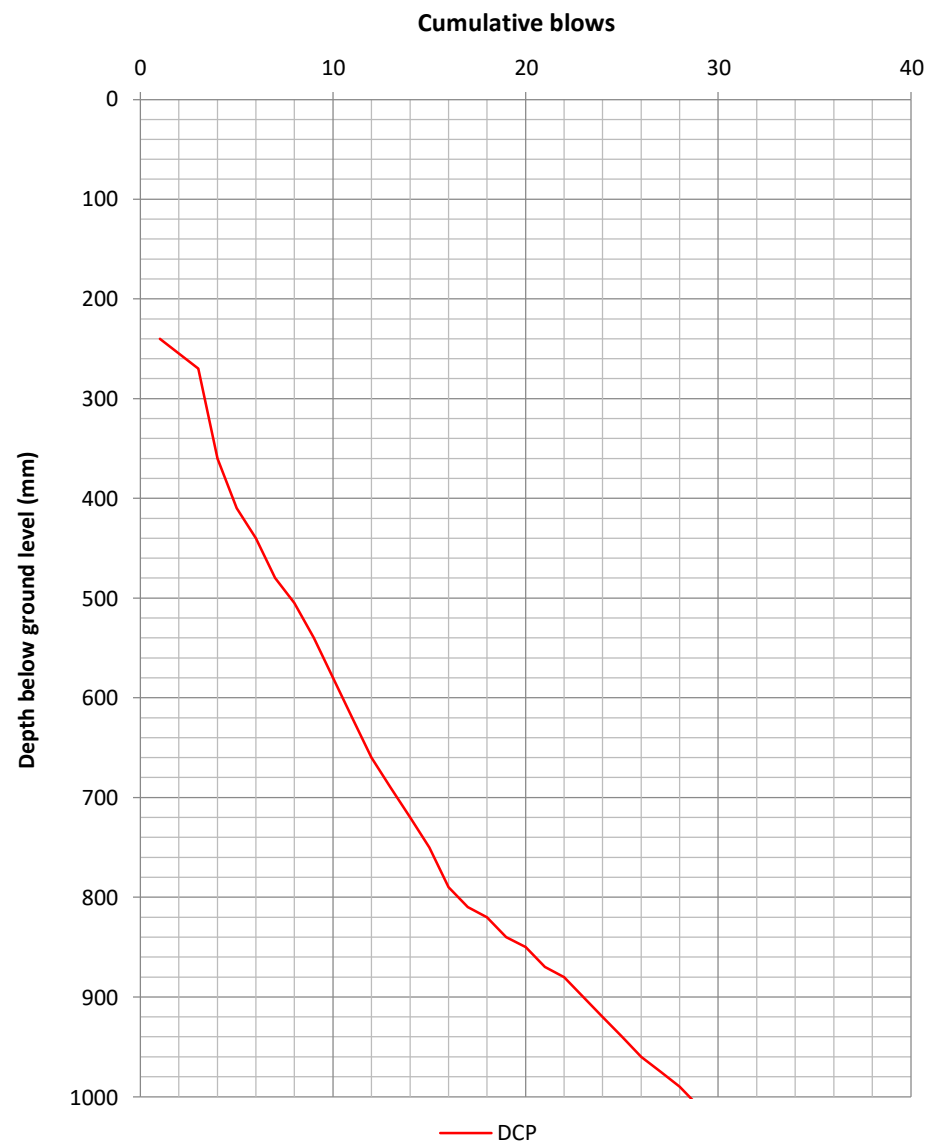
Calculations

$$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$$

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP05	29/08/2023	200	90	JH

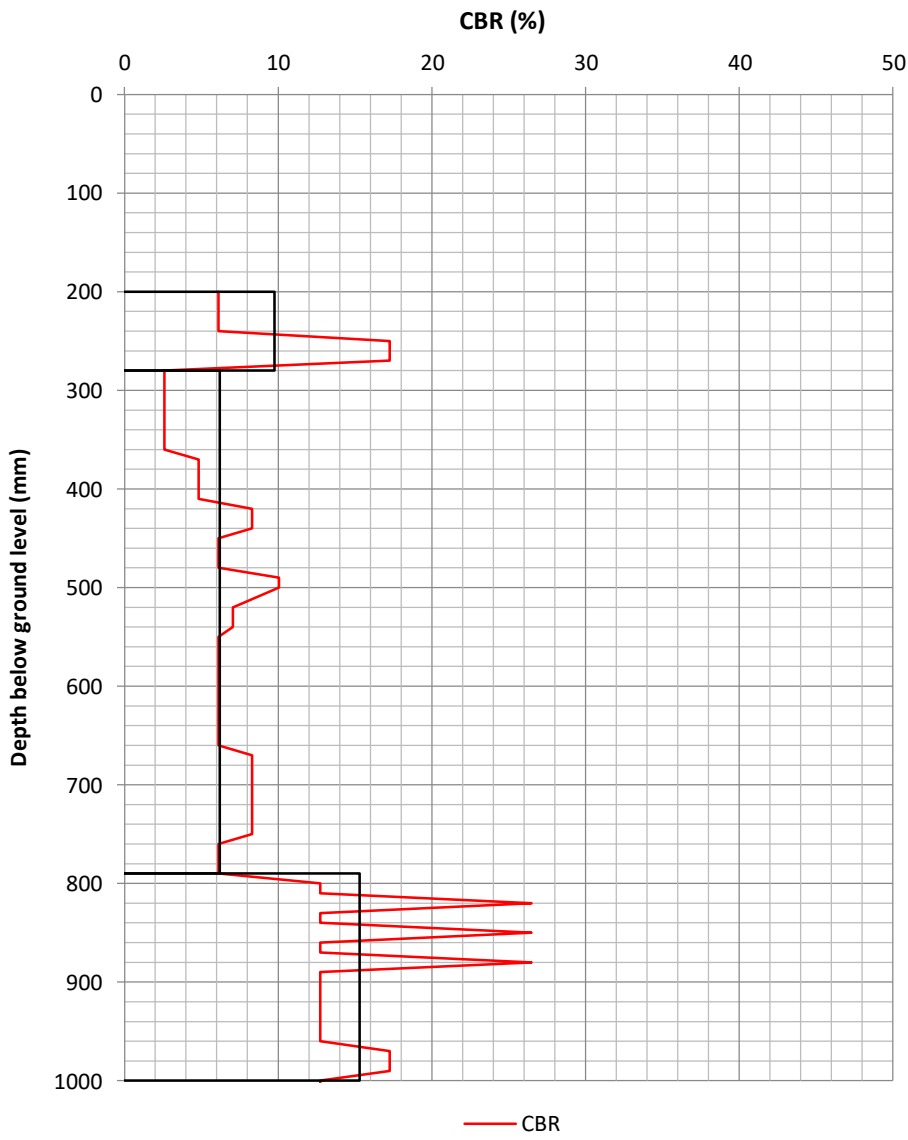
Plot showing number of blows against depth



Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Plot showing CBR (%) against depth



Calculations

$$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$$

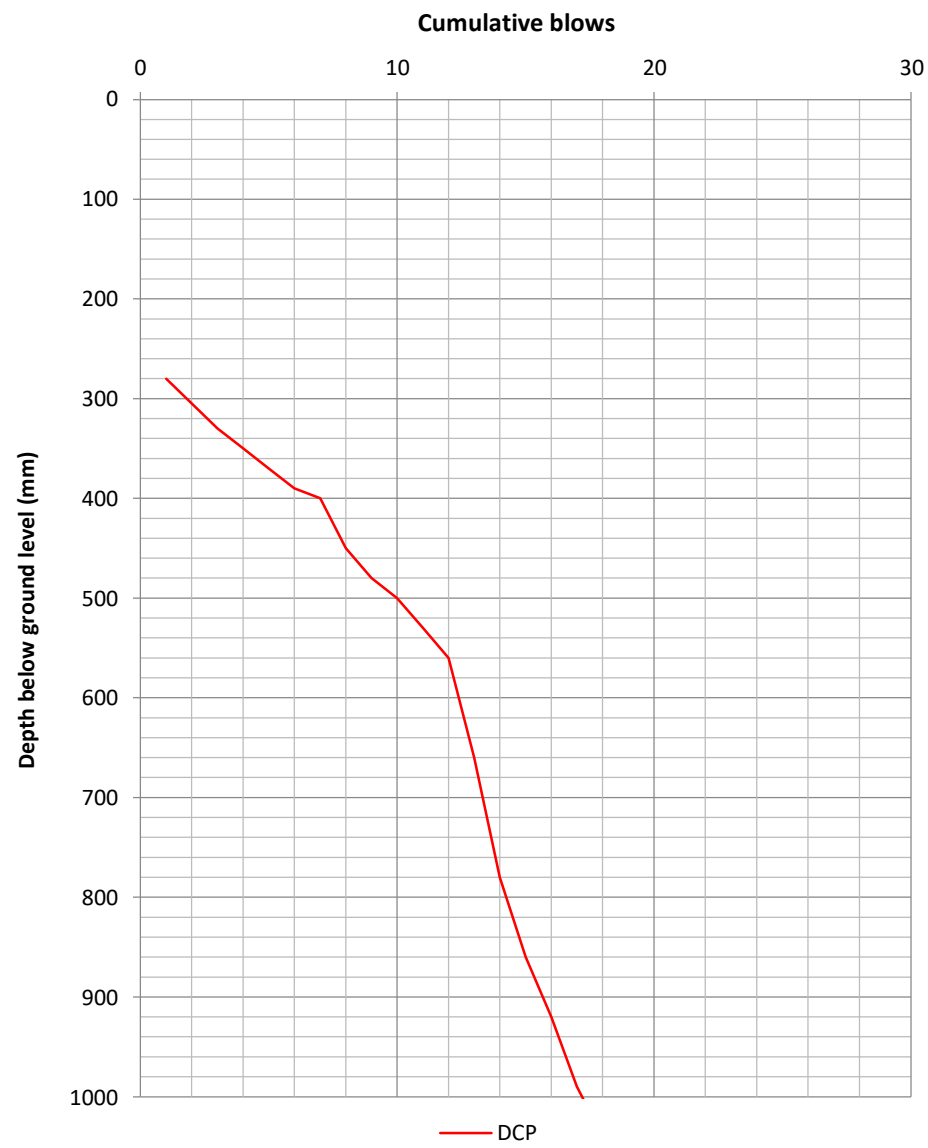
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	9.8	80	200	280
2	6.2	510	280	790
3	15.3	210	790	1000

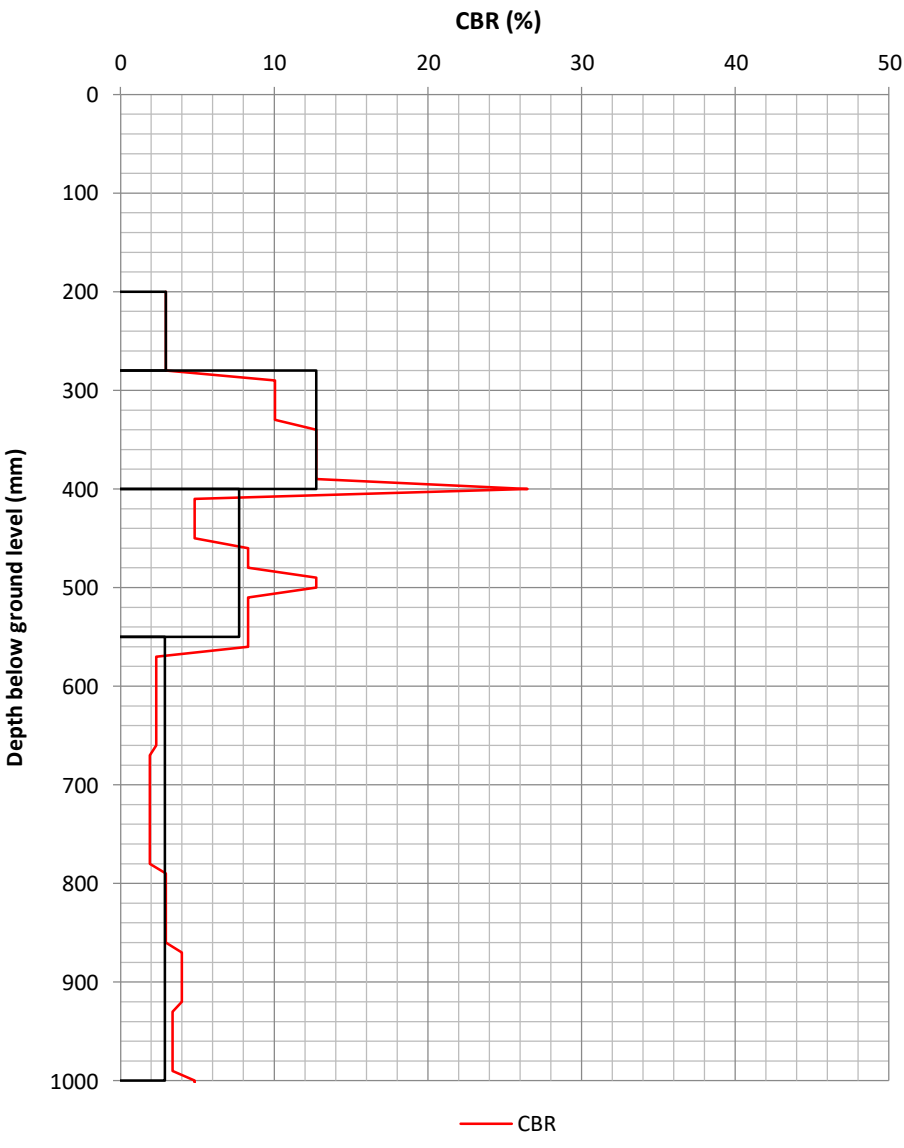
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP06	29/08/2023	200	70	JH

Plot showing number of blows against depth



Plot showing CBR (%) against depth



Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	2.9	80	200	280
2	12.7	120	280	400
3	7.7	150	400	550
4	2.9	450	550	1000

Notes

1. Test procedure following Highways England Document CS229 Data for Pavement Assessment.

Calculations

$$\text{Log10 (Uncorrected (UC) CBR)} = 2.48 - 1.057\text{Log10}(\text{mm/blow})$$

Appendix E In situ Permeability Testing Results

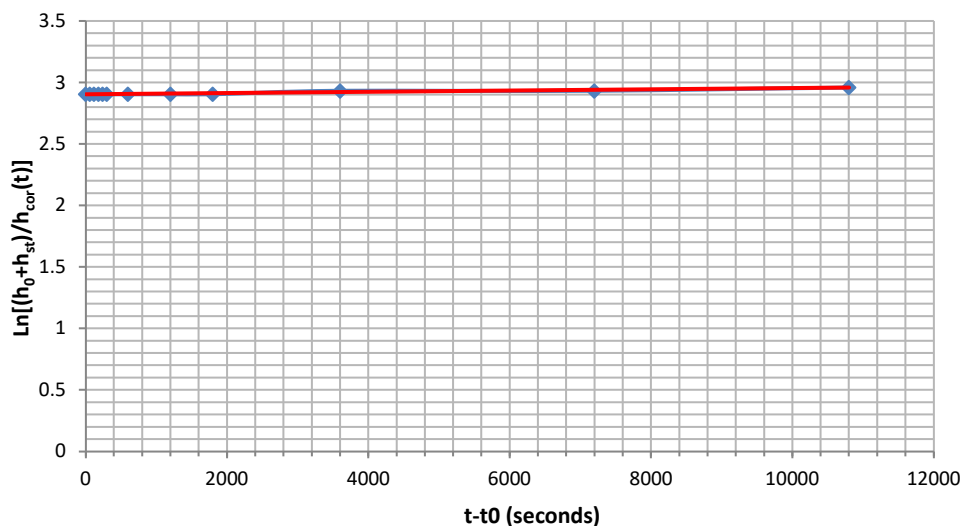
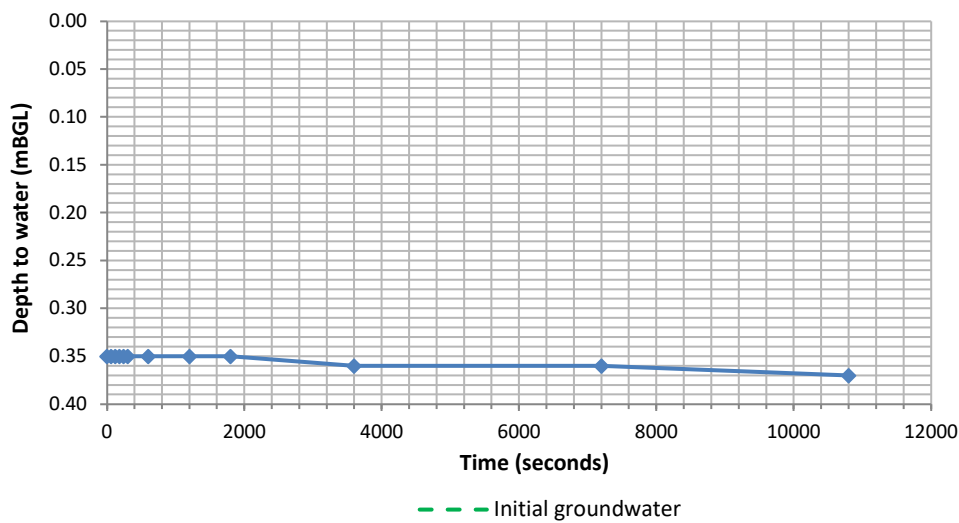
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

Location	Test number	Test method	Test system	Test date
WS02	1	Falling head	Open borehole	29/08/2023

Top of test section (m)	Bottom of test section (m)	Test section length (m)	Test diameter (m)
0.35	4.00	3.65	0.1

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
Dry	0.35	3.65



F	Shape factor according BS EN ISO 22282-1:2012	5.345 m
S	Cross sectional area of measurement tube	0.0079 m ²
h_{st}	Corrective term to initial static level	3.27E+00 m
α	Gradient of line alpha	5.03E-06 s ⁻¹
k	Permeability (α S / F)	7.39E-09 m/s

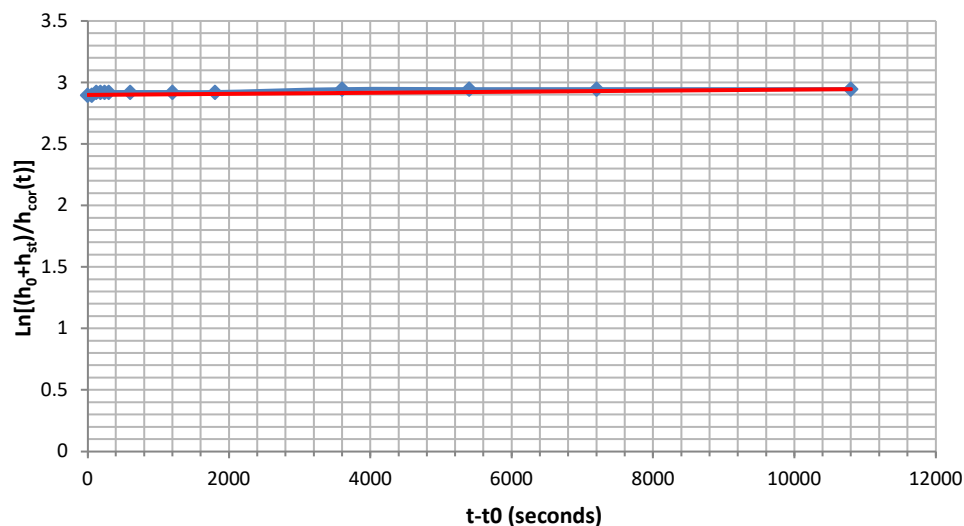
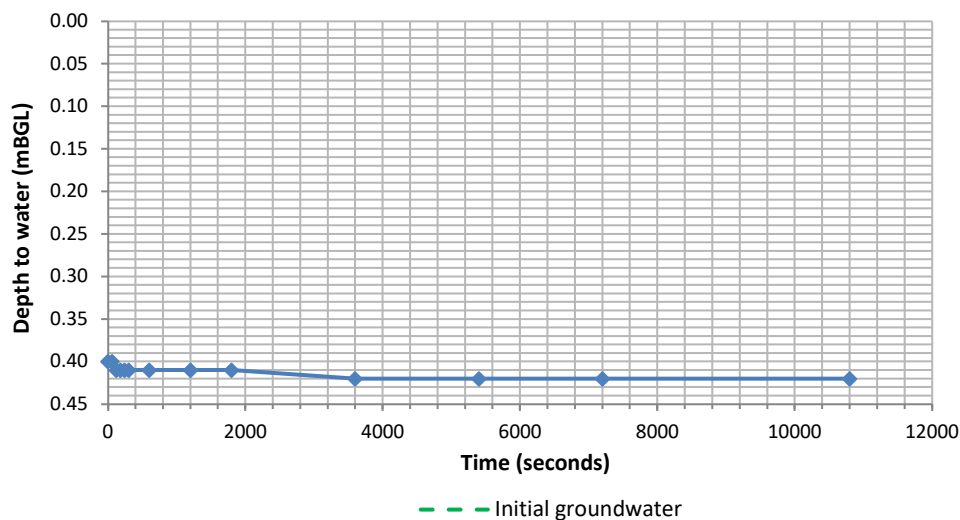
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

Location	Test number	Test method	Test system	Test date
WS05	1	Falling head	Open borehole	29/08/2023

Top of test section (m)	Bottom of test section (m)	Test section length (m)	Test diameter (m)
0.40	4.45	4.05	0.1

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
Dry	0.4	4.05



F	Shape factor according BS EN ISO 22282-1:2012	5.791 m
S	Cross sectional area of measurement tube	0.0079 m ²
h_{st}	Corrective term to initial static level	3.63E+00 m
α	Gradient of line alpha	4.48E-06 s ⁻¹
k	Permeability (α S / F)	6.08E-09 m/s

Appendix F Geotechnical Laboratory Test Results

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 11/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

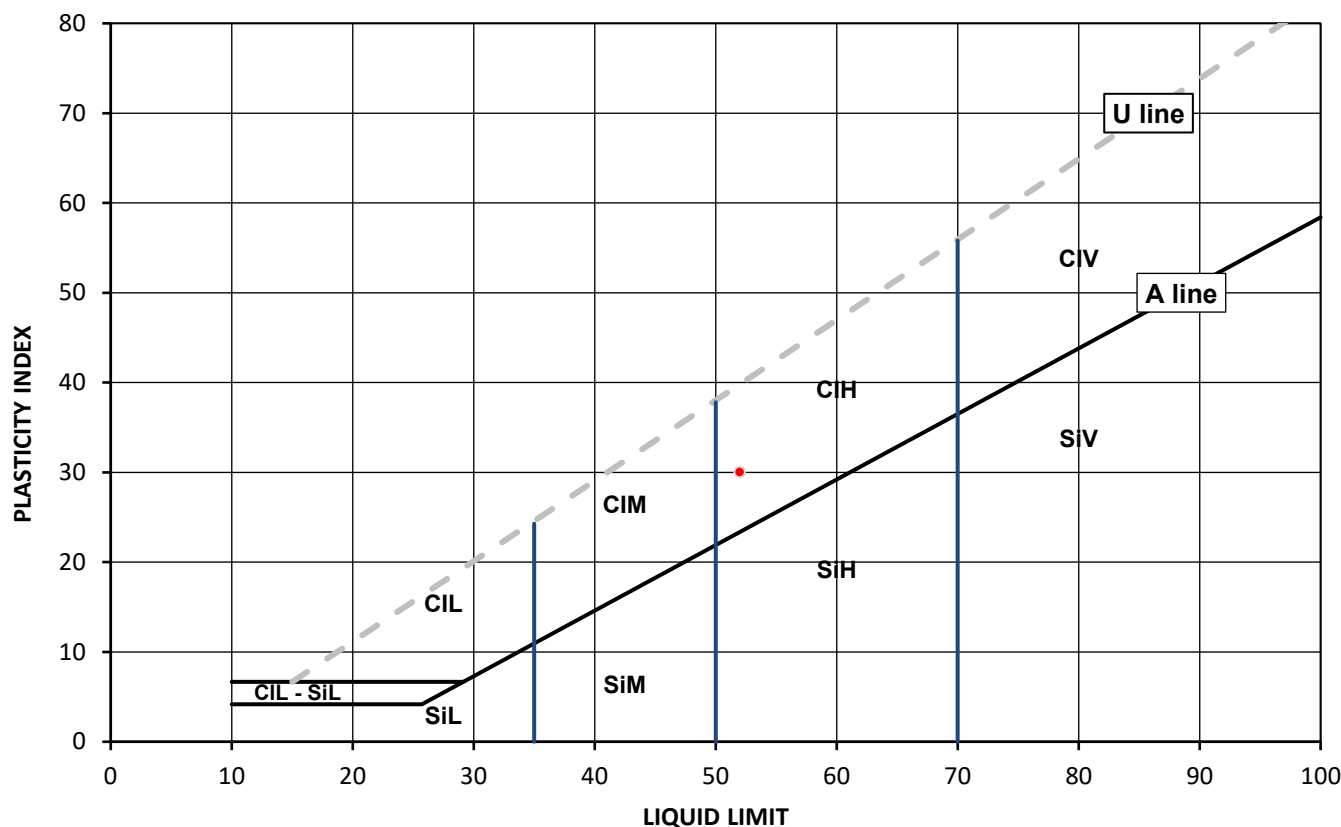
Test Results:

Laboratory Reference: 2799842
Hole No.: WS01
Sample Reference: WS010.401
Sample Description: Greenish grey slightly sandy CLAY

Depth Top [m]: 0.40
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	52	22	30	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg CIHO)
	V Very high	
	O Organic	

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.



TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 08/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

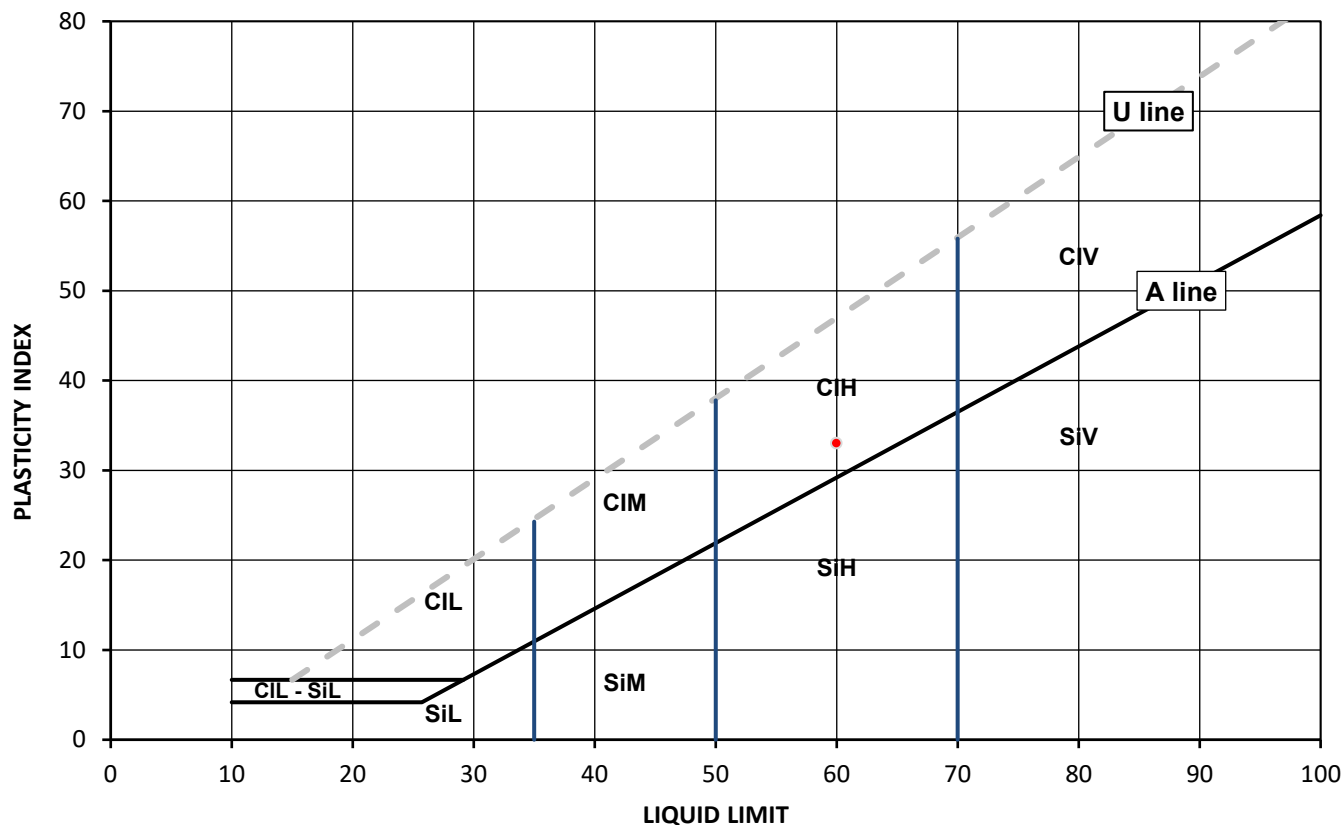
Test Results:

Laboratory Reference: 2799843
Hole No.: WS02
Sample Reference: WS022.904
Sample Description: Brownish grey slightly gravelly CLAY

Depth Top [m]: 2.90
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after >425 µm removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
35	60	27	33	88



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L	Low
	M	Medium
	H	High
	V	Very high
	O	Organic
		append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

Environmental Science

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 11/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

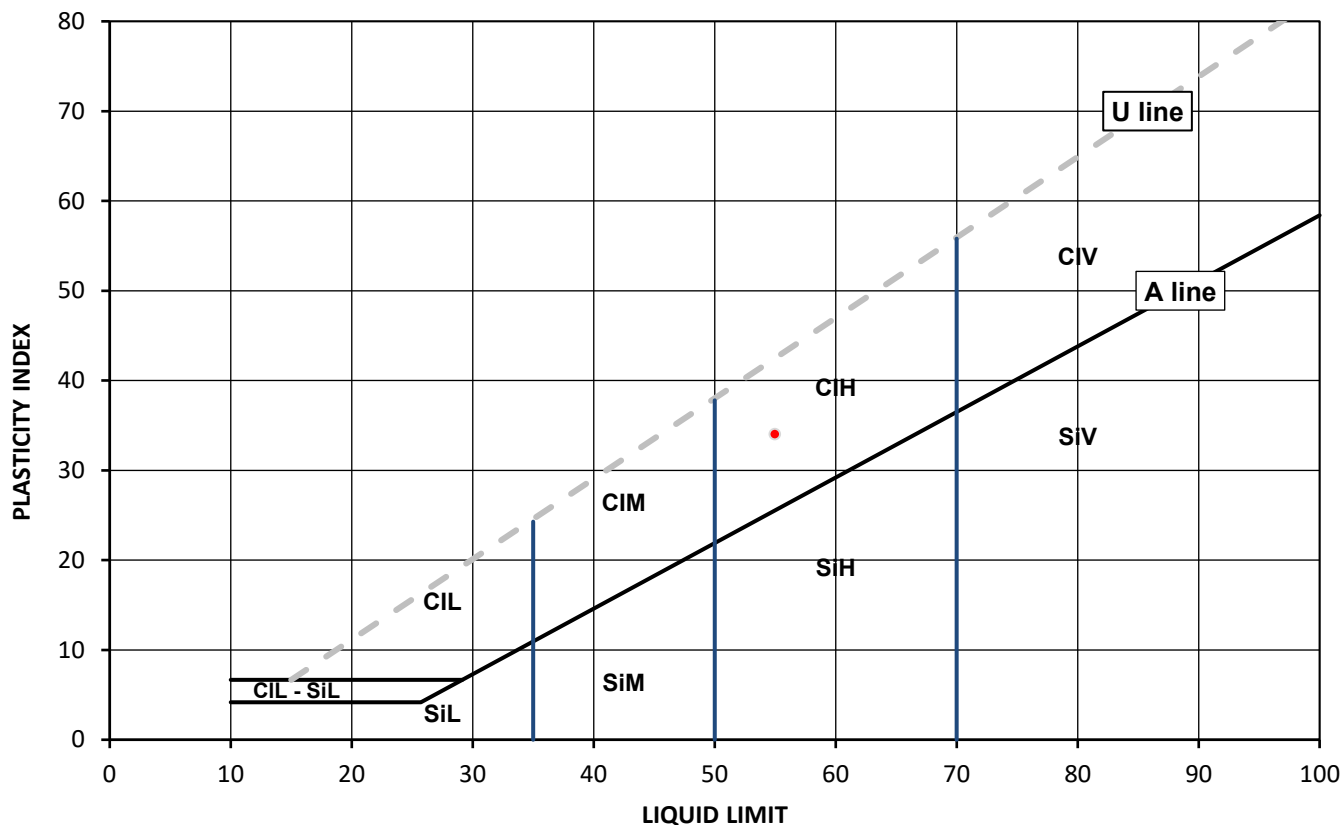
Test Results:

Laboratory Reference: 2799844
Hole No.: WS05
Sample Reference: WS050.501
Sample Description: Brownish grey slightly sandy CLAY

Depth Top [m]: 0.50
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
20	55	21	34	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl Clay	L Low	below 35
Si Silt	M Medium	35 to 50
	H High	50 to 70
	V Very high	exceeding 70
	O Organic	append to classification for organic material (eg CIHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Barbara Zelewska

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS

Tested in Accordance with: BS 1377-2:1990: Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 11/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

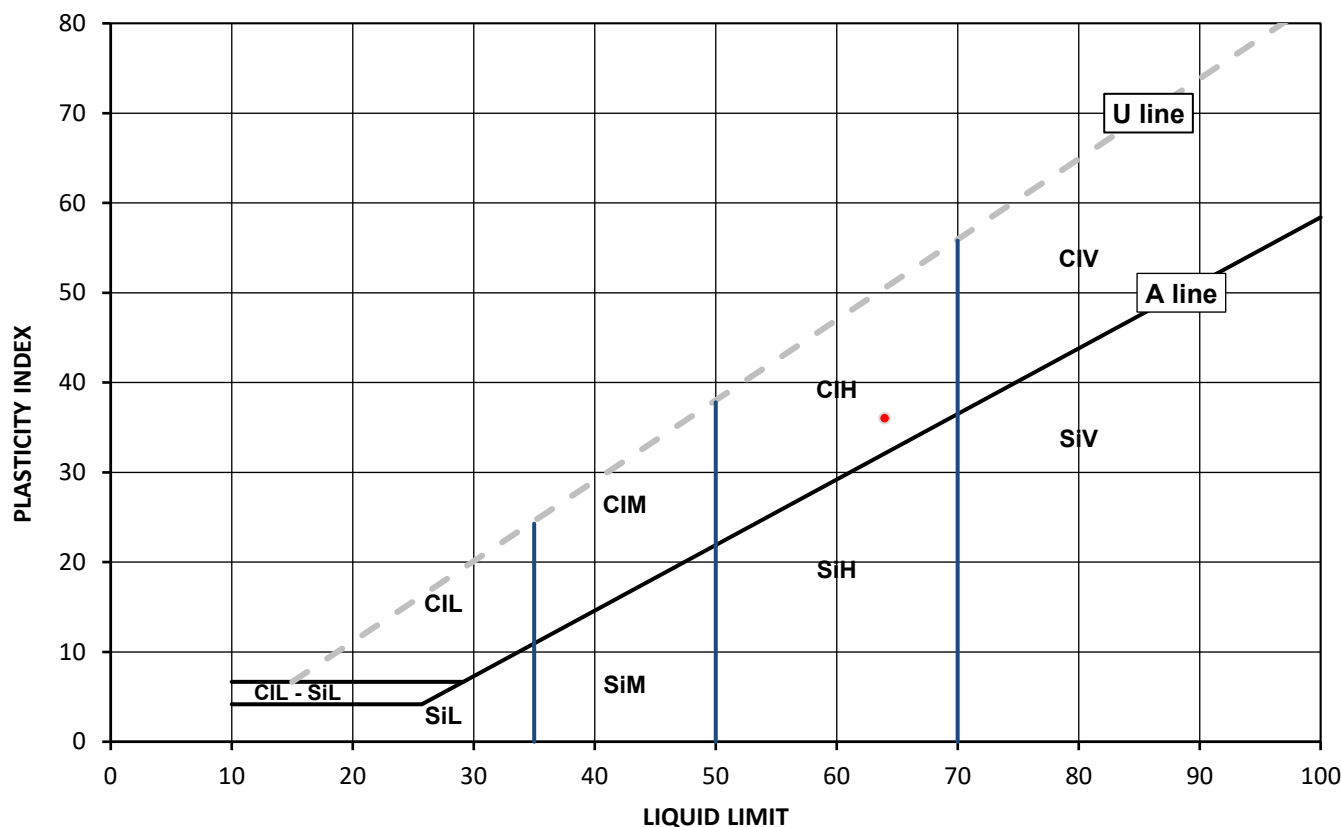
Test Results:

Laboratory Reference: 2799845
Hole No.: WS06
Sample Reference: WS061.203
Sample Description: Brownish grey CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested in natural condition

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
27	64	28	36	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

	Plasticity	Liquid Limit
Cl	Clay	below 35
Si	Silt	35 to 50
	L Low	50 to 70
	M Medium	exceeding 70
	H High	append to classification for organic material (eg CIHO)
	V Very high	
	O Organic	

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Water Content by BS 1377-2:1990: Clause 3.2
Atterberg by BS 1377-2: 1990:
Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 08/09 - 11/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W] %	Water Content BS EN ISO 17892-1 [W] %	Atterberg				Density			Total Porosity# %		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m															
2799842	WS01	WS010.401	0.40	Not Given	D	Greenish grey slightly sandy CLAY	Atterberg 1 Point	26		100	52	22	30						
2799843	WS02	WS022.904	2.90	Not Given	D	Brownish grey slightly gravelly CLAY	Atterberg 1 Point	35		88	60	27	33						
2799844	WS05	WS050.501	0.50	Not Given	D	Brownish grey slightly sandy CLAY	Atterberg 1 Point	20		100	55	21	34						
2799845	WS06	WS061.203	1.20	Not Given	D	Brownish grey CLAY	Atterberg 1 Point	27		100	64	28	36						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Barbara Zelewska

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd

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SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Client: Soiltechnics Limited
Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY
Contact: Admin
Site Address: Sackville School East Grinstead

Client Reference: STV6168
Job Number: 23-54436-1
Date Sampled: 29/08/2023
Date Received: 04/09/2023
Date Tested: 08/09 - 11/09/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type							
2799842	WS01	WS010.401	0.40	Not Given	D	Greenish grey slightly sandy CLAY		26	Sample was quartered, oven dried at 106.6 °C			
2799843	WS02	WS022.904	2.90	Not Given	D	Brownish grey slightly gravelly CLAY		35	Sample was quartered, oven dried at 109 °C			
2799844	WS05	WS050.501	0.50	Not Given	D	Brownish grey slightly sandy CLAY		20	Sample was quartered, oven dried at 106.6 °C			
2799845	WS06	WS061.203	1.20	Not Given	D	Brownish grey CLAY		27	Sample was quartered, oven dried at 106.6 °C			

Comments:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed:

Barbara Zelewska

Barbara Zelewska
PL Head of Geotechnical Laboratory (Quality Section)
for and on behalf of i2 Analytical Ltd



Admin
Soiltechnics Limited
Cedar Barn
White Lodge
Walgrave
Northampton
NN6 9PY

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

e: admin@soiltechnics.net

Analytical Report Number : 23-54437

Project / Site name:	Sackville School East Grinstead	Samples received on:	04/09/2023
Your job number:	STV6168	Samples instructed on / Analysis started on:	04/09/2023
Your order number:	POR016328	Analysis completed by:	12/09/2023
Report Issue Number:	1	Report issued on:	12/09/2023
Samples Analysed:	4 soil samples		

Signed: _____

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 23-54437
 Project / Site name: Sackville School East Grinstead
 Your Order No: POR016328

Lab Sample Number				2799846	2799847	2799848	2799849
Sample Reference				WS02	WS03	WS04	WS05
Sample Number				WS021.402	WS033.604	WS040.702	WS051.402
Depth (m)				1.40	3.60	0.70	1.40
Date Sampled				29/08/2023	29/08/2023	29/08/2023	29/08/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Limit of detection	Accreditation Status				
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	19	13	8.3	10
Total mass of sample received	kg	0.001	NONE	0.7	0.7	0.7	0.7

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.2	8	8.1	8.3
Total Sulphate as SO ₄	%	0.005	MCERTS	0.025	0.026	0.037	0.022
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.118	0.0245	0.113	0.009
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	118	24.5	113	9
Total Sulphur	%	0.005	MCERTS	0.026	0.009	0.017	0.011

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-54437

Project / Site name: Sackville School East Grinstead

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2799846	WS02	WS021.402	1.4	Brown clay.
2799847	WS03	WS033.604	3.6	Brown clay.
2799848	WS04	WS040.702	0.7	Brown clay.
2799849	WS05	WS051.402	1.4	Brown clay.

Analytical Report Number : 23-54437

Project / Site name: Sackville School East Grinstead

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

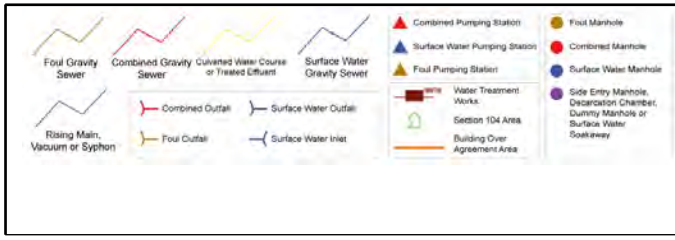
Appendix G Statutory Undertakers Responses



(c) Crown copyright and database rights 2023 Ordnance Survey 100031673 Date: 16/08/23 Scale: 1:1250 Map Centre: 540304,138162 Data updated: 05/05/23 Our Ref: 1251550 - 1 Wastewater Plan A4

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2023 Ordnance Survey 100031673. This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.
WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.



admin@soiltechnics.net
STV6168



Overview map of worksite

1

2

Warning: PDF designed for A4 colour print only with no page scaling



Contact Us
SGN Safety Admin Team:
0800 912 1722
Email:
plantlocation@sgn.co.uk

Low Pressure Mains

Medium Pressure Mains

Intermediate Pressure Mains

High Pressure Mains

Some Examples Of Plant Items

Valve



Syphon



Depth of Cover



Digsite:



Line:



Area:



LA's



GT's



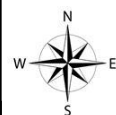
SSSIs



Diameter Change



Material Change



This information is given as a guide only and its accuracy cannot be guaranteed.



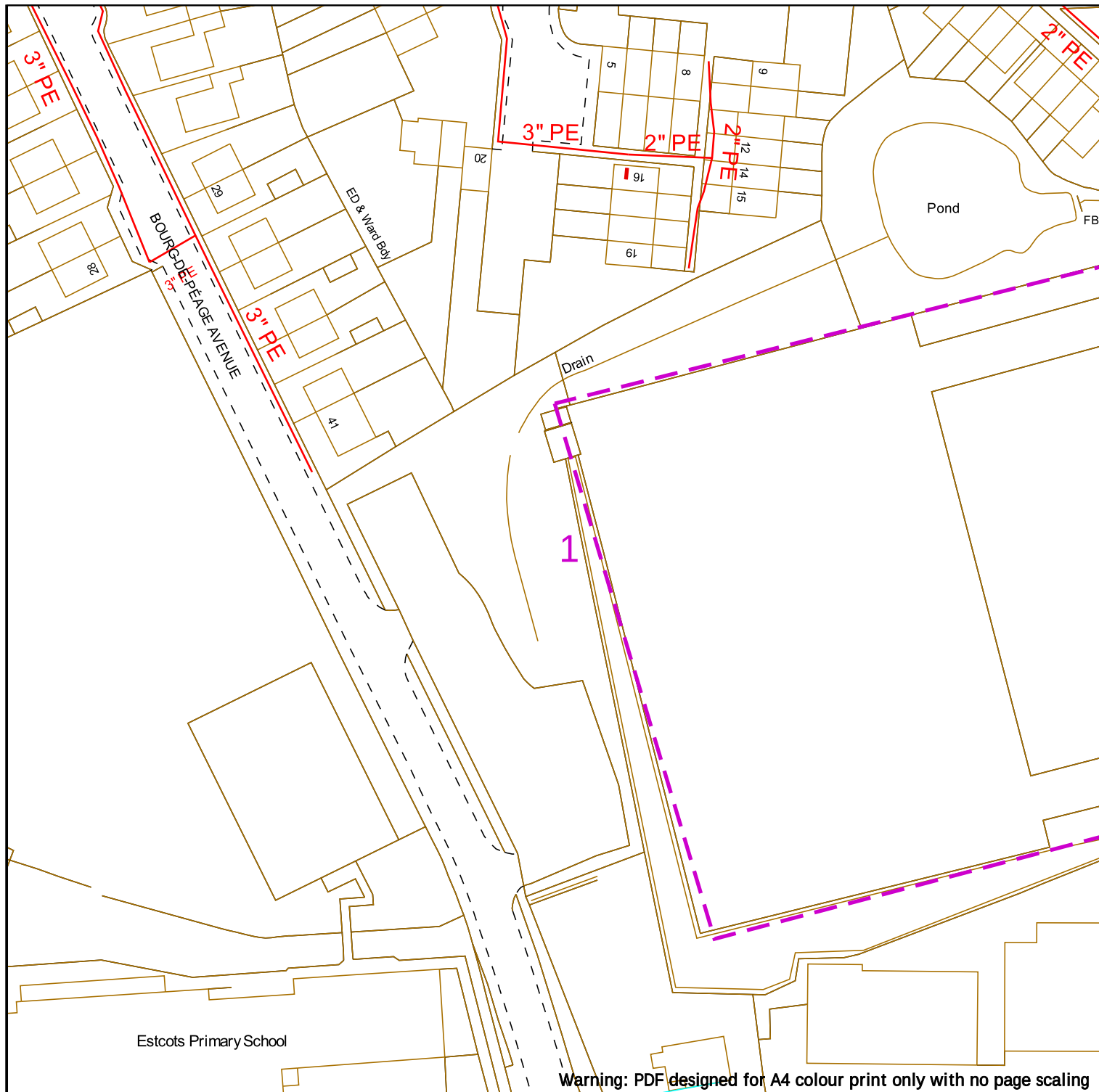
This plan shows the location of those pipes owned by Scotia Gas Networks (SGN) by virtue of being a licensed Gas Transporter (GT). Gas pipes owned by other GTs or third parties may also be present in this area but are not shown on this plan. Information with regard to such pipes should be obtained from the relevant owners. No warranties are given with regard to the accuracy of the information shown on this plan. Service pipes, valves, siphons, sub-connections etc. are not shown but their presence should be anticipated. You should be aware that a small percentage of our pipes/assets may be undergoing review and will temporarily be highlighted in yellow. If your proposed works are close to one of these pipes, you should contact the SGN Safety Admin Team on 0800 912 1722 for advice. No liability of any kind whatsoever is accepted by SGN or its agents, servants or sub-contractors for any error or omission contained herein. Safe digging practices, in accordance with HS (G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that plant location information is provided to all persons (whether direct labour or sub-contractors) working for you on or near gas apparatus. Information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA
0800 111 999

This plan is reproduced from or based on the OS map by Scotia Gas Networks plc, with the sanction of the controller of the HM Stationery Office. Crown Copyright Reserved. Southern Gas – 100044373 and Scotland Gas – 100044366.

Date Requested: 16/08/2023
Job Reference: 30532841
Site Location: 540304 138163
Requested by: Miss Lauren Wenham
Your Scheme/Reference: STV6168

Scale: 1:2050 (When plotted at A4)



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Contact Us
SGN Safety Admin Team:
 0800 912 1722
Email:
 plantlocation@sgn.co.uk

Low Pressure Mains

Medium Pressure Mains

Intermediate Pressure Mains

High Pressure Mains

Some Examples Of Plant Items

Valve



Syphon



Depth of Cover



Diameter Change



Material Change



Digsites:

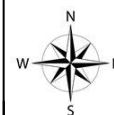
Line:

Area:

LAs

GTs

SSSIs



This information is given as a guide only and its accuracy cannot be guaranteed.

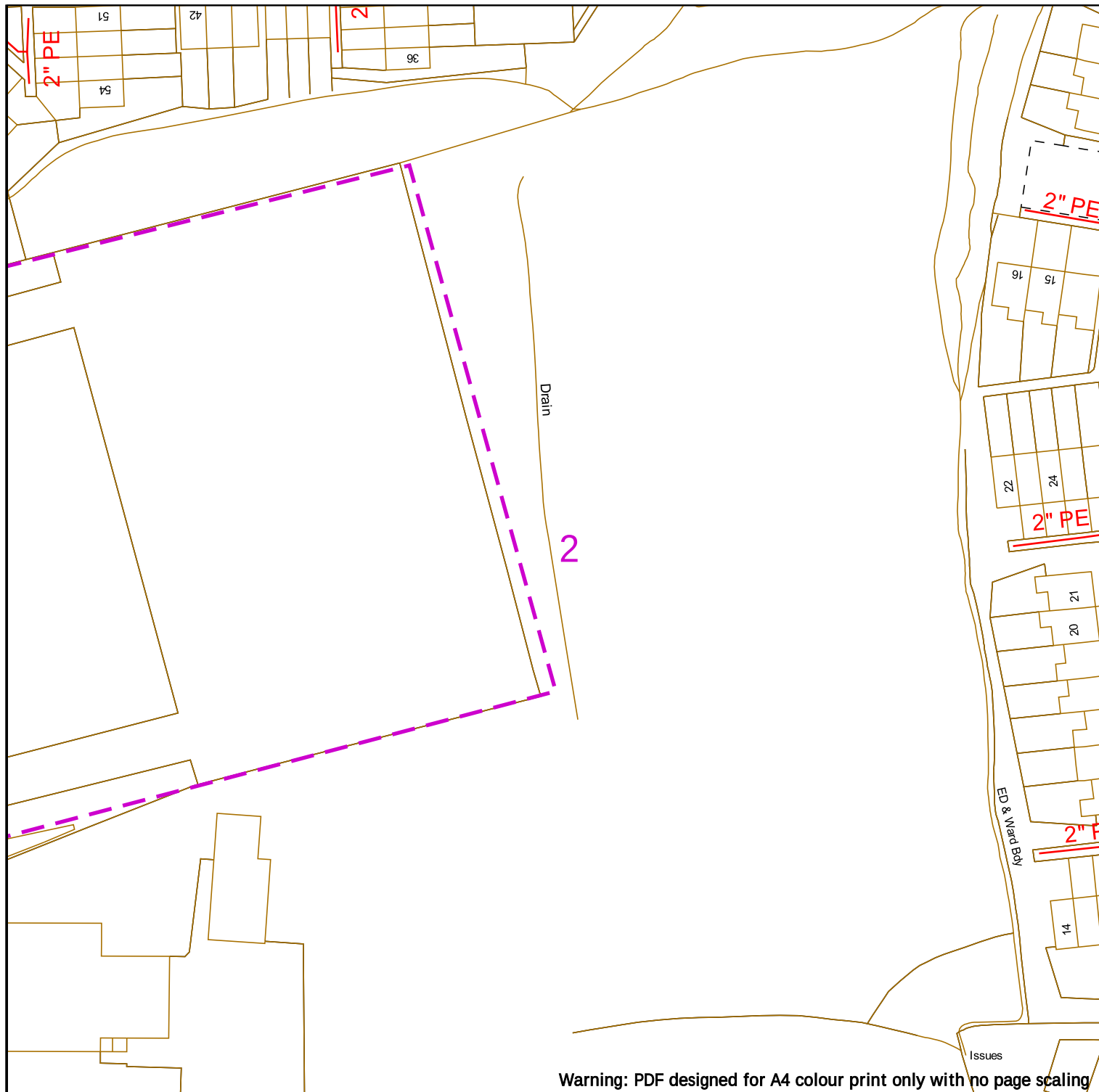


This plan shows the location of those pipes owned by Scotia Gas Networks (SGN) by virtue of being a licensed Gas Transporter (GT). Gas pipes owned by other GTs or third parties may also be present in this area but are not shown on this plan. Information with regard to such pipes should be obtained from the relevant owners. No warranties are given with regard to the accuracy of the information shown on this plan. Service pipes, valves, siphons, sub-connections etc. are not shown but their presence should be anticipated. You should be aware that a small percentage of our pipes/assets may be undergoing review and will temporarily be highlighted in yellow. If your proposed works are close to one of these pipes, you should contact the SGN Safety Admin Team on 0800 912 1722 for advice. No liability of any kind whatsoever is accepted by SGN or its agents, servants or sub-contractors for any error or omission contained herein. Safe digging practices, in accordance with HS (G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that plant location information is provided to all persons (whether direct labour or sub-contractors) working for you on or near gas apparatus. Information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA
0800 111 999

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Scale: 1:1000 (When plotted at A4)



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Contact Us
SGN Safety Admin Team:
 0800 912 1722
Email:
 plantlocation@sgn.co.uk

Low Pressure Mains

Medium Pressure Mains

Intermediate Pressure Mains

High Pressure Mains

Some Examples Of Plant Items

Valve



Syphon



Depth of Cover



Diameter Change



Material Change



Digsites:

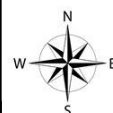
Line:

Area:

LAs

GTs

SSSIs



This information is given as a guide only and its accuracy cannot be guaranteed.

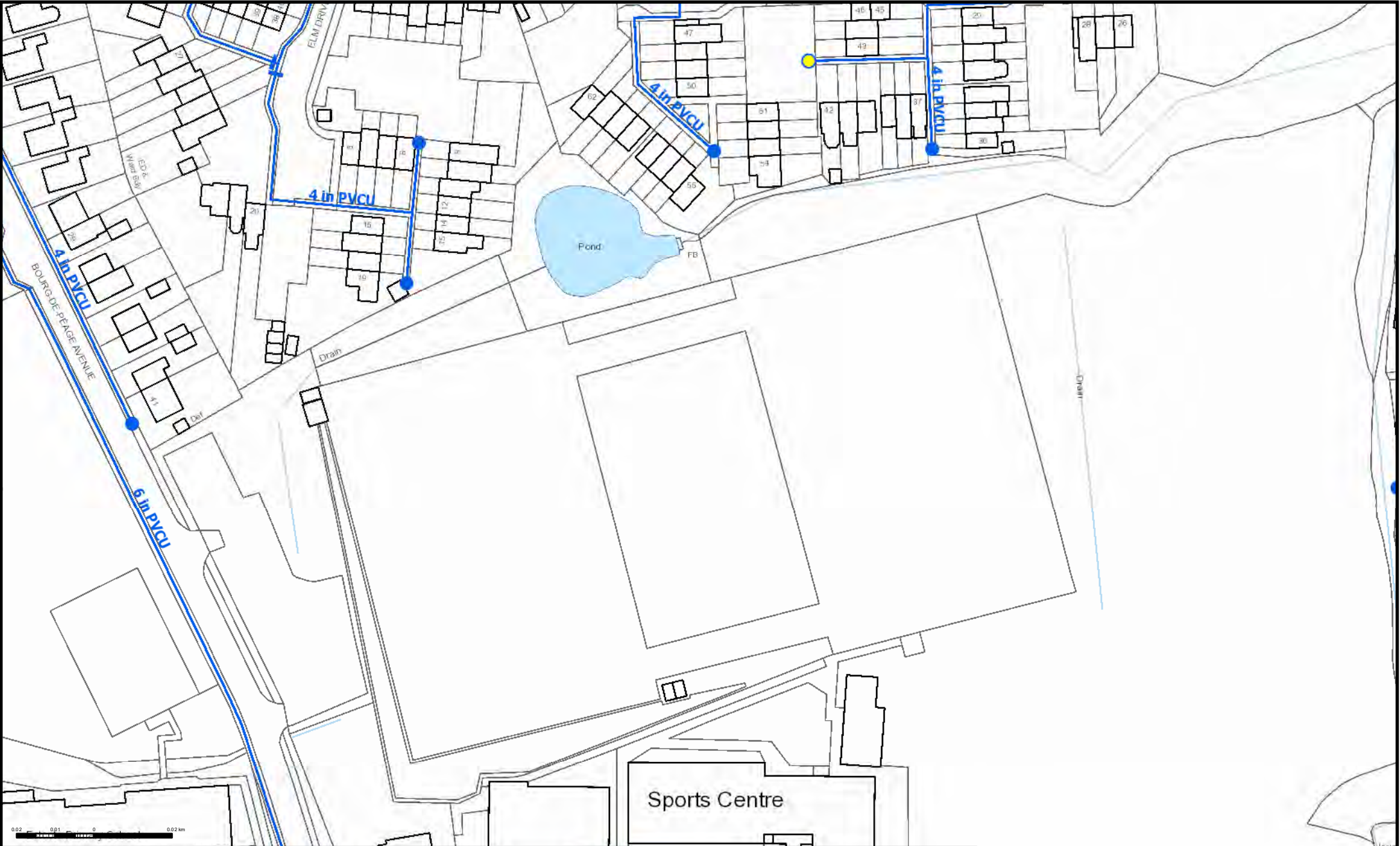


This plan shows the location of those pipes owned by Scotia Gas Networks (SGN) by virtue of being a licensed Gas Transporter (GT). Gas pipes owned by other GTs or third parties may also be present in this area but are not shown on this plan. Information with regard to such pipes should be obtained from the relevant owners. No warranties are given with regard to the accuracy of the information shown on this plan. Service pipes, valves, siphons, sub-connections etc. are not shown but their presence should be anticipated. You should be aware that a small percentage of our pipes/assets may be undergoing review and will temporarily be highlighted in yellow. If your proposed works are close to one of these pipes, you should contact the SGN Safety Admin Team on 0800 912 1722 for advice. No liability of any kind whatsoever is accepted by SGN or its agents, servants or sub-contractors for any error or omission contained herein. Safe digging practices, in accordance with HS (G)47, must be used to verify and establish the actual position of mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that plant location information is provided to all persons (whether direct labour or sub-contractors) working for you on or near gas apparatus. Information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA
0800 111 999

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Scale: 1:1000 (When plotted at A4)



Drawing Title: 540304, 138162

South East Water Mains and Fittings			
	Valve		Meter
	Washout		Pressure Valve
	Fire Hydrant		Abandoned Main
			Company Boundary

This plan is based upon an Ordnance Survey map. © Crown copyright and database rights 2020 Ordnance Survey License No. 100019560. The position of the water mains shown on this plan should not be relied upon as being precise. South East Water accept no responsibility in the event of inaccuracy. This plan (or part) may not be reproduced in any form without the permission of South East Water Ltd. For further information about the contents of this plan please contact South East Water Ltd.

Reference:	
Plot Date:	16/08/2023
Grid Reference:	540,304.0000 138,162.0000
Scale:	1:1,250

south east water

(Water Maps)
PO Box 105
Snodland, Kent
ME6 9DW
Telephone: 0333 000 0058
Email: water.maps@southeastwater.co.uk
Website: www.southeastwater.co.uk



Our Ref: 30532841 Your Ref: STV6168

Wednesday, 16 August 2023

Lauren Wenham
Cedar Barn Cedar Barn White Lodge
Walgrave
Northamptonshire
NN6 9PY

Dear Lauren Wenham

Thank you for your enquiry dated Wednesday, 16 August 2023

Please find an extract from our mains records for your proposed work area, any SGN assets are described in the map legend. **On some occasions blank maps may be sent to you, this is due to your proposed work being in a no gas area but within our operational boundaries.**

This mains record only shows the pipes owned by SGN in our role as a Licensed Gas Transporter (GT). Please note that privately owned gas pipes or pipes owned by other GTs may be present in this area and information regarding those pipes needs to be requested from the owners. If we know of any other pipes in the area we will note them on the plans as a shaded area and/or a series of x's.

The information shown on this plan is given without obligation or warranty and the accuracy cannot be guaranteed. Service pipes, valves, siphons, stub connections etc. are not shown but their presence should be anticipated. Your attention is drawn to the information and disclaimer on these plans. The information included on the plan is only valid for 28 days.

On the mains record you may see the low/medium/intermediate pressure gas main near your site. There should be no mechanical excavations taking place above or within 0.5m of a low/medium pressure system or above or within 3.0m of an intermediate pressure system. You should, where required confirm the position using hand dug trial holes.

A colour copy of these plans and the gas safety advice booklet enclosed should be passed to the senior person on site in order to prevent damage to our plant and potential direct or consequential costs to your organisation.

Safe digging practices in accordance with HSE publication HSG47 "Avoiding Danger from Underground Services" must be used to verify and establish the actual position of the mains, pipes, services and other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that this information is provided to all relevant people (direct labour or contractors) working for you on or near gas pipes.

It must be stressed that both direct and consequential damage to gas plant can be dangerous for your employees and the general public and repairs to any such damage will incur a charge to you or the organisation carrying out work on your behalf. Your works should be carried out in such a manner that we are able to gain access to our apparatus throughout the duration of your operations.

If you require any further information please do not hesitate to contact us.

Yours sincerely,
The Safety Admin Team
For more information, visit our Dig Safely pages on [sgn.co.uk](https://www.sgn.co.uk)
Tel: 0800 912 1722

Enquirer

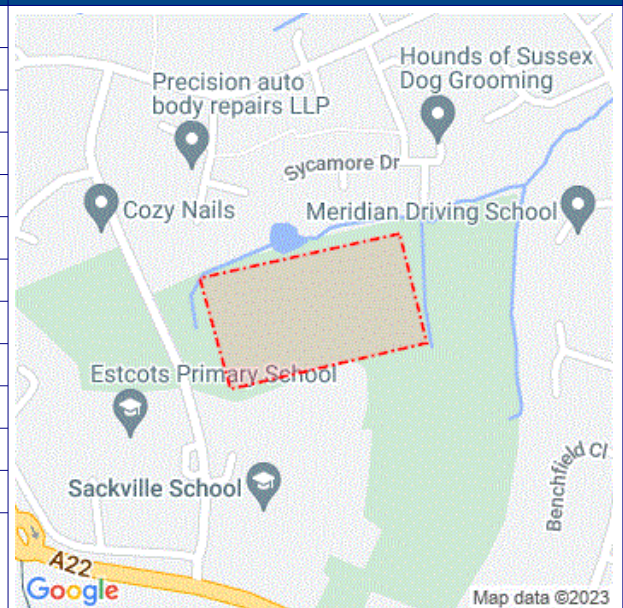
Name	Miss Lauren Wenham	Phone	01604 781877
Company	Soiltechnics Ltd	Mobile	Not Supplied
Address	Cedar Barn Cedar Barn White Lodge Walgrave Northamptonshire NN6 9PY		
Email	admin@soiltechnics.net		

Enquiry Details

Enquiry type	Planned Works
Work category	Development Projects
Work type	Piling
Work type buffer*	150 metres
Start date	17/08/2023
End date	17/08/2023
Scheme/Reference	STV6168
Search location	XY= 540304, 138162
Confirmed location	00 51
Site size	17870 metres square
Site Contact Name	Rosie Dean
Site Phone No.	01604781877
Description of Works	n/a

* The WORK TYPE BUFFER is a distance added to your search area based on the Work type you have chosen.

Site Map



Please note that the above map only displays the location of the proposed work site and will not display any of the Members' pipes and cables. It is imperative that this area accurately reflects the proposed work site.

Affected LSBUD members

(LSBUD Members who have assets registered on LSBUD within the vicinity of your search area.)

Asset Owner	Phone/Email	Emergency Only	Status
SGN	08009121722	0800111999	Await response
UK Power Networks	08000565866	08000565866	Await response

Status explanation

Await Response means that the asset owner will contact you. This is typically by sending the plan response but they may ask for further information before being able to do so, particularly if any payments or authorisations are required.

Email Additional Info means that the asset owner needs further information about your works to assess your enquiry before providing a response. Please provide any details you have available including plans, method statements etc. if available.

Important notices

It is very important that you correctly understand what the service does and the procedures in order for you to work safely. Please refer to the LSBUD Support Page (www.lsbud.co.uk/lineasearchbeforeudig-support) for further guidance.

This information includes how to provide additional information to the LSBUD Members who request it to provide a response to your enquiry.

Validity and search criteria. The results of this enquiry are based on the confirmed information you entered and are valid only as at the date and time of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig (LSBUD) accepts no responsibility for any errors or omissions in the Enquiry Details or any consequences thereof. LSBUD Members update their asset information on a regular basis so you are advised to consider this when undertaking any works. It is your responsibility to choose the period of time after which you need to resubmit any enquiry but the maximum time (after which your enquiry will no longer be dealt with by the LSBUD Helpdesk and LSBUD Members) is 28 days. If any details of the enquiry change, particularly including, but not limited to, the location of the work, then a further enquiry must be made.

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lsbud.co.uk ("Terms of Use") and the disclaimer at the end of this document. Please note that in the event of any conflict or ambiguity between the terms of this Enquiry Confirmation and the Terms of Use, the Terms of Use shall take precedence.

List of not affected LSBUD members

(LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area.)

Angus Energy	AWE Pipeline	B & D Energy Limited
Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)	Box Broadband
BP Exploration Operating Company Limited	BPA	Cadent Gas
Cambridgeshire County Council Climate Change and Energy Services	CATS Pipeline c/o Wood Group PSN	Cemex
Centrica Storage Ltd	CNG Services Ltd	Concept Solutions People Ltd
ConocoPhillips (UK) Teesside Operator Ltd	D.S.Smith	Diamond Transmission Corporation
DIO (MOD Abandoned Pipelines)	DIO (MOD Live Pipelines)	E.ON UK CHP Limited
EDF Energy Renewables Ltd	EirGrid	Eleclink Limited
Electricity North West Limited	Energy Assets Networks	ENI & Himor c/o Penspen Ltd
EnQuest NNS Limited	EP Langage Limited	ESB CCGT Power station (Carrington Gas Pipeline)
ESP Utilities Group	ESSAR	Esso Petroleum Company Limited
euNetworks Fiber UK Ltd	EXA Infrastructure	Exolum Pipeline System
Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited	Gamma
Gas Networks Ireland (UK)	Gateshead Energy Company	Gigaclear Ltd
Harbour Energy	Heathrow Airport LTD	Humbly Grove Energy
IGas Energy	INEOS FPS Pipelines	INEOS Manufacturing (Scotland and TSEP)
INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited	Intergen (Coryton Energy or Spalding Energy)
Jurassic Fibre Ltd	Kensa Utilities	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Moray East Offshore Windfarm
MUA Group Limited	National Gas Transmission	National Grid Electricity Distribution
National Grid Electricity Transmission	Neos Networks	Northern Gas Networks Limited
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	Ogi	Oikos Storage Limited
Ørsted	Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)
Petroineos	Phillips 66	Portsmouth Water
Premier Transmission Ltd (SNIP)	Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)
RWEnpower (Little Barford and South Haven)	SABIC UK Petrochemicals	SAS Utility Services Ltd
Scottish and Southern Electricity Networks	Scottish Power Generation	Seabank Power Ltd
SES Water	Shell	Shell NOP
SP Energy Networks	Spring Fibre Limited	Squire Energy Networks
SSE Generation Ltd	SSE Transmission	SSE Utility Solutions Limited

Storengy	Tata Communications (c/o JSM Construction Ltd)	Total Colnbrook Pipelines
Total Finaline Pipelines	Transmission Capital	Uniper UK Ltd
University of Cambridge Granta Backbone Network	Vattenfall	Veolia ES SELCHP Limited
Veolia ES Sheffield Ltd	Voneus Limited	VPI Power Limited
Wales and West Utilities	West of Duddon Sands Transmission Ltd	Westminster City Council
Zayo Group UK Ltd c/o JSM Group Ltd		

Non-LSBUD members (Asset owners not registered on LSBUD)

(The following Non-LSBUD Members may have assets in your search area. It is YOUR RESPONSIBILITY to contact them before proceeding.

Please be aware this list is not exhaustive and it is your responsibility to identify and contact all asset owners within your search area.)

Asset Owner	Preferred contact method	Phone	Status
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
Equans	nrsua.uk@equans.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@ocugroup.com	02087314613	Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrsua@sky.uk	02070323234	Not Notified
Sota	sota.plantenquiries@ocugroup.com		Not Notified
South East Water	water.maps@southeastwater.co.uk	0333 000 0059	Not Notified
Southern Water	www.digdat.co.uk	08452700212	Not Notified
Utility assets Ltd	assetrecords@utilityassets.co.uk		Not Notified
Verizon Business	osp-team@uk.verizonbusiness.com	01293611736	Not Notified
Virgin Media	http://www.digdat.co.uk	08708883116	Not Notified
Vodafone	osm.enquiries@atkinsglobal.com	01454662881	Not Notified

Disclaimer

Please refer to LSBUD's Terms of Use for full terms of use available at www.lsbud.co.uk

The results of this Enquiry are personal to the Enquirer and shall not be shared with or relied upon by any other party. The asset information on which the Enquiry results are based has been provided by LSBUD Members, therefore LSBUD will provide no guarantee that such information is accurate or reliable nor does it monitor such asset information for accuracy and reliability going forward. There may also be asset owners which do not participate in the enquiry service operated by LSBUD, including but not exclusively those set out above. Therefore, LSBUD cannot make any representation or give any guarantee or warranty as to the completeness of the information contained in the enquiry results or accept any responsibility for the accuracy of the mapping images used. LSBUD and its employees, agents and consultants accept no liability (save that nothing in this Enquiry Confirmation excludes or limits our liability for death or personal injury arising from our negligence, or our fraud or fraudulent misrepresentation, or any other liability that cannot be excluded or limited by English law) arising in respect thereof or in any other way for errors or omissions including responsibility to any person by reason of negligence.

Our Ref: 30532841 Your Ref: STV6168

Wednesday, 16 August 2023

Lauren Wenham
Cedar Barn Cedar Barn White Lodge
Walgrave
Northamptonshire
NN6 9PY

Dear Lauren Wenham

Thank you for contacting us regarding UK Power Networks equipment at the above site. I have enclosed a copy of our records which show the electrical lines and/or electrical plant. I hope you find the information useful.

I have also enclosed a fact sheet which contains important information regarding the use of our plans and working around our equipment. Safety around our equipment is our number one priority so please ensure you have completed all workplace risk assessments before you begin any works.

Should your excavation affect our Extra High Voltage equipment (6.6 KV, 22 KV, 33 KV or 132 KV), please contact us to obtain a copy of the primary route drawings and associated cross sections.

If you have any further queries do not hesitate to contact us.

Plan Provision
0800 056 5866



This information is made available to you on the terms set out below. If you do not accept the terms of use set out in this fact sheet please do not use the plans and return them to UK Power Networks.

1. UK Power Networks does not warrant that the information provided to you is correct. You rely upon it at your own risk.
2. UK Power Networks does not exclude or limit its liability if it causes the death of any person or causes personal injury to a person where such death or personal injury is caused by its negligence.
3. Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise how for any loss, damage, costs, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.
4. The information about UK Power Networks electrical plant and/or electric lines provided to you belongs to and remains the property of UK Power Networks. You must not alter it in any respect.
5. The information provided to you about the electrical plant and/or electric lines depicted on the plans may NOT be a complete record of such apparatus belonging to UK Power Networks. The information provided relates to electric lines and/or electrical plant belonging to UK Power Networks that it believes to be present but the plans are not definitive: other electric lines and/or electrical plant may be present and that may or may not belong to UK Power Networks.
6. Other apparatus not belonging to UK Power Networks is not shown on the plan. It is your responsibility to make your own enquiries elsewhere to discover whether apparatus belonging to others is present. It would be prudent to assume that other apparatus is present.
7. You are responsible for ensuring that the information made available to you is passed to those acting on your behalf and that all such persons are made aware of the contents of this letter.
8. Because the information provided to you may not be accurate, you are recommended to ascertain the presence of UK Power Networks electric lines and/or electrical plant by the digging of trial holes. Trial holes should be dug by hand only.

Excavations must be carried out in line with the Health and Safety Executive guidance document HSG 47. We will not undertake this work. A copy of HSG 47 can be obtained from the Health and Safety Executives website.

All electric lines discovered must be considered LIVE and DANGEROUS at all times and must not be cut, resited, suspended, bent or interfered with unless specially authorised by UK Power Networks.

The electric line and electrical plant belonging to UK Power Networks remains so even when made dead and abandoned and any such electric line and/or electrical plant exposed shall be reported to UK Power Networks.

Where your works are likely to affect our electric lines and/or electrical plant an estimate of the price of any protective /diversionary works can be prepared by UK Power Networks Branch at Metropolitan House, Darkes Lane, Potters Bar, Herts. , EN6 1AG, telephone no. 0845 2340040



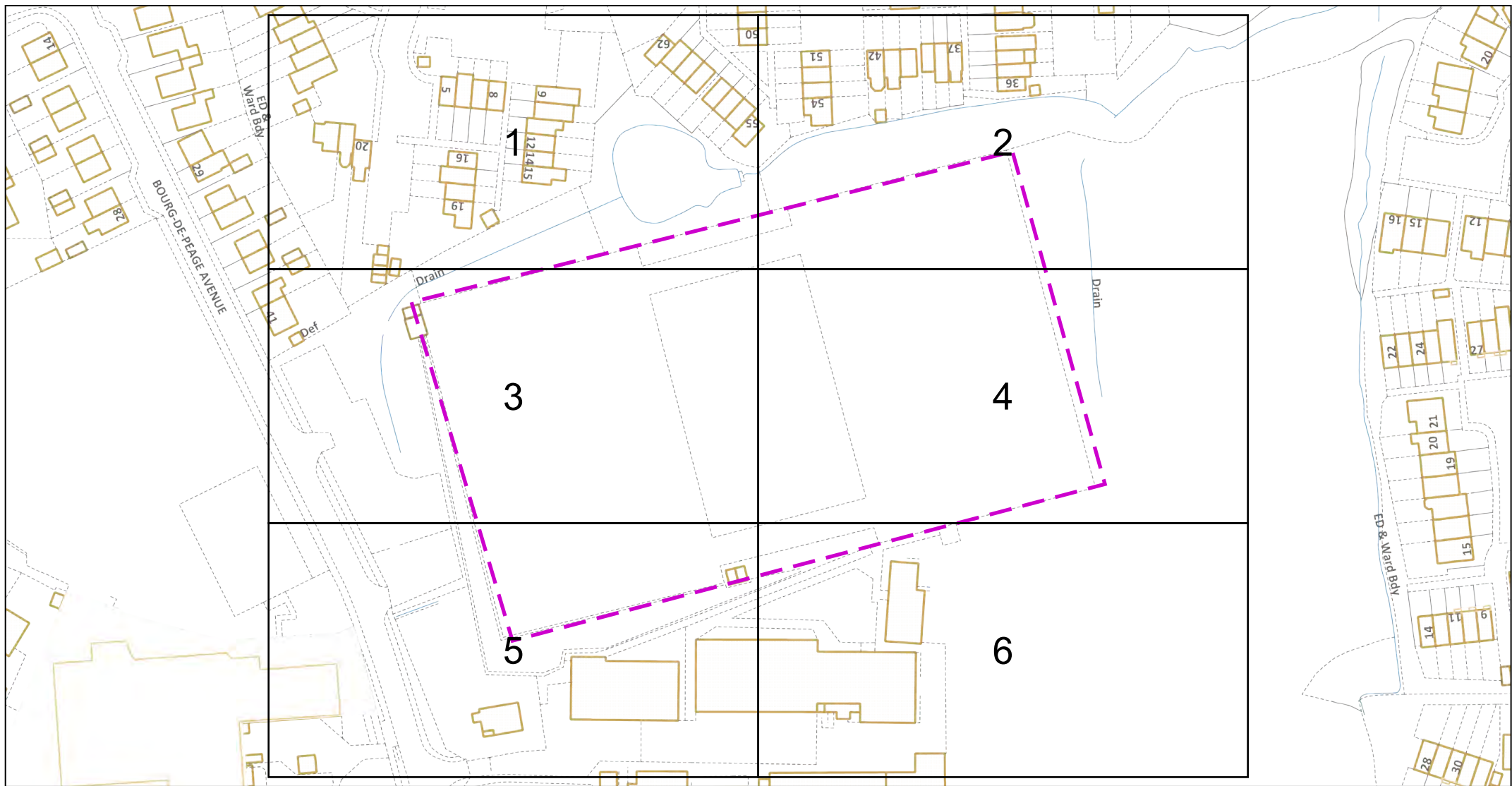
- 9 Any work near to any overhead electricity lines must be carried out by you in accordance with the Health and Safety Executive guidance document GS6 and the Electricity at Work Regulations.

The GS6 Recommendations may be purchased from HSE Books or downloaded from the Energy Networks Association's website.

If given a reasonable period of prior notice UK Power Networks will attend on site without charge to advise how and where "goal posts" should be erected. If you wish to use this service, in the first instance please telephone: 0845 6014516 between 08:30 and 17:00 Monday to Friday.

10. You are responsible for the security of the information provided to you. It must not be given, sold or made available upon payment of a fee to a third party.
11. If in carrying out work on land in, on, under or over which is installed an electric line and/or electrical plant that belongs to UK Power Networks you and/or anyone working on your behalf damages (however slightly) that apparatus you must inform immediately UK Power Networks by our emergency 24 hour three digit telephone number **105** providing;
- your name, address and telephone number;
 - the date, time and place at which such damage was caused;
 - a description of the electric line and/or electrical plant to which damage was caused;
 - the name of the person whom it appears to you is responsible for that damage;
 - the nature of the damage.
12. The expression "UK Power Networks" includes UK Power Networks (EPN) plc, UK Power Networks (LPN) plc, UK Power Networks (SEPN) plc, UK Power Networks and any of their successors and predecessors in title.

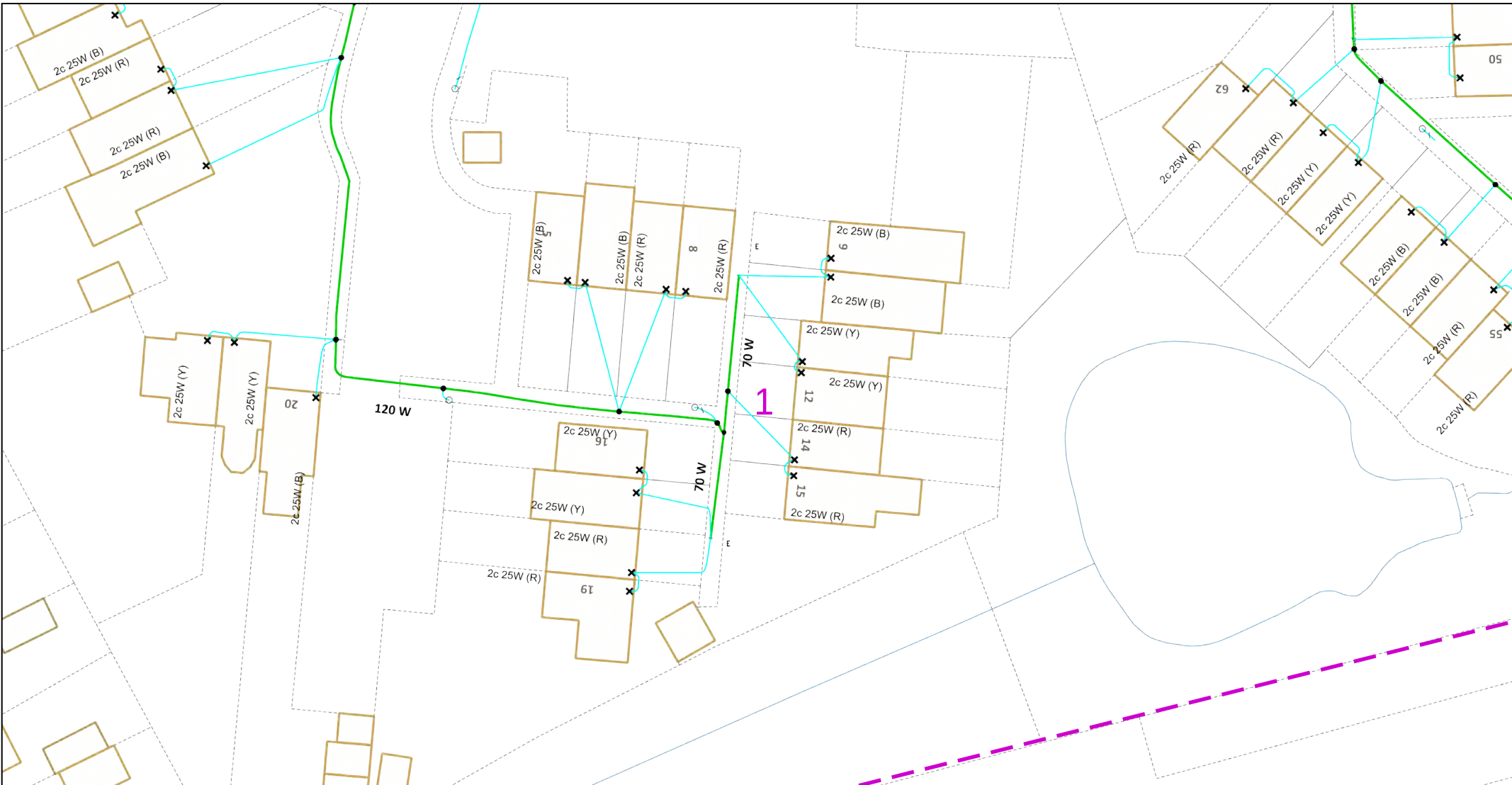




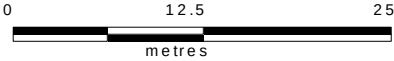
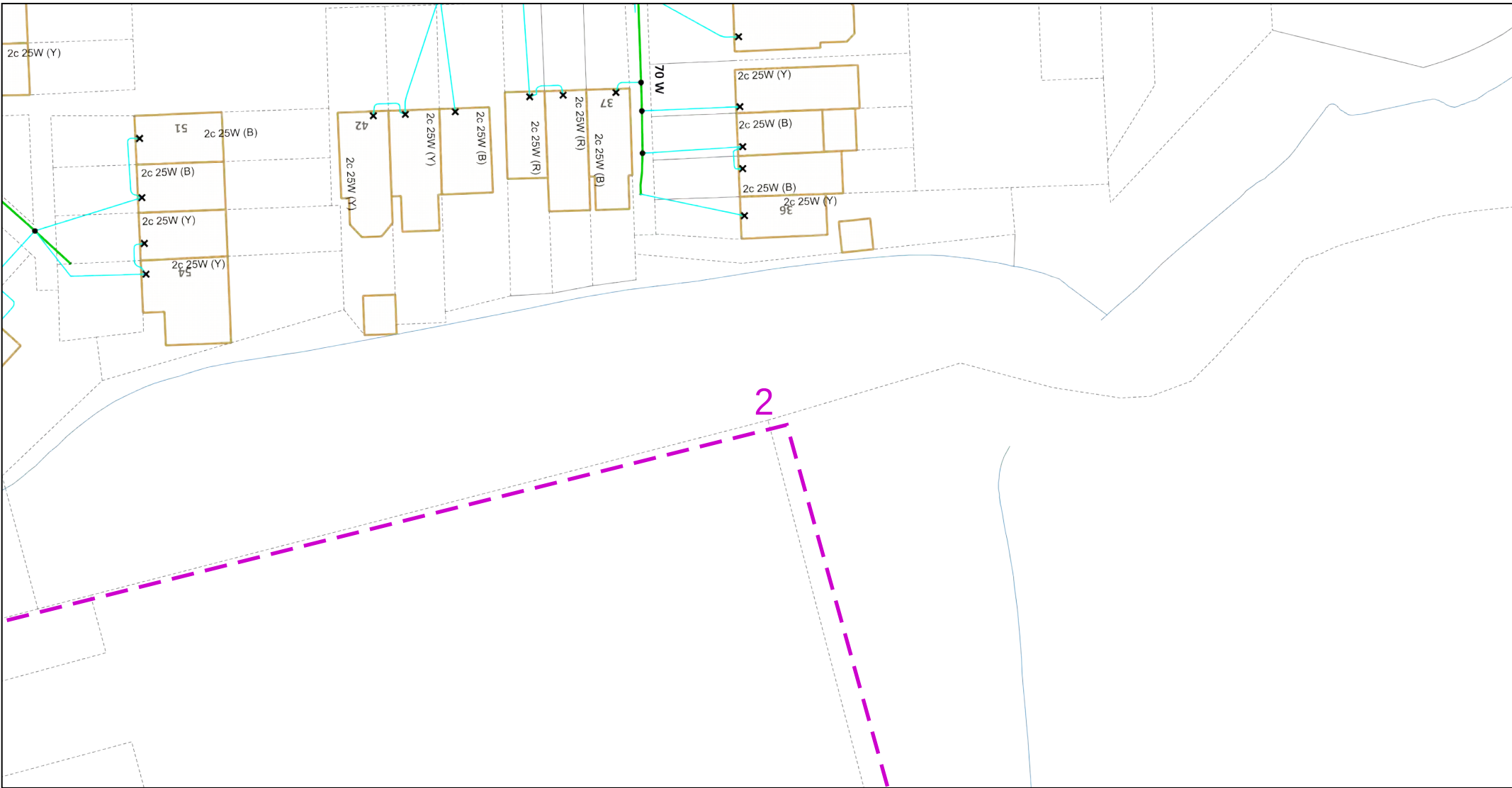
Dig Sites Area:  Line: 

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Date Requested: 16/08/2023 Job Reference: 30532841 Site Location: 540203 138091 Requested by: Miss Lauren Wenham Your Scheme/Reference: STV6168 Scale: 1:1538 (When plotted at A4)			IF IN DOUBT - ASK! PHONE 0800 056 5866 EMERGENCY - If you damage a cable or line Phone 0800 783 8838 (24hrs) URGENTLY	 ALWAYS LOOK UP BEFORE YOU START WORK Refer to HSE Guidance note GS6



0 12.5 25 metres Dig Sites Area: Line:		The quality and accuracy of any print will depend on your printer, your computer and its print settings. Measurements scaled from this plan may not match measurements between the same points on the ground.	
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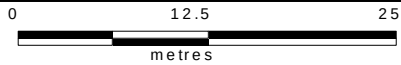
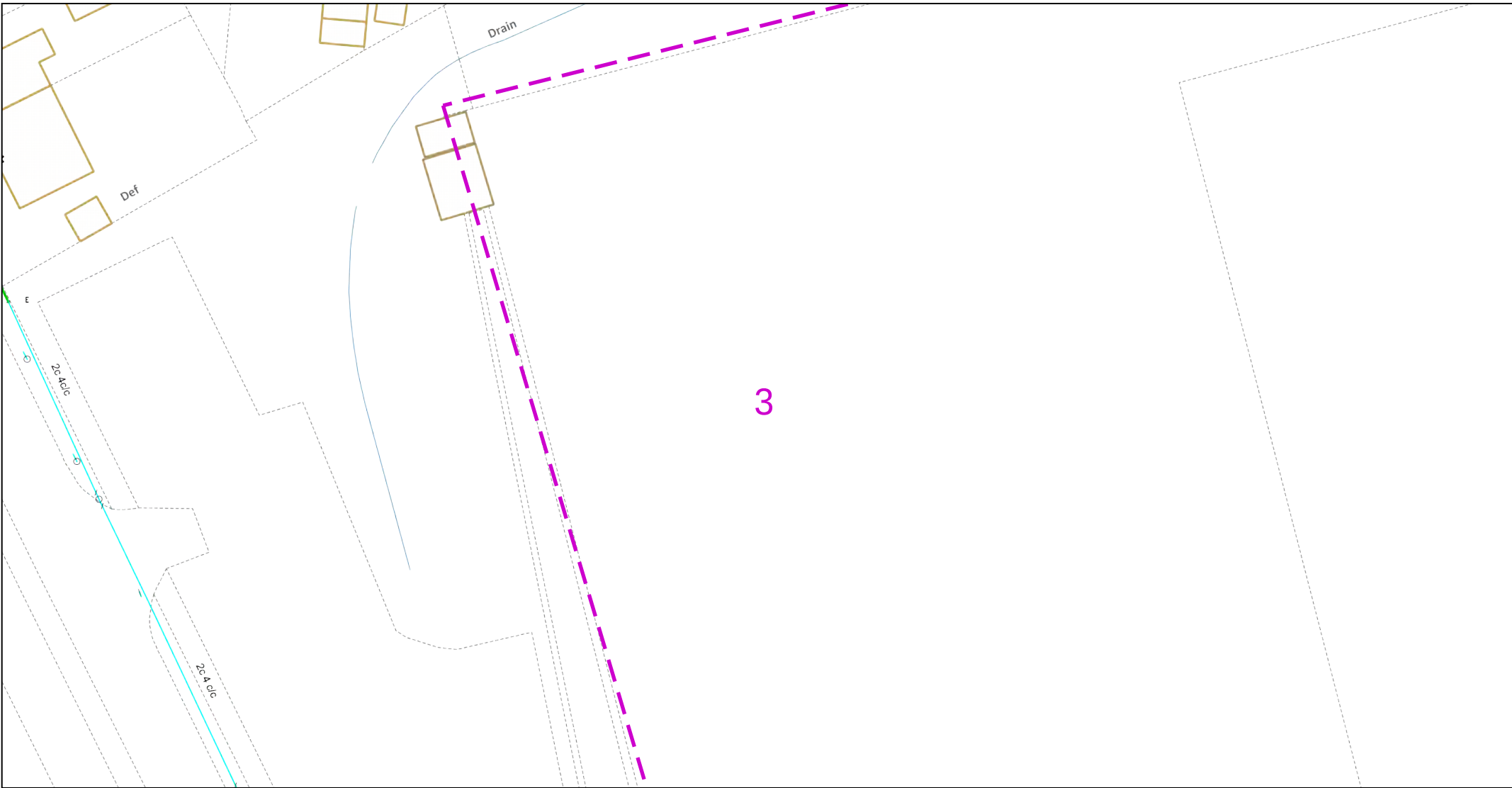


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Job Reference: 30532841
Site Location: 540203 138091
Requested by: Miss Lauren Wenham

Your Scheme/Reference:
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Scale: 1:500 (When plotted at A4)

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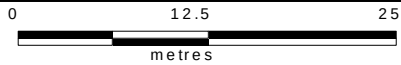
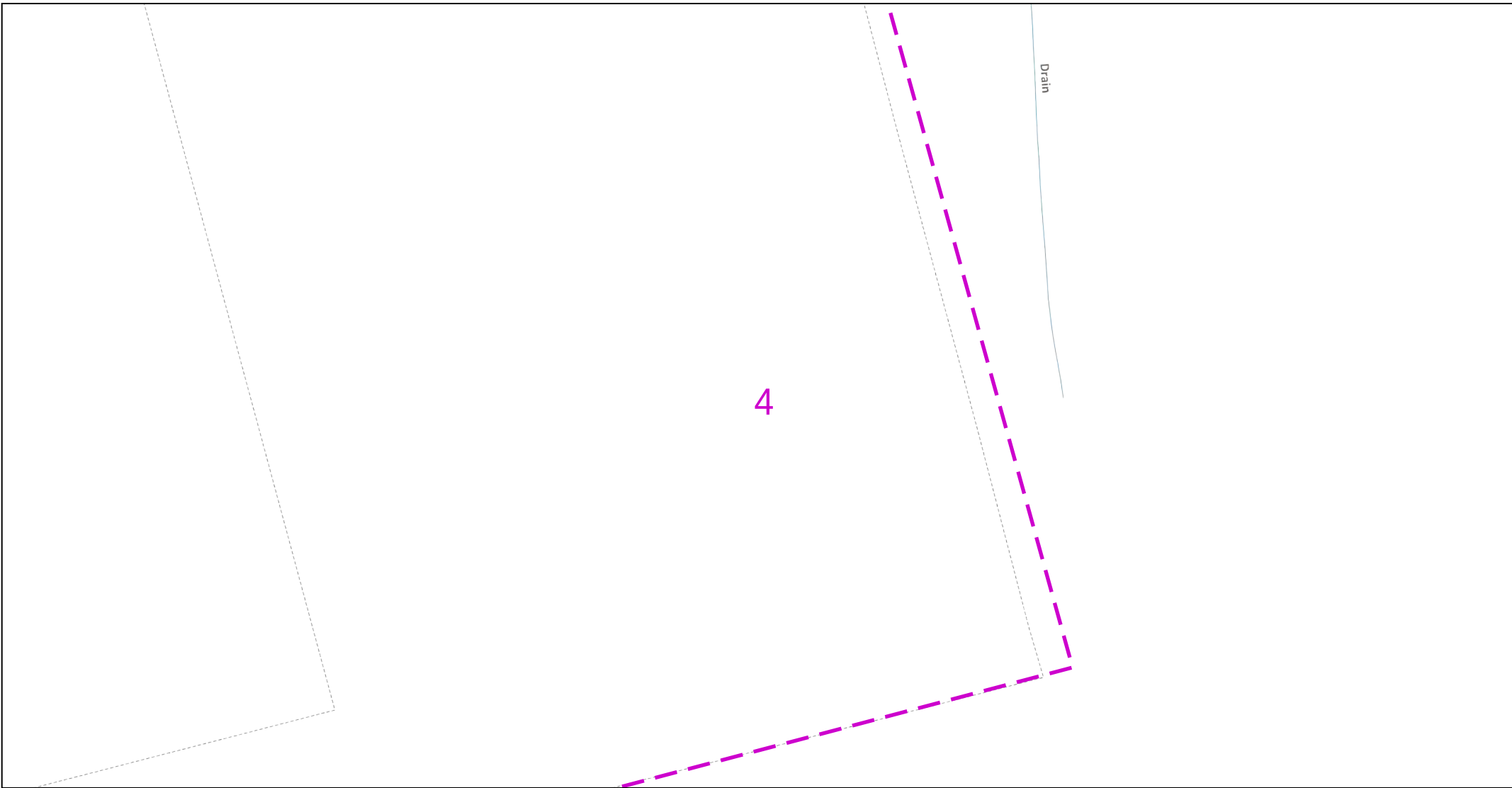


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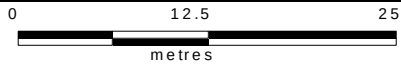
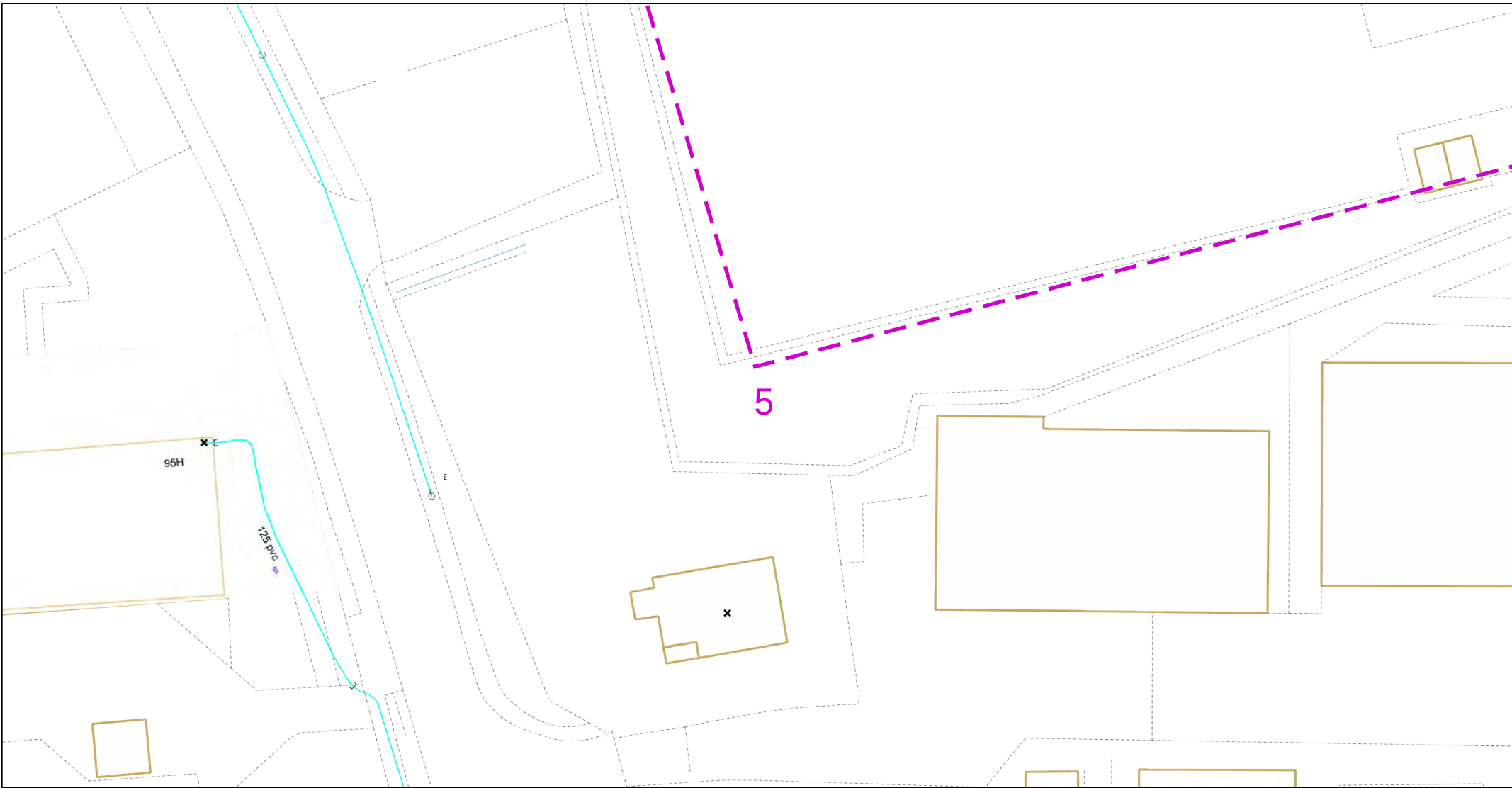
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- 3. Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise for any loss, damage, cost, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.
- 4. This plan has been provided to you on the basis of the terms of use set out in the covering letter that accompanies this plan. If you do not accept and/or do not understand the terms of use set out in the covering letter you must not use the plan and must return it to the sender of the letter.
- 5. You are responsible for the security of the information provided to you. It must not be given, sold or made available upon payment of a fee to a third party.
- 6. Please Note: The Overview map does not display UK Power Networks electricity network and should not be used for the location of UK Power Networks assets. For detail of the electricity network please view the relevant page as highlighted in the Overview map.

IF IN DOUBT - ASK! PHONE 0800 056 5866
EMERGENCY - If you damage a cable or line Phone 0800 783 8838 (24hrs) URGENTLY

ALWAYS LOOK UP BEFORE YOU START WORK
Refer to HSE Guidance note GS6

Maps produced at 1:2500 scale are Geo-Schematics which show LV mains cables and overhead lines (in some cases all voltages). Prior to carrying out excavations you must refer to the 1:500 records to determine the location of all known underground plant and equipment.



Dig Sites Area:  Line: 

The quality and accuracy of any print will depend on your printer, your computer and its print settings. Measurements scaled from this plan may not match measurements between the same points on the ground.

This plan must be used with the attached 'Symbols' document.	1. The position of the apparatus shown on this drawing is believed to be correct but the original landmarks may have been altered since the apparatus was installed. 2. The exact position of the apparatus should be verified - use approved cable avoidance tools prior to excavation using suitable hand tools. 3. It is essential that trial holes are carefully made avoiding the use of mechanical tools or picks until the exact location of all the cables have been determined. 4. It must be assumed that there is a service cable into each property, lamp column and street sign, etc. 5. All cables must be treated as being live unless proved otherwise by UK Power Networks. 6. The information proved must be given to all people working near UK Power Networks plant and equipment. Do not use plans more than 3 months after the issue date for excavation purposes. 7. Please be aware that electric cables/lines belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify their location. 8. Please be aware the Low Voltage Overhead power lines are not currently displayed for the Eastern Region via this service, if you require records on the location of these please contact our Plan Provision team directly via plans@ukpowernetworks.co.uk.		1. UK Power Networks does not warrant that the information provided to you is correct. You rely upon it at your own risk. 2. UK Power Networks does not exclude or limit its liability if it causes the death of any persons or causes personal injury to a person. 3. Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise for any loss, damage, cost, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever. 4. This plan has been provided to you on the basis of the terms of use set out in the covering letter that accompanies this plan. If you do not accept and/or do not understand the terms of use set out in the covering letter you must not use the plan and must return it to the sender of the letter. 5. You are responsible for the security of the information provided to you. It must not be given, sold or made available upon payment of a fee to a third party. 6. Please Note: The Overview map does not display UK Power Networks electricity network and should not be used for the location of UK Power Networks assets. For detail of the electricity network please view the relevant page as highlighted in the Overview map. <td data-kind="ghost"></td>	
Date Requested: 16/08/2023 Job Reference: 30532841 Site Location: 540203 138091 Requested by: Miss Lauren Wenham			  IF IN DOUBT - ASK! PHONE 0800 056 5866 EMERGENCY - If you damage a cable or line Phone 0800 783 8838 (24hrs) URGENTLY  ALWAYS LOOK UP BEFORE YOU START WORK Refer to HSE Guidance note GS6	
Your Scheme/Reference: STV6168 Scale: 1:500 (When plotted at A4)			Maps produced at 1:2500 scale are Geo-Schematics which show LV mains cables and overhead lines (in some cases all voltages). Prior to carrying out excavations you must refer to the 1:500 records to determine the location of all known underground plant and equipment.	

UK Power Networks Feedback Tool

Please help UK Power Networks improve the accuracy of their network records and help make it safer for all those working around them in future.

All you need to do is:

1. Use your phone camera to scan the QR code:
2. Provide feedback on what you have found on site (good or bad)
3. Upload a photo if needed



Thank you for making the area a safer place to dig.

UK Power Networks, working with LSBUD