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Ground Investigation Report

Proposed Floodlit Artificial 3G Pitch

Knowsley MBC, Huyton

July 2022



Proposed floodlit artificial 3G pitch

Knowsley MBC, Huyton

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Executive Summary

Development proposals and site description

The proposed development is for construction of a 73m x 46m (9v9) 3G LED Floodlit Turf Pitch (FTP) including parking provision within the Knowsley Metropolitan Borough Council (MBC) land at Jubilee Park.

Site history

The earliest available maps date back to the late-1800s and shows the wider site as an area of open land (assumed agricultural). A single plot and associated land are recorded beyond the southeastern boundary of the proposed pitch area. By the mid-1900s the site is recorded as Jubilee Park, a defined rectangular area (possible hardstanding sports court) is recorded within the area of the proposed pitch, a small building is also recorded to the north of the pitch. A large building (day nursery) is recorded within the northern central boundary of the wider Jubilee site.

Ground conditions

Exploratory locations encountered a profile of soils comprising Topsoil overlying Made Ground soils to a maximum depth of 1.3m overlying naturally derived firm to stiff clay soils of the Devensian Till (across the south of the proposed pitch) and Weathered Chester Formation (across the entire site). No groundwater was encountered during our investigation.

Coal mining and ground stability

Coal Authority mapping data shows the site does not lie within a Coal Mining Reporting Area, as such we consider the coal mining risk on site to be low.

Drainage and infiltration potential

Infiltration testing indicated that the near surface Weathered Chester Formation are unlikely suitable for soakaway design. Discharging into the public foul sewer (north and south of proposed pitch) is likely to be a viable approach. The Devensian Till is considered to be impermeable based on composition.

CBR assessment and pitch foundations

A CBR design value of 5% is considered suitable for preliminary design purposes.

The formation is anticipated to span Made Ground throughout. We recommend that any area of near surface 'soft' ground present at formation level is replaced by competent clays or granular fill and suitably compacted in order to limit differential settlement across the pitch surfacing.

Floodlight foundations

The naturally derived Devensian Till and Weather Chester Formation are considered suitable to provide support to floodlight foundations on traditional pad type foundations. Laboratory testing indicates the soils are of low volume change potential and thus foundations should extend a minimum of 0.75m depth below proposed ground level in stiff clay soils. Bearing pressures are presented in Section 7.

A concrete class of DS-1 and ACEC-1 / 1s is required.

Contamination and waste assessment

Laboratory testing indicates that the Topsoil present on site is suitable for reuse onsite or within a residential setting. By virtue of elevated organic carbon content, the Topsoil would only be suitable for disposal as non-hazardous waste within a non-hazardous landfill cell.

The Made Ground and natural deposits of the Devensian Till and Weathered Chester Formation on site are suitable for disposal as non-hazardous waste within an inert landfill cell.

No asbestos was identified within soils tested on site.

Recommendations for further works

At this stage, we do not consider further investigations are required onsite.

1 Introduction

1.1 Project Brief

- 1.1.1 The proposed development is for construction of a 73m x 46m (9v9) 3G LED Floodlit Turf Pitch (FTP), including parking provision to the west and north. A site location plan is presented below.



Figure 1-1: Aerial image and approximate site boundary

- 1.1.2 The initial scope of works has been completed in accordance with the framework agreement for a ground investigation utilising hand pitting method. Owing to the presence of Made Ground (in excess of hand pit depths) during the initial phase of work, the scope was later supplemented to include a ground investigation utilising a windowless sampling borehole method. The principal objectives of the ground investigations are to establish ground conditions at the site sufficient to assess the infiltration potential and provide information necessary to allow design of the artificial sports pitch, car parking and floodlight foundations. The report will also advise on abnormal ground conditions and provide recommendations for further investigation works where applicable.
- 1.1.3 In addition to the above, a topographical survey and an electrical survey were commissioned for the project, each provided under separate cover.

1.2 Site Location and Description

- 1.2.1 The wider site encompasses the grounds of Jubilee Park, at the following postal address:

Jubilee Park
Dinas Lane
Huyton
Liverpool
L36 2NW

- 1.2.2 The proposed Knowsley Metropolitan Borough Council (MBC) development lies approximately 8.5km to the east of Liverpool city centre. The closest surface water feature is the River Alt some 725m east of Jubilee Park.
- 1.2.3 The proposed pitch development lies within a predominantly grass surface parcel of land towards the western extent of the wider site. A 17m x 17m single hoop hardstanding basketball court lies within the eastern extent of the proposed pitch development.
- 1.2.4 Surface levels are relatively flat across the proposed pitch development and wider site.
- 1.2.5 A plan showing the existing site features is presented as Drawing 01. A selection of photographs are presented below.



Figure 1-2: View from the east, looking west towards the hardstanding basketball court



Figure 1-3: View from the west, looking east towards wider Jubilee Park

2 Desk Study

2.1 Site History

2.1.1 An attempt to trace the history of the site has been carried out by reviewing readily available Ordnance Survey maps. The earliest available maps date back to the late-1800s and shows the wider site as an area of open land (assumed agricultural). A single plot and associated land are recorded beyond the south-eastern boundary of the proposed pitch area.

2.1.2 By the mid-1900s the site is recorded as Jubilee Park, a defined rectangular area (possible hardstanding sports court) is recorded within the area of the proposed pitch, a small building is also recorded to the north of the pitch. A large building (day nursery) is recorded within the northern central boundary of the wider Jubilee site.

2.2 Recorded Geology and Hydrogeology

2.2.1 Open-source British Geological Survey (BGS) mapping for the area shows superficial deposits to comprise of Devensian Till across the entire site. There are no BGS borehole records within close proximity to the site, however, the site is not recorded to be within a 'hidden valley' as such we anticipate Devensian Till deposits to be less than 5-10m in thickness across the site.

2.2.2 We do not anticipate shallow groundwater to be present across the site.

2.2.3 Due to the limited phases of historical development, Made Ground is anticipated to be thin to absent across the site.

2.2.4 The underlying bedrock is recorded as Chester Formation comprising sandstone across the entire site.

2.2.5 A summary of the anticipated geology is presented below.



Figure 2-1: Superficial geology and artificial ground deposits



Figure 2-2: Bedrock geology and linear features

2.2.6 The table below summarises anticipated geological conditions on site:

Strata	Bedrock or superficial	Approximate thickness	Typical soil type	Likely permeability
Topsoil	-	~0.3m	Organic soil	Moderate
Made Ground	-	<1m, localised	Variable	Variable
Devensian Till	Superficial	<5-10m	Clays	Low
Chester Formation	Bedrock	Basal unit	Sandstone	Permeable [Principal Aquifer]

Table 1: Summary of anticipated geology and hydrogeology

2.3 Mining and Ground Stability

2.3.1 Coal Authority mapping data shows the site does not lie within a Coal Mining Reporting Area, as such we consider the risk of land instability coal mining risk on site to be low.

2.4 Hydrology and Flood Risk

2.4.1 The nearest surface water feature is the River Alt, some 725m east of the site.

2.4.2 Environment Agency flood maps indicate the site is within a Flood Zone 1 and outside of a general Flood Risk Area (see mapping below). There is evidence from other sources that the eastern perimeter of the wider site is susceptible to flooding.

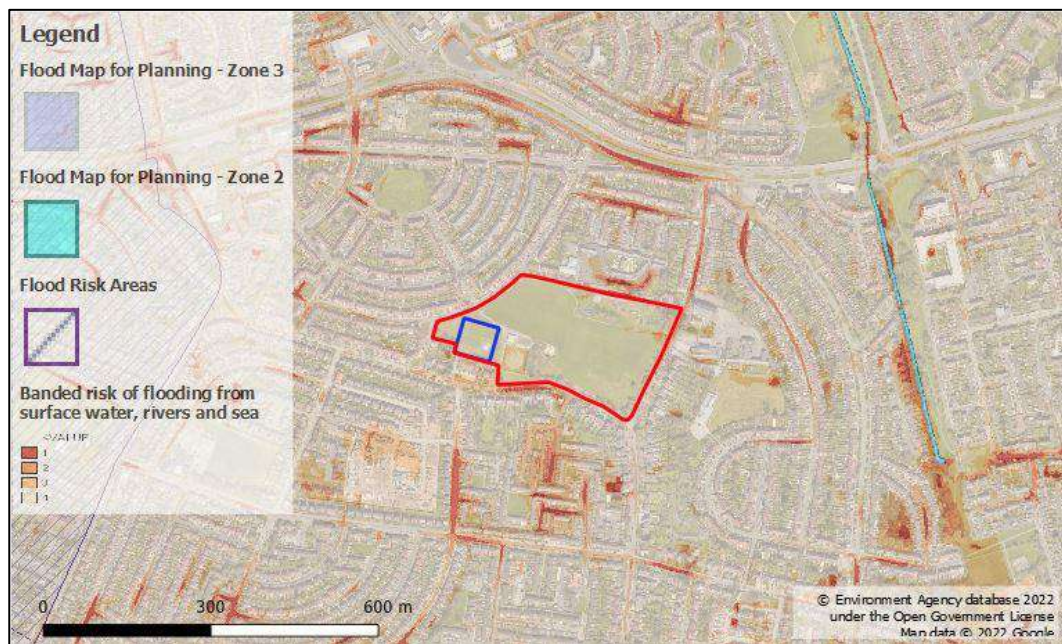


Figure 2-3: Flood risk mapping

2.5 Landfilling

- 2.5.1 Open-source Environment Agency landfill mapping data shows that the site does not lie within 250m of a permitted or historical landfill site (see Figure 2-5 below).
- 2.5.2 Based on the above and anticipated ground conditions on site, the risk from ground gases is considered low.



Figure 2-4: Historical and permitted landfills

2.6 Enquiries with Statutory Undertakers

- 2.6.1 We have contacted a number of Statutory Undertakers and obtained a Linesearch report to obtain copies of available records to avoid damaging buried apparatus during fieldwork activities. Copies of their records are appended; however, it should be noted that private runs are typically excluded from these records.

- 2.6.2 A review of the information indicates the presence of two foul sewer pipes across the wider site from northwest to southeast, whilst an out of use high voltage cable runs parallel but located further east of the wider site. No services are shown to be within the proposed pitch/car park development area.
- 2.6.3 Copies of the SU records received at the time of distribution are included in Appendix A.

3 Fieldwork

3.1 Fieldwork Summary

3.1.1 Fieldwork was initially undertaken on 25th April 2022 (Phase 1) and later supplemented with further works on 18th May 2022 (Phase 2). All works completed are summarised below. Exploratory hole logs are presented in Appendix B, and an exploratory hole location plan is presented as Drawing 01.

Fieldwork	Exploratory hole ID	Method	Achieved depth (m bgl)	Purpose
Phase 1	HP01 to HP06	Hand excavated trial pits	0.1 - 1.2	Prove ground conditions for pitch/floodlights
	DCP01 to DCP06	Dynamic cone penetrometer	0.16 to 0.95	Determine CBR value for sports pitch
Phase 2	WS101 to WS106	Windowless sampling boreholes	1.45 to 4.45	Prove deeper ground conditions owing to presence of Made Ground in excess of hand excavated trial pit depths.

Table 2: Summary of fieldwork undertaken

3.1.2 All soils encountered were described in accordance with BS EN ISO 14688 “Identification and classification of soil”. Rock, where encountered, was described in accordance with BS EN ISO 14689 “Identification and classification of rock”.

3.2 Site Restrictions

3.2.1 No on site restrictions were encountered at the time of investigation.

3.3 Sampling

3.3.1 During the fieldwork, sampling of materials has been undertaken in accordance with BS EN ISO 22475-1 “Geotechnical Investigation and testing – sampling by drilling and excavation and groundwater measurements”. Various sampling and sub-sampling methodologies have been adopted, depending on the medium, excavation / drilling method and analysis requirements, with the primary aim of obtaining the highest quality sample class practicable.

3.4 In-situ Testing

3.4.1 Field testing comprised the following tests:

Test type	Applicable standard / guidance
Pocket penetrometer	Manufacturer's instructions
Standard Penetration Test (SPT)	BS EN ISO 22476-3
Infiltration test	Principles of BRE 365
Dynamic cone penetrometer	Highways England Document CS229 Data for Pavement Assessment

Table 3: Summary of field testing undertaken

3.4.2 The raw data from the in-situ testing is presented in Appendix C, and the results are summarised on individual exploratory hole logs where appropriate.

4 Ground Conditions

4.1 Overview

- 4.1.1 Ground conditions comprised Topsoil overlying Made Ground within Devensian Till and/or Weathered Chester Formation recorded beneath.
- 4.1.2 Topsoil was observed between 0.1m and 0.5m in thickness across the site. Topsoil typically comprised grass onto dark brown gravelly sand with rootlets.
- 4.1.3 Made Ground was recorded beneath the Topsoil to depths between 0.7m and 1.3m across the site where proven. The Made Ground typically comprised black very gravelly medium to coarse sand and soft brown slightly gravelly slightly sandy clay beneath. Gravels comprised coal, flint, brick, concrete, glass, tile and sandstone. Towards the south of the proposed pitch development area, a thin layer of grey sandy gravel comprising of brick, concrete, sandstone and clinker-like material was also noted within the Made Ground (0.3m to 0.4m in thickness).
- 4.1.4 Devensian Till deposits were recorded beneath the Made Ground predominantly within the southern half of the proposed pitch development area (WS02, WS03 and WS04). The Devensian Till deposits were typically recorded firm to very stiff brown and reddish brown and brown slightly sandy slightly gravelly clay with gravels of fine to medium angular to subrounded sandstone, mudstone and flint. Where encountered the Devensian Till was recorded to a depth between 2.4m and 4.0m bgl.
- 4.1.5 The Weathered Chester Formation was observed either beneath the Made Ground (north of proposed pitch area) or beneath the Devensian Till (south of proposed pitch area). The Weathered Chester Formation was recorded as a medium dense to dense reddish-brown sand with localised clay and silt inclusion and gravels of sandstone.
- 4.1.6 Photographs representing the typical ground conditions are presented below.



Figure 4-1: Photo of soil profile at WS102



Figure 4-2: Photo of soil profile at WS105

4.2 Groundwater

4.2.1 Groundwater was absent across all exploratory hole positions.

4.3 Evidence of Possible Contamination

4.3.1 During the ground investigation works no significant visual or olfactory evidence of contamination was observed, beyond the presence of anthropogenic materials in the Made Ground and rare inclusion of clinker-like material.

4.4 Obstructions and Instability

4.4.1 During the initial investigation (Phase 1) a concrete slab across HP04 and HP04A to HP04D was encountered at a depth of 0.1m. We were unable to penetrate the concrete during our investigation. The slab was located towards the southwest of the proposed pitch area.

4.4.2 During the second phase of works (Phase 2), an obstruction (assumed concrete) was noted at 1.0m depth in BH06 (area of proposed car parking). The borehole was then moved locally to the north (BH06A), and the obstruction was not encountered.

5 Laboratory testing

5.1 Overview

- 5.1.1 Upon completion of the fieldworks, selected samples obtained from exploratory holes were sent to independent laboratories for geotechnical testing.
- 5.1.2 The testing schedules were developed by Soiltechnics taking cognisance of the scheme proposals and based on the initial findings of the fieldworks.

5.2 Geotechnical Testing

- 5.2.1 Laboratory test certificates are presented as Appendix D, and the total number of geotechnical tests undertaken is summarised below:

Geological Unit	Test	Quantity
Made Ground	Atterberg	1
	Moisture Content	1
	Particle Size Distribution	1
	BRE SD1 Suite D	2
Devensian Till	Atterberg	1
	BRE SD1 Suite B	1
Weathered Chester Formation	BRE SD1 Suite B	1

Table 4: Summary of geotechnical laboratory testing

5.3 Chemical Testing

- 5.3.1 Chemical laboratory test certificates are presented in Appendix E, and the total number of chemical tests undertaken is summarised below:

Geological Unit	Testing Suite	Quantity
Topsoil	ST Basic classification suite	1
Made Ground	ST Basic classification suite	1
	Full WAC Suite	1

Table 5: Summary of chemical laboratory testing

6 Chemical Assessment

6.1 Topsoil suitability

6.1.1 A composite sample of the Topsoil was obtained and tested for the sole purpose of assessing the suitability of such soils for either reuse onsite within the existing playing fields or offsite, potentially within a residential development. As such we have adopted generic screening values based upon a 'Residential with plant uptake scenario' as a precaution.

6.1.2 Our assessment of laboratory test data has been carried out using Suitable for Use Levels (S4ULs). These screening values have been used as a preference; however, where published S4ULs are not available, we have adopted C4SLs (Category 4 Screening Levels), or soil screening values derived by Atkins.

6.1.3 Tables analysing the test data is presented in Appendix F, and the following table summarises the outcome of the analysis.

Analysis tables	Receptor group	CLEA model	Inorganic contaminants	Organic contaminants
1	Residential users (child), with plant uptake	Residential	No exceedances	No exceedances

Table 6: Summary of chemical analysis

6.1.4 Based on the above, the testing indicates that the Topsoil in-situ would be chemically suitable for reuse on or offsite.

6.1.5 In addition, no asbestos was detected within the Topsoil sample analysed and no suspected asbestos containing materials were observed during the site works.

6.2 Waste disposal

6.2.1 We have undertaken sampling to characterise the insitu soils encountered on site for the potential disposal to landfill. Our assessment includes a hazardous waste classification, in accordance with WM3 (v1.1), and a Waste Acceptance Criteria assessment, in accordance with the current requirements published by the government.

6.2.2 A single composite sample of the Made Ground was obtained using soils from each exploratory hole, referenced as WAC01/2. A composite sample of the Topsoil referenced TS01 was also obtained (also utilised for the assessment in Section 6.1 above).

6.2.3 The assessment sheets are enclosed within 0, and a summary of the findings is presented in the table below.

Stratum	Hazardous classification	Landfill classification
Topsoil	Non-hazardous	Topsoil is typically unsuitable for disposal to inert landfill sites due to high organic carbon content.
Made Ground	Non-hazardous	Inert landfill site
Naturally derived deposits	Non-hazardous	Inert based on soils being of natural origin and unaffected by contamination

Table 7: Summary of waste characterisation testing

7 Engineering Assessment

7.1 Ground Conditions Summary

- 7.1.1 Ground conditions comprised Topsoil (0.1m to 0.5m in thickness) overlying Made Ground (up to a depth of 0.7m bgl and 1.3m bgl) with Devensian Till and/or Weathered Chester Formation recorded beneath.
- 7.1.2 No groundwater was encountered within any of the exploratory locations.
- 7.1.3 A large concrete slab was recorded to the southwest of the proposed pitch area at a depth of 0.1m, whilst a second obstruction (also assumed to be concrete) was recorded at a depth of 1.0m to the west of the proposed pitch area (area of proposed car parking).

7.2 Floodlight foundations

- 7.2.1 In our opinion, the naturally derived Devensian Till and Weathered Chester Formation will adequately support the proposed pad foundations for the floodlight bases. As the deposits comprised both clay and sand, we have determined bearing pressures for both scenarios, and presented the most conservative values accordingly. However, foundation depths are based on soils exhibiting cohesion as a worst case scenario.
- 7.2.2 Laboratory testing indicates the soils are of low volume change potential and thus, foundations should extend a minimum of 0.75m depth below proposed ground level, subject to penetrating the naturally deposited soils by a minimum of 0.3m.
- 7.2.3 Made Ground deposits are present between depths of 0.7m and 1.3m, as such, foundations will locally require deepening into the underlying natural deposits subject to a minimum founding depth of 0.75m.
- 7.2.4 The lighting column 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. 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.
- 7.2.5 In such cases, there is a risk of foundation failure about one edge of the foundation as soils fail in a circular mode. In order to minimise the risk of such a foundation failure, the presumed bearing capacity (which includes a factor of safety of 3) should not exceed 5.52 x undrained shear strength.
- 7.2.6 Based on our understanding of the ground conditions, we have adopted a conservative undrained shear strength of 100kN/m² for the Devensian Till design purposes. Therefore, based on the above equation, the presumed bearing capacity to limit the effects of eccentricity should not exceed 180kN/m².
- 7.2.7 The results of the calculations undertaken to determine the bearing values for pad type foundations are presented below, assuming a minimum founding depth of 0.75m.

Plan size of pad (m)	Ultimate bearing value (kN/m ²)	Presumed bearing value (kN/m ²)	Allowable bearing pressure (kN/m ²)
1 x 1	565	180	180
1.5 x 1.5	655	180	130
2 x 2	750	180	100

Table 8: *Bearing values*

- 7.2.8 The presumed bearing value has been derived from the ultimate bearing value by applying a factor of safety of 3 and adopting the lesser value when compared with the eccentricity value derived in paragraph 7.2.6. The presumed bearing capacities given above should not be exceeded in any loading cases. The allowable bearing capacity is derived assuming a constant, uniformly applied load, with a settlement limit of 25mm.

7.3 Artificial Pitch Foundations

- 7.3.1 We have determined CBR value for the proposed artificial pitch foundations based on existing ground levels 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.

- 7.3.2 We anticipate that the proposed artificial sports pitch foundations will be located at or about existing ground level with the formation predominately located on Made Ground deposits.

- 7.3.3 The placement of any fill used onsite and the compaction achieved will dictate the overall design CBR value of such soils.

7.3.4 Determination of subgrade CBR using the Dynamic Cone Penetrometer

- 7.3.4.1 Based on the anticipated founding depth, and our understanding of the existing ground conditions, a CBR design value of 5% can be adopted for preliminary design purposes for the existing site.

7.3.5 Treatment of formation

- 7.3.5.1 Insitu testing suggests a variation in CBR values for Made Ground deposits across the site. Once formation levels have been established it is recommended that the formation be trimmed and rolled following current requirements of the Highways Agency Specification for Highways Works (clause 616) (refer <https://www.standardsforhighways.co.uk/ha/standards/>). Such a process will identify any soft areas, which we recommend be either 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' area.

7.3.6 Subgrade frost susceptibility

- 7.3.6.1 The fact that the clay subgrade soils are likely to be deemed frost susceptible will probably be the overriding criteria for pavement foundation design purposes. It should also be noted that the thickness of the pavement foundation also relates to the amount and loading from construction traffic, which is discussed in detail in the Transport and Road Research Laboratory (TRRL) Report LR1132 'Structural design of Bituminous Roads'.

7.3.7 Moisture susceptibility

- 7.3.7.1 The cohesive nature of the clay soils will render them moisture susceptible with small increases in moisture content giving rise to a rapid loss of support to construction plant. We therefore recommend, as soon as formation is trimmed and rolled, that sub-base is laid in order to avoid deterioration of the subgrade in wet or frosty conditions.

7.4 Drainage and Infiltration Potential

- 7.4.1 The Devensian Till soils were predominantly encountered as a cohesive material across the site, which typically exhibit low permeability. As such infiltration testing was only undertaken within WS101 targeting the Weathered Chester Formation. Testing was undertaken between depths of 0.7m to 4.45m and two cycles were completed. During the test an infiltration rate between 1.29×10^{-5} m/s and 5.1×10^{-7} m/s was recorded. It is worth noting however that a full test could not be completed during the second cycle owing to time constraints.
- 7.4.2 Based on the above assessment of the ground conditions, the near surface soils are unlikely to be considered amenable to the use of soakaway type systems, thus an alternative drainage solution will need to be considered.
- 7.4.3 It should be noted that testing has not been strictly carried out in accordance with BRE Digest 365 (2016) "*Soakaway Design*". However, on review of the results and ground conditions encountered, the testing is considered to be sufficient to inform the drainage strategy.
- 7.4.4 No existing soakaway features were observed on site during our ground investigation works; however, a full drainage survey was not undertaken.
- 7.4.5 Two manholes were recorded beyond the east of the proposed development area (one towards the north, the other to the south). We were unable to lift either during our site investigation, however, we anticipate that both could represent possible drainage options for the proposed pitch. The southern manhole is recorded as a 'foul' public sewer within the United Utilities service records and exists the site towards the south, whilst it is unclear whether the northern manhole is also associated to this.
- 7.4.6 There is also the possibility of draining into the foul sewer which crosses the centre of Jubilee Park (wider site) towards the north of the proposed pitch area. However, as mentioned above a full drainage survey would be required to confirm this.

7.5 Aggressiveness of the ground to buried concrete

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

7.5.2 The site is interpreted to be a brownfield site where pyrite is unlikely to be present.

7.5.3 The classification of each strata is tabulated below:

Stratum	Design sulphate classification	Aggressive chemical environment for concrete classification
Made Ground	DS-1	ACEC-1
Devensian Till	DS-1	ACEC-1s
Weathered Chester Formation	DS-1	ACEC-1

Table 9: Summary of the aggressiveness of the ground to buried concrete

7.5.4 It should be noted that where concrete is in contact with more than one soil type then the most onerous DS and ACEC classification should be adopted.

7.6 Recommendations for further works

7.6.1 At this stage, we do not consider further investigations are required onsite.

Drawings



Key:

- Site Boundary
- Pitch Boundary
- Exploratory Locations — Hand Pit
- Exploratory Locations — WLS
- DCPs

Notes

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

Contains OS data © Crown copyright [and database right] [2022]
Map data © 2022 Google

A	July 2022	First issue
REV	DATE	COMMENT ON VARIATION

soiltechnics
environmental • geotechnical • building fabric

PROJECT
Knowsley MBC, Huyton

TITLE
Exploratory Location Plan

PROJECT No.	DRAWING	REVISION
STU5625	01	A

Appendix A Statutory Undertakers Responses

Soiltechnics

**Soiltechnics
white lodge, walgrave
walgrave, nothants
nn6 9py**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: STU5625
Our Ref: UUPS-ORD-369855
Date: 24/02/2022**

Dear Sirs

Location: Knowsley MBC

I acknowledge with thanks your request dated 23/02/2022 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

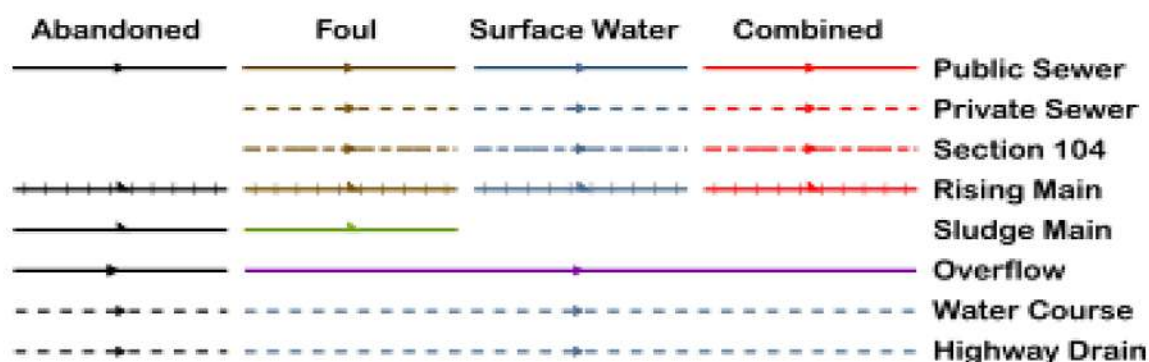
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

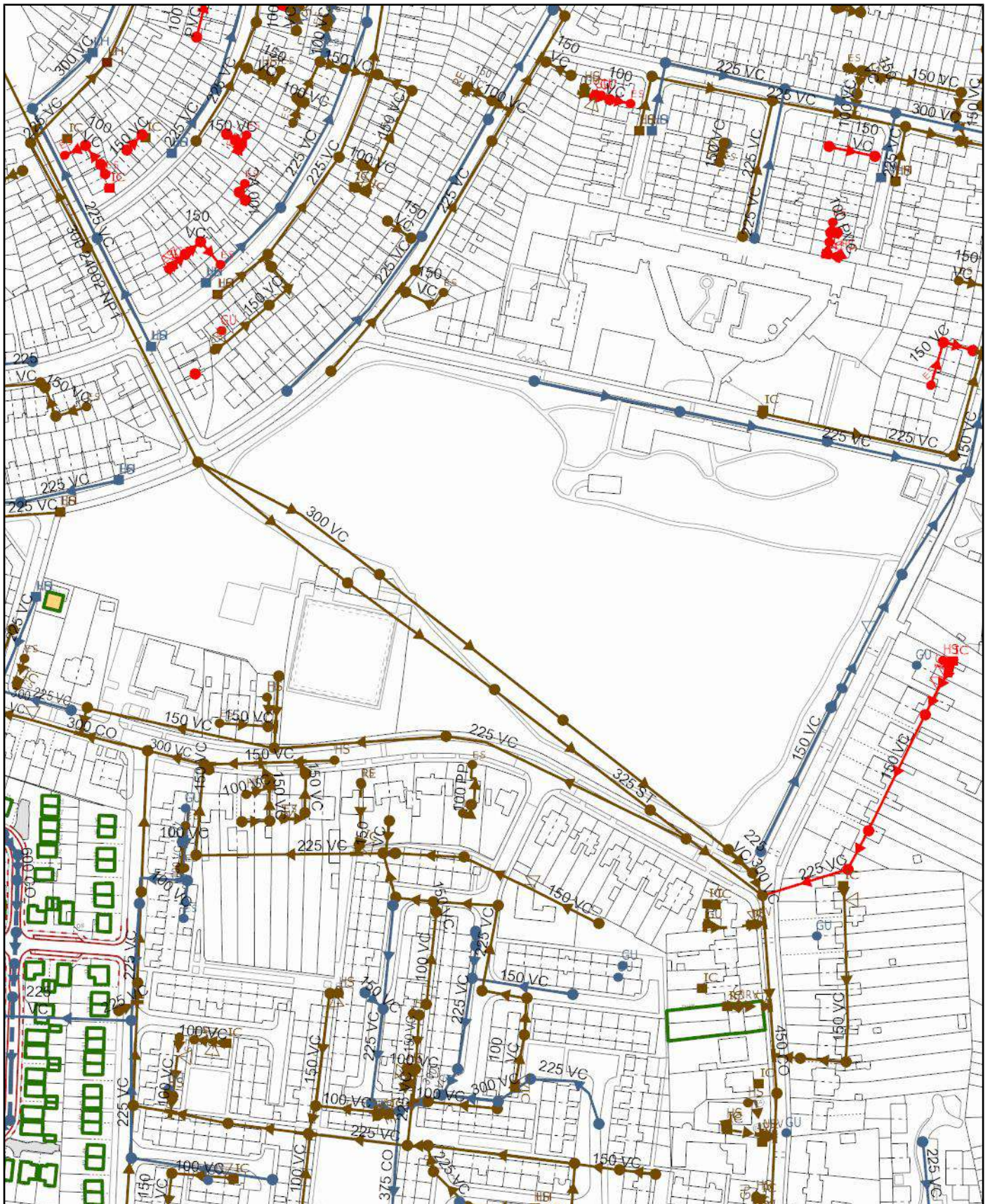
- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



All point assets follow the standard colour convention: **red** – combined **brown** - foul
blue – surface water **purple** - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	
Drop Shaft	Change of Characteristic
Orifice Plate	



Scale: 1:2633
Date: 24/02/2022

SEWER RECORDS



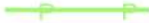
Water for the North West

Address or Site Reference: Knowsley MBC
Printed by: Property Searches

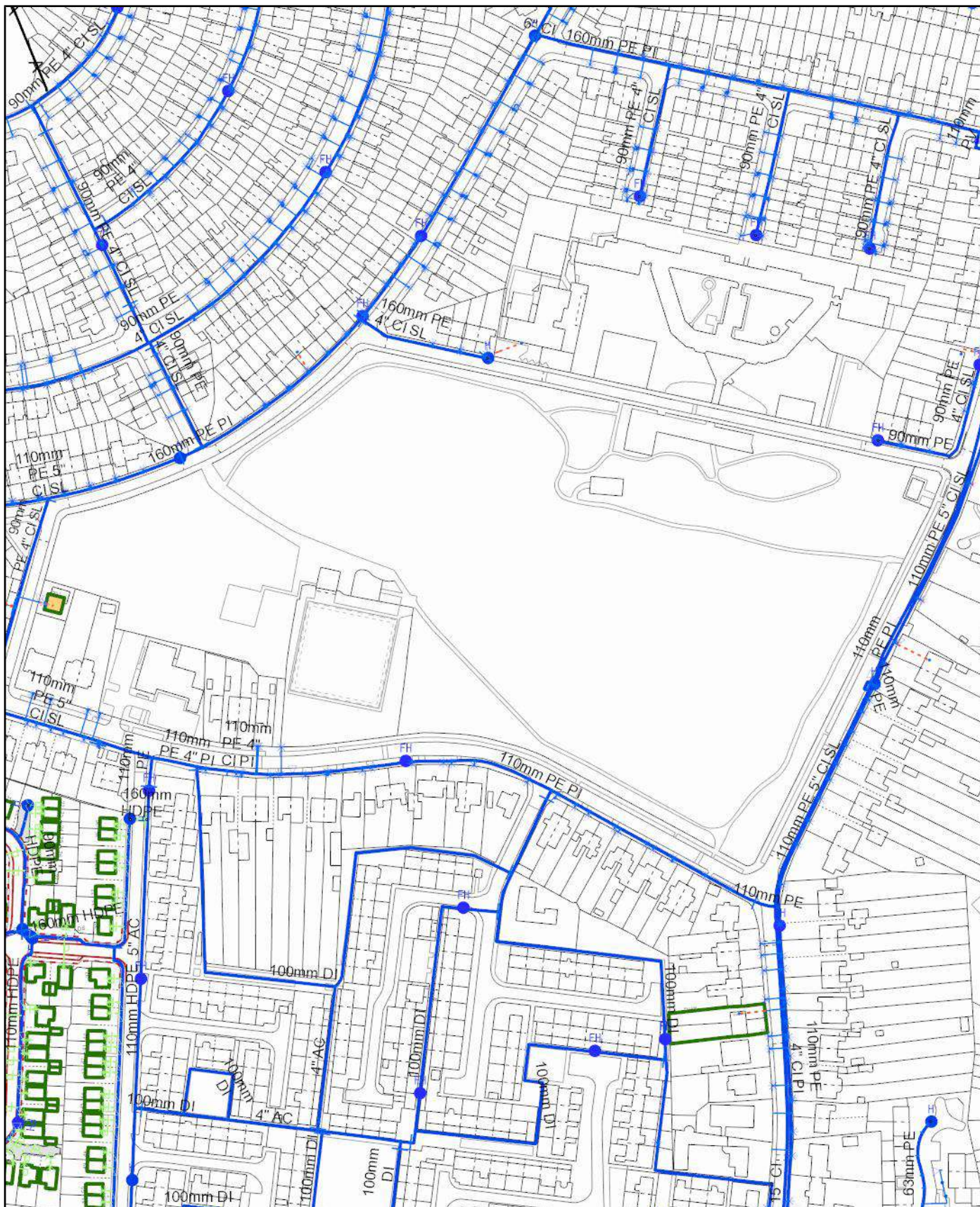
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
Symbology for abandoned assets is the same as above, but shown in **black**



Scale: 1:2633
Date: 24/02/2022

WATER MAINS RECORDS

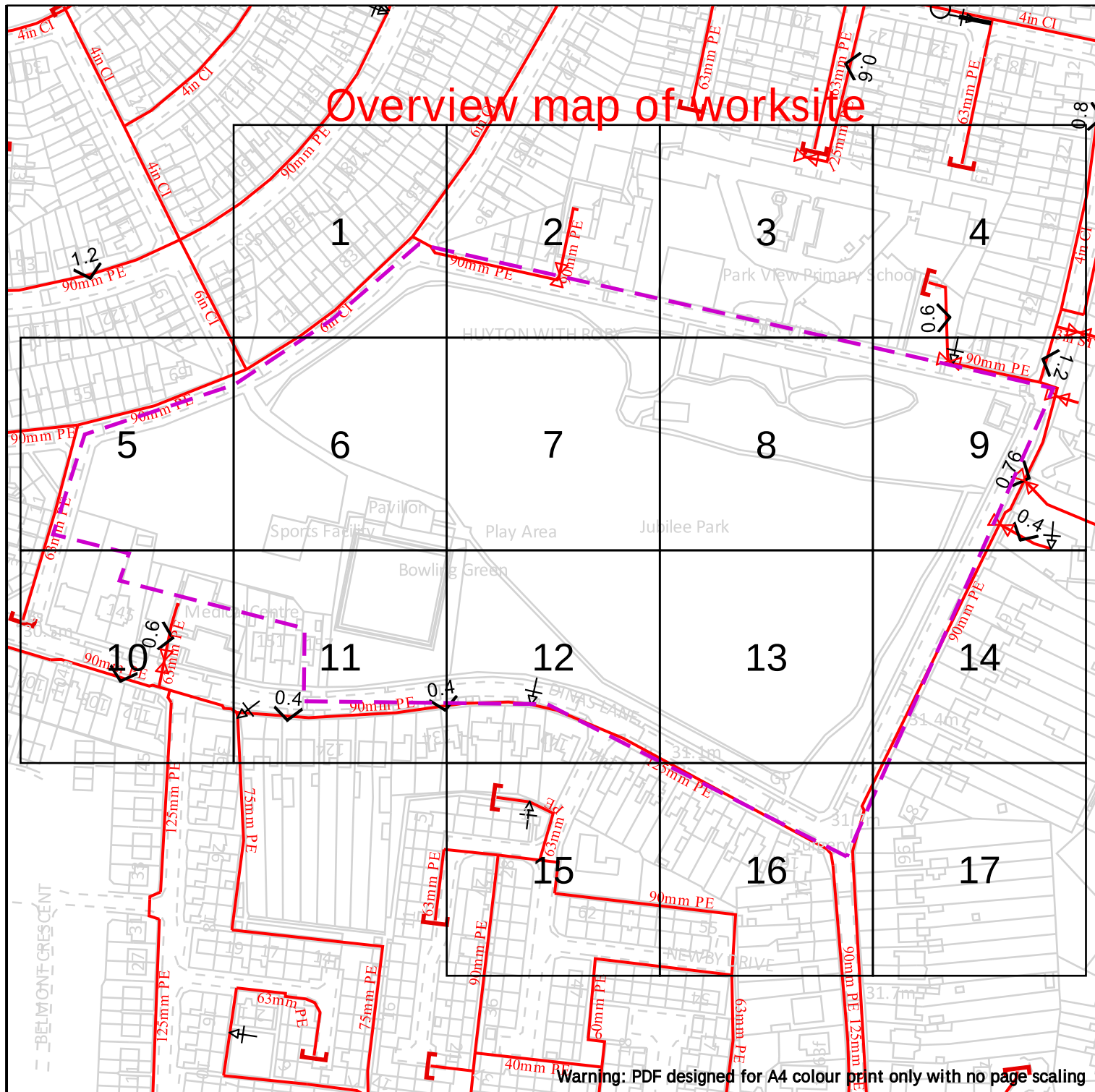
Address or Site Reference: Knowsley MBC
Printed by: Property Searches



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Overview map of worksite

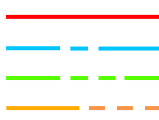


Cadent
Your Gas Network

Dig Sites

Area:

Line:



LP Mains
MP Mains
IP Mains
LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

IMPORTANT NOTICES

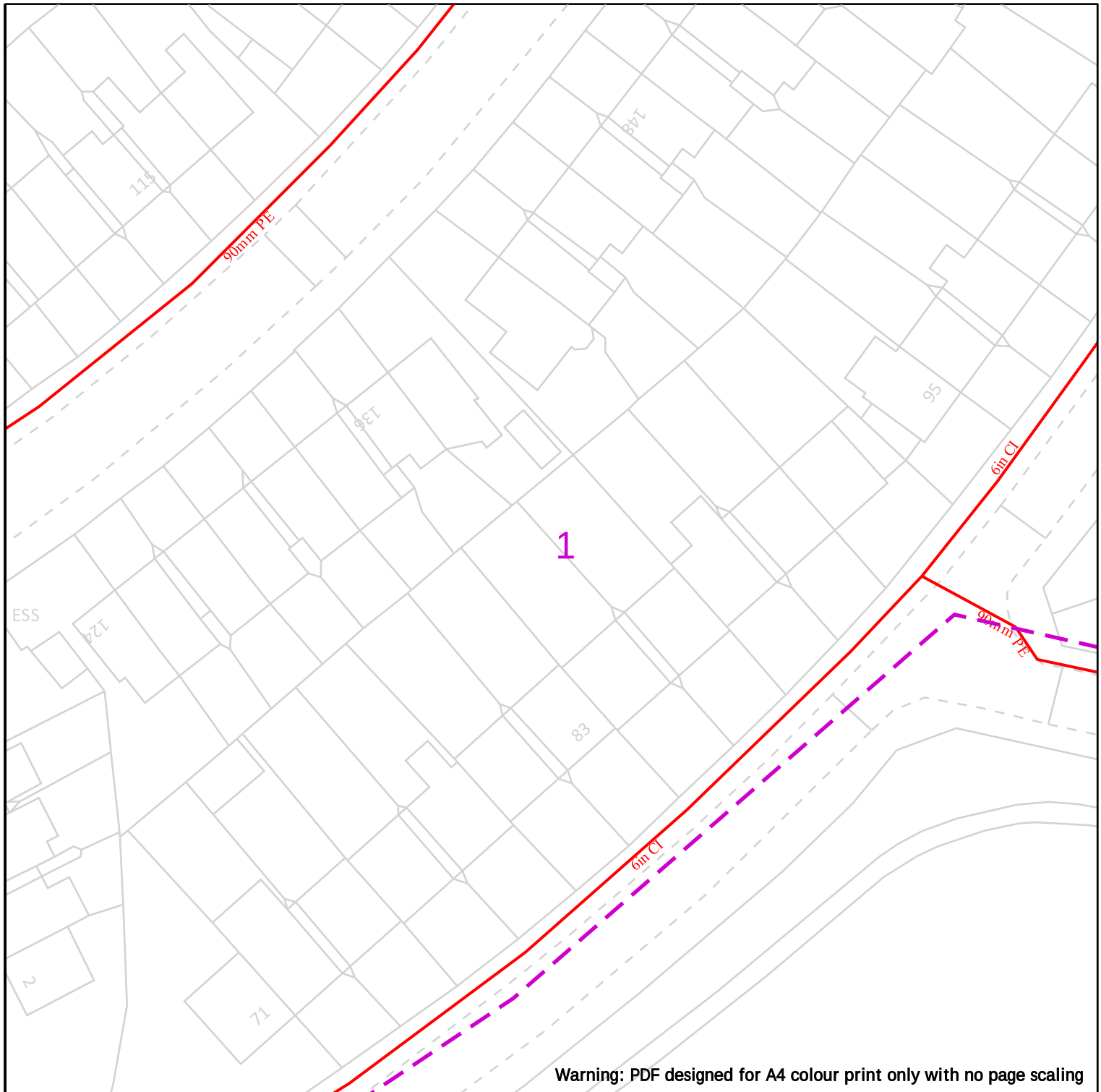
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View extent: 100m, 100m

Scale: 1:2563 (When plotted at A4)

In case of emergency call - 0800 111 999

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25m

Dig Sites

Area:



Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

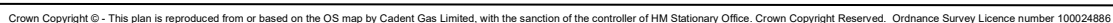
IMPORTANT NOTICES

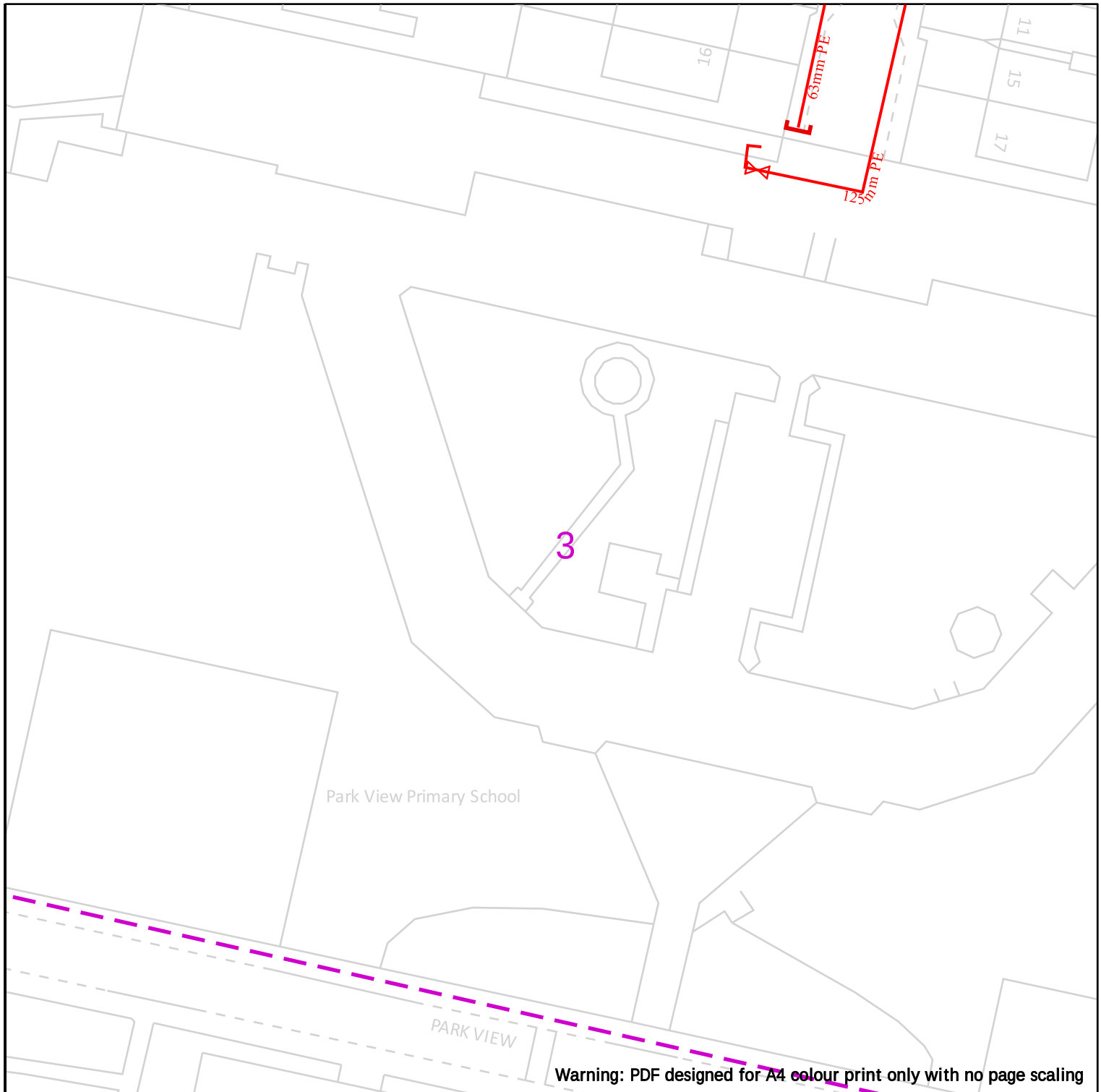
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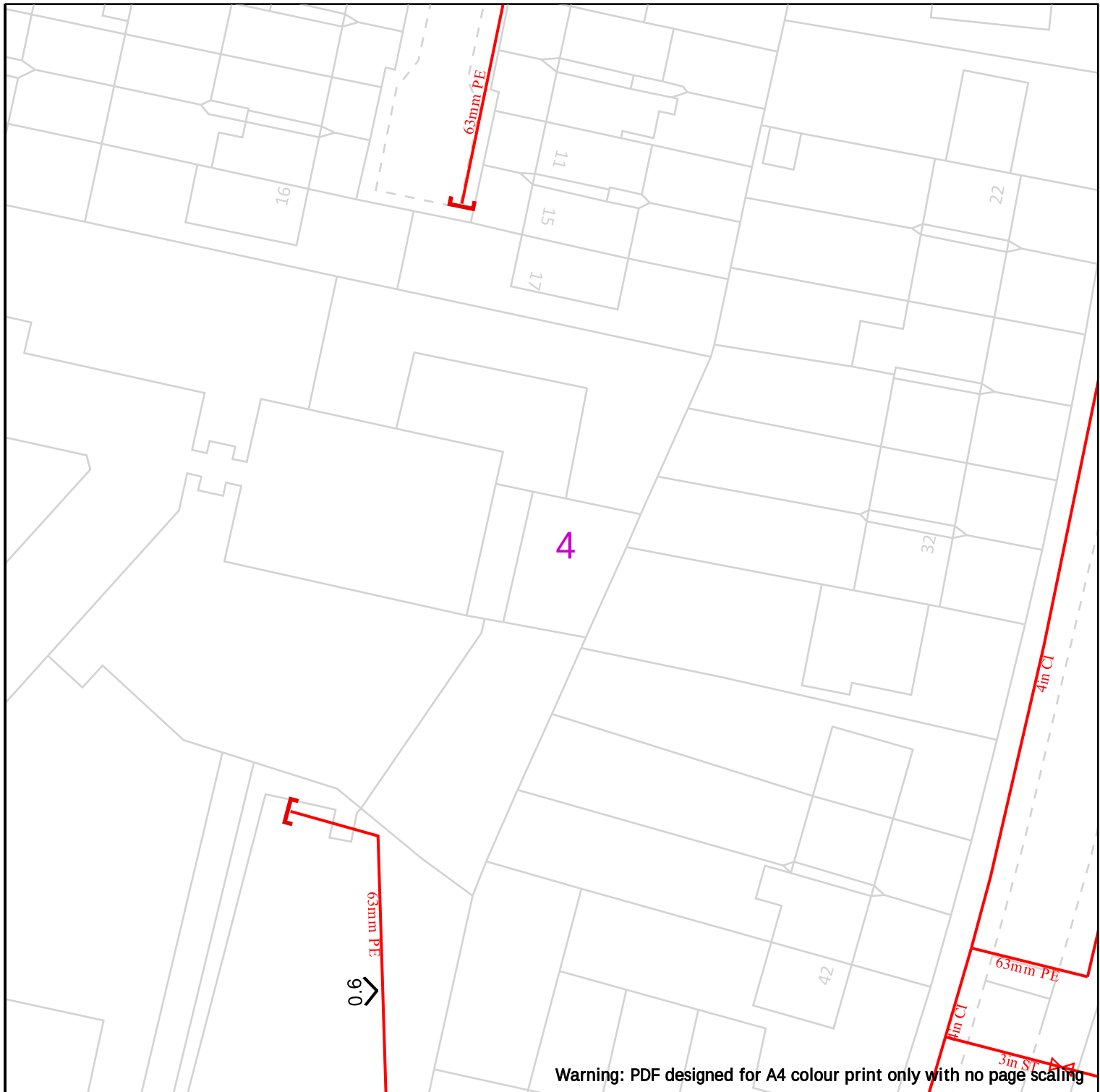
Scale: 1:500 (When plotted at A4)

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25m

Dig Sites

Area:



Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band
Your Scheme/Reference: STU5625

View extent: 100m, 100m

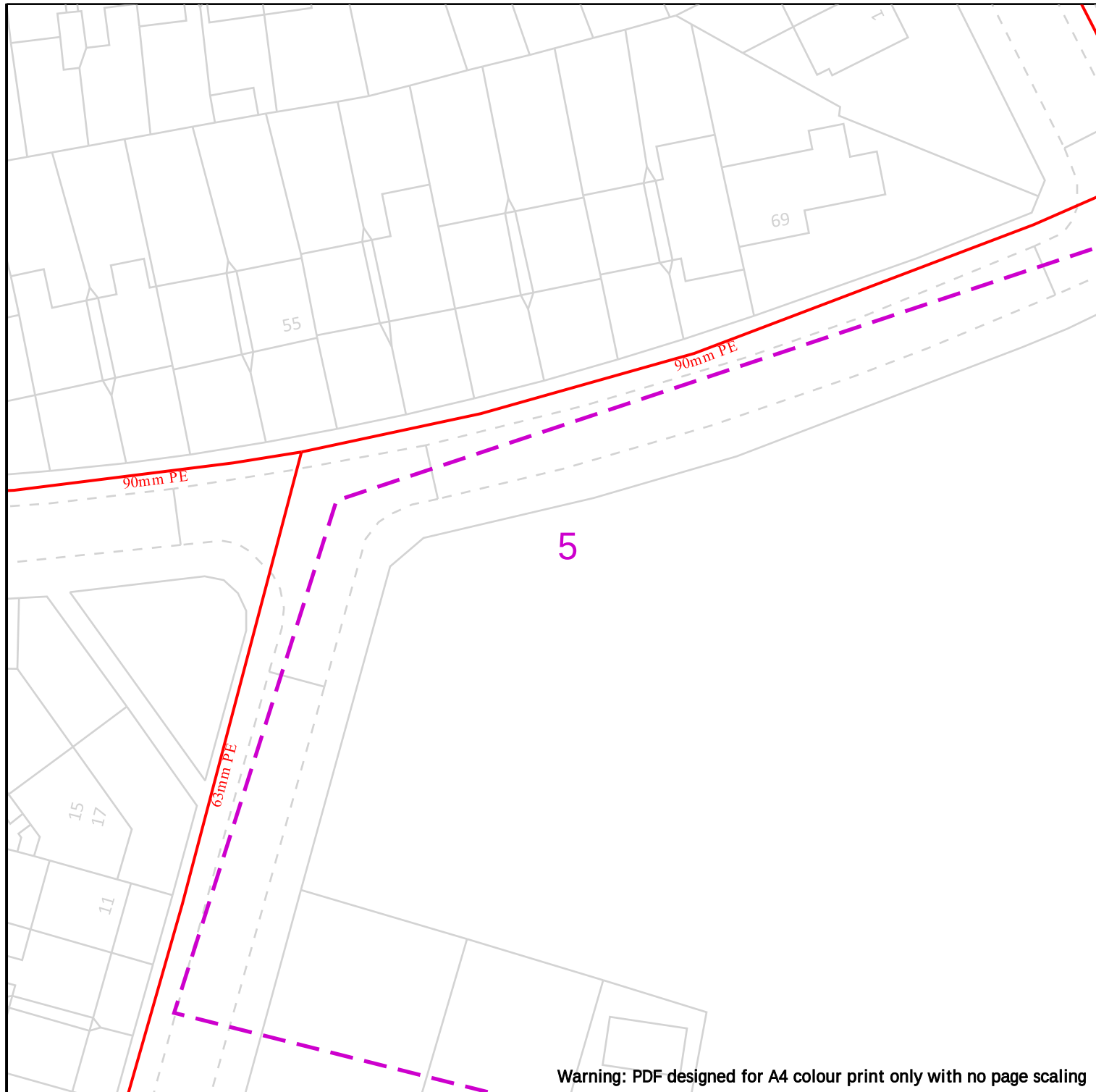
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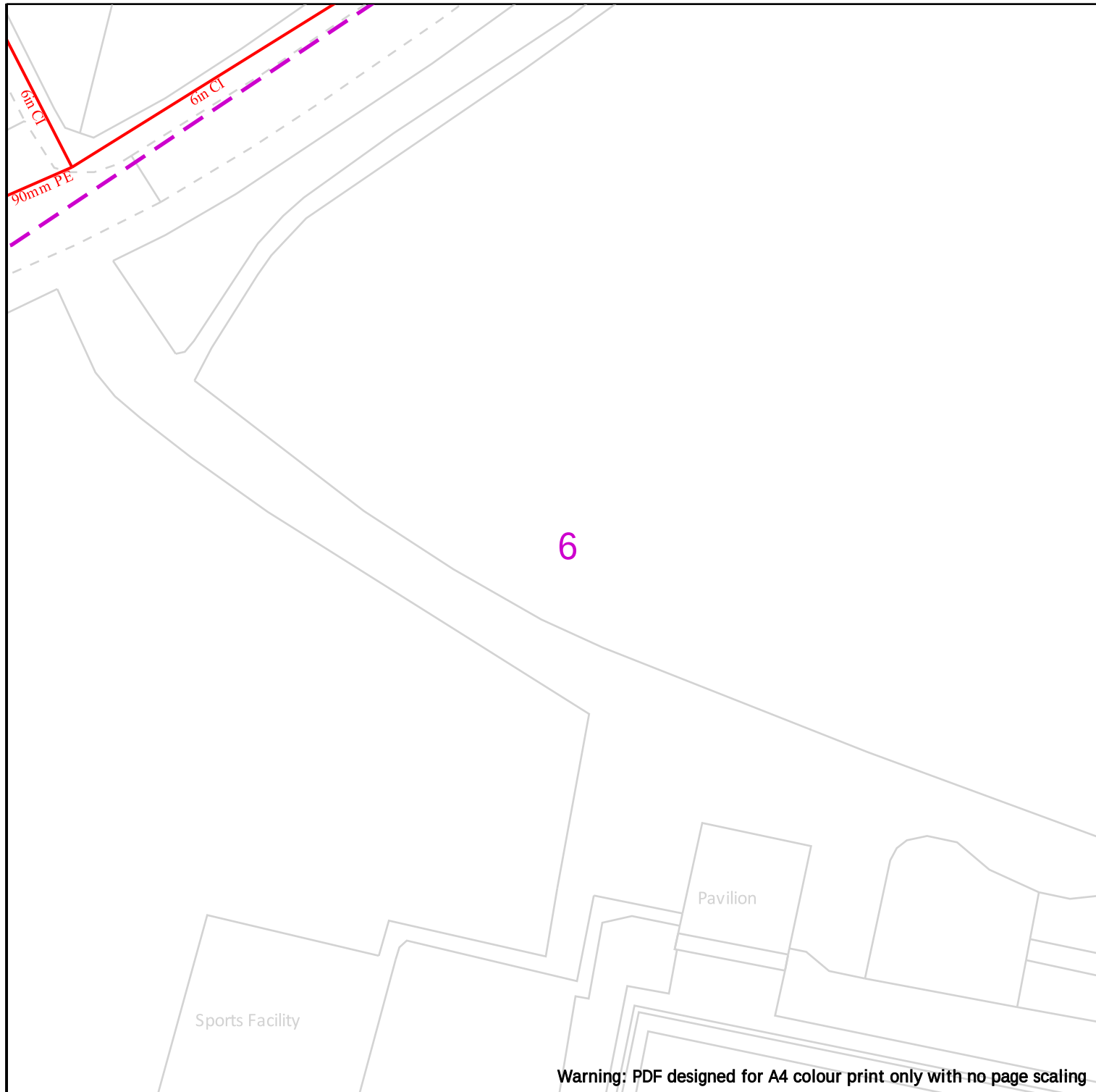
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Scale: 1:500 (When plotted at A4)



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	Dig Sites LP Mains MP Mains IP Mains LHP Mains Area:  Line:   Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886

7

Play Area

Jubilee Park

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 25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

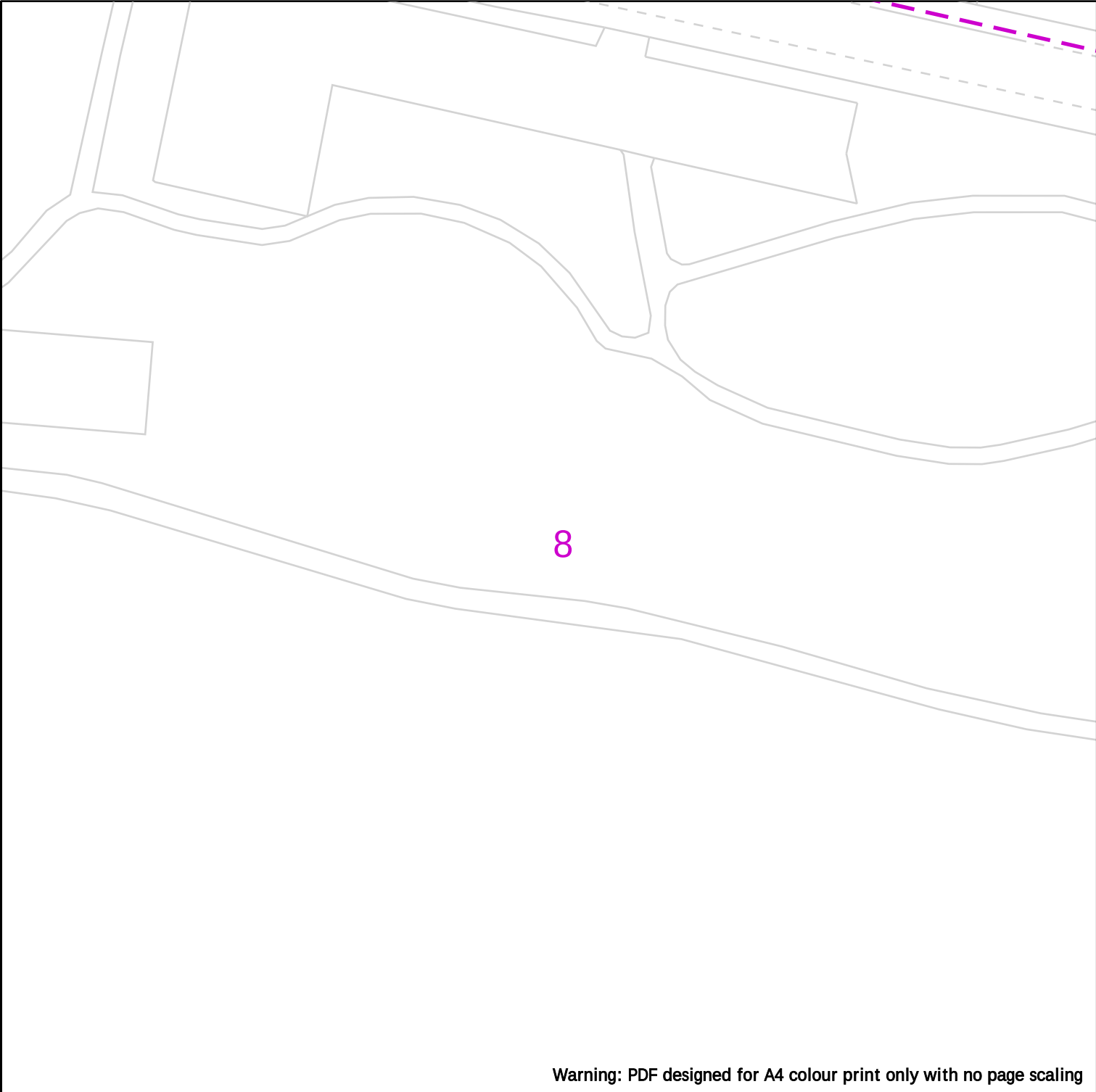
View extent: 100m, 100m

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Scale: 1:500 (When plotted at A4)



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Cadent
Your Gas Network

IMPORTANT NOTICES

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Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band
Your Scheme/Reference: STU5625

View extent: 100m, 100m

Scale: 1:500 (When plotted at A4)

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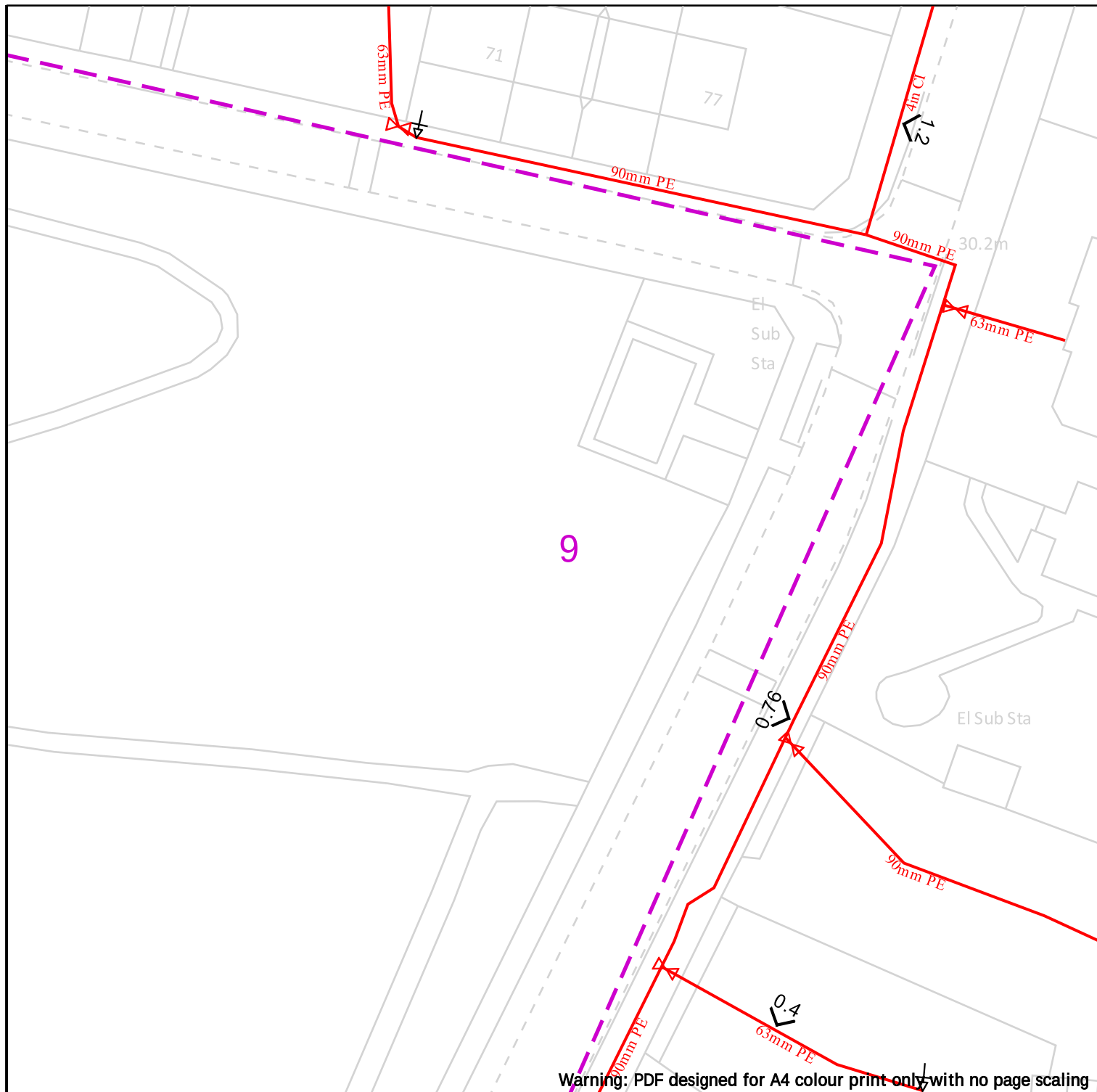
- Dig Sites
- Area:  Line: 
-  LP Mains

 MP Mains

 IP Mains

 LHP Mains

-  Valve
-  Depth of cover
-  Syphon
-  Diameter Change
-  Material Change
-  Out of Standard Service



25m

Dig Sites

Area:

Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
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View extent: 100m, 100m

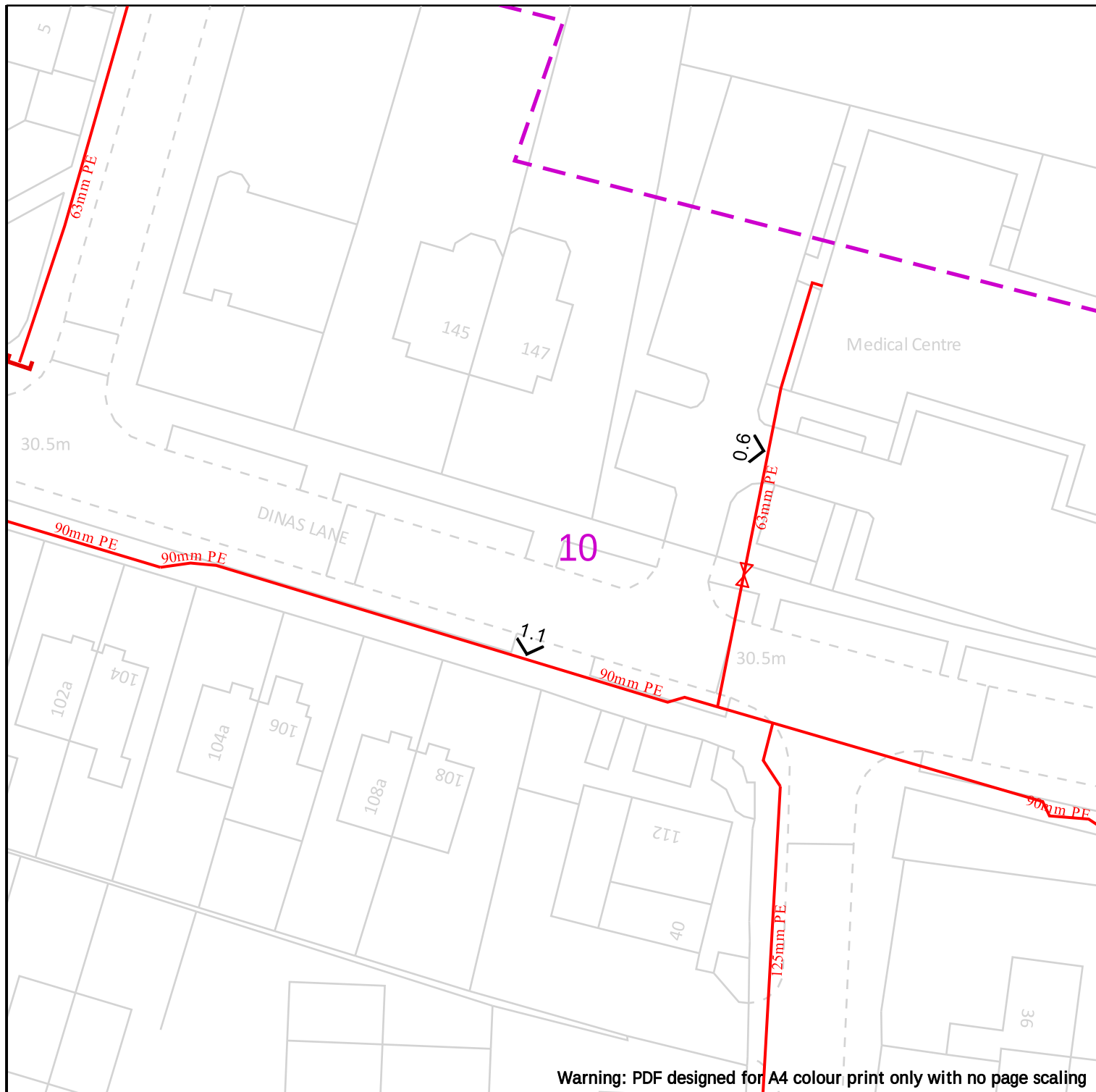
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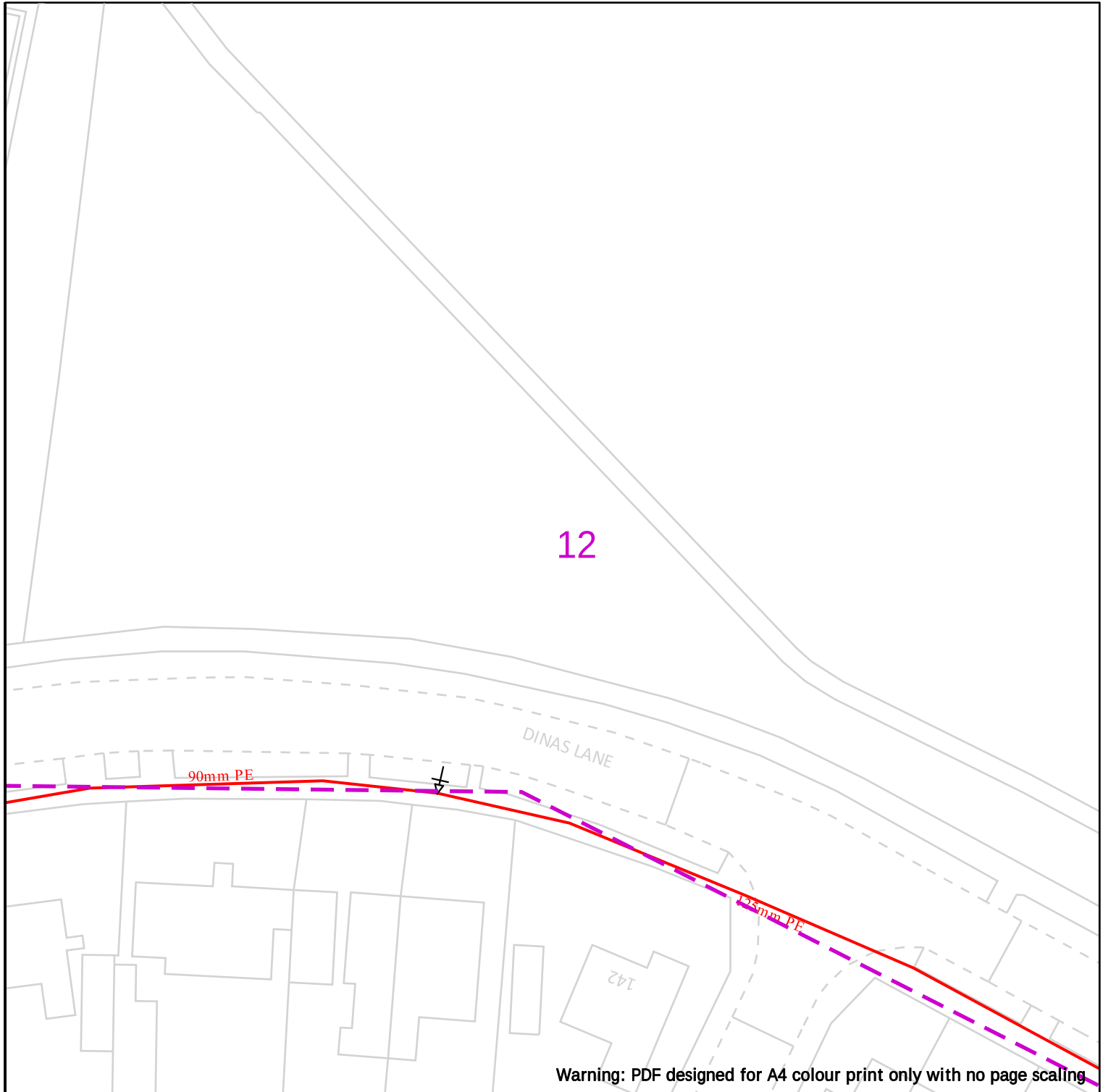
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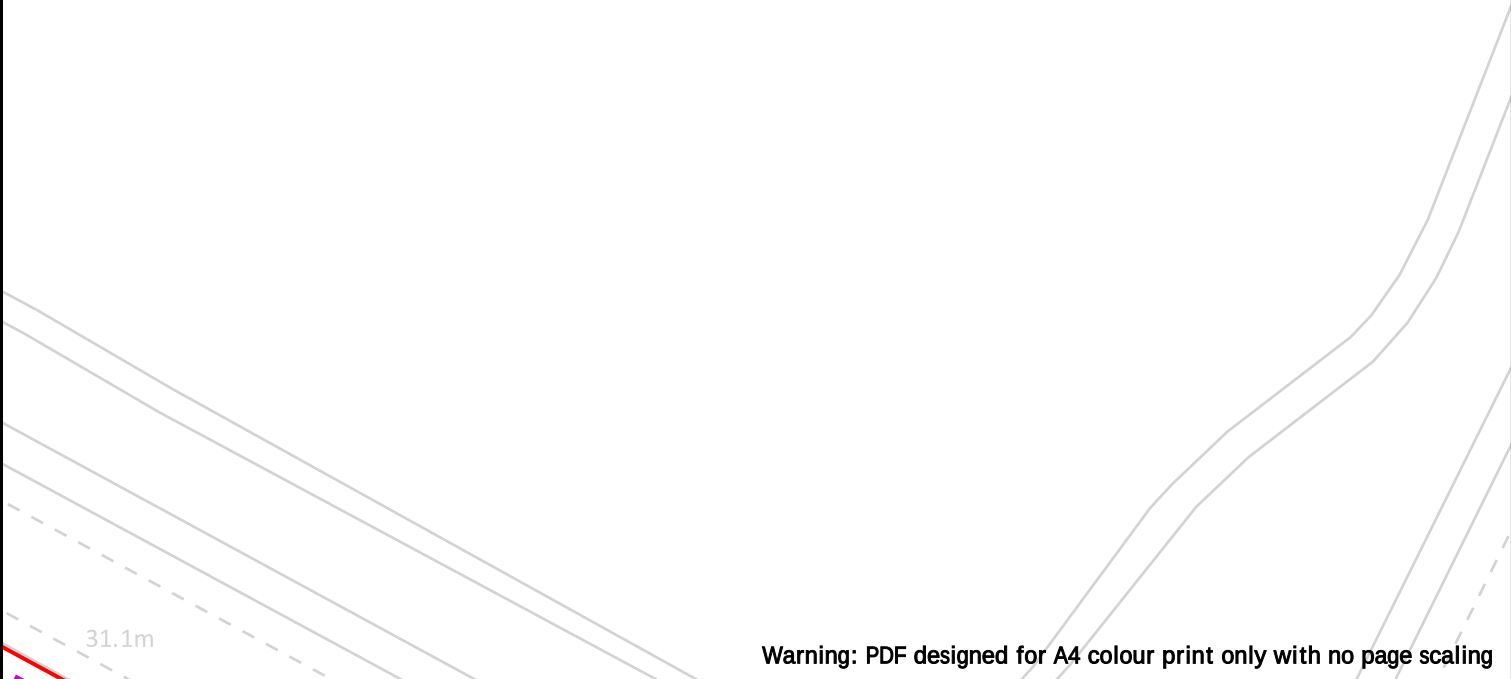
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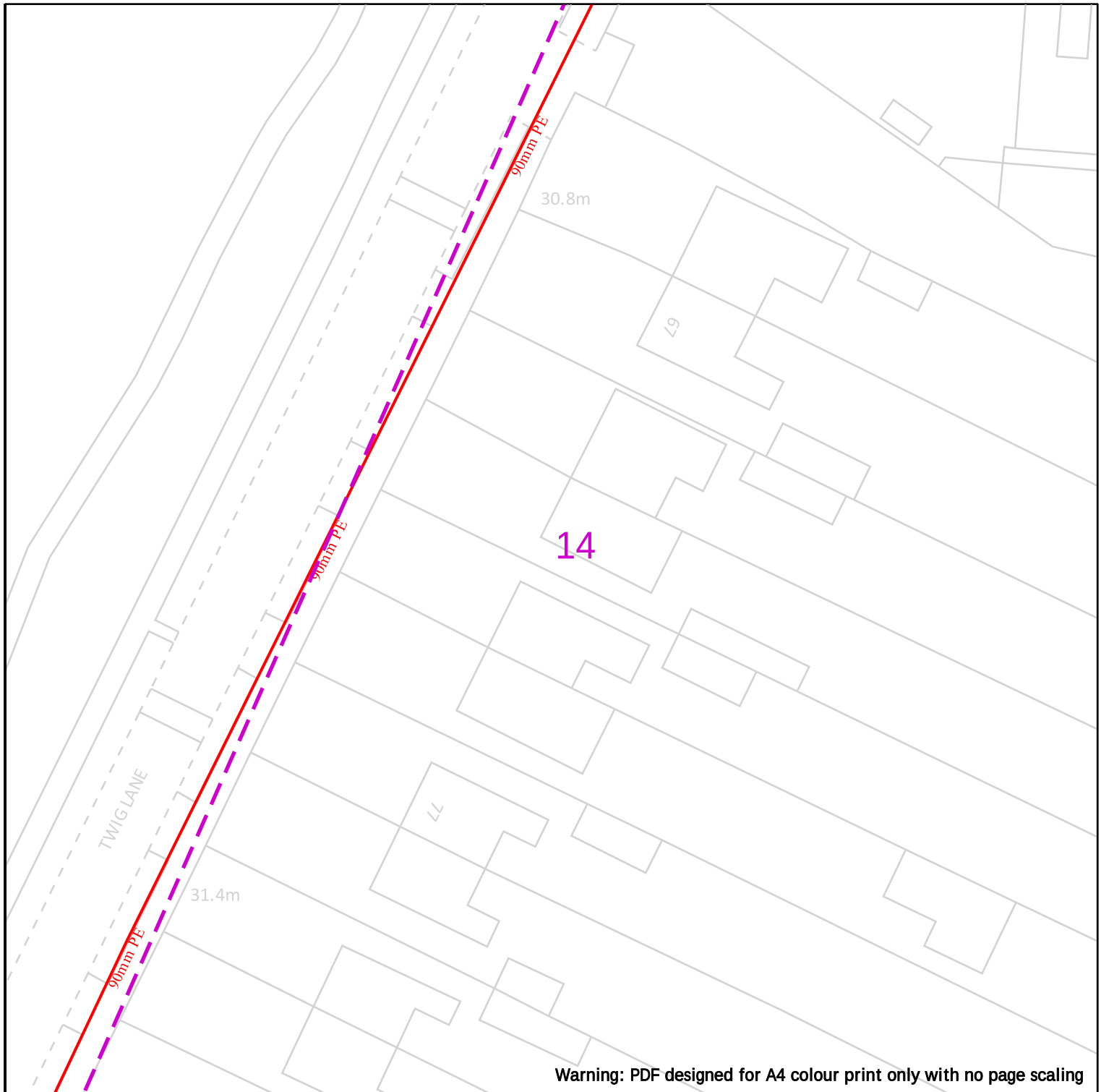
	 25m Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886



 Cadent Your Gas Network	 25m <table border="0"> <tr> <td>Dig Sites</td> <td>Area: </td> <td>Line: </td> </tr> <tr> <td></td> <td>LP Mains</td> <td> Valve</td> </tr> <tr> <td></td> <td>MP Mains</td> <td> Depth of cover</td> </tr> <tr> <td></td> <td>IP Mains</td> <td> Syphon</td> </tr> <tr> <td></td> <td>LHP Mains</td> <td> Diameter Change</td> </tr> <tr> <td></td> <td></td> <td> Material Change</td> </tr> <tr> <td></td> <td></td> <td> Out of Standard Service</td> </tr> </table>	Dig Sites	Area: 	Line: 		LP Mains	 Valve		MP Mains	 Depth of cover		IP Mains	 Syphon		LHP Mains	 Diameter Change			 Material Change			 Out of Standard Service
Dig Sites	Area: 	Line: 																				
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 Your Gas Network	Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
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25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

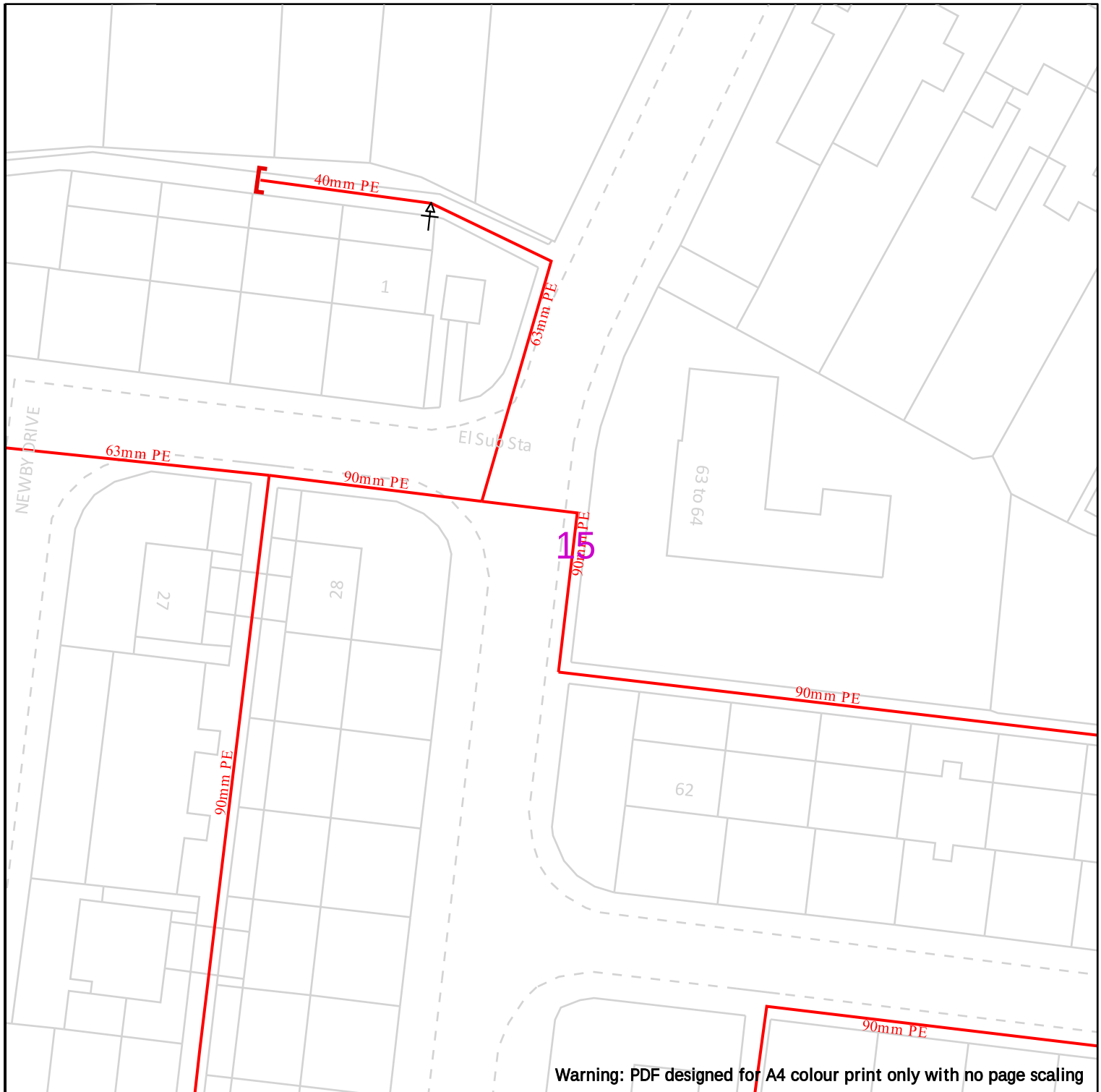
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25m

Dig Sites

Area:



Line:



Cadent
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Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

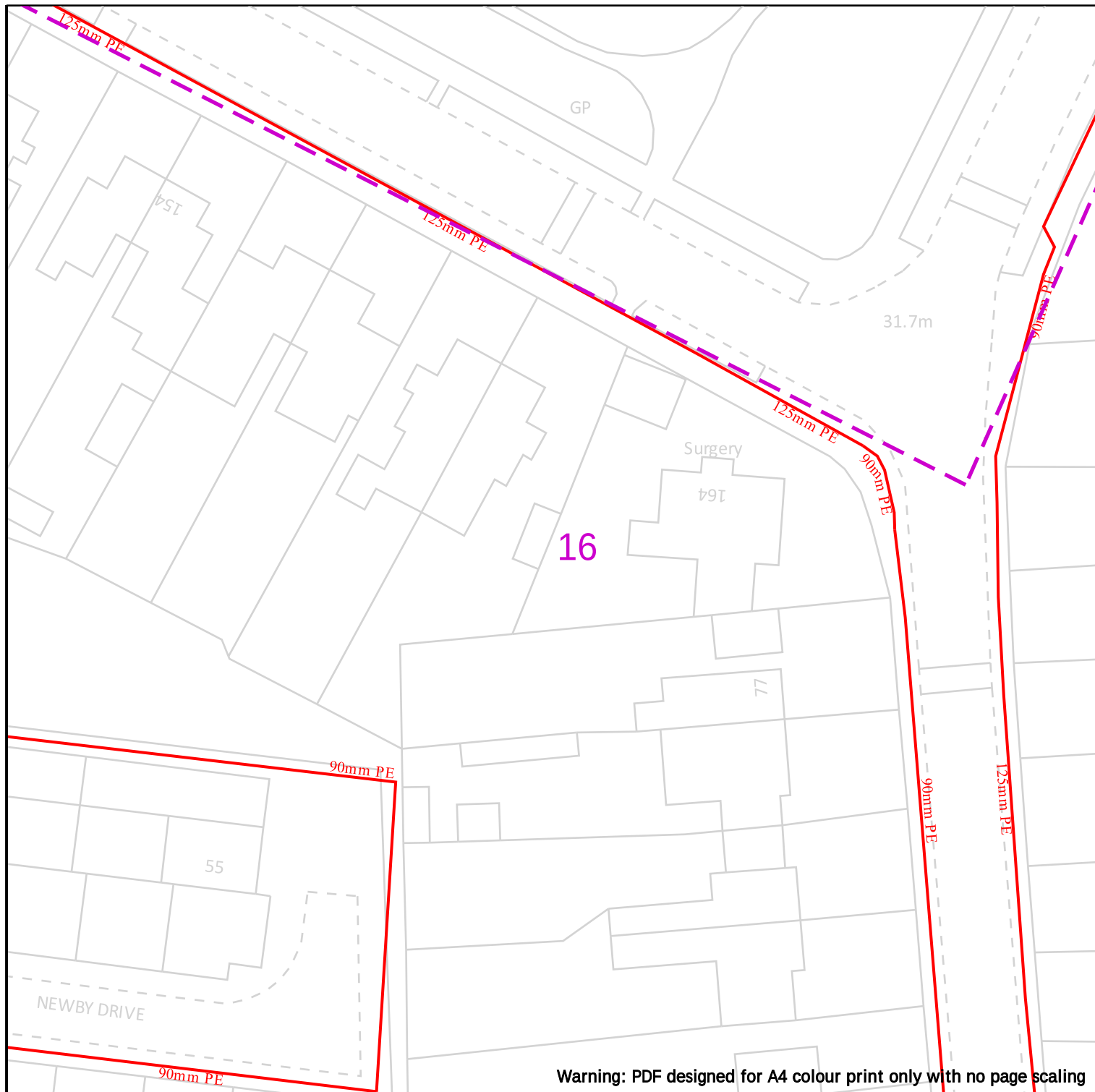
IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

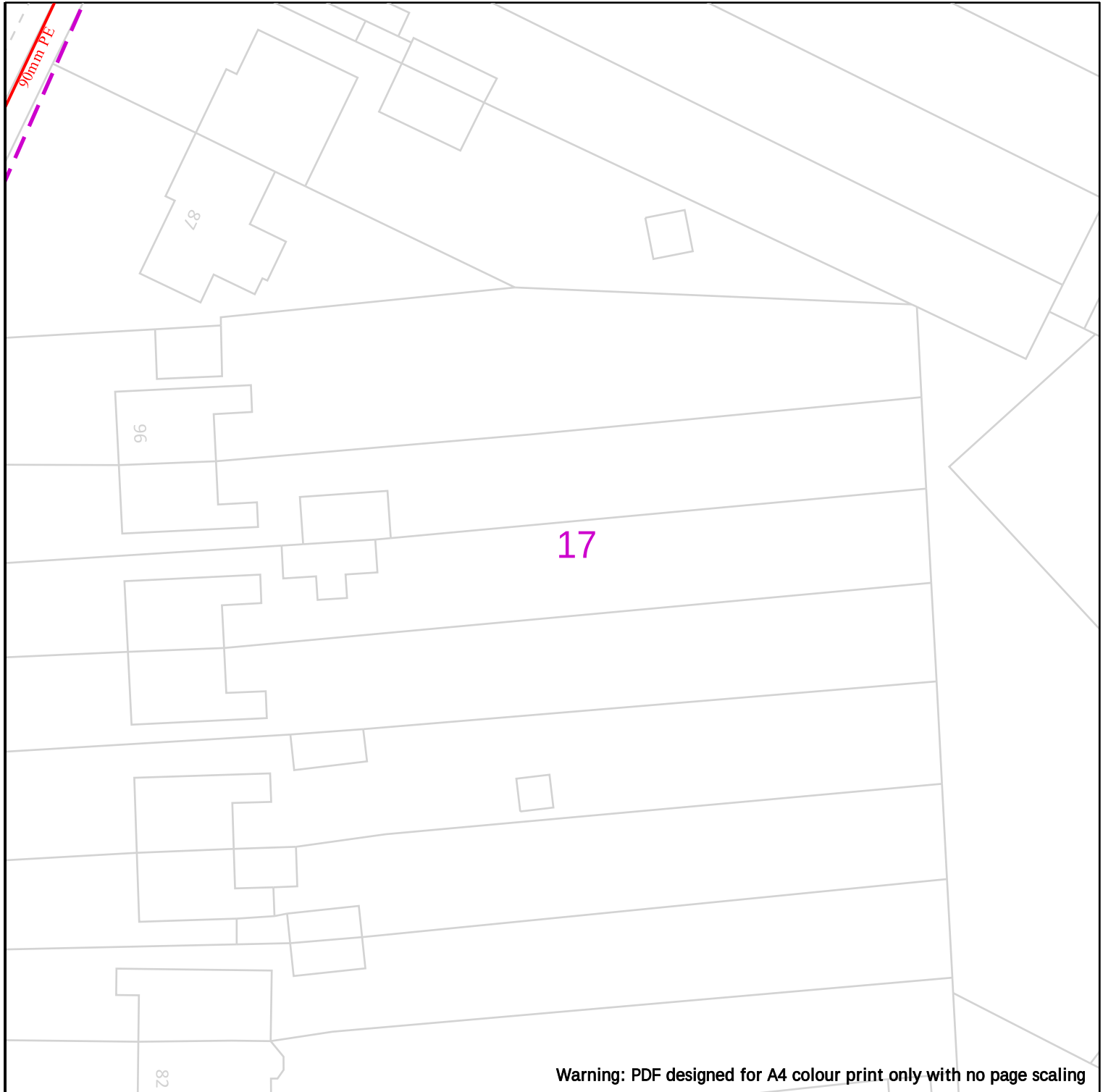
In case of emergency call - 0800 111 999

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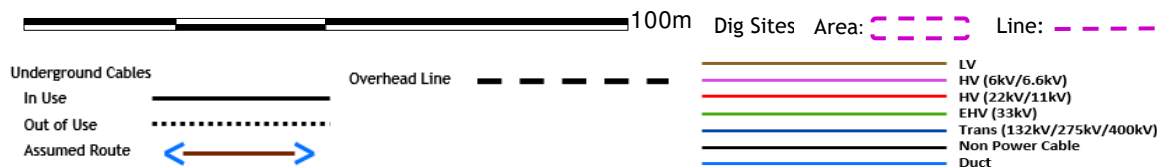
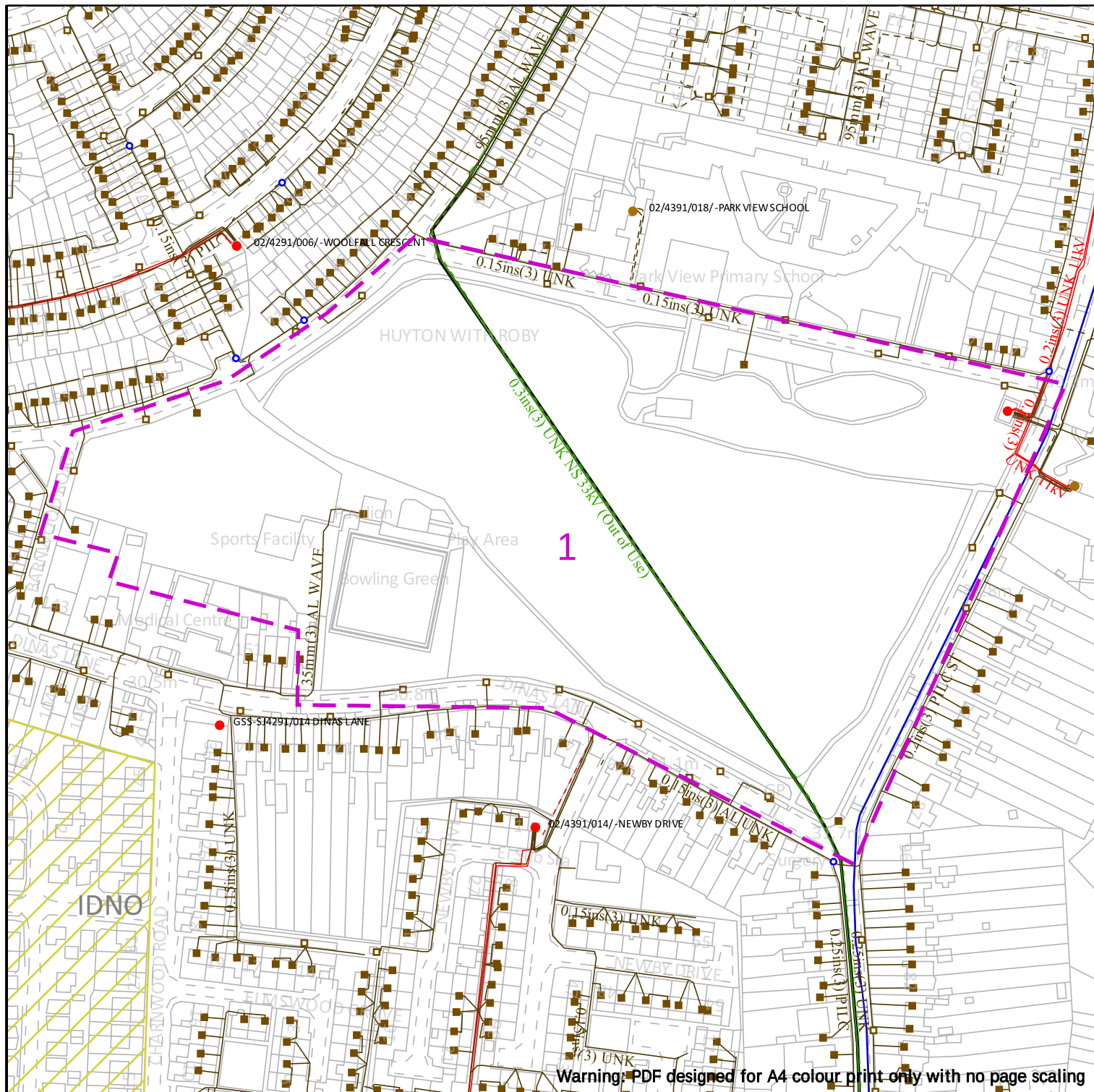
Scale: 1:500 (When plotted at A4)



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 Cadent Your Gas Network	 25m Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886



IMPORTANT NOTICES

- This information shown on this plan is indicative only and its accuracy cannot be guaranteed.
- The plan only shows assets owned by SP Energy Networks.
- Positions and depths of cables may have altered since being recorded. A line on a plan may represent more than one cable. Normally electric cables are laid at depths between 450mm and 1m but depths may have changed if land surface levels have since altered.
- The plan may not show, or may inaccurately show, individual property services and services to street lighting installations. Underground services may be found in roads, footpaths and on sites. Always assume that they are present for each property, lamp column and street sign etc and treat any services found anywhere as live.
- You must use safe digging practices in accordance with HS(G)47 to establish the actual position of mains cables, services and other apparatus before any mechanical excavation is used.
- Where overhead lines cross your site, you must comply with the requirements of Health & Safety Executive guidance as laid down in GS6, Avoidance of Danger from Overhead Electric Lines.
- Any works that fall within 5m of any 132kV or Transmission cables, or within 15m of any 132kV or Transmission OHL's, please contact our General Enquiries Team **0845 273 4444 / 0330 10 10 444** for further safety advice.
- In the event of an emergency or for further assistance contact **0800-092-9290 (Central & Southern Scotland)** or **0800-001-5400 (Merseyside, Cheshire & North Wales)** or by dialling **105**
- It is your responsibility to ensure this information is provided to all persons working near our plant.

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

Scale: 1:2500 (When plotted at A4)

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Soiltechnics

**Soiltechnics
white lodge, walgrave
walgrave, nothants
nn6 9py**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: STU5625
Our Ref: UUPS-ORD-369855
Date: 24/02/2022**

Dear Sirs

Location: Knowsley MBC

I acknowledge with thanks your request dated 23/02/2022 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

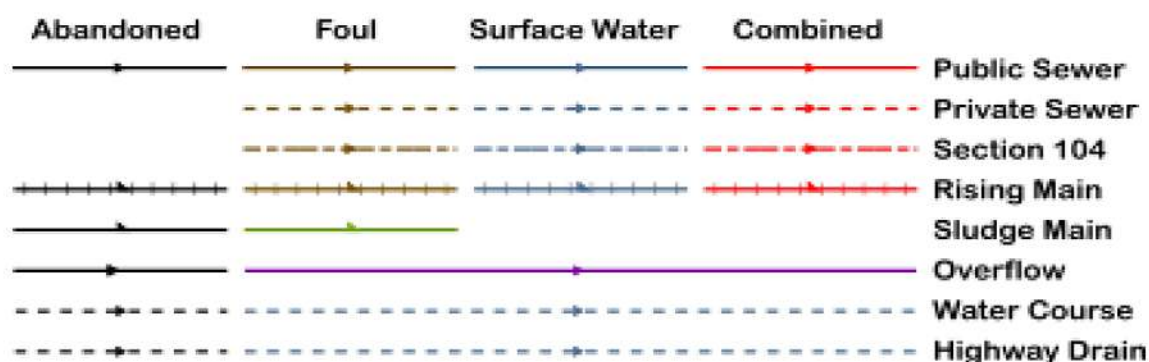
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

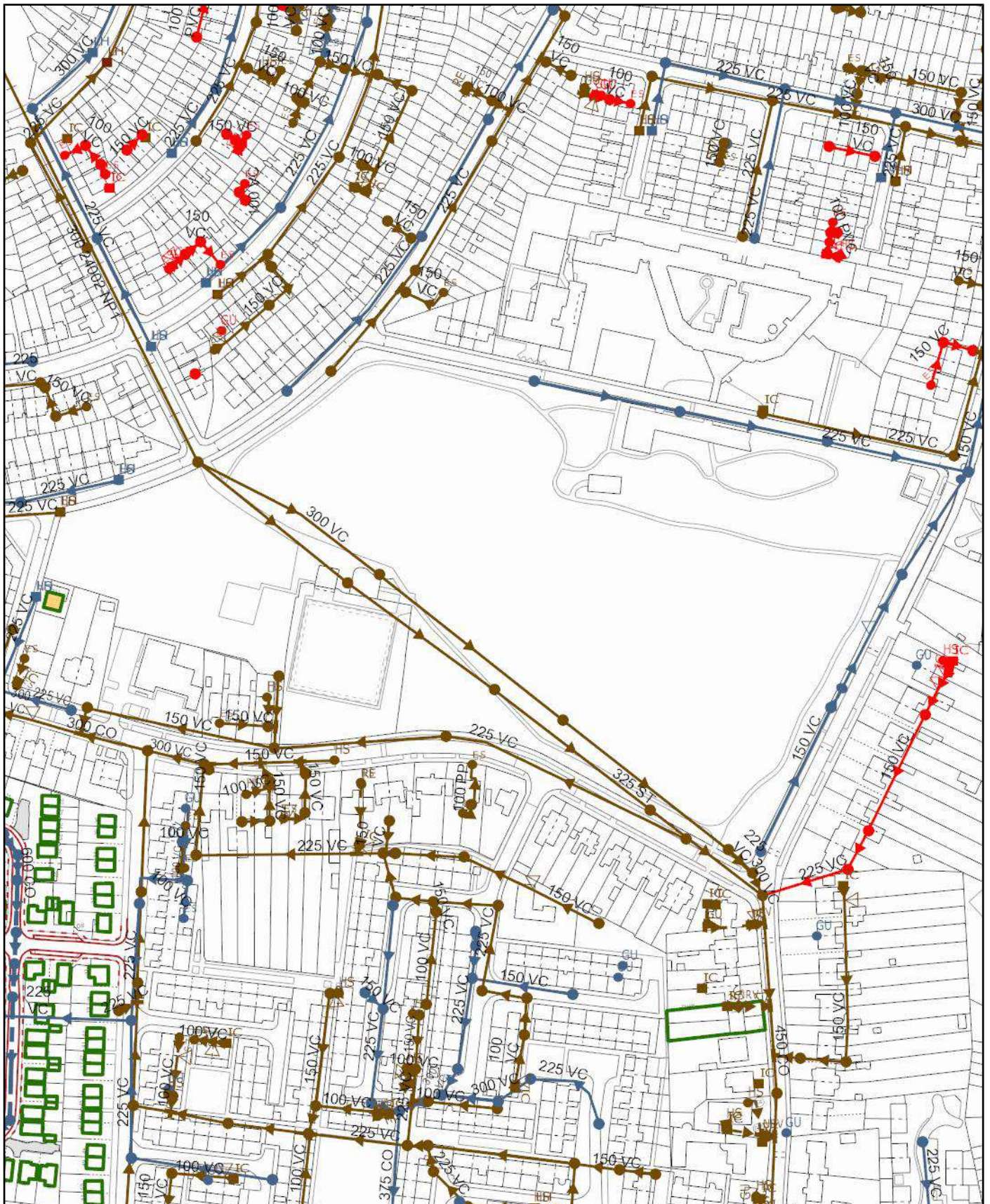
- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



All point assets follow the standard colour convention: **red** – combined **brown** - foul
blue – surface water **purple** - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	
Drop Shaft	Change of Characteristic
Orifice Plate	



Scale: 1:2633
Date: 24/02/2022

SEWER RECORDS



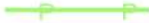
Water for the North West

Address or Site Reference: Knowsley MBC
Printed by: Property Searches

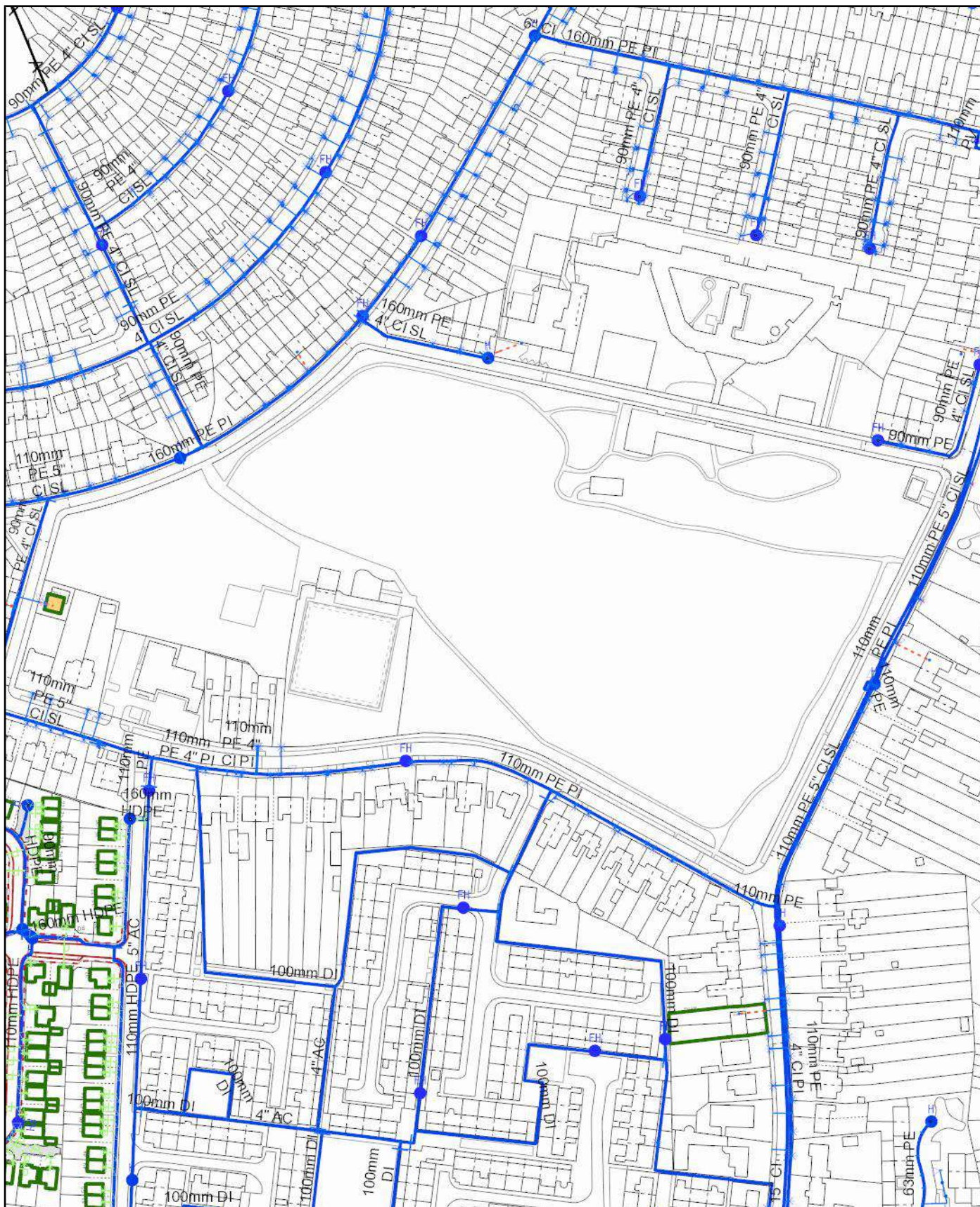
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
Symbology for abandoned assets is the same as above, but shown in **black**



Scale: 1:2633
Date: 24/02/2022

WATER MAINS RECORDS

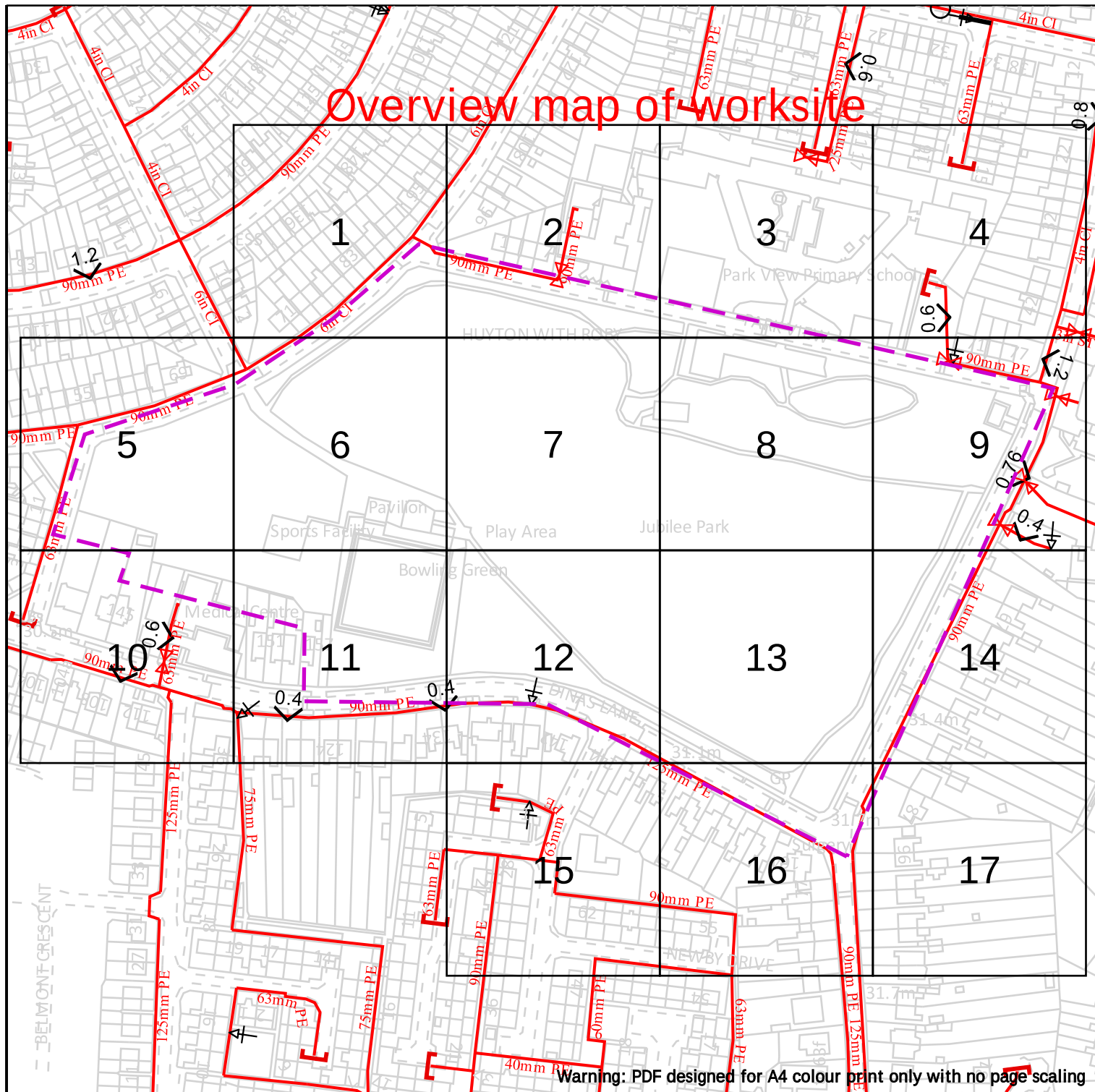
Address or Site Reference: Knowsley MBC
Printed by: Property Searches

 **United
Utilities**
Water for the North West

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Overview map of worksite

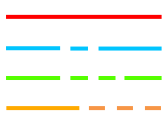


Cadent
Your Gas Network

Dig Sites

Area:

Line:



LP Mains
MP Mains
IP Mains
LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

IMPORTANT NOTICES

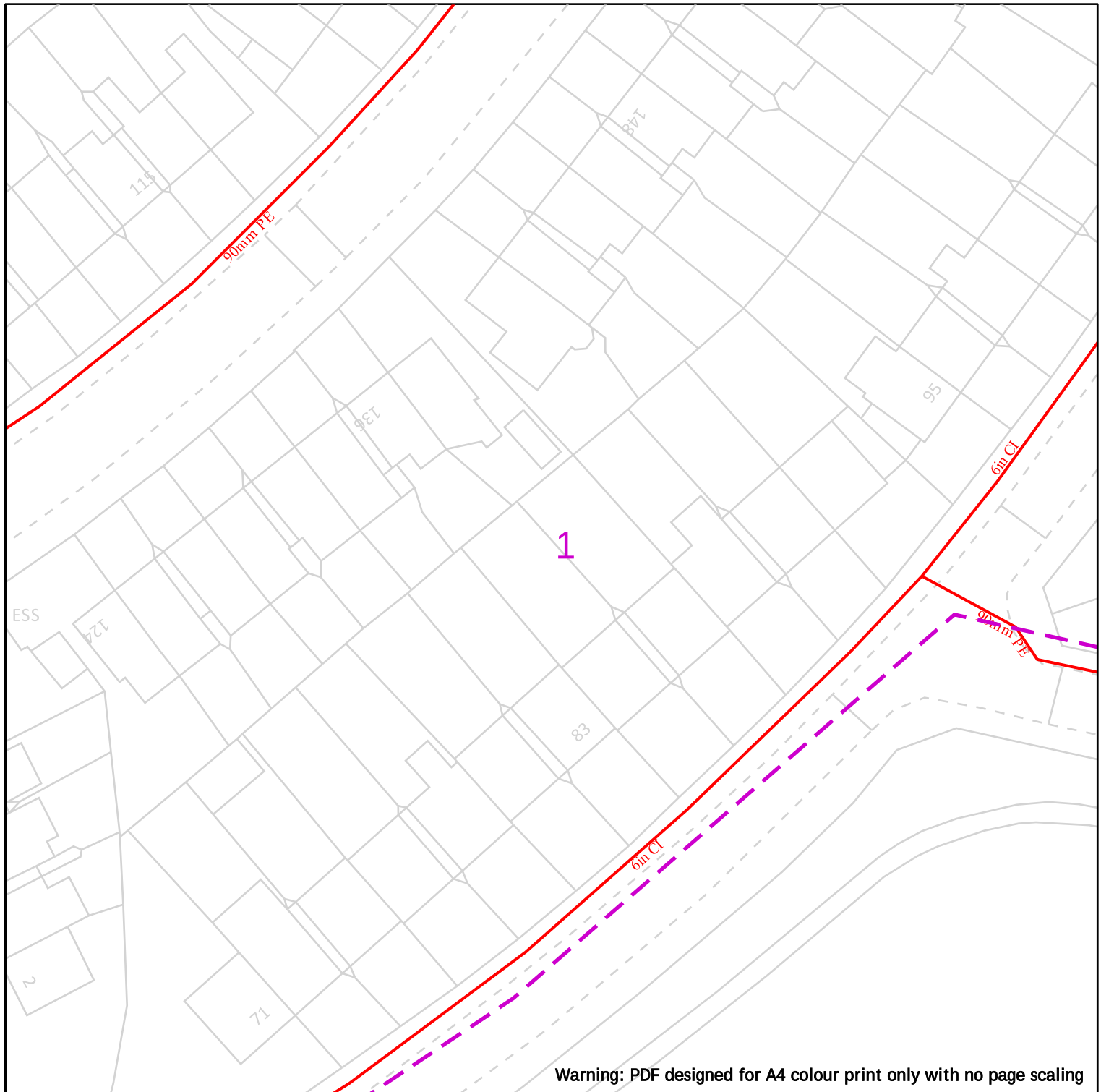
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View extent: 100m, 100m

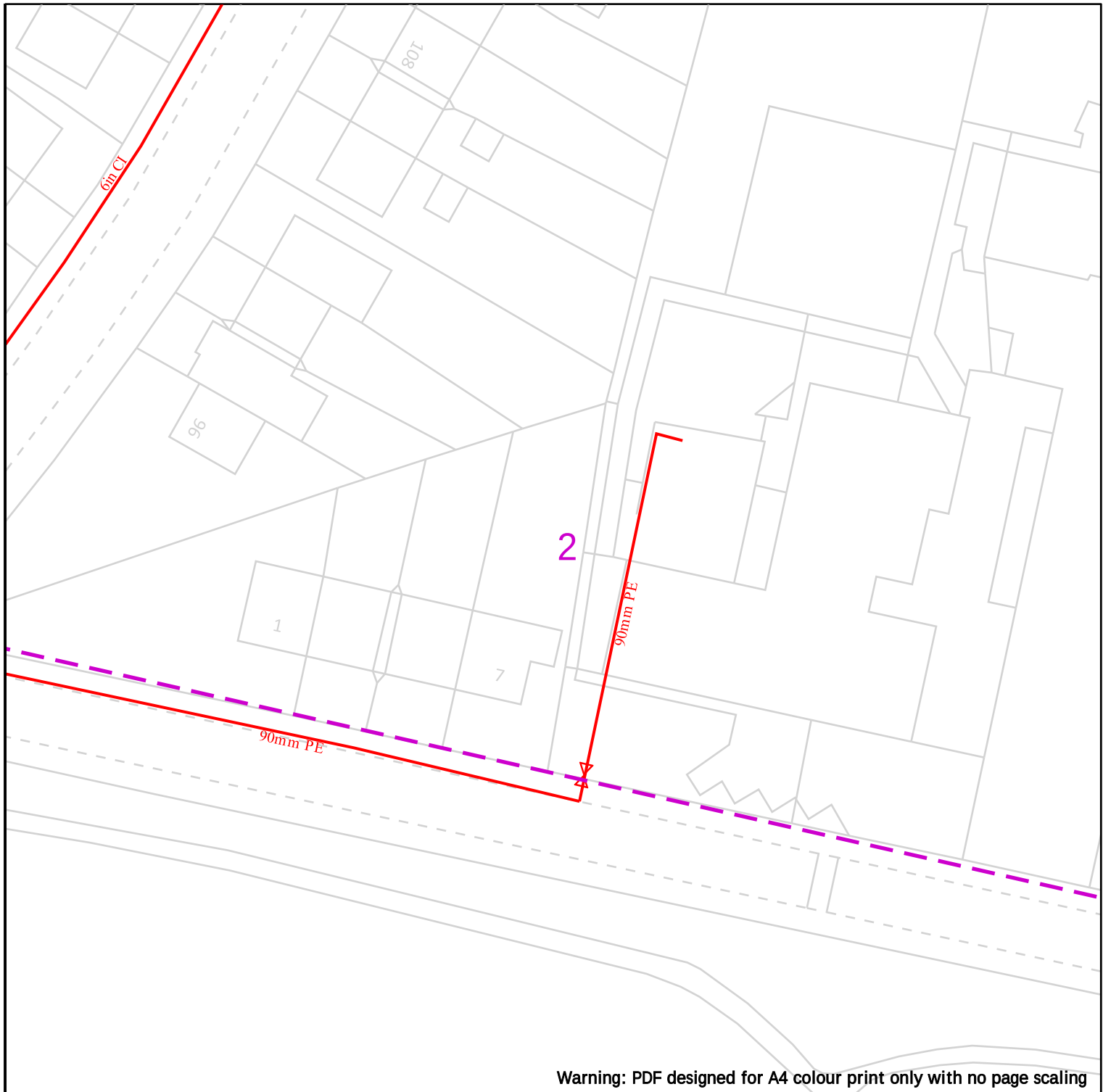
Scale: 1:2563 (When plotted at A4)

In case of emergency call - 0800 111 999

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 Cadent Your Gas Network	 25m <table border="0"> <tr> <td>Dig Sites</td> <td>Area: </td> <td>Line: </td> </tr> <tr> <td></td> <td>LP Mains</td> <td> Valve</td> </tr> <tr> <td></td> <td>MP Mains</td> <td> Depth of cover</td> </tr> <tr> <td></td> <td>IP Mains</td> <td> Syphon</td> </tr> <tr> <td></td> <td>LHP Mains</td> <td> Diameter Change</td> </tr> <tr> <td></td> <td></td> <td> Material Change</td> </tr> <tr> <td></td> <td></td> <td> Out of Standard Service</td> </tr> </table>	Dig Sites	Area: 	Line: 		LP Mains	 Valve		MP Mains	 Depth of cover		IP Mains	 Syphon		LHP Mains	 Diameter Change			 Material Change			 Out of Standard Service
Dig Sites	Area: 	Line: 																				
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	LHP Mains	 Diameter Change																				
		 Material Change																				
		 Out of Standard Service																				
Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886																					



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25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

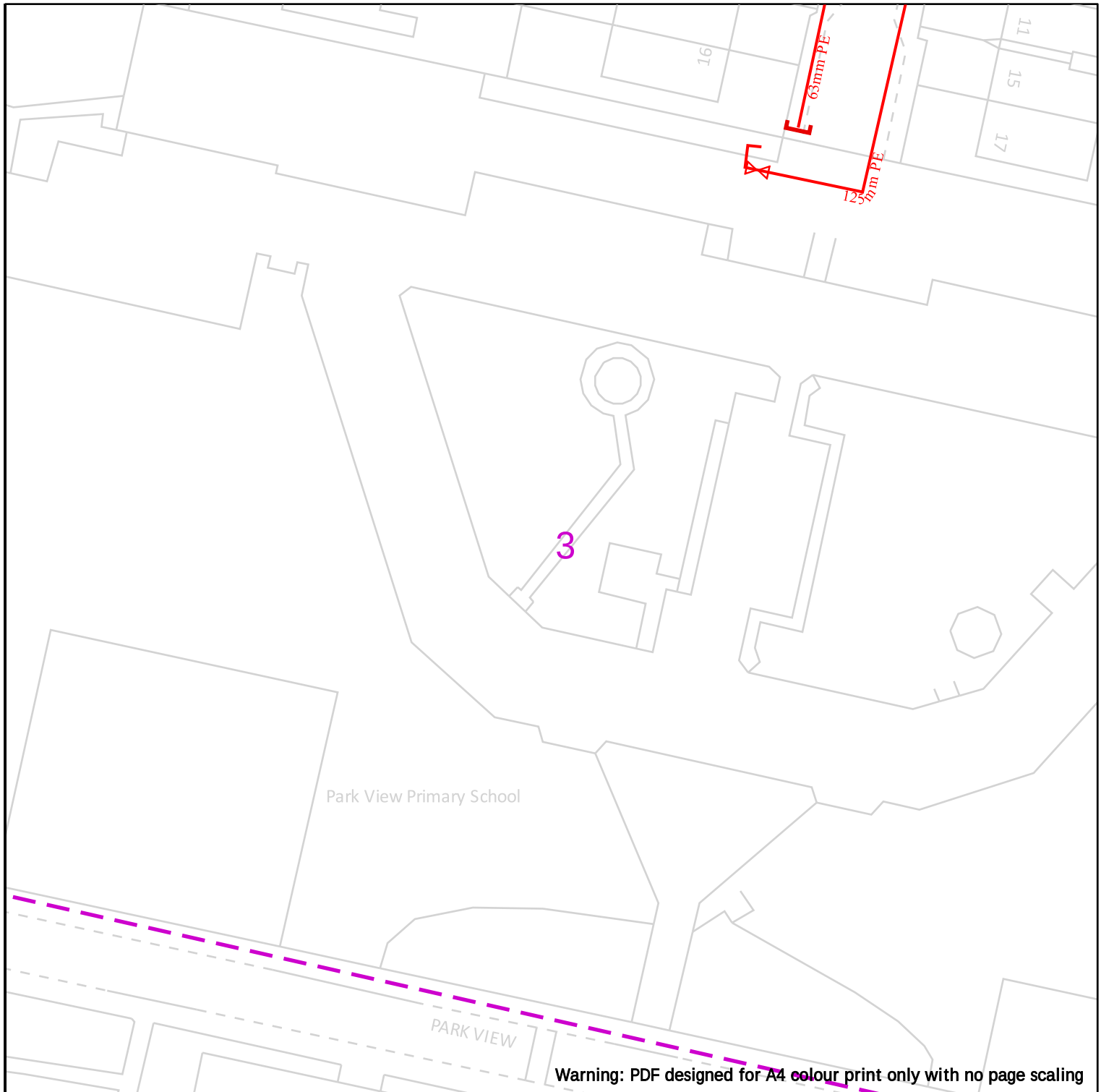
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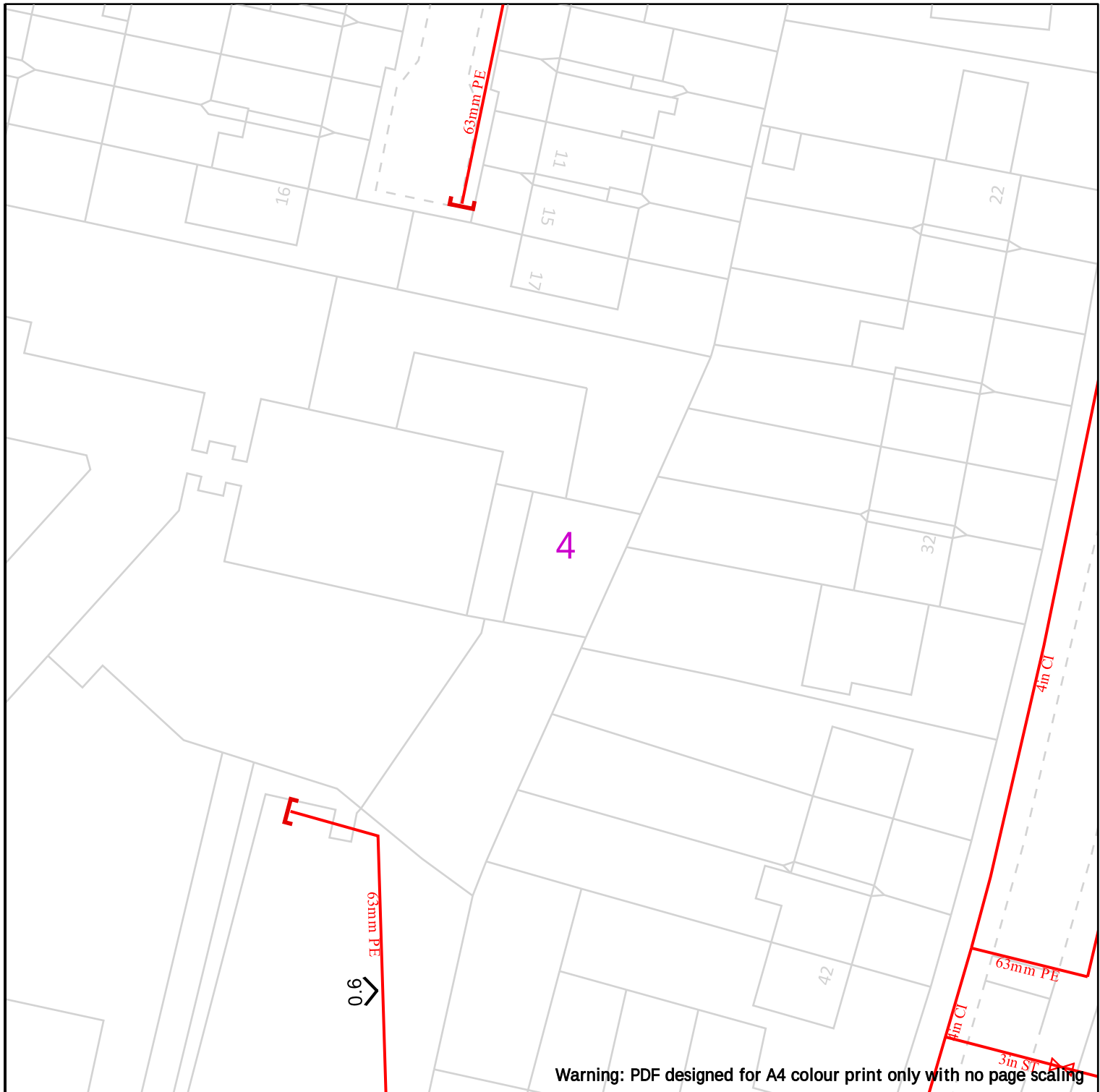
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Scale: 1:500 (When plotted at A4)



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25m

Dig Sites

Area:



Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

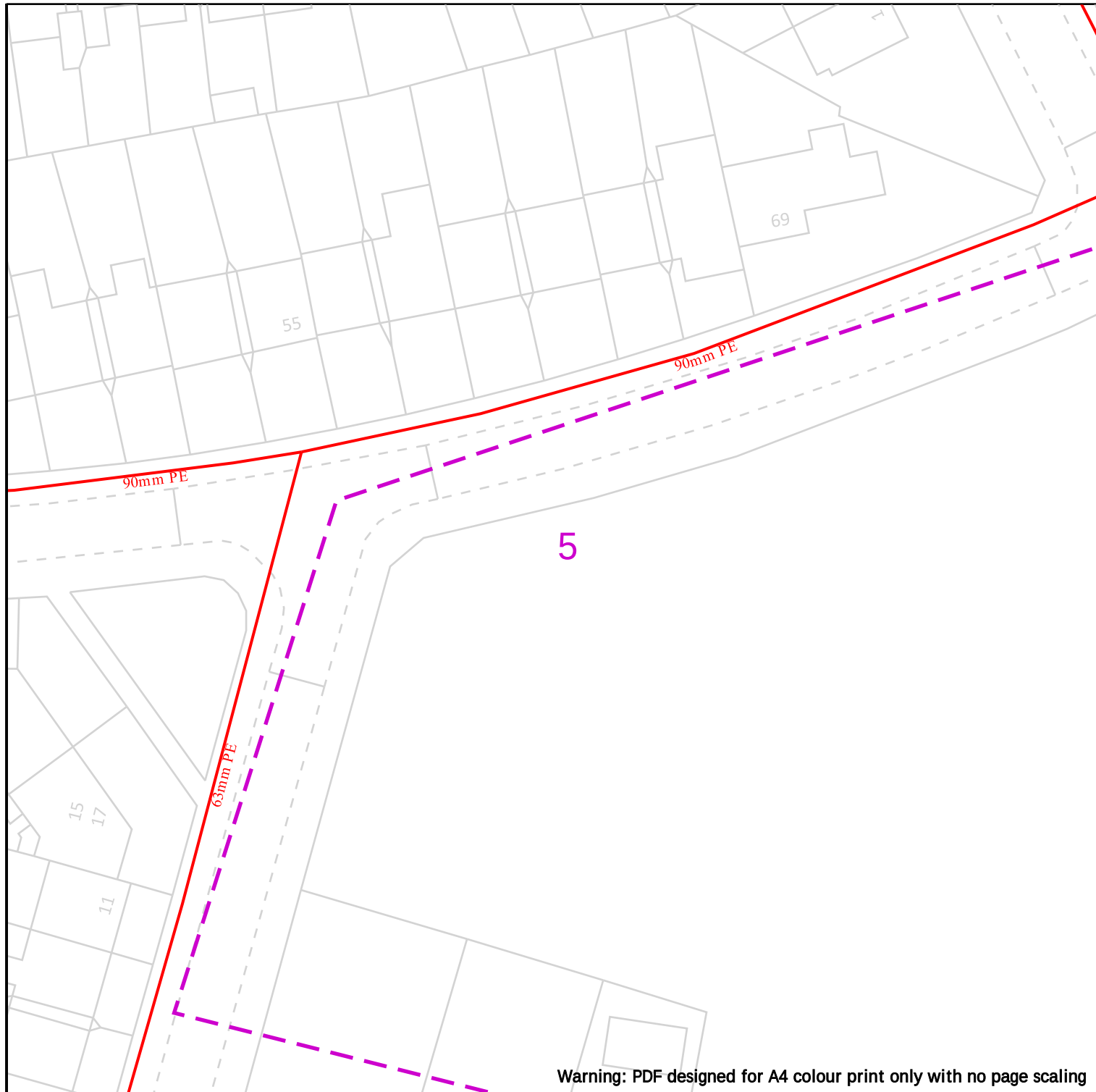
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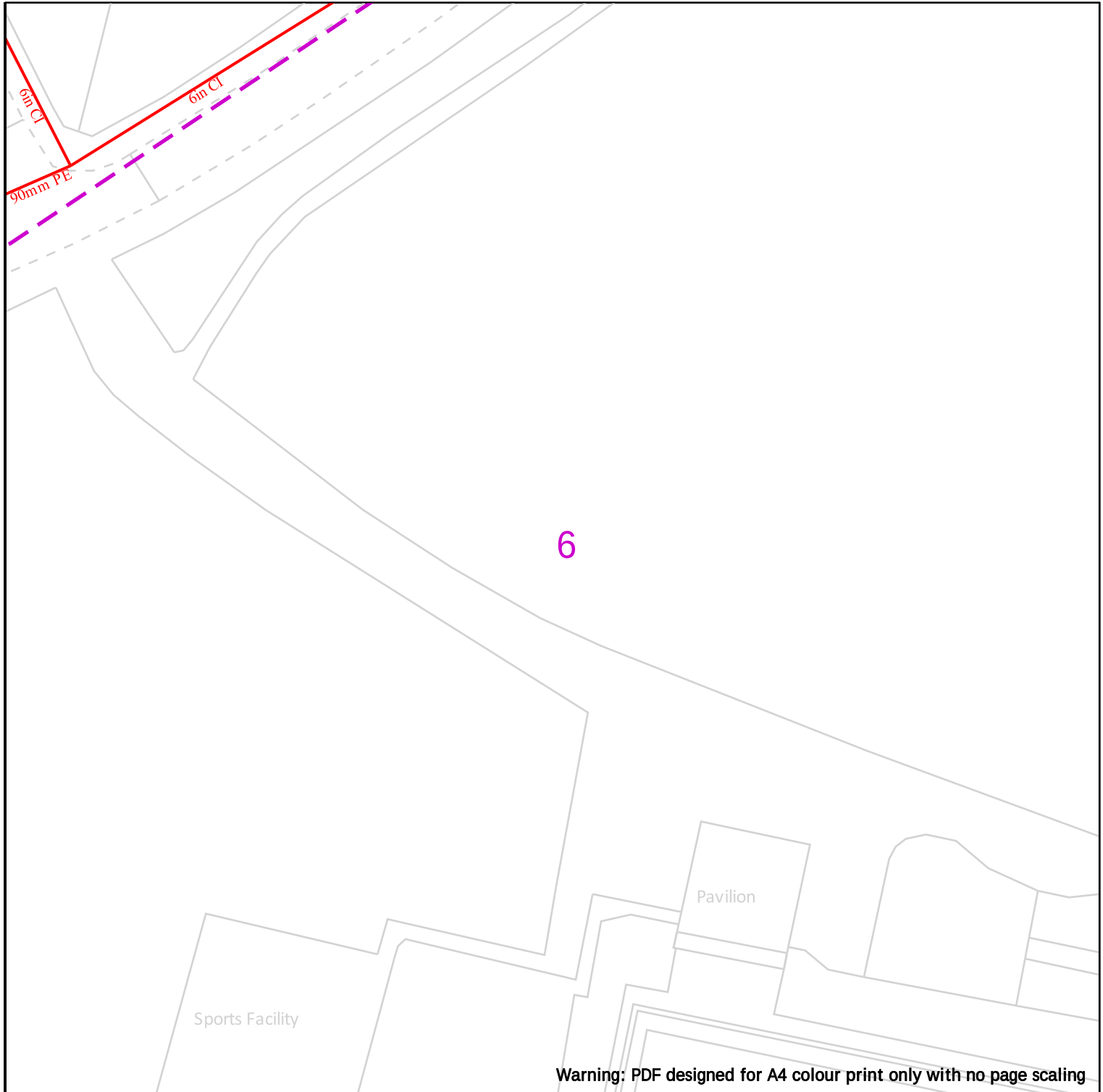
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25m

Dig Sites

Area:

Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022
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Scale: 1:500 (When plotted at A4)

7

Play Area

Jubilee Park

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 25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

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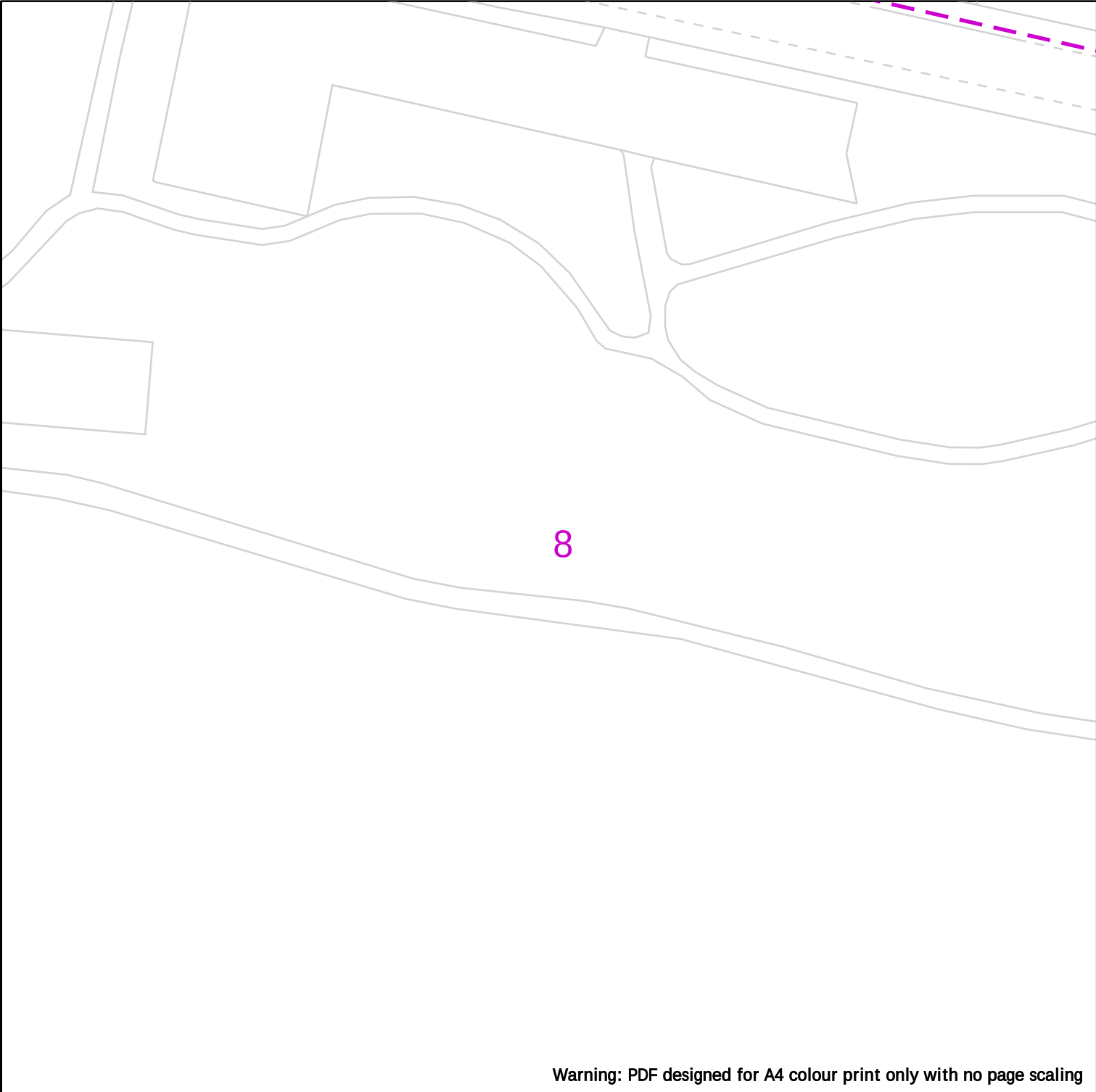
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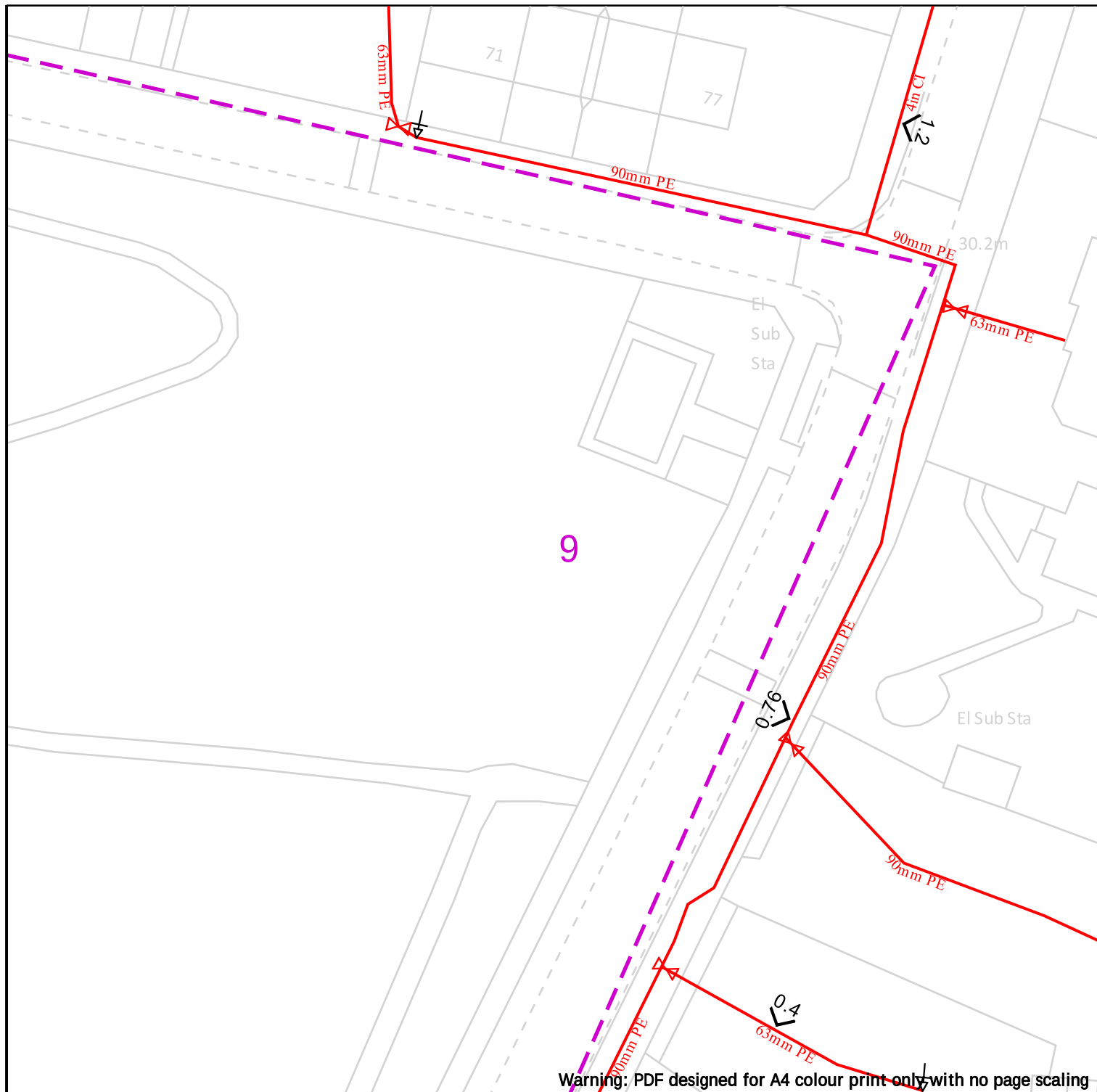
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Scale: 1:500 (When plotted at A4)



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	 Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
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Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886



25m

Dig Sites

Area:

Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band
Your Scheme/Reference: STU5625

View extent: 100m, 100m

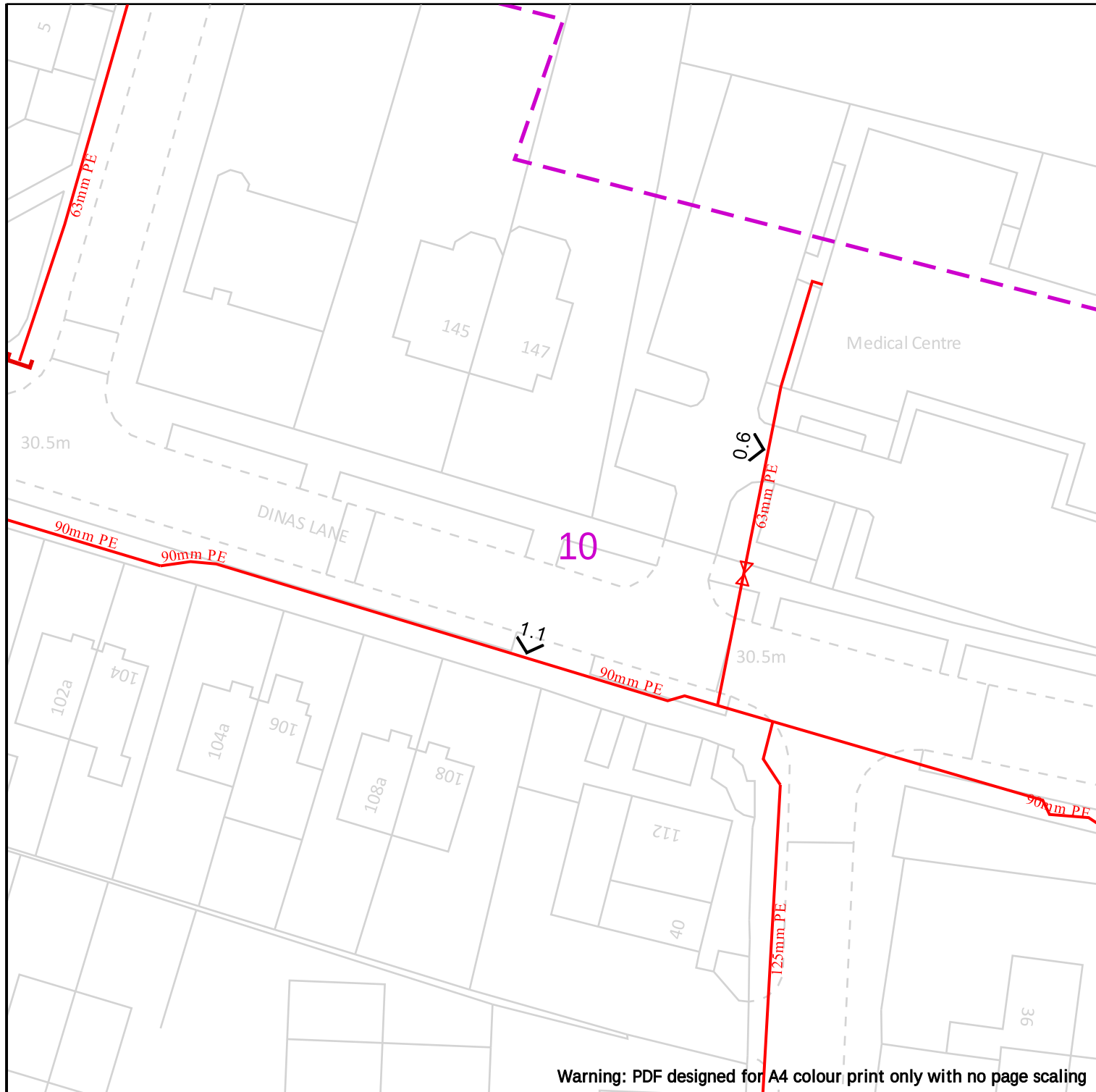
IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

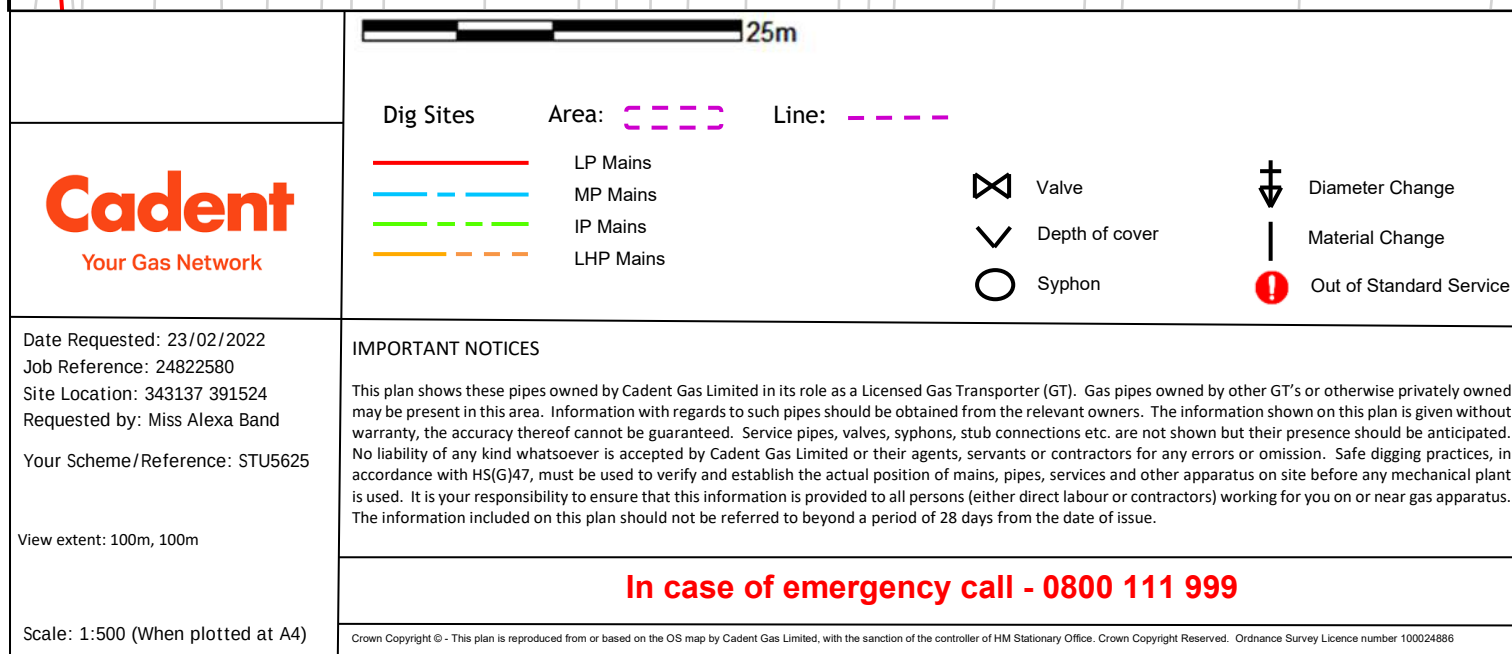
In case of emergency call - 0800 111 999

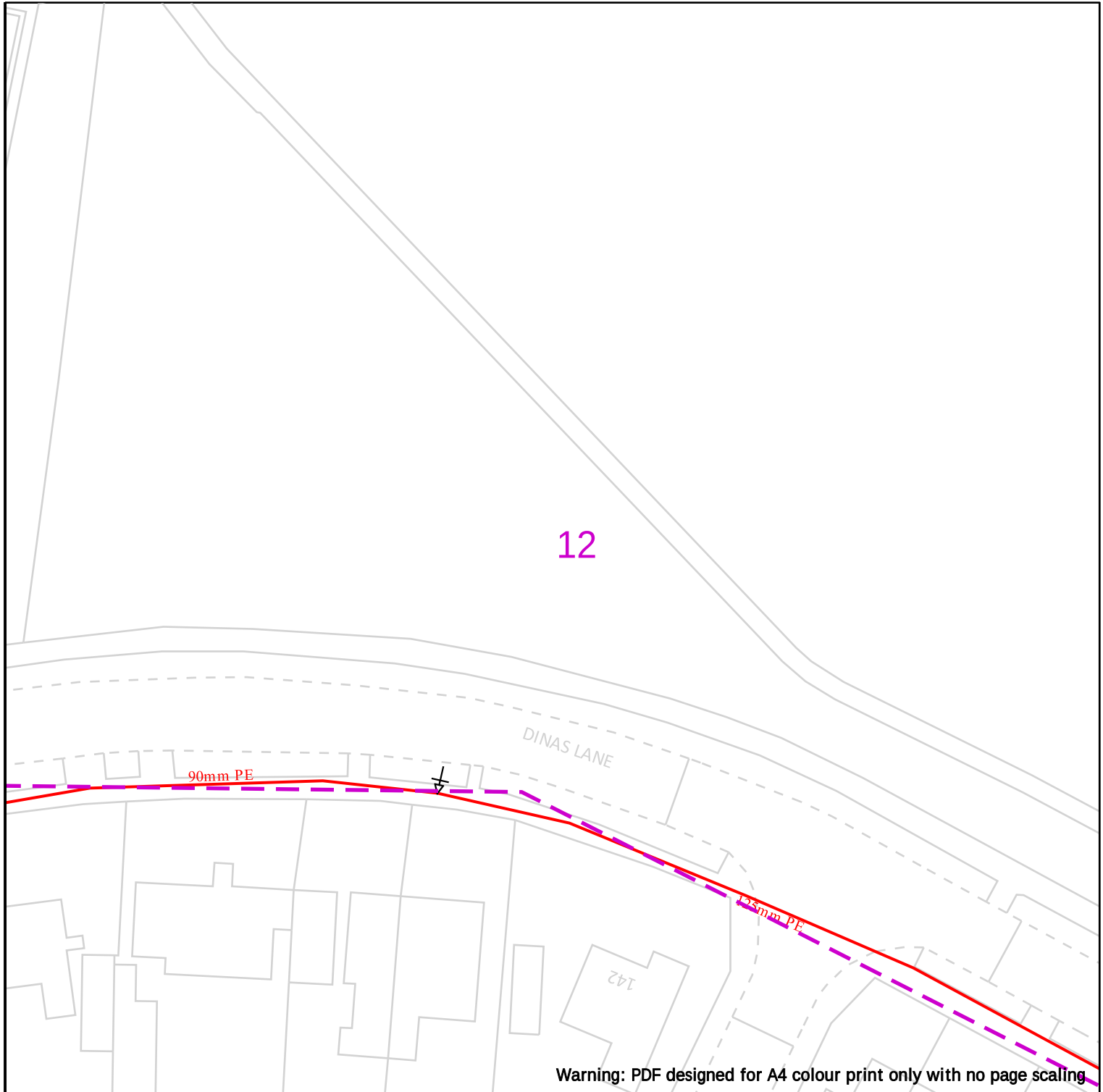
Scale: 1:500 (When plotted at A4)

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 Cadent Your Gas Network	Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886

Date Requested: 23/02/2022

Job Reference: 24822580

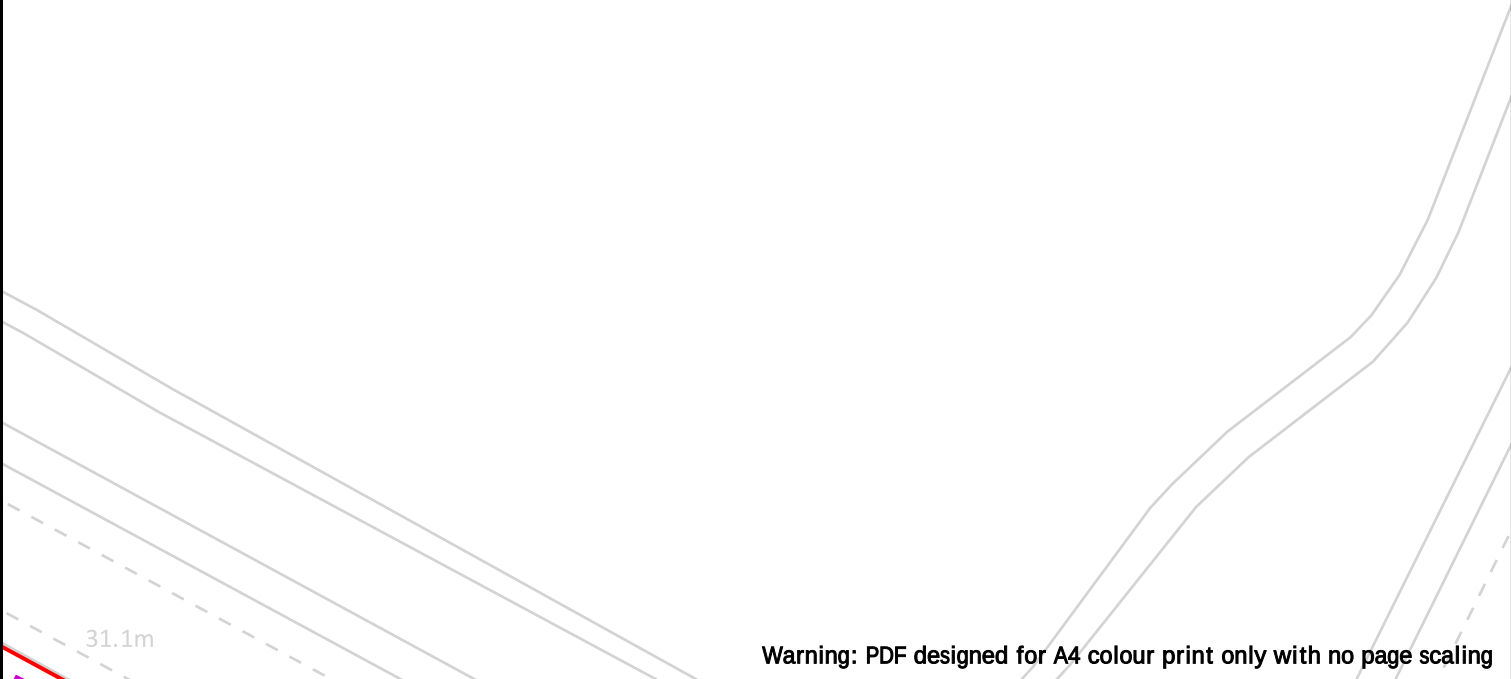
Site Location: 343137 391524

Requested by: Miss Alexa Band

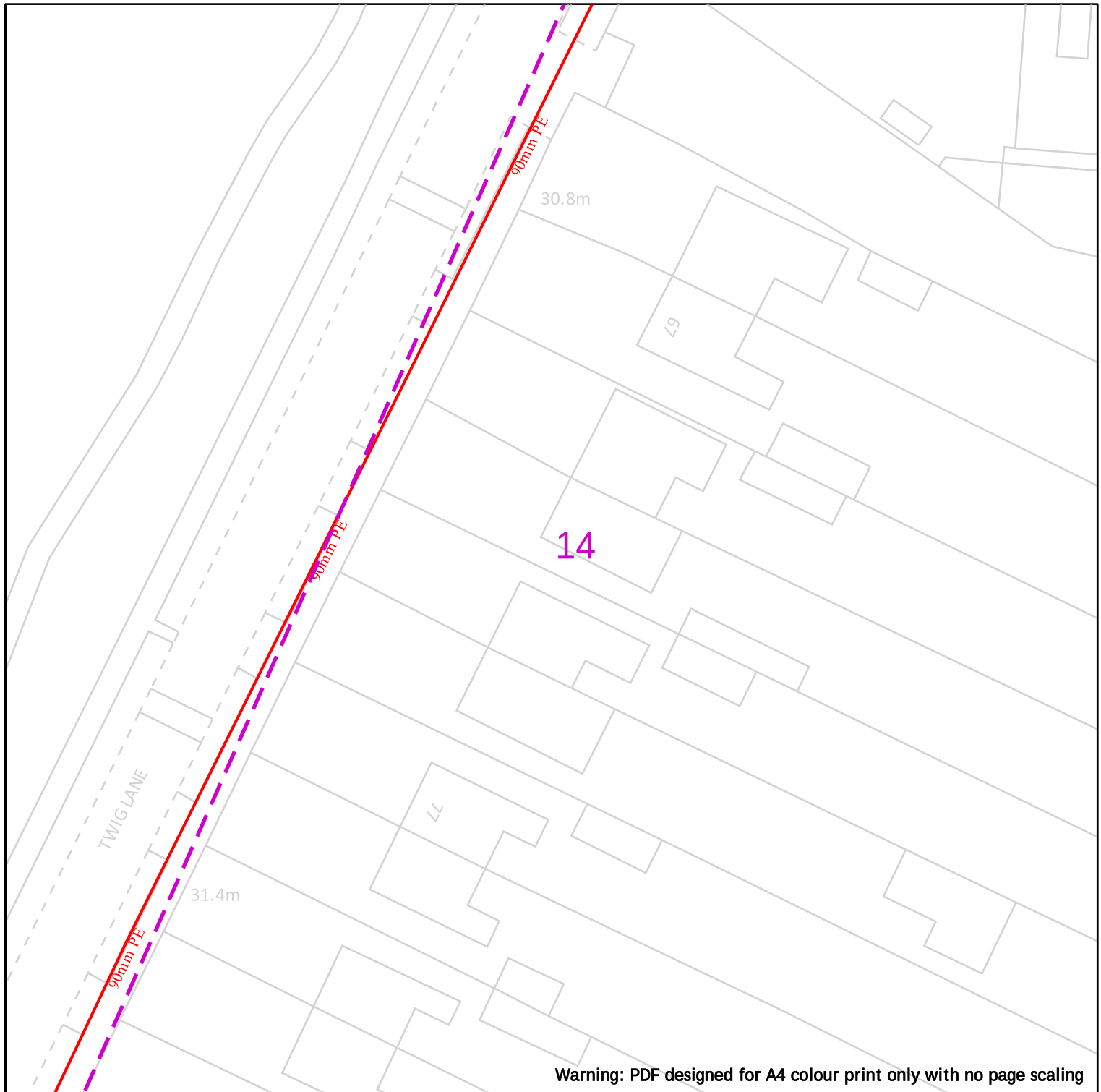
Your Scheme/Reference: STU5625

View extent: 100m, 100m

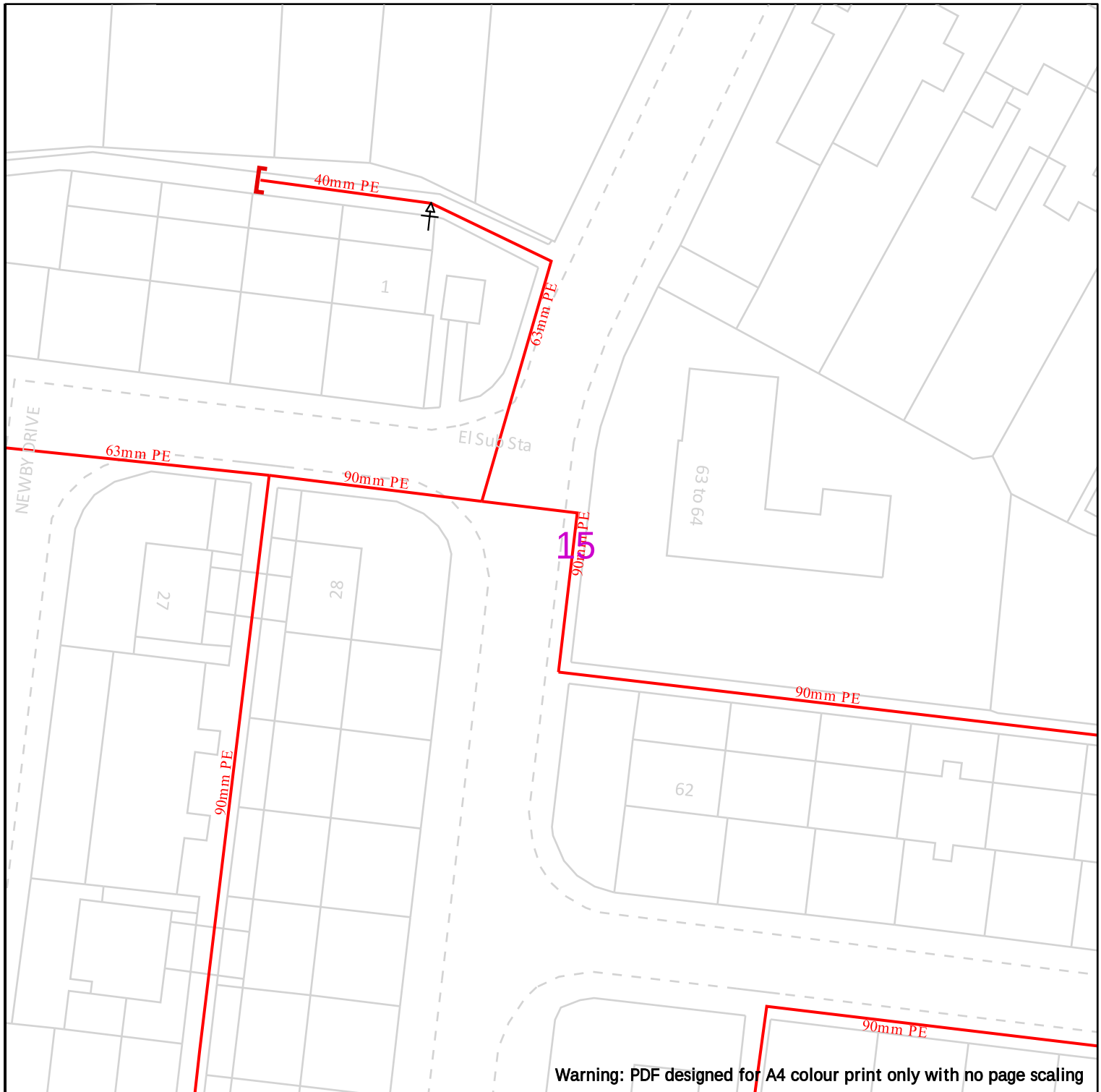
Scale: 1:500 (When plotted at A4)



 Your Gas Network	Dig Sites Area:  Line:   LP Mains  MP Mains  IP Mains  LHP Mains  Valve  Depth of cover  Syphon  Diameter Change  Material Change  Out of Standard Service
	Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)



	25m	
	Dig Sites Area: Line: LP Mains MP Mains IP Mains LHP Mains	Valve Depth of cover Syphon Diameter Change Material Change Out of Standard Service
Date Requested: 23/02/2022 Job Reference: 24822580 Site Location: 343137 391524 Requested by: Miss Alexa Band Your Scheme/Reference: STU5625 View extent: 100m, 100m Scale: 1:500 (When plotted at A4)	IMPORTANT NOTICES This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue. In case of emergency call - 0800 111 999 Crown Copyright © - This plan is reproduced from or based on the OS map by Cadent Gas Limited, with the sanction of the controller of HM Stationary Office. Crown Copyright Reserved. Ordnance Survey Licence number 100024886	



25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

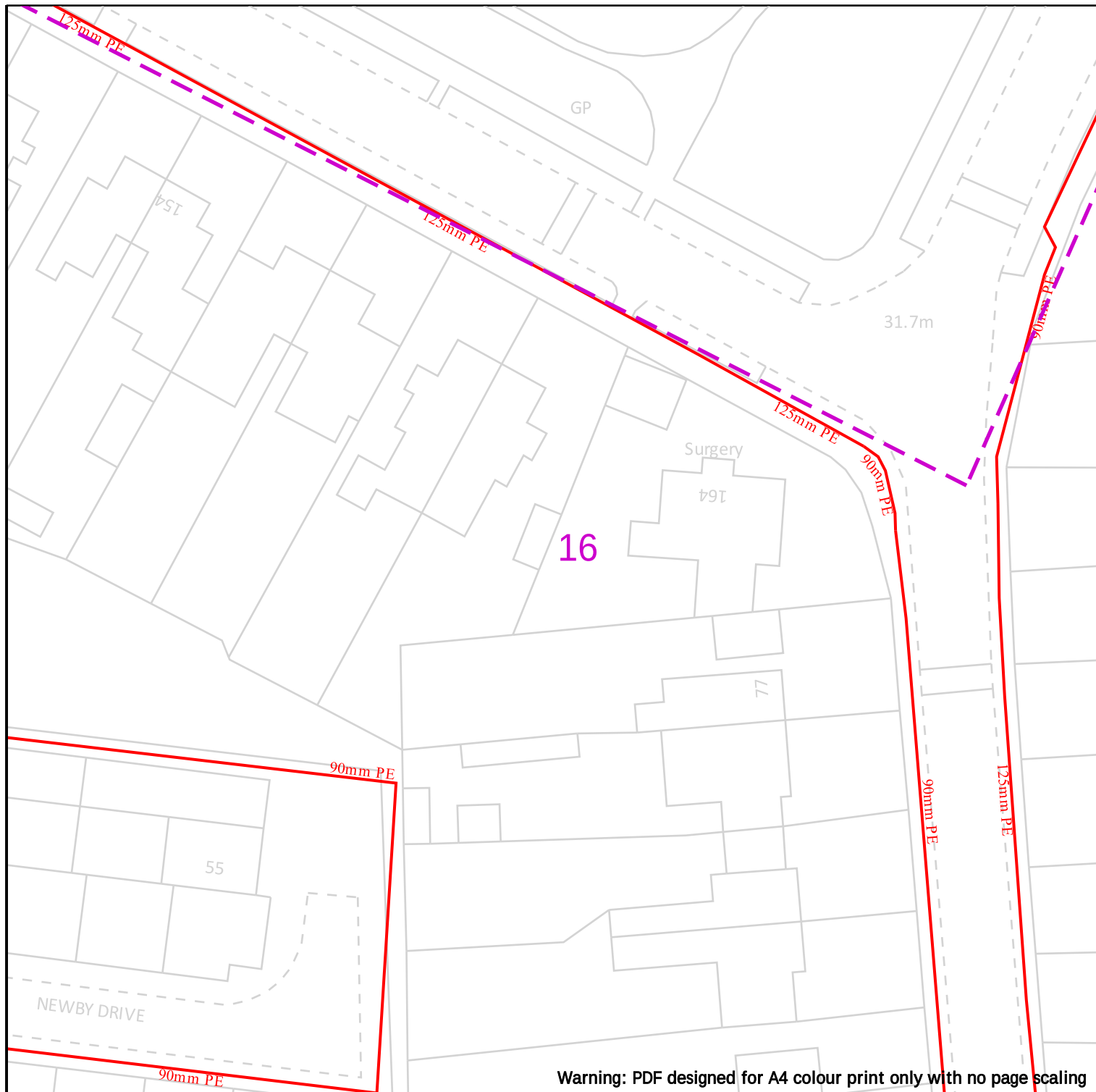
IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In case of emergency call - 0800 111 999

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Scale: 1:500 (When plotted at A4)



25m

Dig Sites

Area:



Line:



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Cadent
Your Gas Network

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band
Your Scheme/Reference: STU5625

View extent: 100m, 100m

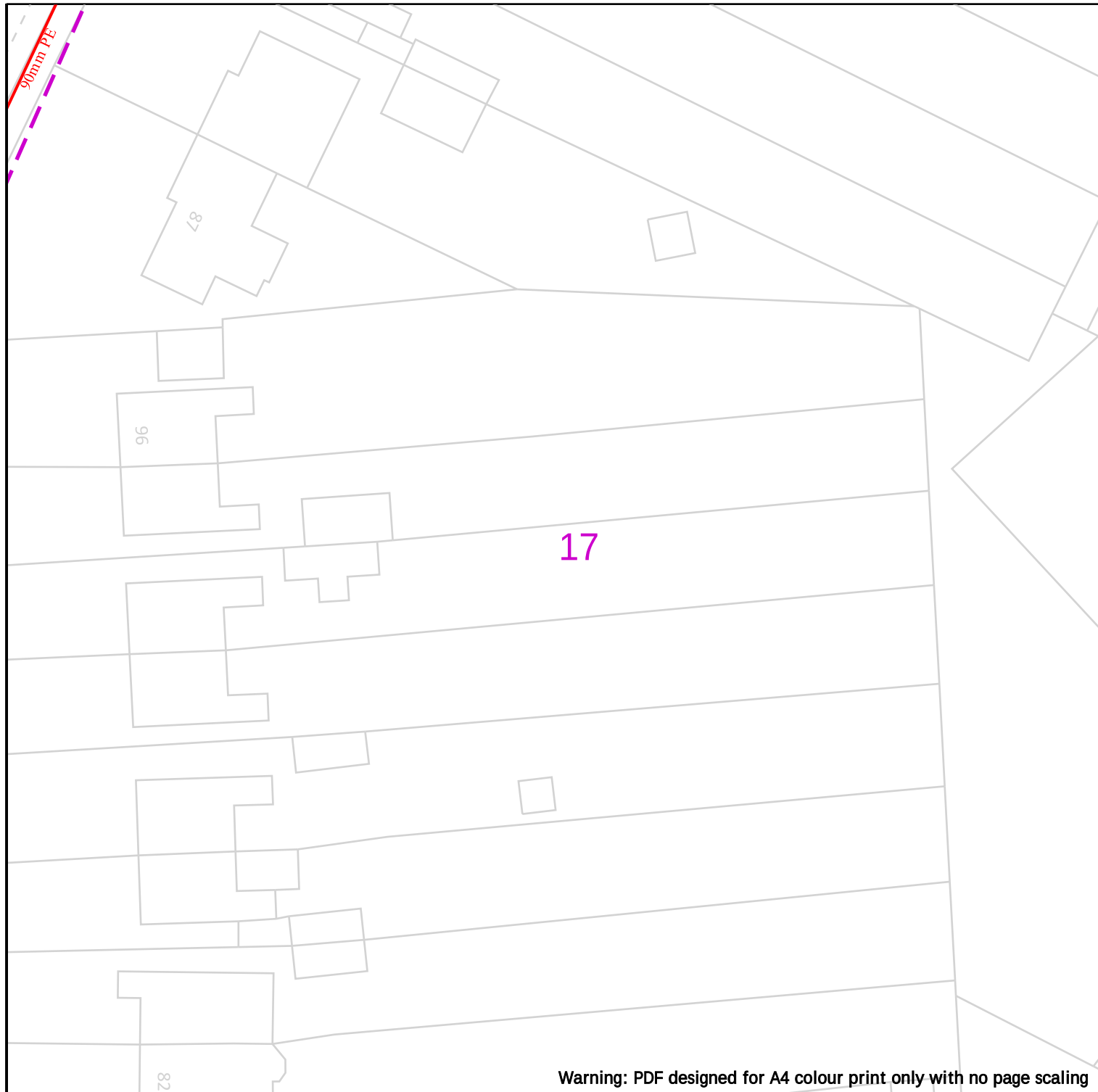
IMPORTANT NOTICES

This plan shows these pipes owned by Cadent Gas Limited in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GT's or otherwise privately owned may be present in this area. Information with regards to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Service pipes, valves, syphons, stub connections etc. are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Cadent Gas Limited or their agents, servants or contractors for any errors or omission. 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 this information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

In case of emergency call - 0800 111 999

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Scale: 1:500 (When plotted at A4)



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

25m

Dig Sites

Area:



Line:



Cadent
Your Gas Network



LP Mains



MP Mains



IP Mains



LHP Mains



Valve



Depth of cover



Syphon



Diameter Change



Material Change



Out of Standard Service

Date Requested: 23/02/2022

Job Reference: 24822580

Site Location: 343137 391524

Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

View extent: 100m, 100m

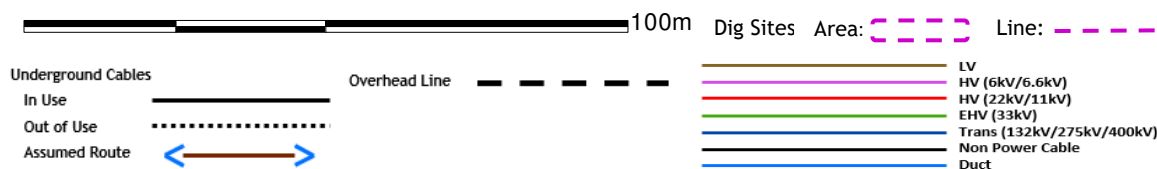
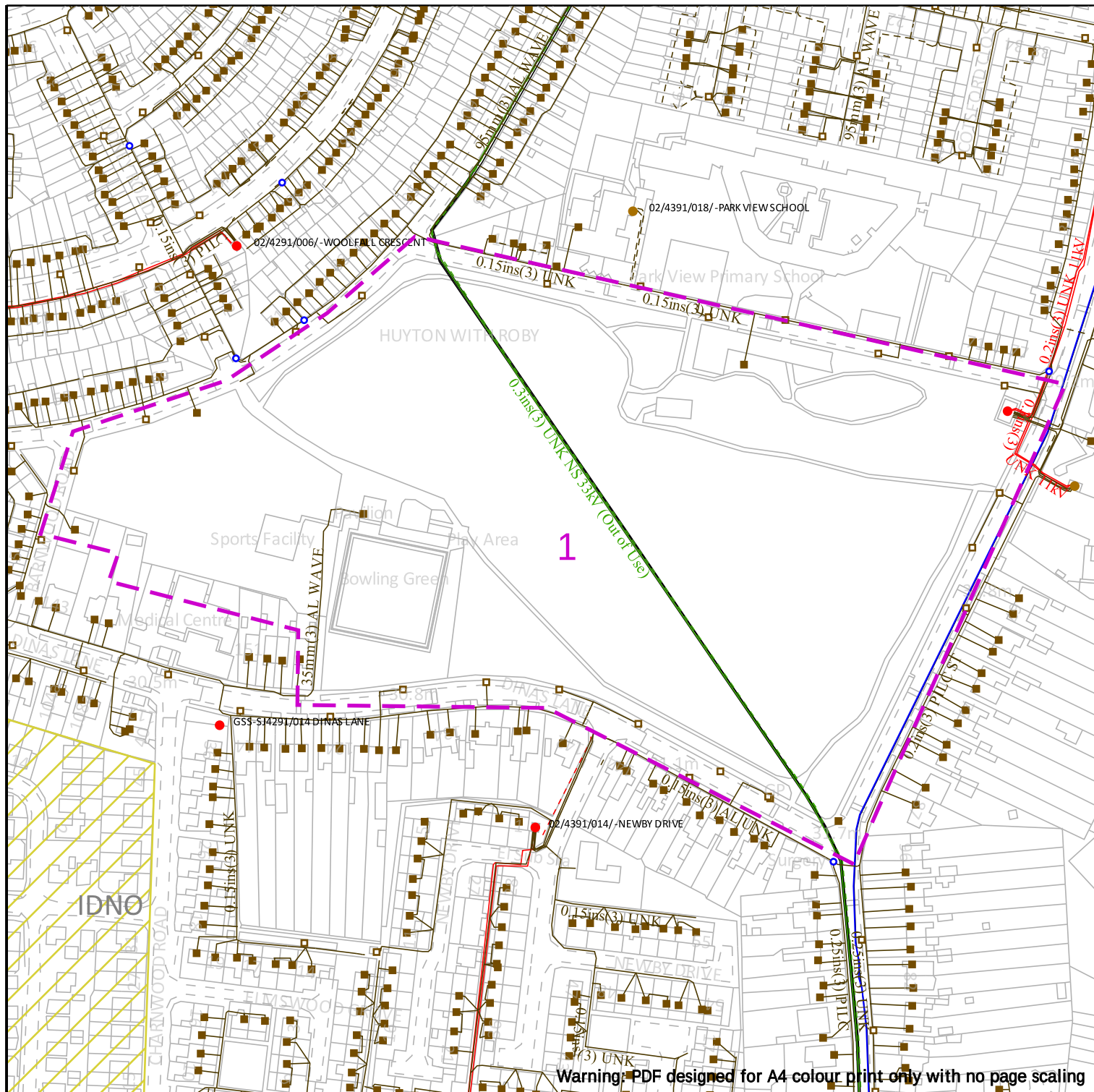
Scale: 1:500 (When plotted at A4)

IMPORTANT NOTICES

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In case of emergency call - 0800 111 999

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IMPORTANT NOTICES

- This information shown on this plan is indicative only and its accuracy cannot be guaranteed.
- The plan only shows assets owned by SP Energy Networks.
- Positions and depths of cables may have altered since being recorded. A line on a plan may represent more than one cable. Normally electric cables are laid at depths between 450mm and 1m but depths may have changed if land surface levels have since altered.
- The plan may not show, or may inaccurately show, individual property services and services to street lighting installations. Underground services may be found in roads, footpaths and on sites. Always assume that they are present for each property, lamp column and street sign etc and treat any services found anywhere as live.
- You must use safe digging practices in accordance with HS(G)47 to establish the actual position of mains cables, services and other apparatus before any mechanical excavation is used.
- Where overhead lines cross your site, you must comply with the requirements of Health & Safety Executive guidance as laid down in GS6, Avoidance of Danger from Overhead Electric Lines.
- Any works that fall within 5m of any 132kV or Transmission cables, or within 15m of any 132kV or Transmission OHL's, please contact our General Enquiries Team **0845 273 4444 / 0330 10 10 444** for further safety advice.
- In the event of an emergency or for further assistance contact **0800-092-9290 (Central & Southern Scotland)** or **0800-001-5400 (Merseyside, Cheshire & North Wales)** or by dialling **105**
- It is your responsibility to ensure this information is provided to all persons working near our plant.

Date Requested: 23/02/2022
Job Reference: 24822580
Site Location: 343137 391524
Requested by: Miss Alexa Band

Your Scheme/Reference: STU5625

Scale: 1:2500 (When plotted at A4)

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Maps by email Plant Information Reply



IMPORTANT WARNING

Information regarding the location of BT apparatus is given for your assistance and is intended for general guidance only. No guarantee is given of its accuracy. It should not be relied upon in the event of excavations or other works being made near to BT apparatus which may exist at various depths and may deviate from the marked route.



openreach

CLICK BEFORE YOU DIG

FOR PROFESSIONAL FREE ON SITE ASSISTANCE PRIOR TO COMMENCEMENT OF EXCAVATION WORKS INCLUDING LOCATE AND MARKING SERVICE

email cbyd@openreach.co.uk

ADVANCE NOTICE REQUIRED
(Office hours: Monday - Friday 08.00 to 17.00)
www.openreach.co.uk/cbyd

Accidents happen

If you do damage any Openreach equipment please let us know by calling 0800 023 2023 (opt 1 + opt 1) and we can get it fixed ASAP

KEY TO BT SYMBOLS

	Planned	Live	Change Of State	+	Hatchings	
PCP			Split Coupling	×	Built	
Pole			Duct Tee	▲	Planned	
Box			Building		Inferred	
Manhole			Kiosk		Duct	
Cabinet			Other proposed plant is shown using dashed lines. BT Symbols not listed above may be disregarded. Existing BT Plant may not be recorded. Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.			
	Pending Add	In Place	Pending Remove	Not In Use		
Power Cable						
Power Duct				N/A		

BT Ref : HSM02242Y

Map Reference : (centre) SJ4299791553

Easting/Northing : (centre) 342997,391553

Issued : 23/02/2022 14:24:15

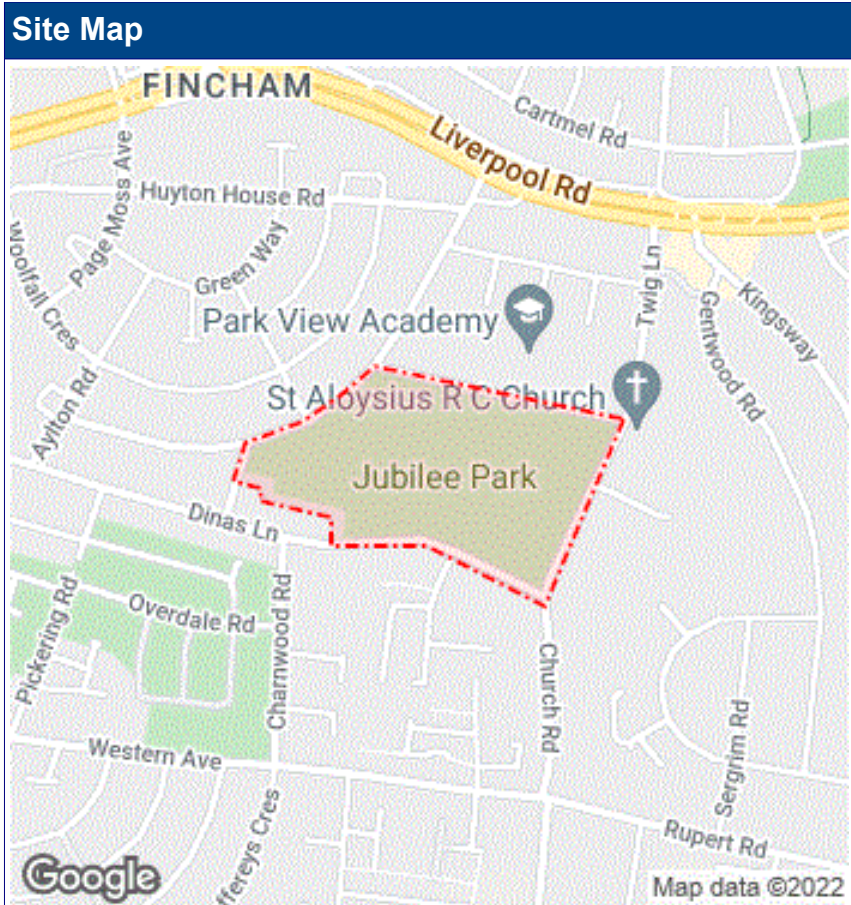
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(C) Crown Copyright British Telecommunications plc 100028040

WARNING: IF PLANNED WORKS FALL INSIDE HATCHED AREA IT IS ESSENTIAL BEFORE PROCEEDING THAT YOU CONTACT THE NATIONAL NOTICE HANDLING CENTRE. PLEASE SEND E-MAIL TO: nnhc@openreach.co.uk

Enquirer			
Name	Miss Alexa Band	Phone	01604 781877
Company	Soiltechnics	Mobile	Not Supplied
Address	Cedar Barn White Lodge Walgrave Northamptonshire NN6 9PY		
Email	Alexa.Band@soiltechnics.net		

Enquiry Details			
Scheme/Reference	STU5625		
Enquiry type	Planned Works	Work category	Development Projects
Start date	24/02/2022	Work type	Commercial/industrial
End date	24/02/2022	Site size	75693 metres square
Searched location	XY= 342997, 391553	Work type buffer*	75 metres
Confirmed location	343137 391524		
Site Contact Name	Not Supplied	Site Phone No	Not Supplied
Description of Works			

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



Asset Owners

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lineasearchbeforeudig.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.

Notes. Please ensure your contact details are correct and up to date on the system in case the LSBUD Members need to contact you.

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 of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig 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.

Asset Owners & Responses. Please note the enquiry results include the following:

1. "LSBUD Members" who are asset owners who have registered their assets on the LSBUD service.
2. "Non LSBUD Members" are asset owners who have not registered their assets on the LSBUD service but LSBUD is aware of their existence. Please note that there could be other asset owners within your search area.

Below are three lists of asset owners:

1. **LSBUD Members who have assets registered within your search area. ("Affected")**
 - a. **These LSBUD Members will either:**
 - i. **Ask for further information ("Email Additional Info" noted in status).** The additional information includes: Site contact name and number, Location plan, Detailed plan (minimum scale 1:2500), Cross sectional drawings (if available), Work Specification.
 - ii. **Respond directly to you ("Await Response").** In this response they may either send plans directly to you or ask for further information before being able to do so, particularly if any payments or authorisations are required.
2. **LSBUD Members who do not have assets registered within your search area. ("Not Affected")**
3. **Non LSBUD Members who may have assets within your search area.** Please note that this list is not exhaustive and all details are provided as a guide only. It is your responsibility to identify and consult with all asset owners before proceeding.

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

List of affected LSBUD members

Asset Owner	Phone/Email	Emergency Only	Status
Cadent Gas	0800688588	0800111999	Await response
SP Energy Networks	08452734444	08000929290 / 105	Await response

LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area. Please be aware that LSBUD Members make regular changes to their assets and this list may vary for new enquiries in the same area.

List of not affected LSBUD members

AWE Pipeline	Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)
Box Broadband	BP Exploration Operating Company Limited	BPA
Carrington Gas Pipeline	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
EirGrid	Electricity North West Limited	ENI & Himor c/o Penspen Ltd
EnQuest NNS Limited	EP Langage Limited	ESP Utilities Group
ESSAR	Esso Petroleum Company Limited	euNetworks Fiber UK Ltd
EXA Infrastructure	Exolum Pipeline System	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	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Murphy Utility Assets
National Grid Electricity Transmission	National Grid Gas Transmission	Neos Networks
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	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
SGN	Shell	Shell NOP
Squire Energy Networks	SSE Generation Ltd	SSE Transmission
	Tata Communications (c/o JSM Construction)	

SSE Utility Solutions Limited	Ltd)	Total Colnbrook Pipelines
Total Finaline Pipelines	Transmission Capital	UK Power Networks
Uniper UK Ltd	University of Cambridge Granta Backbone Network	Vattenfall
Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd	VPI Power Limited
Wales and West Utilities	West of Duddon Sands Transmission Ltd	Western Power Distribution
Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd	

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.

Non-LSBUD members (Asset owners not registered on LSBUD)			
Asset Owner	Preferred contact method	Phone	Status
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CenturyLink Communications UK Limited	plantenquiries@instalcom.co.uk	02087314613	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
ENGIE	nrsua.uk@engie.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	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@instalcom.co.uk		Not Notified
Teliasonera	check-network@teliacompany.com	0800526015	Not Notified
United Utilities	WastewaterDeveloperServices@uuplc.co.uk	08707510101	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

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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 LineSearchbeforeUdig 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 LineSearchbeforeUdig, including but not exclusively those set out above. Therefore, LineSearchbeforeUdig 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. LineSearchbeforeUdig 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.

Soiltechnics

**Soiltechnics
white lodge, walgrave
walgrave, nothants
nn6 9py**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: STU5625
Our Ref: UUPS-ORD-369855
Date: 24/02/2022**

Dear Sirs

Location: Knowsley MBC

I acknowledge with thanks your request dated 23/02/2022 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

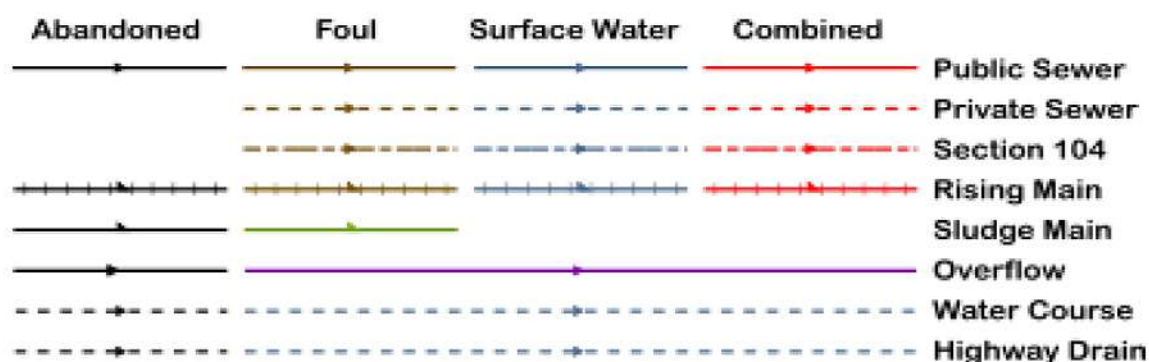
TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

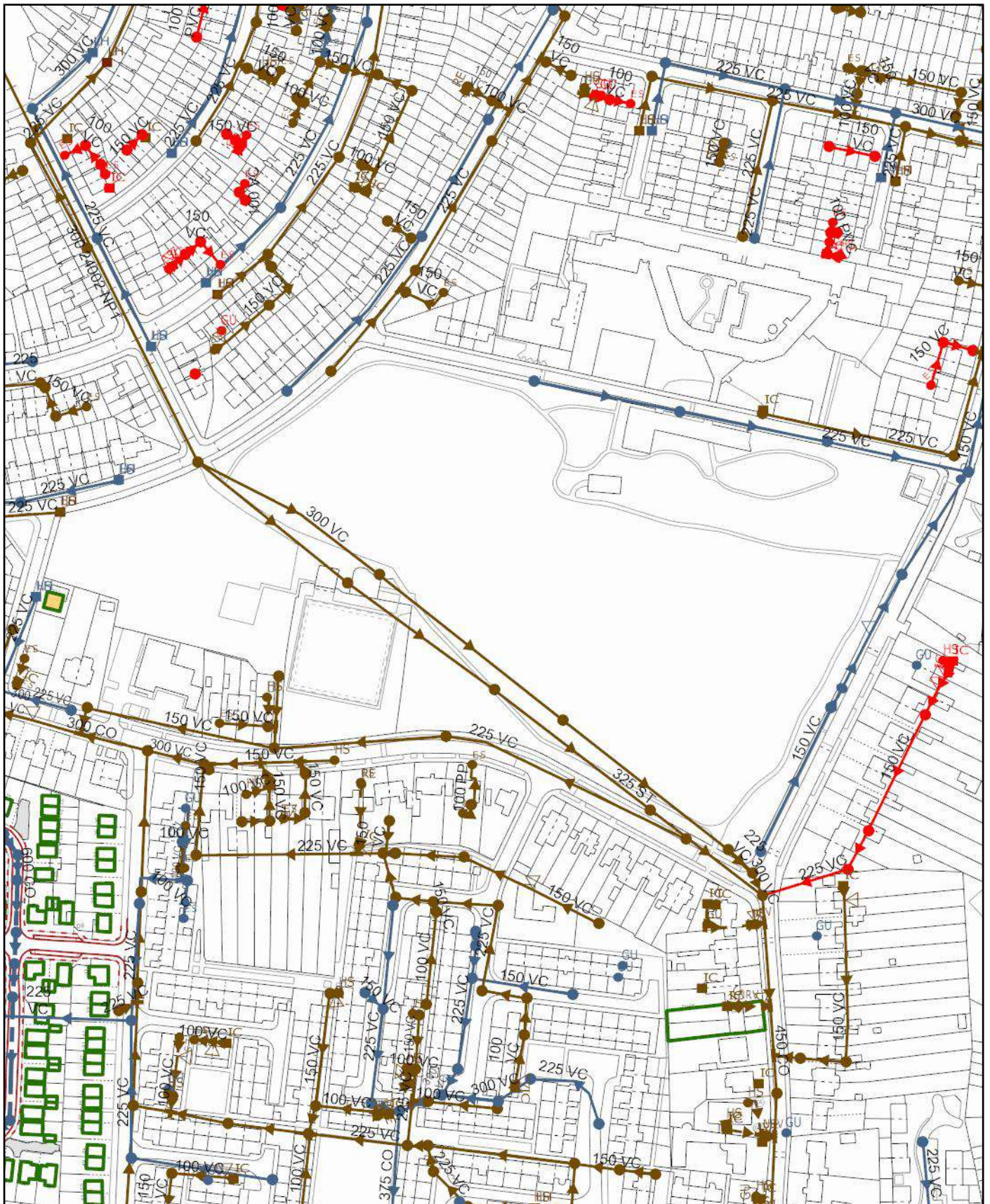
- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

Wastewater Symbolology



All point assets follow the standard colour convention: **red** – combined **brown** - foul
blue – surface water **purple** - overflow

Manhole	Side Entry Manhole
Head of System	Outfall
Extent of Survey	Screen Chamber
Rodding Eye	Inspection Chamber
Inlet	Bifurcation Chamber
Discharge Point	Lamp Hole
Vortex	T Junction / Saddle
Penstock	Catchpit
Washout Chamber	Valve Chamber
Valve	Vent Column
Air Valve	Vortex Chamber
Non Return Valve	Penstock Chamber
Soakaway	Network Storage Tank
Gully	Sewer Overflow
Cascade	Ww Treatment Works
Flow Meter	Ww Pumping Station
Hatch Box	Septic Tank
Oil Interceptor	Control Kiosk
Summit	
Drop Shaft	Change of Characteristic
Orifice Plate	



Scale: 1:2633
Date: 24/02/2022

SEWER RECORDS



Water for the North West

Address or Site Reference: Knowsley MBC
Printed by: Property Searches

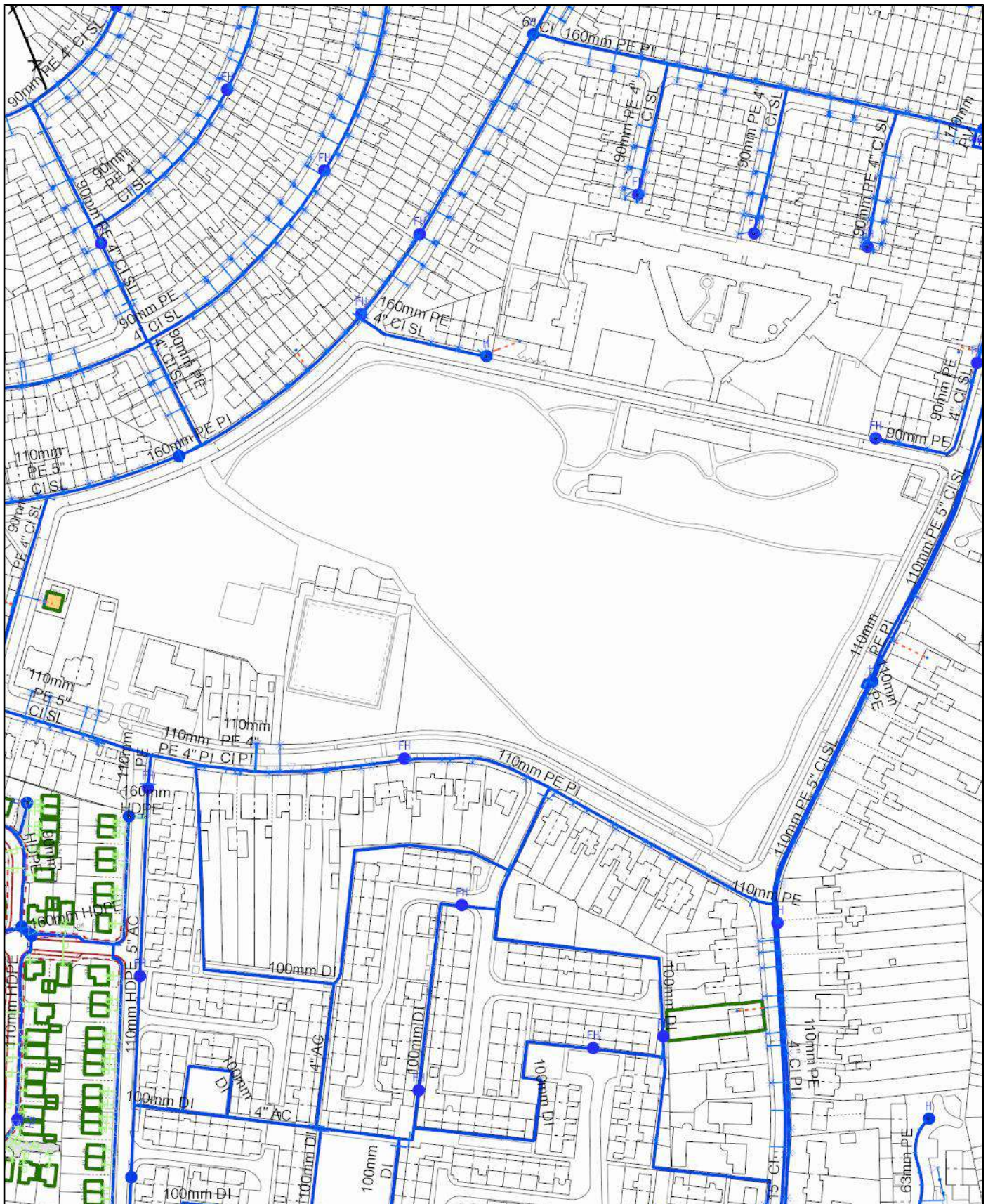
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Clean Water Symbolology

Proposed	Abandoned	Live	
			Distribution Main
			Trunk Main
			Comms Pipe
			Private Pipe
			Concessionary Service
			Raw Water
			LDTM Raw Water
			LDTM Treated Water
			Air Valve
			AC Valve, open
			AC Valve, closed
			CC Valve, open
			CC Valve, closed
			Non Return Valve
			Pressure Management Valve
			OMS Valve
			Stop Tap
			Flow Meter
			Domestic Meter
			Commercial Meter
			Pump
			Hydrant
			Fire Hydrant
			Anode
			Chlorination Point
			De-chlorination Point
			Strainer Point
			Access Point
			Hatch Box
			IP Point
			Sampling Station
			Logger Box
			Bore Hole
			Inlet Point
			Bulk Supply Point
			End Cap
			Site Termination
			Change of Characteristic
			Condition Report
			<u>Property Types</u>
			Water Tower
			Valve House
			Booster Pumping Station
			Intake Pumping Station
			Water Treatment Works
			Supply Reservoir
			Service Reservoir
			Impounding Reservoir
			Pipe Bridge

Symbology for proposed assets is the same as above, but shown in **green**
 Symbology for abandoned assets is the same as above, but shown in **black**



Scale: 1:2633
Date: 24/02/2022

WATER MAINS RECORDS



Water for the North West

Address or Site Reference: Knowsley MBC
Printed by: Property Searches

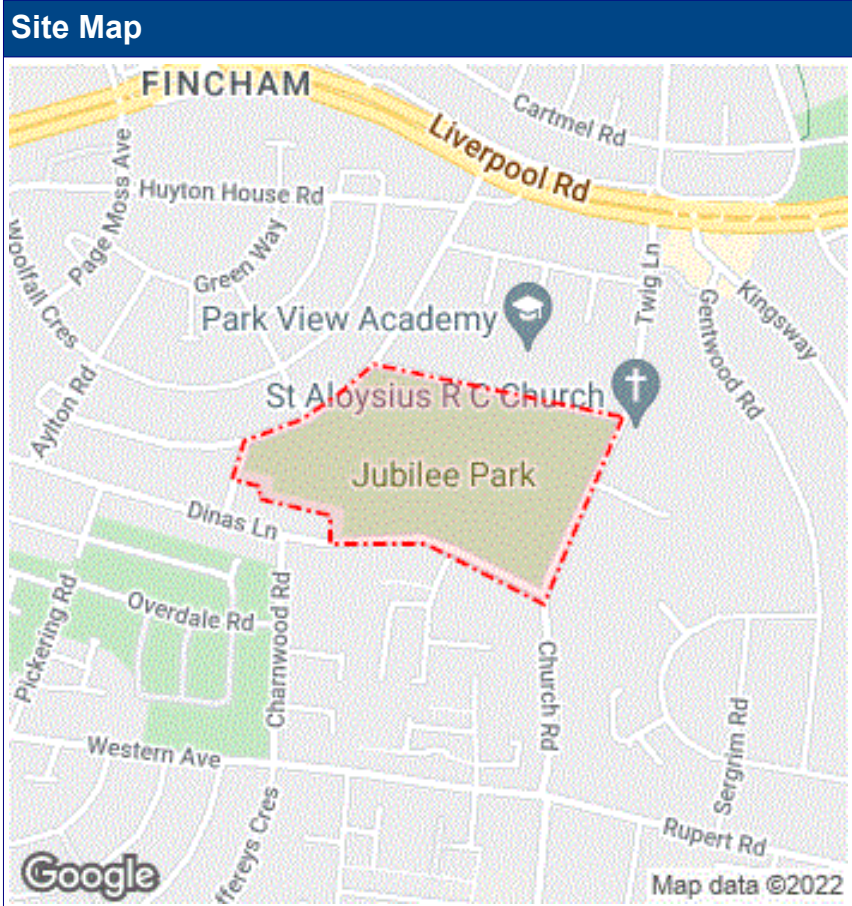
The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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Enquirer			
Name	Miss Alexa Band	Phone	01604 781877
Company	Soiltechnics	Mobile	Not Supplied
Address	Cedar Barn White Lodge Walgrave Northamptonshire NN6 9PY		
Email	Alexa.Band@soiltechnics.net		

Enquiry Details			
Scheme/Reference	STU5625		
Enquiry type	Planned Works	Work category	Development Projects
Start date	24/02/2022	Work type	Commercial/industrial
End date	24/02/2022	Site size	75693 metres square
Searched location	XY= 342997, 391553	Work type buffer*	75 metres
Confirmed location	343137 391524		
Site Contact Name	Not Supplied	Site Phone No	Not Supplied
Description of Works			

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



Asset Owners

Terms and Conditions. Please note that this enquiry is subject always to our standard terms and conditions available at www.lineasearchbeforeudig.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.

Notes. Please ensure your contact details are correct and up to date on the system in case the LSBUD Members need to contact you.

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 of the enquiry. It is your responsibility to ensure that the Enquiry Details are correct, and LineasearchbeforeUdig 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.

Asset Owners & Responses. Please note the enquiry results include the following:

1. "LSBUD Members" who are asset owners who have registered their assets on the LSBUD service.
2. "Non LSBUD Members" are asset owners who have not registered their assets on the LSBUD service but LSBUD is aware of their existence. Please note that there could be other asset owners within your search area.

Below are three lists of asset owners:

1. LSBUD Members who have assets registered within your search area. ("Affected")
 - a. These LSBUD Members will either:
 - i. Ask for further information ("Email Additional Info" noted in status). The additional information includes: Site contact name and number, Location plan, Detailed plan (minimum scale 1:2500), Cross sectional drawings (if available), Work Specification.
 - ii. Respond directly to you ("Await Response"). In this response they may either send plans directly to you or ask for further information before being able to do so, particularly if any payments or authorisations are required.
2. LSBUD Members who do not have assets registered within your search area. ("Not Affected")
3. Non LSBUD Members who may have assets within your search area. Please note that this list is not exhaustive and all details are provided as a guide only. It is your responsibility to identify and consult with all asset owners before proceeding.

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

List of affected LSBUD members

Asset Owner	Phone/Email	Emergency Only	Status
Cadent Gas	0800688588	0800111999	Await response
SP Energy Networks	08452734444	08000929290 / 105	Await response

LSBUD Members who do not have assets registered on the LSBUD service within the vicinity of your search area. Please be aware that LSBUD Members make regular changes to their assets and this list may vary for new enquiries in the same area.

List of not affected LSBUD members

AWE Pipeline	Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)
Box Broadband	BP Exploration Operating Company Limited	BPA
Carrington Gas Pipeline	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
EirGrid	Electricity North West Limited	ENI & Himor c/o Penspen Ltd
EnQuest NNS Limited	EP Langage Limited	ESP Utilities Group
ESSAR	Esso Petroleum Company Limited	euNetworks Fiber UK Ltd
EXA Infrastructure	Exolum Pipeline System	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	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Murphy Utility Assets
National Grid Electricity Transmission	National Grid Gas Transmission	Neos Networks
Northumbrian Water Group	NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd
NYnet Ltd	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
SGN	Shell	Shell NOP
Squire Energy Networks	SSE Generation Ltd	SSE Transmission
	Tata Communications (c/o JSM Construction)	

SSE Utility Solutions Limited	Ltd)	Total Colnbrook Pipelines
Total Finaline Pipelines	Transmission Capital	UK Power Networks
Uniper UK Ltd	University of Cambridge Granta Backbone Network	Vattenfall
Veolia ES SELCHP Limited	Veolia ES Sheffield Ltd	VPI Power Limited
Wales and West Utilities	West of Duddon Sands Transmission Ltd	Western Power Distribution
Westminster City Council	Zayo Group UK Ltd c/o JSM Group Ltd	

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.

Non-LSBUD members (Asset owners not registered on LSBUD)			
Asset Owner	Preferred contact method	Phone	Status
BT	https://www.swns.bt.com/pls/mbe/welcome.home	08000232023	Not Notified
CenturyLink Communications UK Limited	plantenquiries@instalcom.co.uk	02087314613	Not Notified
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
ENGIE	nrswa.uk@engie.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Sky UK Limited	nrswa@sky.uk	02070323234	Not Notified
Sota	SOTA.plantenquiries@instalcom.co.uk		Not Notified
Teliasonera	check-network@teliacompany.com	0800526015	Not Notified
United Utilities	WastewaterDeveloperServices@uuplc.co.uk	08707510101	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

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Appendix B Exploratory hole records

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.20						0.10		D
Dark brown slightly gravelly fine to coarse SAND. Gravel is fine to medium angular brick and concrete. (MADE GROUND)	0.60						0.30		D
Brown slightly gravelly very clayey fine to medium SAND. Gravel is fine to coarse angular to rounded brick, concrete, sandstone and coal. (MADE GROUND)	1.20						0.70		D
TRIAL PIT TERMINATED AT 1.20m							1.10		D

Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP01

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.25						0.10	0.70	D
Dark brown slightly gravelly fine to coarse SAND. Gravel is fine to medium angular brick, concrete and glass. (MADE GROUND)							0.50		D
Grey sandy GRAVEL of fine to medium brick, concrete, sandstone and clinker like material. (MADE GROUND)	0.60						0.70		D
Brown slightly sandy gravelly CLAY. Gravel is fine to medium brick, concrete and sandstone. (MADE GROUND)	0.90						0.70		B
TRIAL PIT TERMINATED AT 1.20m	1.20						1.20		D

Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP02

[illegible]

Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP03

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.10								
TRIAL PIT TERMINATED AT 0.10m									

Notes Trial pit sides remained upright and stable upon completion. Trial pit terminated due to concrete slab at 0.1m depth.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP04

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.10								
TRIAL PIT TERMINATED AT 0.10m									

Notes Trial pit sides remained upright and stable upon completion. Trial pit terminated due to concrete slab at 0.1m depth.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP04A

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.10								
TRIAL PIT TERMINATED AT 0.10m									

Notes Trial pit sides remained upright and stable upon completion. Trial pit terminated due to concrete slab at 0.1m depth.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP04B

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.10								
TRIAL PIT TERMINATED AT 0.10m									

Notes Trial pit sides remained upright and stable upon completion. Trial pit terminated due to concrete slab at 0.1m depth.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP04C

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)							0.20		D
Grey sandy GRAVEL of fine to medium brick, concrete, sandstone and clinker like material. (MADE GROUND)	0.30						0.40		D
							0.60		D
Soft to firm brown slightly sandy gravelly CLAY. Gravel is fine to medium brick, concrete and sandstone. (MADE GROUND)	0.70						0.80		D
							1.20		D
TRIAL PIT TERMINATED AT 1.20m	1.20								

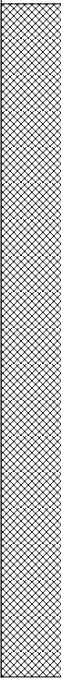
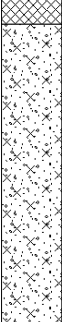
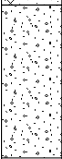
Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP04D

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.15						0.10		D
Dark brown slightly gravelly fine to coarse SAND. Gravel is fine to medium angular brick, concrete and glass. (MADE GROUND)							0.30		D
							0.50		D
Reddish brown fine to medium SAND. (WEATHERED CHESTER FORMATION)	0.60						0.70	1.20	B
TRIAL PIT TERMINATED AT 1.20m	1.20								

Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP05

STRATA				WATER STRIKES	IN SITU TESTING		SAMPLING		
DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND		TYPE / DEPTH (m)	RESULT	FROM (m)	TO (m)	TYPE
Grass onto dark brown SAND with rootlets. (TOPSOIL)	0.20						0.10		D
Dark brown slightly gravelly fine to coarse SAND. Gravel is fine to medium angular brick, concrete and glass. (MADE GROUND)							0.50		D
Soft to firm brown slightly sandy slightly gravelly CLAY. Gravel is fine coal and sandstone. (DEVENSIAN TILL)	0.70						0.90		B
	0.90						1.20		D
TRIAL PIT TERMINATED AT 1.20m	1.20								

Notes Trial pit sides remained upright and stable upon completion.	Title Trial pit record	Dimensions (w x l) 0.30m x 0.30m	Date(s) 25/04/2022
	Method Hand tools	Logged by TO	Sheet number Sheet 1 of 1
Groundwater observations No groundwater encountered.	Level (m OD) -	Compiled by KD	Revision 0
	Co-ordinates -	Checked by JP	HP06

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				
	Grass onto dark brown slightly gravelly clayey fine SAND with rootlets. Gravel is fine to medium subangular to subrounded concrete and brick. (TOPSOIL)	0.50				S 1.00 - 1.45	(9) 18			PP 0.60 PP 0.70	PP=175 PP=200	0.10	0.40	D				
	Very stiff brown mottled reddish brown sandy slightly gravelly CLAY. Gravel is fine subangular to subrounded coal, tile and brick. (MADE GROUND)													0.60 0.60	0.80 0.80	D ES		
	Medium dense reddish brown very gravelly slightly silty fine to medium SAND. Gravel is medium to coarse angular to subangular sandstone. (WEATHERED CHESTER FORMATION)	1.10				S 2.00 - 2.45	(8) 13					1.10	2.00	B				
	...between 2.2m and 2.3m depth, becoming clayey.																	
						S 3.00 - 3.45	(5) 18			PP 3.30	PP=0							
	Very soft reddish brown slightly sandy silty CLAY. (WEATHERED CHESTER FORMATION)	3.10										3.10	3.30	D				
	Dense reddish brown slightly gravelly fine to medium SAND. Gravel is medium to coarse subangular to subrounded sandstone. (WEATHERED CHESTER FORMATION)	3.44				S 4.00 - 4.45	(15) 39					3.50		D				
	BOREHOLE TERMINATED AT 4.45m	4.45																

Notes Borehole collapsed to 3.3m depth upon completion. Infiltration testing performed. Borehole collapse further to 2.05m depth during test.	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
	0.00 - 1.00 1.00 - 2.00 2.00 - 3.00 3.00 - 4.00	100 95 90 80	Level (m OD) - Co-ordinates -	Compiled by KD Checked by JP	Revision 0 WS101

Groundwater observations
No groundwater encountered.

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.16										0.10		D
	Black very gravelly medium to coarse SAND with low cobble content of subangular brick. Gravel is fine to coarse angular to subangular clinker, brick and sandstone. (MADE GROUND)	0.50								PP 0.55	PP=25	0.30		D
	Soft brown slightly gravelly slightly sandy CLAY. Gravel is fine subangular to subrounded flint, coal, brick and sandstone. (MADE GROUND)									PP 0.75	PP=25	0.80		D
	...from 1m depth, becoming sandy.											0.80		ES
	Firm to stiff brown mottled light grey and dark grey slightly gravelly slightly sandy CLAY. Gravel is fine angular to subangular sandstone and quartzite. (DEVENSIAN TILL)	1.30				S 1.00 - 1.45	(4) 7			PP 1.40	PP=150	1.50		D
										PP 1.60	PP=100	1.50		D
										PP 1.80	PP=142			
						S 2.00 - 2.45	(6) 14			PP 2.20	PP=133			
										PP 2.40	PP=175	2.50		D
										PP 2.80	PP=158			
	Stiff reddish brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded sandstone and flint. (DEVENSIAN TILL)	3.00				S 3.00 - 3.45	(7) 16			PP 3.45	PP=225	3.50		D
										PP 3.80	PP=225			
	Dense reddish brown fine SAND. (WEATHERED CHESTER FORMATION)	4.00				S 4.00 - 4.45	(9) 34							
	BOREHOLE TERMINATED AT 4.45m	4.45												

Notes	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	0
	2.00 - 3.00	95	Co-ordinates	Checked by	WS102
	3.00 - 4.00	95	-	JP	

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.35										0.20		D
	Black very gravelly slightly silty medium to coarse SAND. Gravel is medium to coarse angular to subangular clinker, asphalt and coal. (MADE GROUND)	0.60										0.40		D
	Soft to firm brown sandy slightly gravelly CLAY. Gravel is fine angular to subangular brick and flint. (MADE GROUND)	1.00				S 1.00 - 1.45	(3) 9			PP 0.70 PP 0.90 PP 1.10 PP 1.30	PP=50 PP=83 PP=100 PP=200	0.80 0.80		D ES
	Stiff reddish brown slightly gravelly slightly sandy CLAY. Gravel is fine angular to subangular mudstone and flint. (DEVENSIAN TILL)									PP 1.60 PP 1.80	PP=217 PP=208	1.50 1.50		D D
	Very dense reddish brown fine to medium SAND. (WEATHERED CHESTER FORMATION)	2.40				S 2.00 - 2.45	(4) 21							
	BOREHOLE TERMINATED AT 3.00m	3.00				S 3.00 - 3.42	(13) 50/275mm							

Notes	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	0
	2.00 - 3.00	90	Co-ordinates	Checked by	WS103
			-	JP	

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.20								PP 0.30	PP=167	0.10		D
	Stiff brown sandy slightly gravelly CLAY. Gravel is fine to medium angular to subangular sandstone, brick and coal. (MADE GROUND)									PP 0.50	PP=192	0.50		D
										PP 0.80	PP=192	0.50		ES
	Stiff reddish brown sandy slightly gravelly CLAY. Gravel is fine angular to subangular sandstone and flint. (DEVENSIAN TILL)	1.00				S 1.00 - 1.45	(4) 9			PP 1.20	PP=200			
										PP 1.50	PP=192	1.50		D
						S 2.00 - 2.45	(4) 11			PP 1.80	PP=200			
										PP 2.00	PP=200			
										PP 2.40	PP=217	2.50		D
										PP 2.80	PP=225			
						S 3.00 - 3.22	(18) 50/75mm							
	BOREHOLE TERMINATED AT 3.45m	3.45												

Notes	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	90	-	KD	0
	2.00 - 3.00	75	Co-ordinates	Checked by	WS104
			-	JP	

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)											0.30		D
	Soft brown sandy slightly gravelly CLAY. Gravel is fine to medium angular sandstone. (MADE GROUND)	0.45								PP 0.60	PP=100	0.50		D
	Medium dense reddish brown slightly silty fine to medium SAND. (WEATHERED CHESTER FORMATION)	0.70				S 1.00 - 1.45	(3) 10					0.50		ES
												0.80		D
	...from 2.0m depth, becoming very dense.					S 2.00 - 2.34	(26) 50/185mm					0.80		D
												1.50		D
	BOREHOLE TERMINATED AT 2.45m	2.45												

Notes	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	0
			Co-ordinates	Checked by	WS105
			-	JP	

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)	0.30								PP 0.40	PP=175	0.20		D
	Dark brown mottled light brown sandy slightly gravelly CLAY. Gravel is fine subangular coal and brick. (MADE GROUND)											0.50		D
	Firm brown sandy slightly gravelly CLAY. Gravel is medium to coarse subangular to subrounded sandstone and flint. (MADE GROUND)	0.60										0.50		ES
		1.00								PP 0.80	PP=192	0.80		D
	BOREHOLE TERMINATED AT 1.00m													

Notes Borehole terminated due to concrete obstruction.	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
Groundwater observations No groundwater encountered.			-	KD	0
			Co-ordinates	Checked by	WS106
			-	JP	

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
	Grass onto dark brown fine to medium SAND with rootlets. (TOPSOIL)											0.20		D
	Very stiff brown sandy slightly gravelly CLAY. Gravel is fine angular brick, sandstone and coal. (MADE GROUND)	0.35								PP 0.40	PP=225	0.40		D
	Very stiff brown mottled light brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded sandstone, flint and coal. (MADE GROUND)	0.50								PP 0.60	PP=225	0.40		ES
	Very dense reddish brown slightly silty fine SAND. (WEATHERED CHESTER FORMATION)	1.20				S 1.00 - 1.45	(5) 13			PP 0.80	PP=217	0.80		D
												1.20	2.00	B
						S 2.00 - 2.32	(20) 50/165mm							
	BOREHOLE TERMINATED AT 2.45m	2.45												

Notes	Title			Date(s)	
	Dynamic windowless sampling record			18/05/2022	
	Recovery details		Method	Logged by	Sheet number
	Range (m)	Recovery (%)	Windowless sampler	JT	Sheet 1 of 1
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	Level (m OD)	Compiled by	Revision
	1.00 - 2.00	100	-	KD	0
			Co-ordinates	Checked by	WS106A
			-	JP	

Appendix C In situ test results

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP01	45	1
DCP01	70	2
DCP01	95	3
DCP01	120	4
DCP01	150	5
DCP01	170	6
DCP01	195	7
DCP01	220	8
DCP01	235	9
DCP01	250	10
DCP01	260	11
DCP01	270	12
DCP01	280	13
DCP01	310	14
DCP01	330	15
DCP01	340	16
DCP01	360	17
DCP01	375	18
DCP01	395	19
DCP01	425	20
DCP01	450	21
DCP01	490	22
DCP01	520	23
DCP01	555	24
DCP01	590	25
DCP01	640	26
DCP01	690	27
DCP01	740	28
DCP01	785	29
DCP01	830	30
DCP01	870	31
DCP01	910	32
DCP02	60	1
DCP02	100	2
DCP02	130	3
DCP02	160	4
DCP02	190	5
DCP02	210	6
DCP02	230	7
DCP02	240	8
DCP02	260	9
DCP02	270	10
DCP02	280	11

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP02	290	12
DCP02	300	13
DCP02	310	14
DCP02	320	15
DCP02	335	16
DCP02	340	21
DCP02A	60	1
DCP02A	100	2
DCP02A	130	7
DCP03	60	1
DCP03	100	2
DCP03	140	3
DCP03	150	4
DCP03	170	5
DCP03	180	6
DCP03	190	7
DCP03	200	8
DCP03	210	9
DCP03	220	10
DCP03	230	11
DCP03	245	12
DCP03	250	13
DCP03	265	14
DCP03	270	15
DCP03	280	16
DCP03	285	17
DCP03	290	18
DCP03	295	19
DCP03	300	24
DCP03A	60	1
DCP03A	100	2
DCP03A	125	3
DCP03A	140	4
DCP03A	150	5
DCP03A	160	6
DCP03A	170	7
DCP03A	180	8
DCP03A	190	9
DCP03A	200	10
DCP03A	210	11
DCP03A	230	12
DCP03A	245	13
DCP03A	260	14

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP03A	270	15
DCP03A	280	16
DCP03A	285	17
DCP03A	290	18
DCP03A	295	19
DCP03A	300	20
DCP03A	305	25
DCP04	40	1
DCP04	45	2
DCP04	50	3
DCP04	60	4
DCP04	70	5
DCP04	80	10
DCP04A	40	1
DCP04A	80	2
DCP04A	100	3
DCP04A	120	4
DCP04A	150	5
DCP04A	165	6
DCP04A	180	7
DCP04A	200	8
DCP04A	210	9
DCP04A	215	10
DCP04A	220	11
DCP04A	235	12
DCP04A	250	13
DCP04A	260	14
DCP04A	280	15
DCP04A	290	16
DCP04A	310	17
DCP04A	350	18
DCP04A	380	19
DCP04A	410	21
DCP04A	420	22
DCP04A	430	28
DCP05	45	1
DCP05	70	2
DCP05	95	3
DCP05	115	4
DCP05	125	5
DCP05	135	6
DCP05	150	7
DCP05	170	8

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP05	190	9
DCP05	205	10
DCP05	220	11
DCP05	240	12
DCP05	260	13
DCP05	280	14
DCP05	300	15
DCP05	305	16
DCP05	310	17
DCP05	320	18
DCP05	330	19
DCP05	340	20
DCP05	350	21
DCP05	355	22
DCP05	360	23
DCP05	365	24
DCP05	380	25
DCP05	385	26
DCP05	390	27
DCP05	400	28
DCP05	410	29
DCP05	420	30
DCP05	430	31
DCP05	435	32
DCP05	445	33
DCP05	460	34
DCP05	470	35
DCP05	480	36
DCP05	490	37
DCP05	495	38
DCP05	510	39
DCP05	515	43
DCP05A	25	1
DCP05A	55	2
DCP05A	90	3
DCP05A	105	4
DCP05A	115	5
DCP05A	130	6
DCP05A	145	7
DCP05A	155	8
DCP05A	175	9
DCP05A	195	10
DCP05A	215	11

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP05A	245	12
DCP05A	265	13
DCP05A	285	14
DCP05A	305	15
DCP05A	320	16
DCP05A	330	17
DCP05A	345	18
DCP05A	365	19
DCP05A	380	20
DCP05A	385	21
DCP05A	395	22
DCP05A	400	23
DCP05A	405	28
DCP06	60	1
DCP06	100	2
DCP06	125	3
DCP06	150	4
DCP06	180	5
DCP06	205	6
DCP06	220	7
DCP06	250	8
DCP06	290	9
DCP06	335	10
DCP06	380	11
DCP06	420	12
DCP06	470	13
DCP06	520	14
DCP06	570	15
DCP06	620	16
DCP06	690	17
DCP06	770	18
DCP06	860	19
DCP06	920	20
DCP101	52	1
DCP101	76	2
DCP101	103	3
DCP101	122	4
DCP101	142	5
DCP101	162	6
DCP101	179	7
DCP101	196	8
DCP101	214	9
DCP101	232	10

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP101	246	11
DCP101	262	12
DCP101	282	13
DCP101	301	14
DCP101	320	15
DCP101	342	16
DCP101	360	17
DCP101	382	18
DCP101	405	19
DCP101	426	20
DCP101	440	21
DCP101	457	22
DCP101	491	23
DCP101	527	24
DCP101	566	25
DCP101	597	26
DCP101	646	27
DCP101	687	28
DCP101	734	29
DCP101	774	30
DCP101	807	31
DCP101	846	32
DCP101	882	33
DCP101	912	34
DCP102	30	1
DCP102	40	2
DCP102	50	3
DCP102	65	4
DCP102	80	5
DCP102	92	6
DCP102	182	11
DCP102	265	16
DCP102	287	21
DCP102	305	26
DCP103	66	1
DCP103	89	2
DCP103	104	3
DCP103	111	4
DCP103	120	5
DCP103	126	6
DCP103	153	11
DCP103	156	12
DCP103	160	13

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP103	166	14
DCP103	172	15
DCP103	183	16
DCP103	187	17
DCP103	194	18
DCP103	200	19
DCP103	205	20
DCP103	212	21
DCP103	217	22
DCP103	251	27
DCP103	290	37
DCP103	320	47
DCP104	55	1
DCP104	95	2
DCP104	109	3
DCP104	114	4
DCP104	116	5
DCP104	117	6
DCP104	119	7
DCP104	127	8
DCP105	57	1
DCP105	80	2
DCP105	94	3
DCP105	104	4
DCP105	116	5
DCP105	127	6
DCP105	138	7
DCP105	147	8
DCP105	152	9
DCP105	159	10
DCP105	164	11
DCP105	170	12
DCP105	178	13
DCP105	184	14
DCP105	191	15
DCP105A	57	1
DCP105A	79	2
DCP105A	97	3
DCP105A	111	4
DCP105A	122	5
DCP105A	133	6
DCP105A	143	7
DCP105A	152	8

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP105A	163	9
DCP105A	175	10
DCP105A	187	11
DCP105A	199	12
DCP105A	211	13
DCP105A	220	14
DCP105A	232	15
DCP105A	241	16
DCP105A	249	17
DCP105A	257	18
DCP105A	262	19
DCP105A	271	20
DCP105A	277	21
DCP105A	296	26
DCP105A	324	31
DCP105A	351	36
DCP105A	414	41
DCP105A	435	42
DCP105A	459	43
DCP105A	486	44
DCP105A	517	45
DCP105A	547	46
DCP105A	571	47
DCP105A	597	48
DCP105A	617	49
DCP105A	634	50
DCP105A	652	51
DCP105A	671	52
DCP105A	696	53
DCP105A	717	54
DCP105A	735	55
DCP105A	757	56
DCP105A	777	57
DCP105A	797	58
DCP105A	819	59
DCP105A	843	60
DCP105A	865	61
DCP105A	887	62
DCP106	51	1
DCP106	82	2
DCP106	104	3
DCP106	123	4
DCP106	137	5

Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP106	152	6
DCP106	163	7
DCP106	174	8
DCP106	186	9
DCP106	202	10
DCP106	222	11
DCP106	240	12
DCP106	261	13
DCP106	287	14
DCP106	312	15
DCP106	326	16
DCP106	340	17
DCP106	368	18
DCP106	400	19
DCP106	430	20
DCP106	469	21
DCP106	505	22
DCP106	536	23
DCP106	569	24
DCP106	596	25
DCP106	625	26
DCP106	660	27
DCP106	700	28
DCP106	745	29
DCP106	810	30
DCP106	854	31
DCP106	890	32
DCP106	910	33

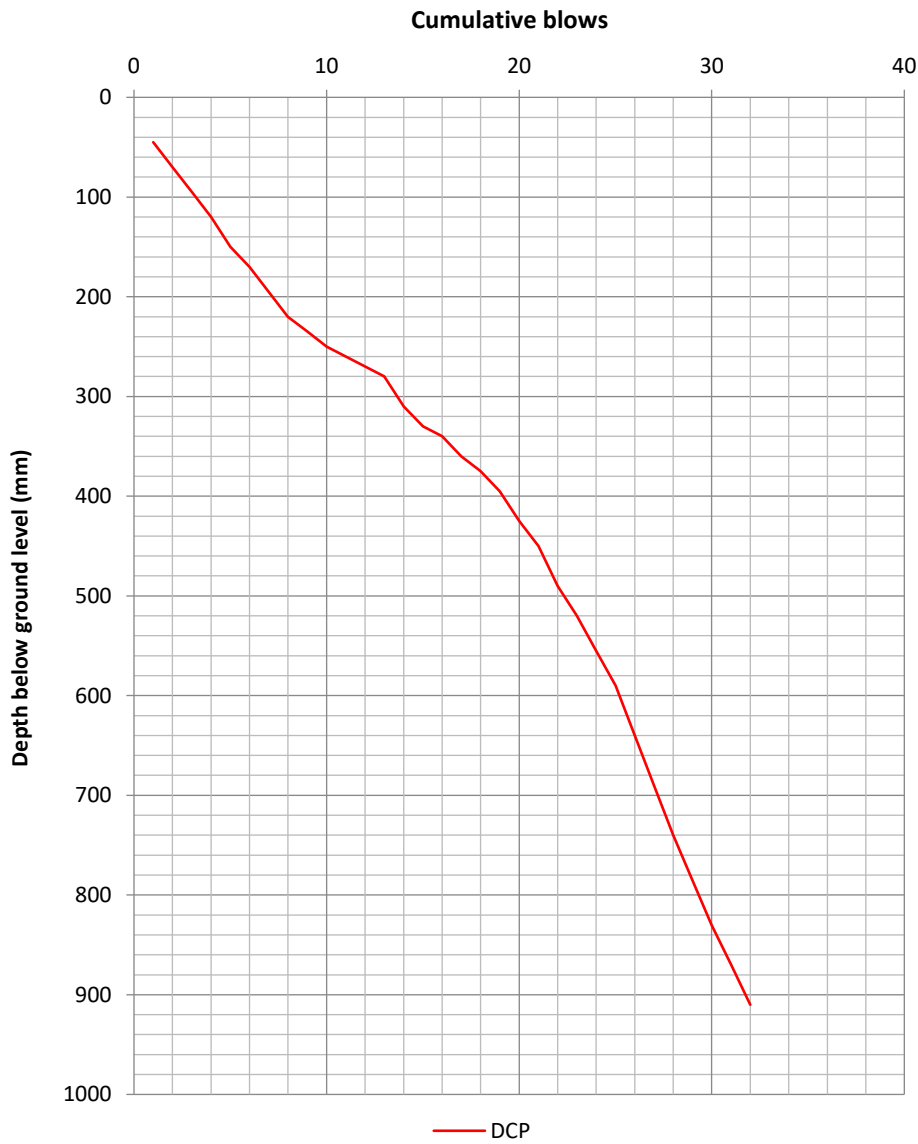
Dynamic Cone Penetrometer (DCP) summary

Location	Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
DCP01	1	13.1	230	50	280
DCP01	2	7.5	620	280	900
DCP02	1	13.5	255	60	315
DCP02A	1	5.7	50	50	100
DCP03	1	6.1	60	60	120
DCP03	2	32.0	180	120	300
DCP03A	1	7.4	60	60	120
DCP03A	2	25.2	180	120	300
DCP04	1	33.5	80	0	80
DCP04A	1	11.1	160	40	200
DCP04A	2	22.3	100	200	300
DCP04A	3	10.3	110	300	410
DCP05	1	14.1	250	50	300
DCP05	2	31.2	200	300	500
DCP05A	1	8.9	70	30	100
DCP05A	2	16.6	300	100	400
DCP06	1	8.5	140	60	200
DCP06	2	4.8	700	200	900
DCP101	1	13.0	380	50	430
DCP101	2	7.0	470	430	900
DCP102	1	19.2	250	30	280
DCP103	1	48.1	220	80	300
DCP104	1	26.5	60	60	120
DCP105	1	25.3	130	50	180
DCP105A	1	24.0	230	50	280
DCP105A	2	55.2	70	280	350
DCP105A	3	12.4	530	350	880
DCP106	1	13.8	270	50	320
DCP106	2	7.2	580	320	900

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP01	25/04/2022	0	30	TO

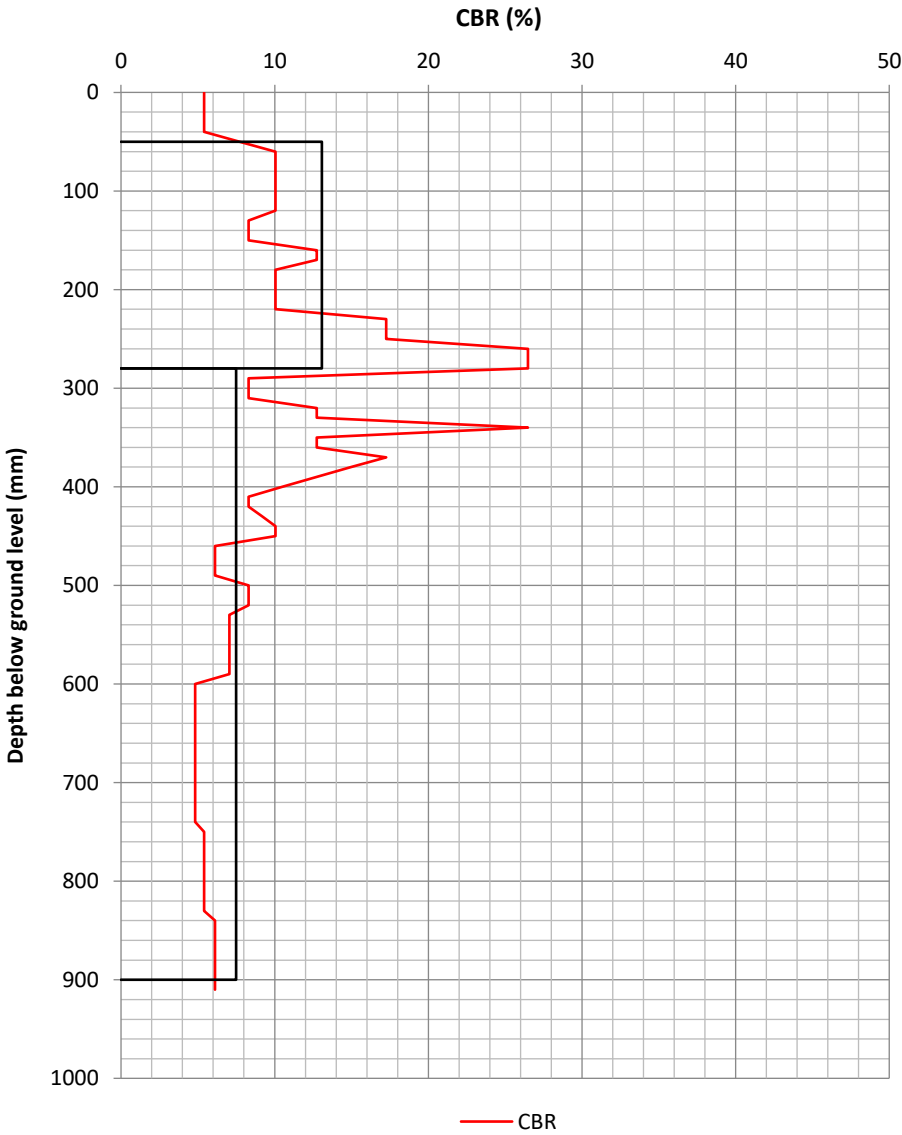
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

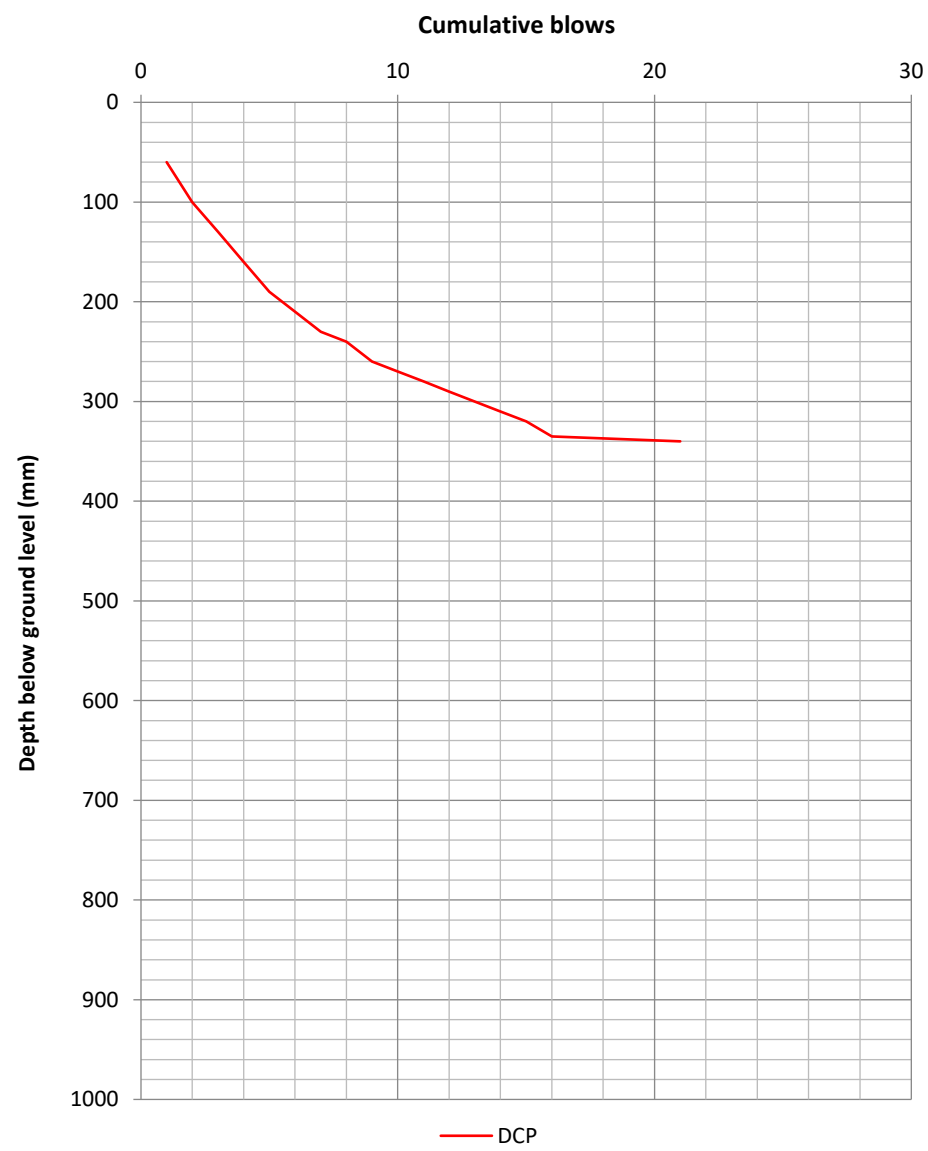
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	13.1	230	50	280
2	7.5	620	280	900

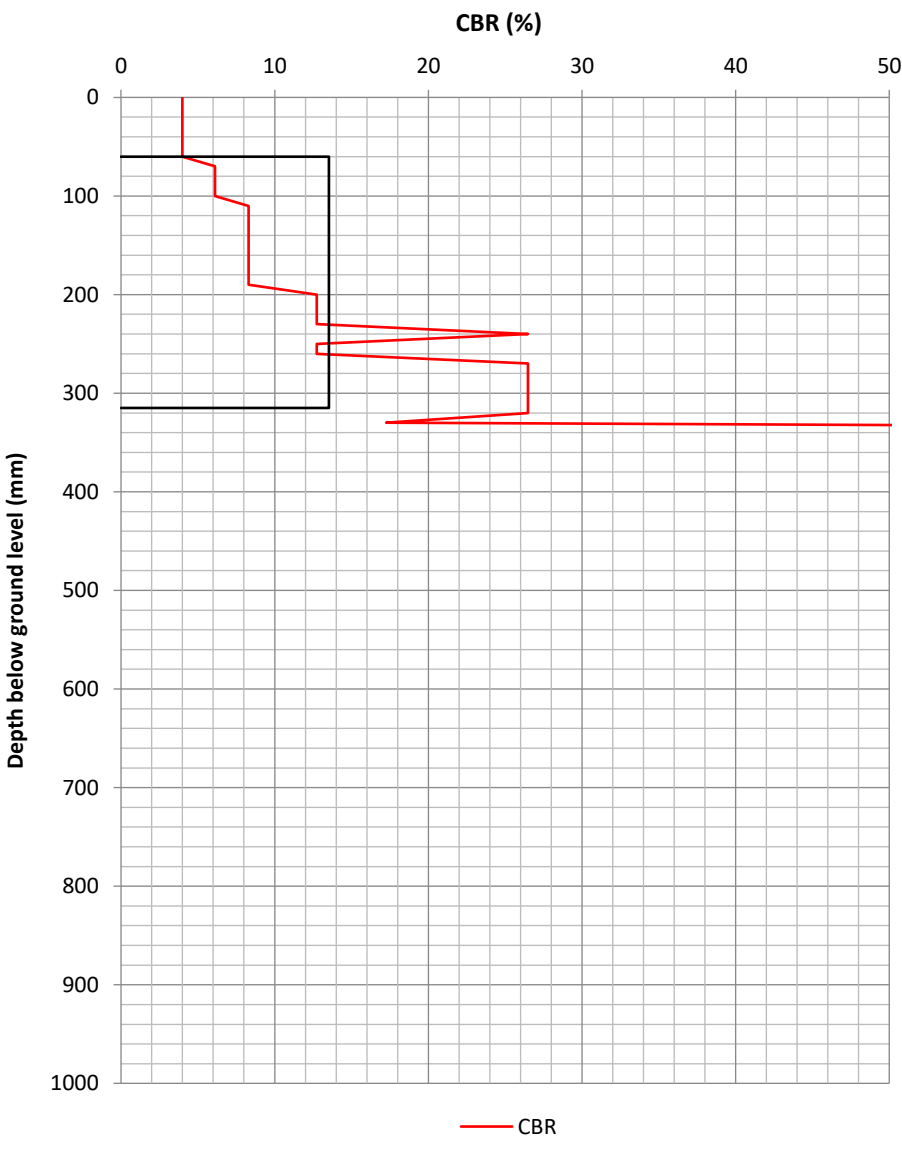
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02	25/04/2022	0	30	TO

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	13.5	255	60	315

Notes

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

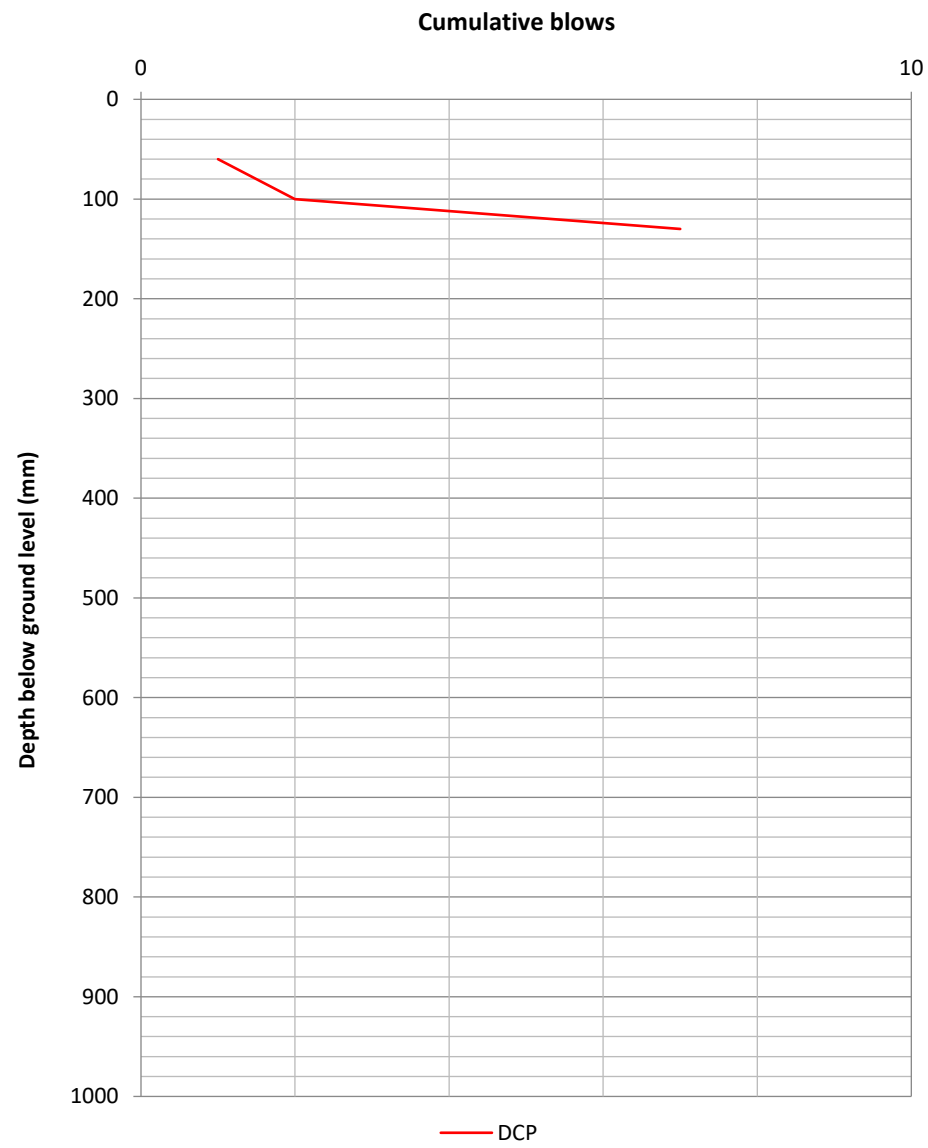
Calculations

$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02A	25/04/2022	0	30	TO

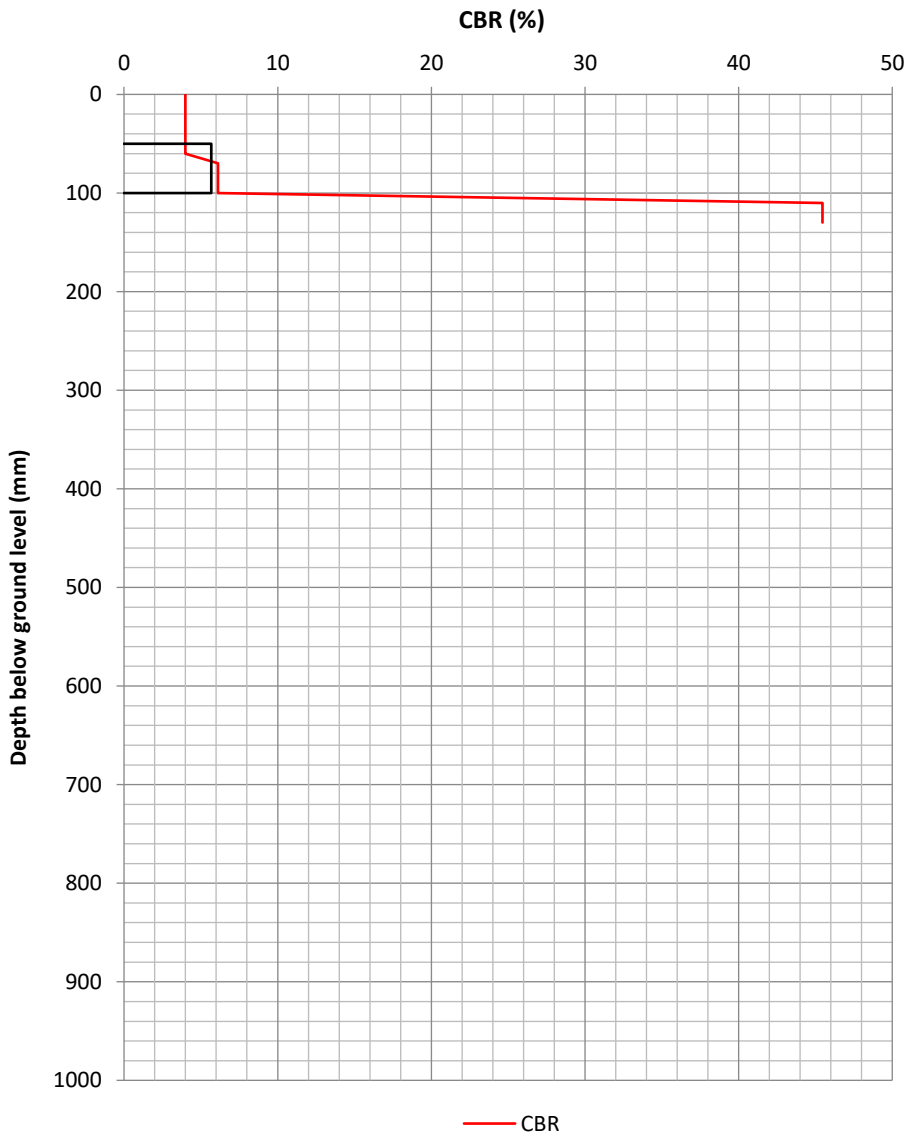
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$

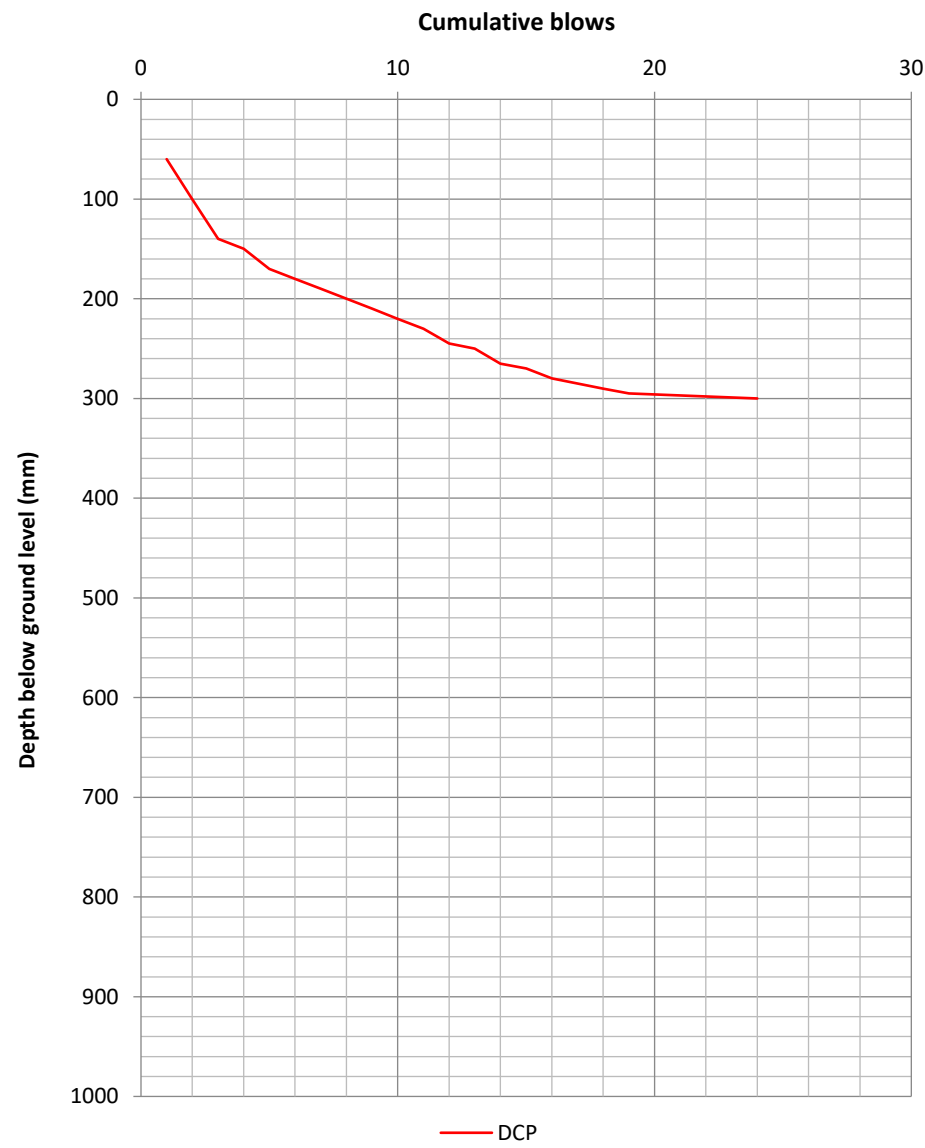
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	5.7	50	50	100

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03	25/04/2022	0	30	TO

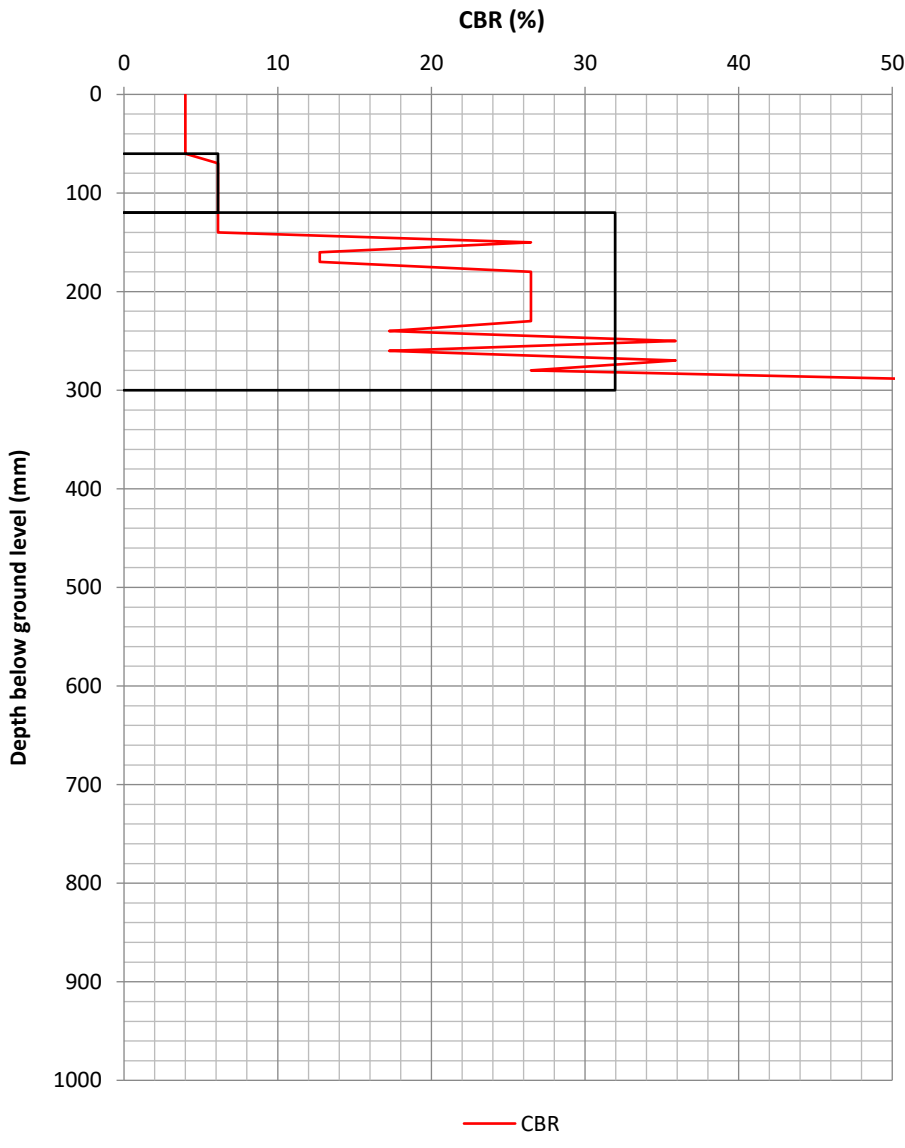
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$

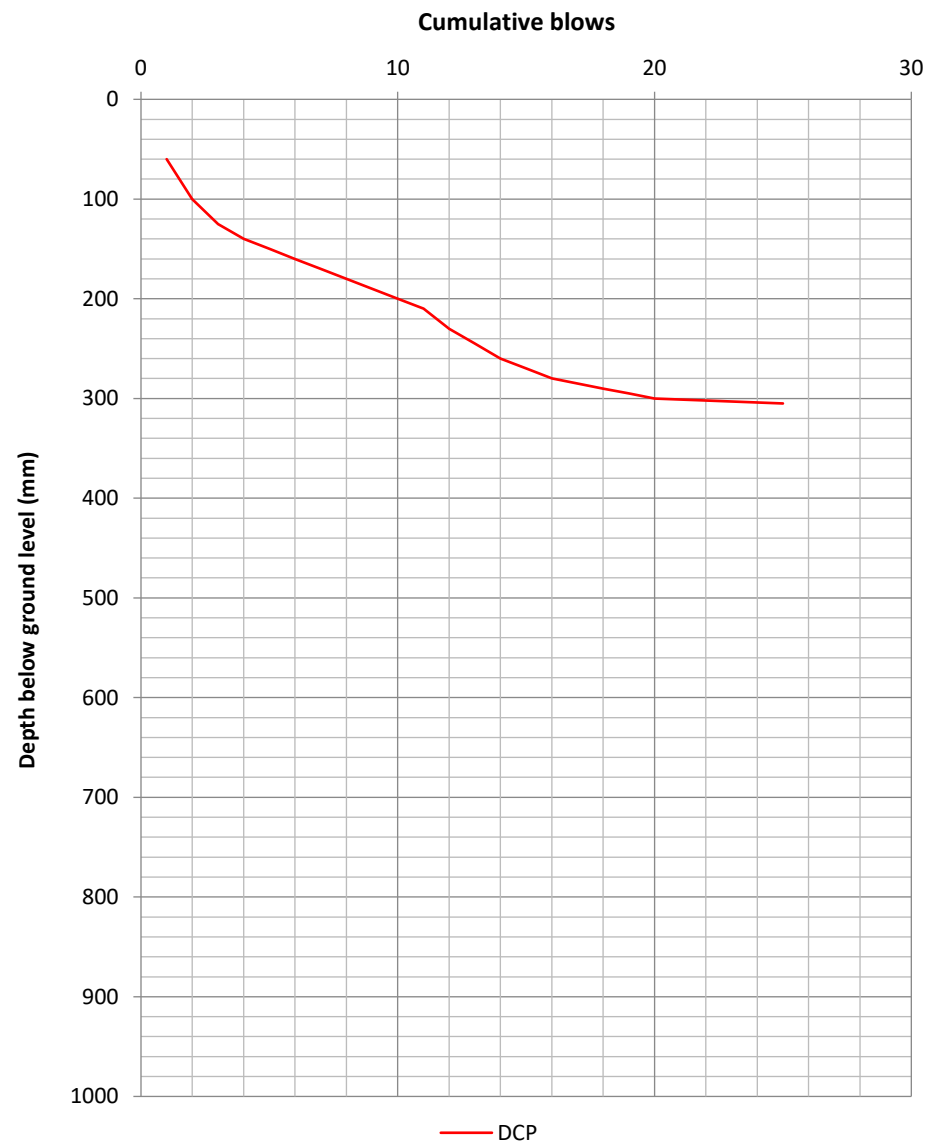
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	6.1	60	60	120
2	32.0	180	120	300

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03A	25/04/2022	0	30	TO

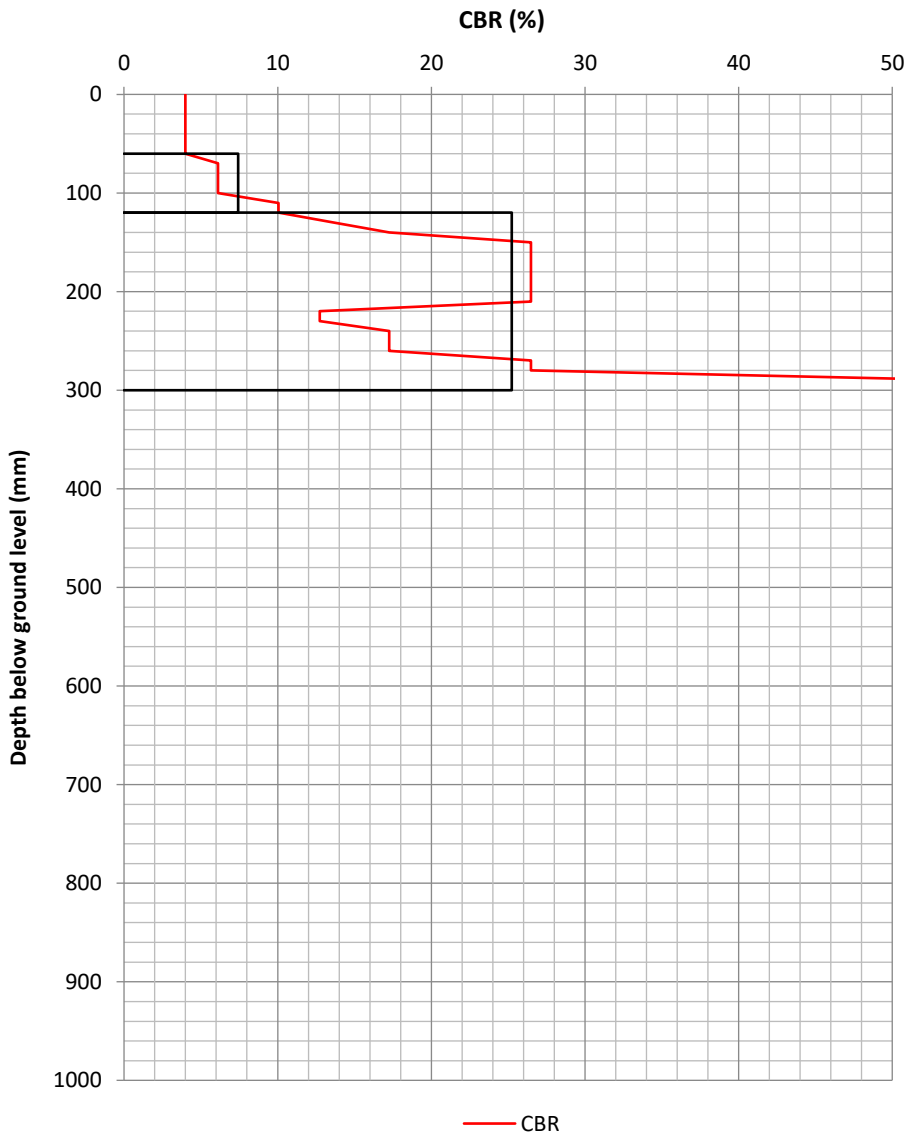
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

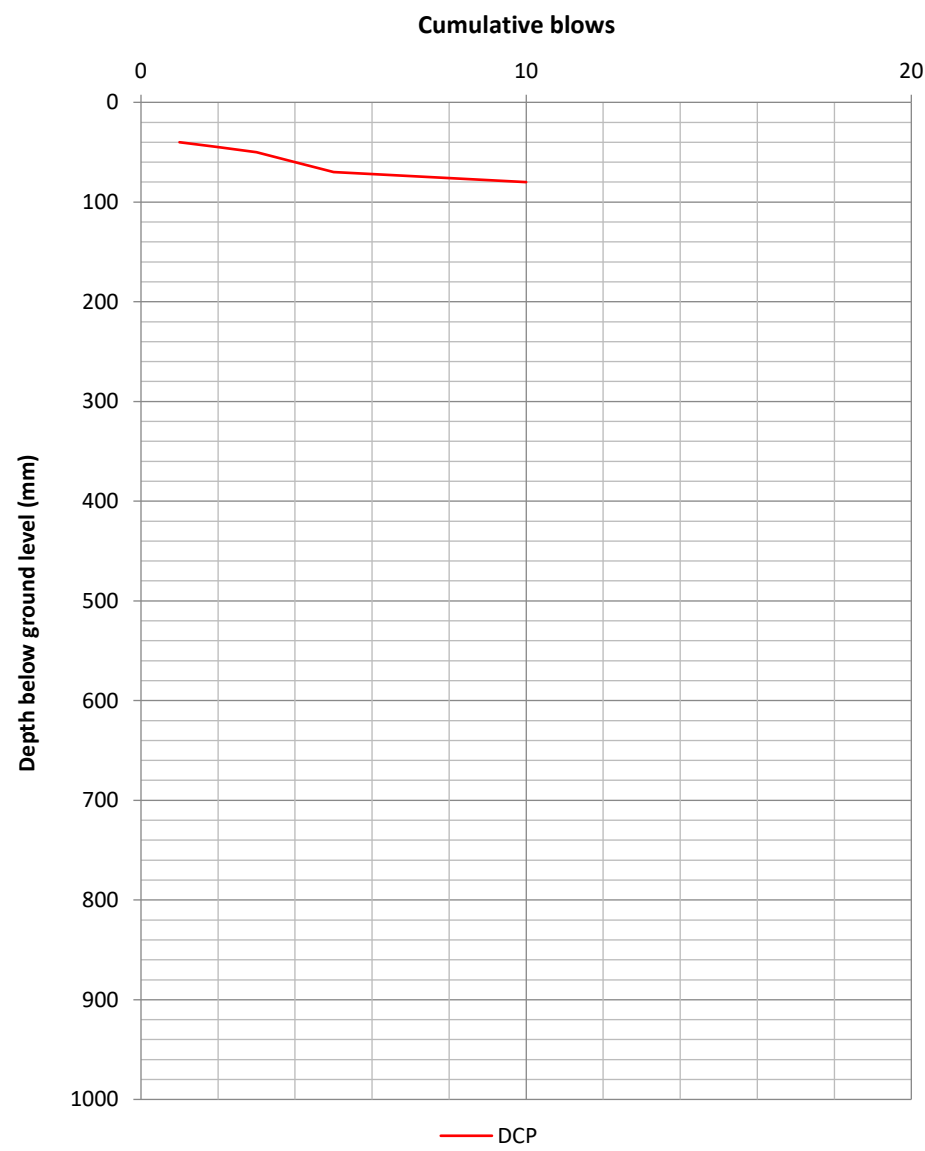
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	7.4	60	60	120
2	25.2	180	120	300

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04	25/04/2022	0	30	TO

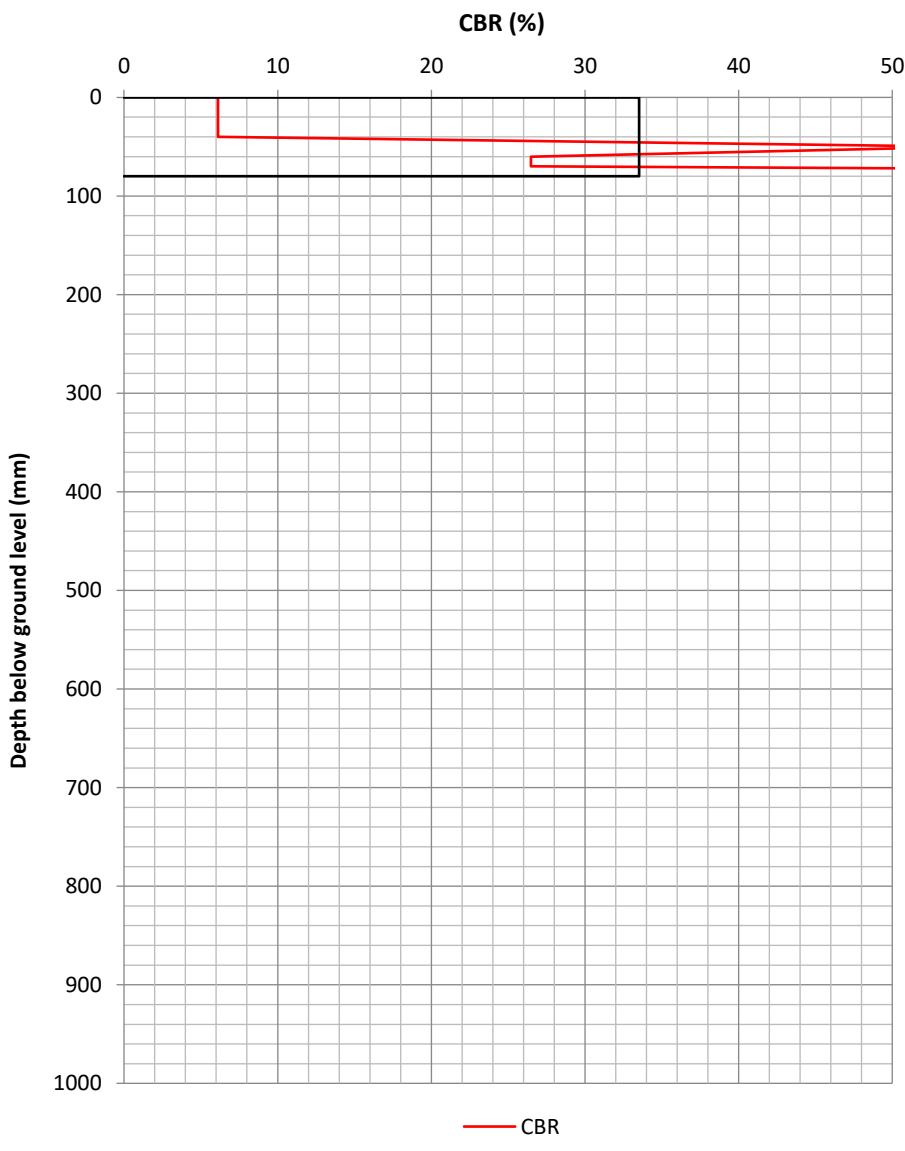
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

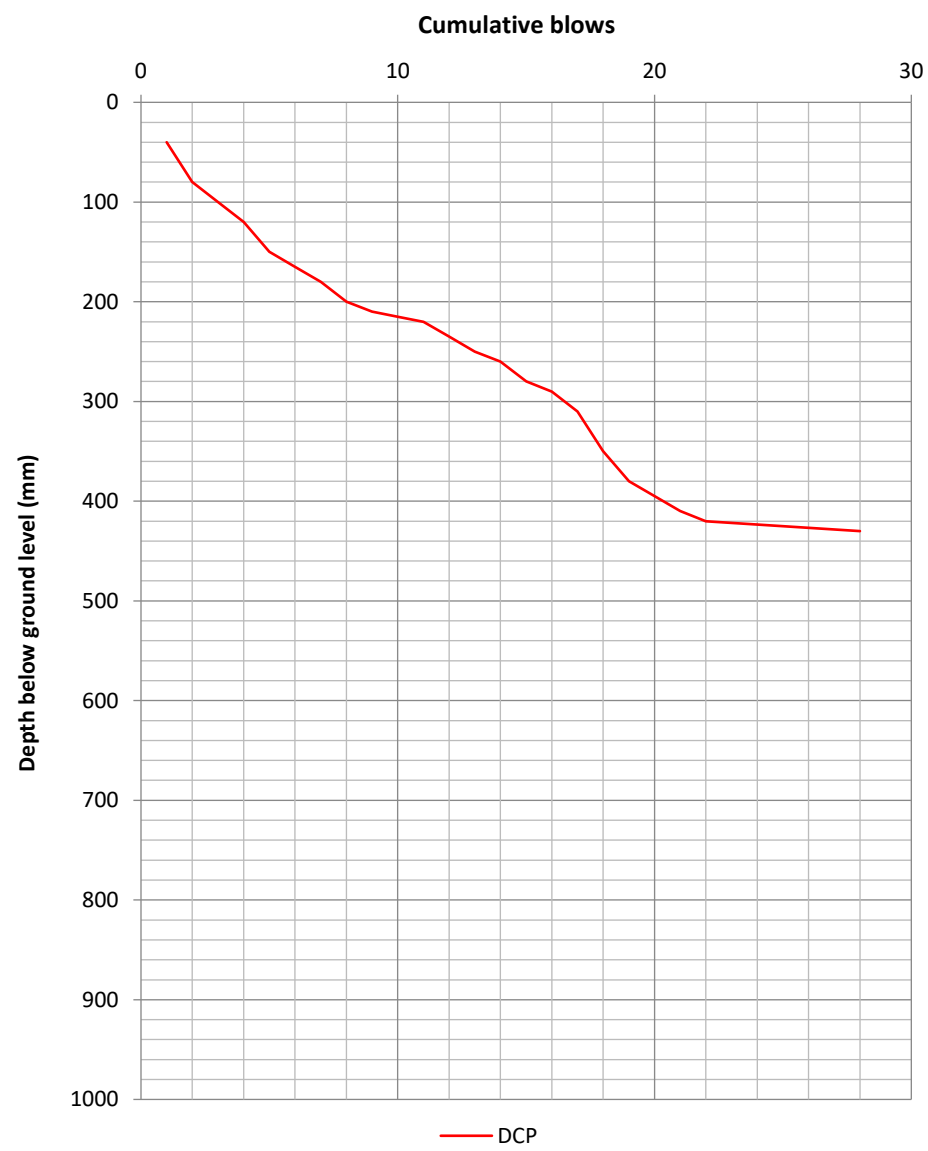
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	33.5	80	0	80

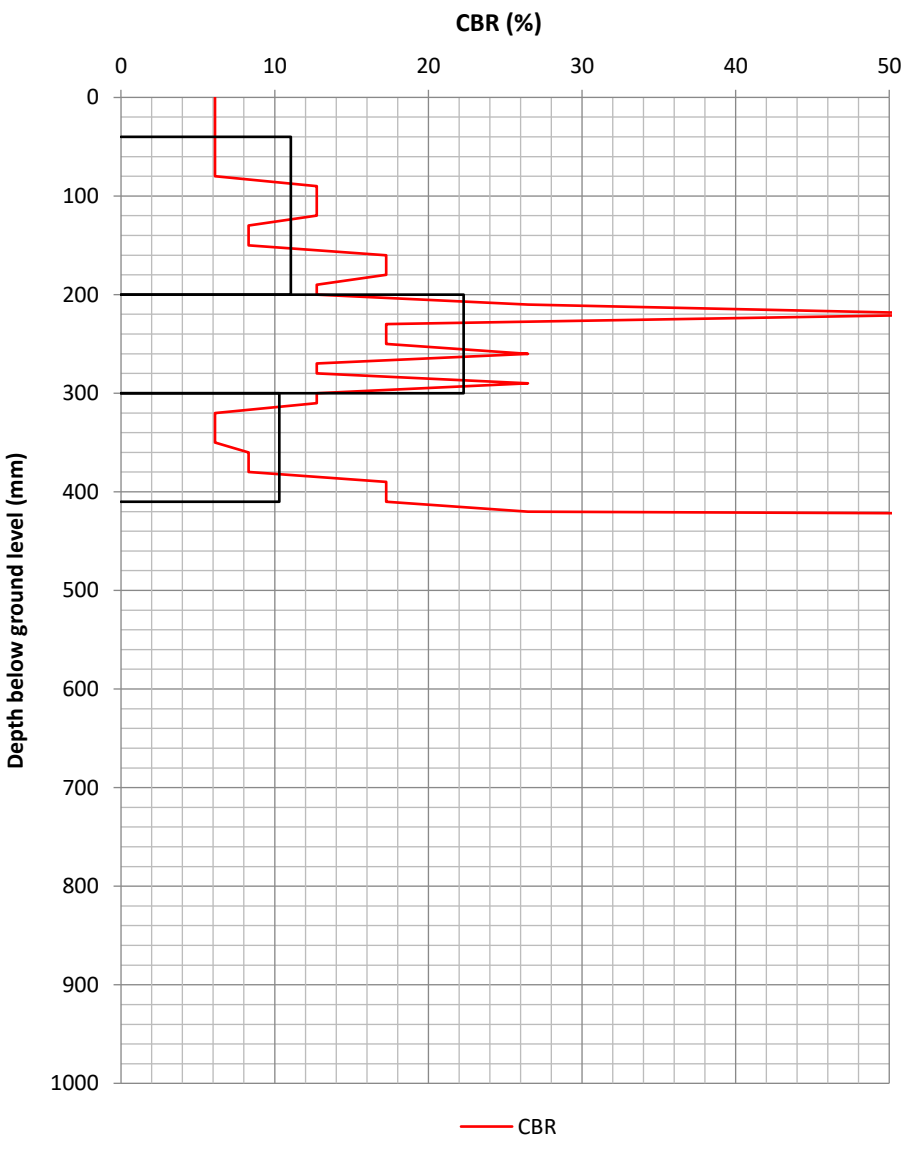
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04A	25/04/2022	0	30	TO

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	11.1	160	40	200
2	22.3	100	200	300
3	10.3	110	300	410

Notes

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

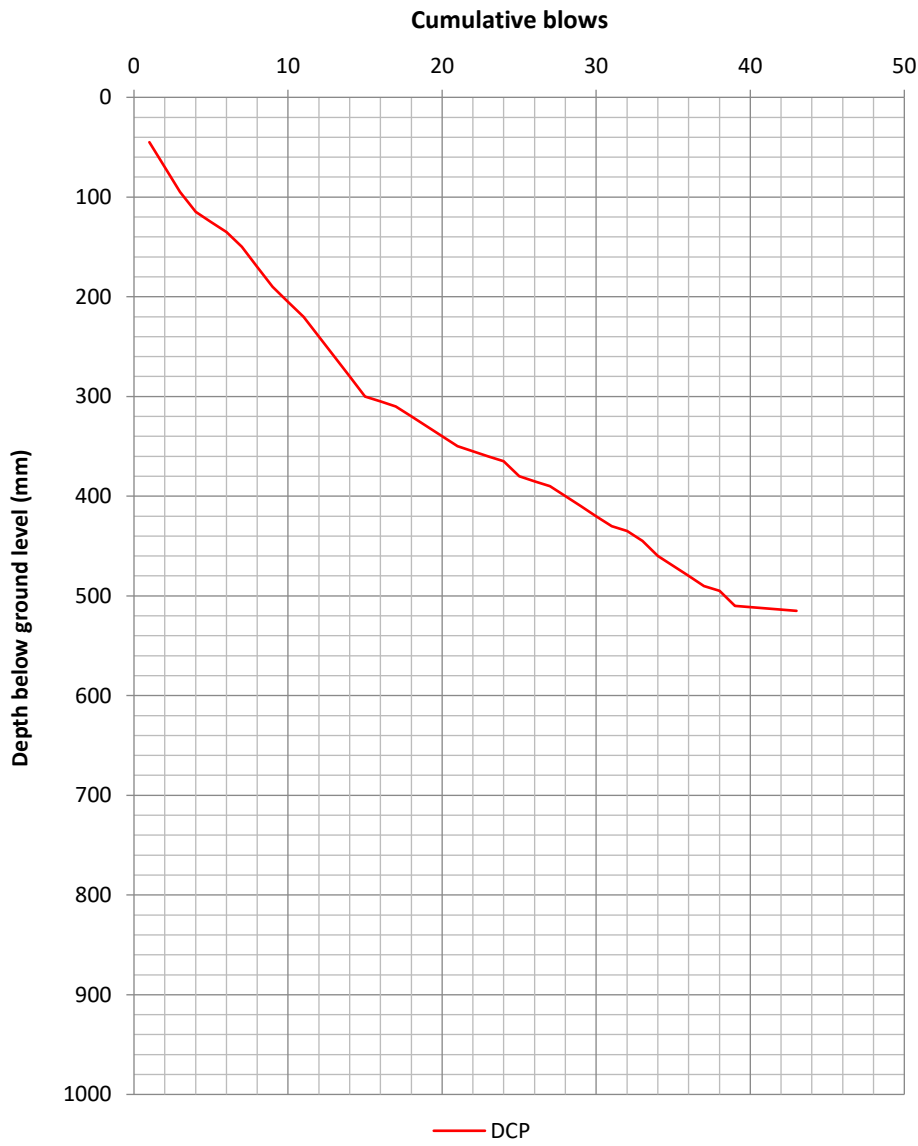
Calculations

$\text{Log}_{10}(\text{Uncorrected (UC) CBR}) = 2.48 - 1.057\text{Log}_{10}(\text{mm/blow})$

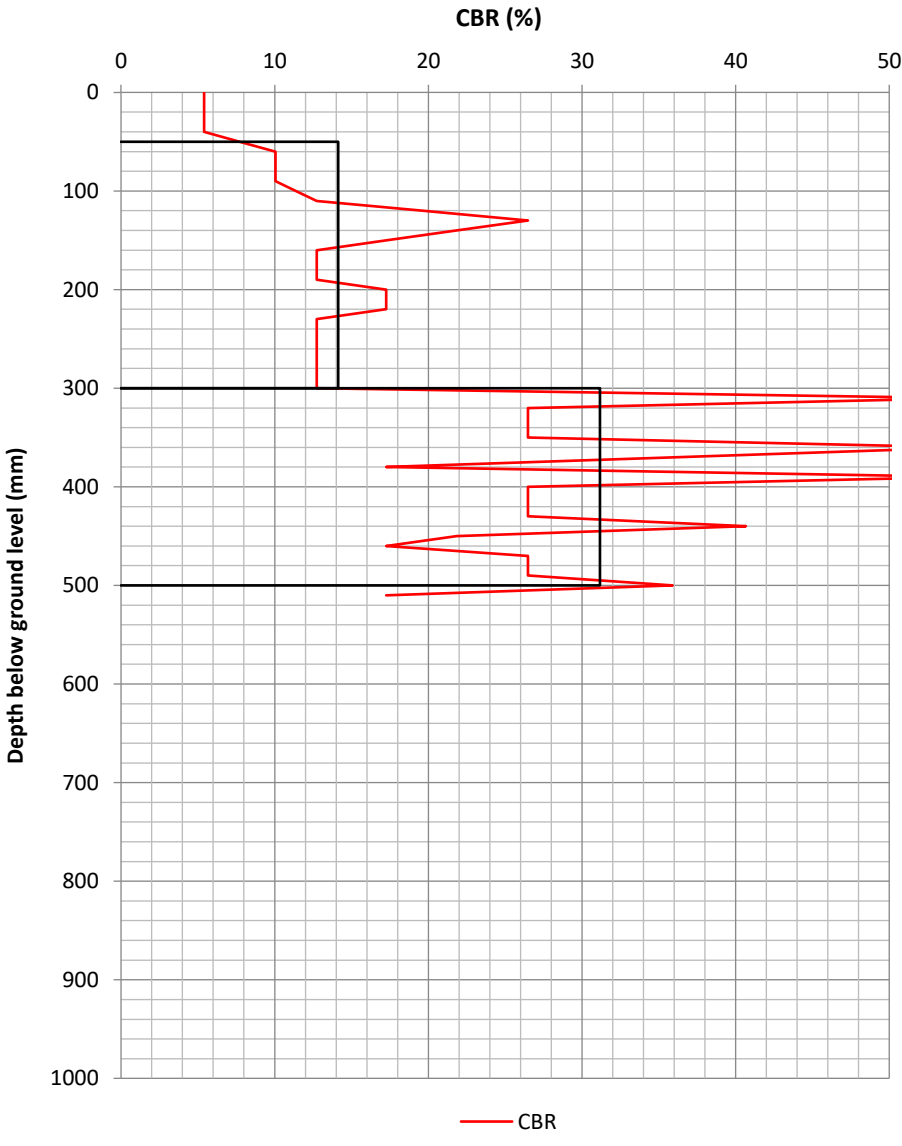
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP05	25/04/2022	0	40	TO

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	14.1	250	50	300
2	31.2	200	300	500

Notes

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

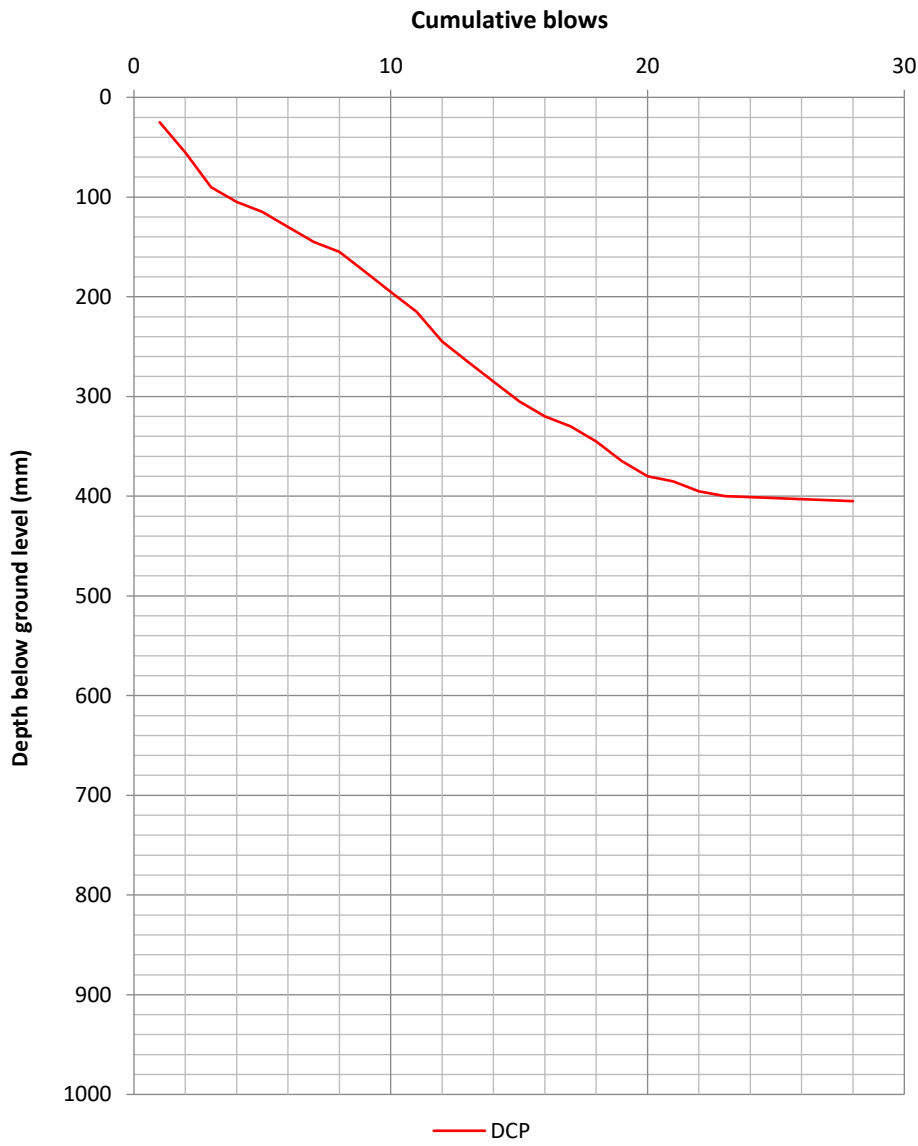
Calculations

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

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP05A	25/04/2022	0	25	TO

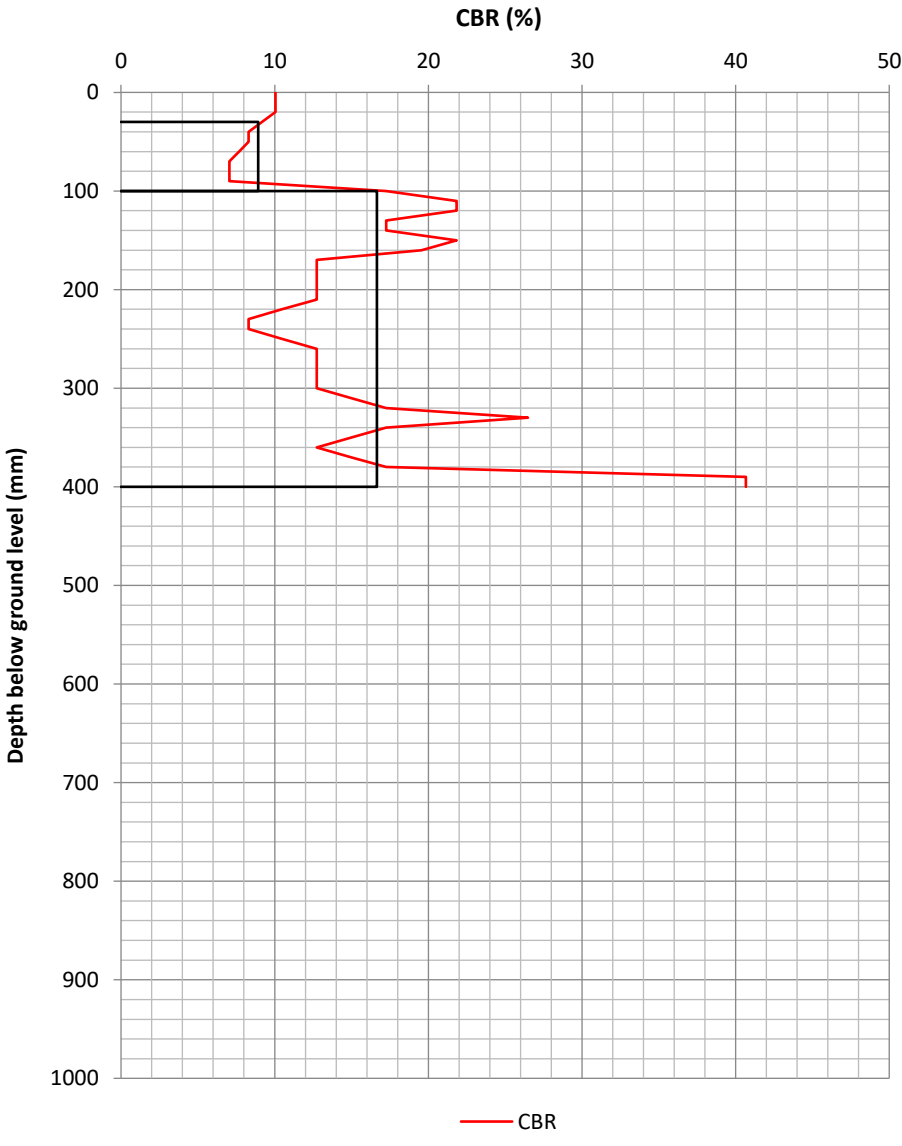
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

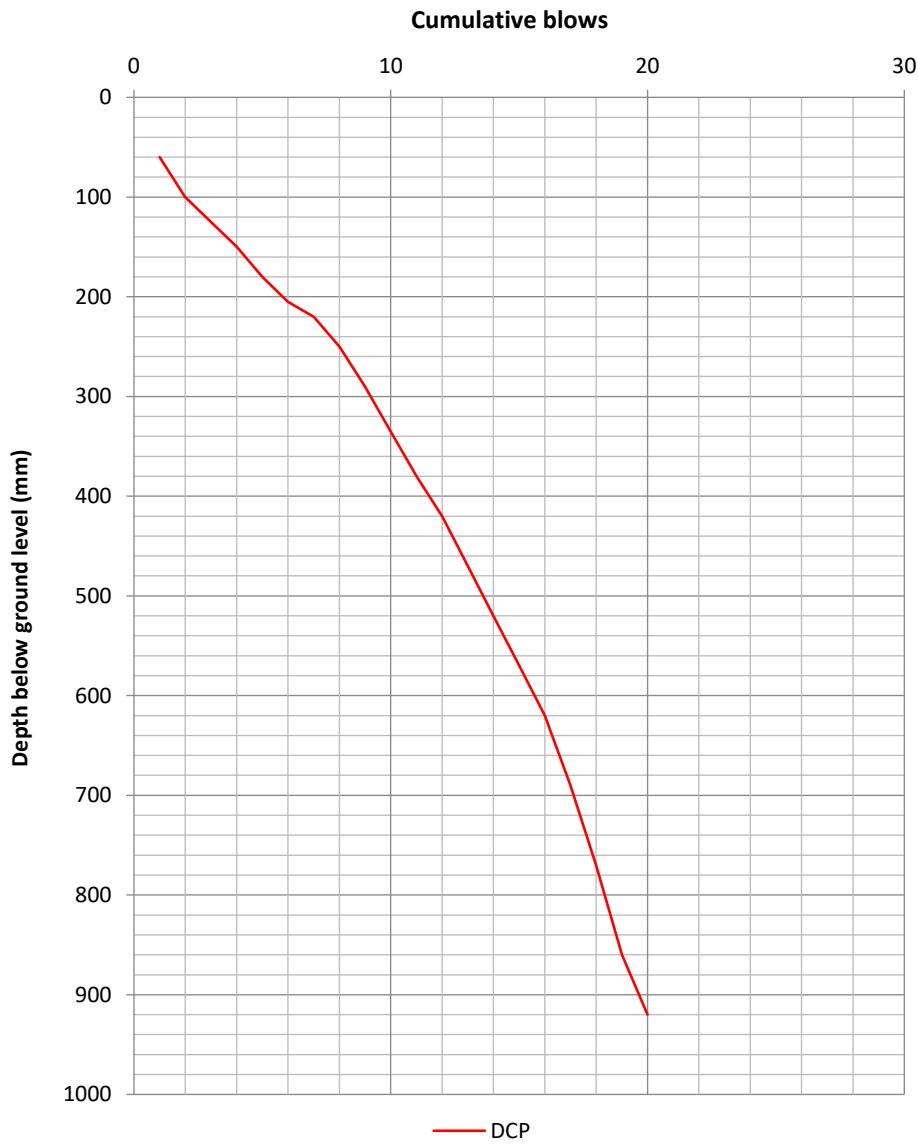
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	8.9	70	30	100
2	16.6	300	100	400

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP06	25/04/2022	0	20	TO

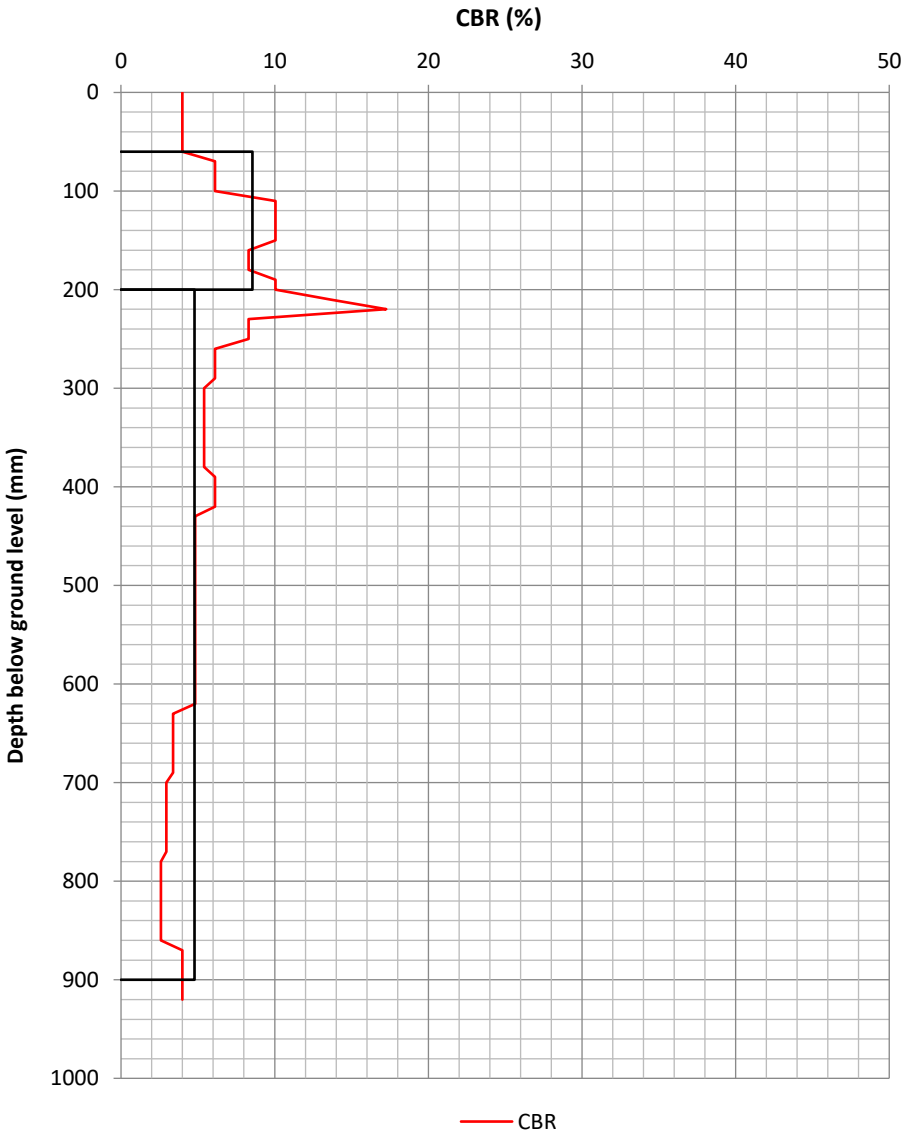
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

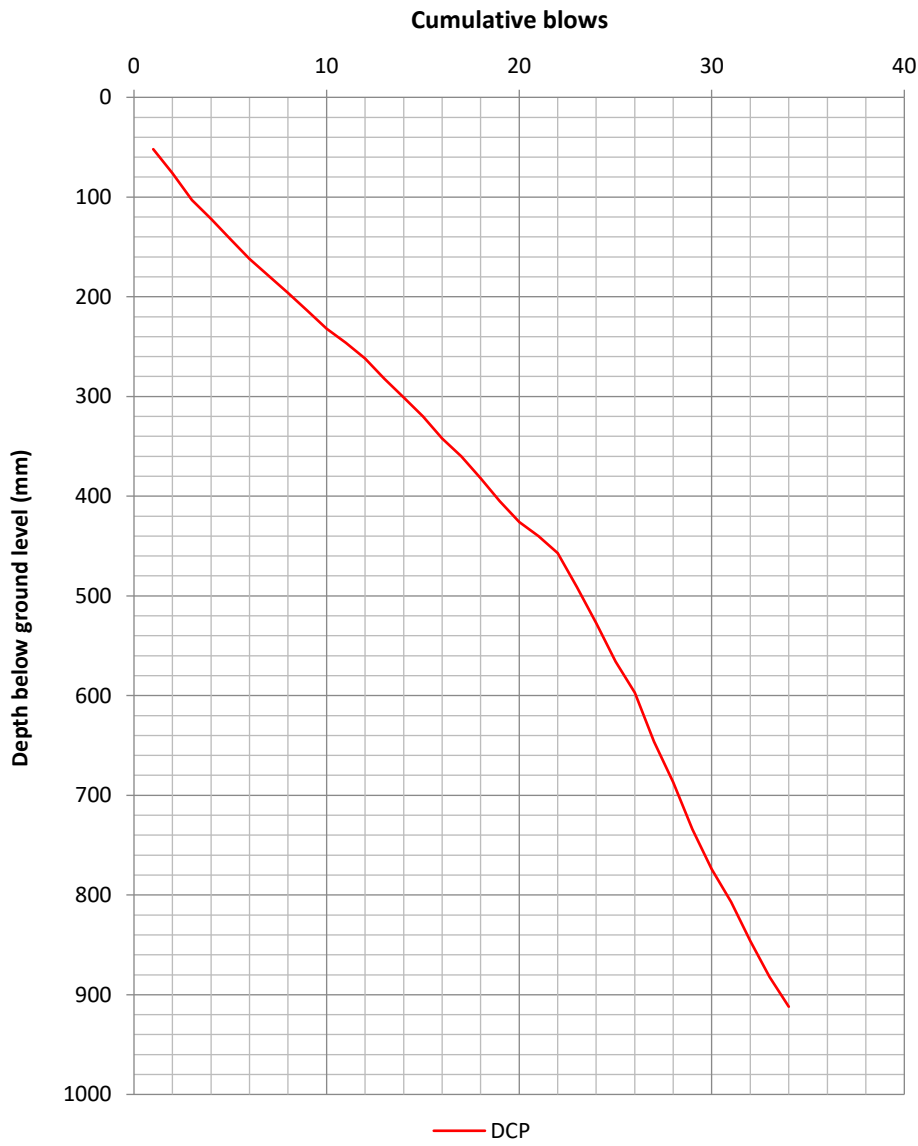
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	8.5	140	60	200
2	4.8	700	200	900

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP101	18/05/2022	0	38	JT

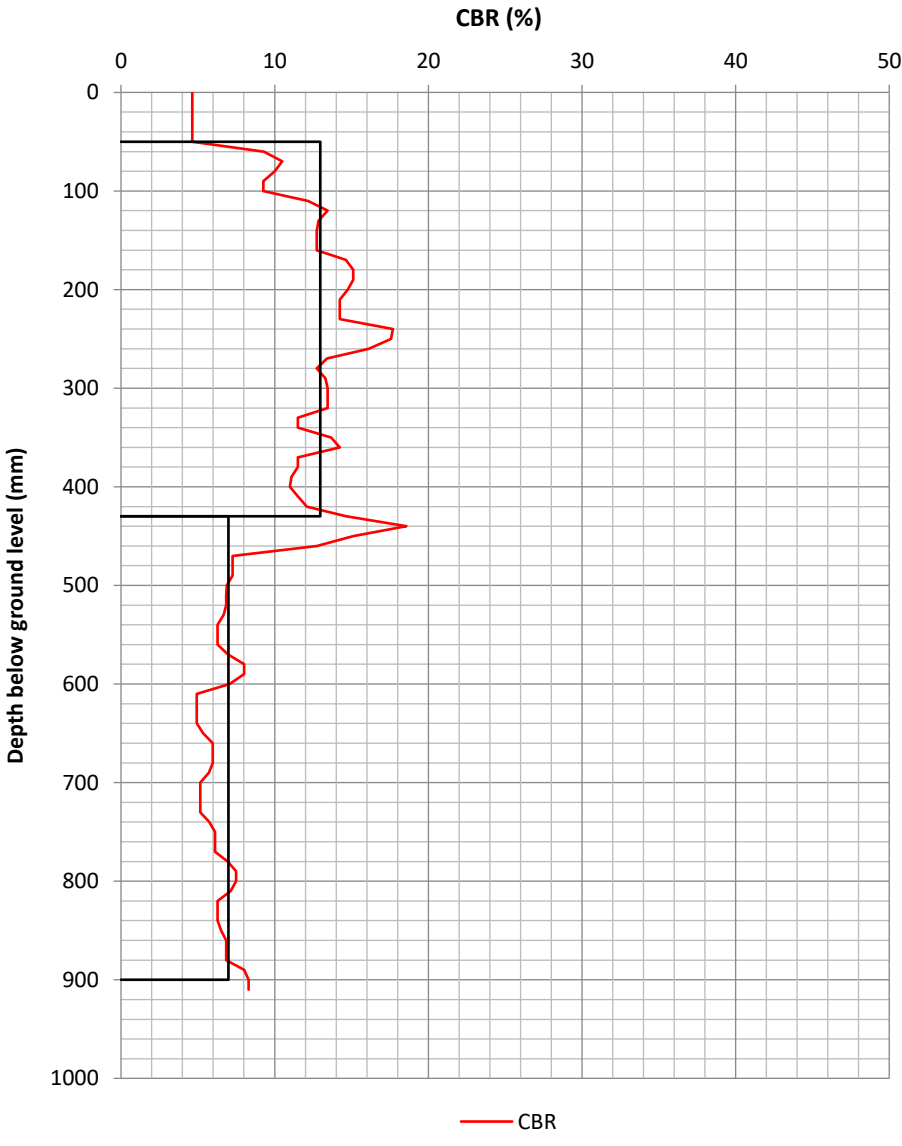
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

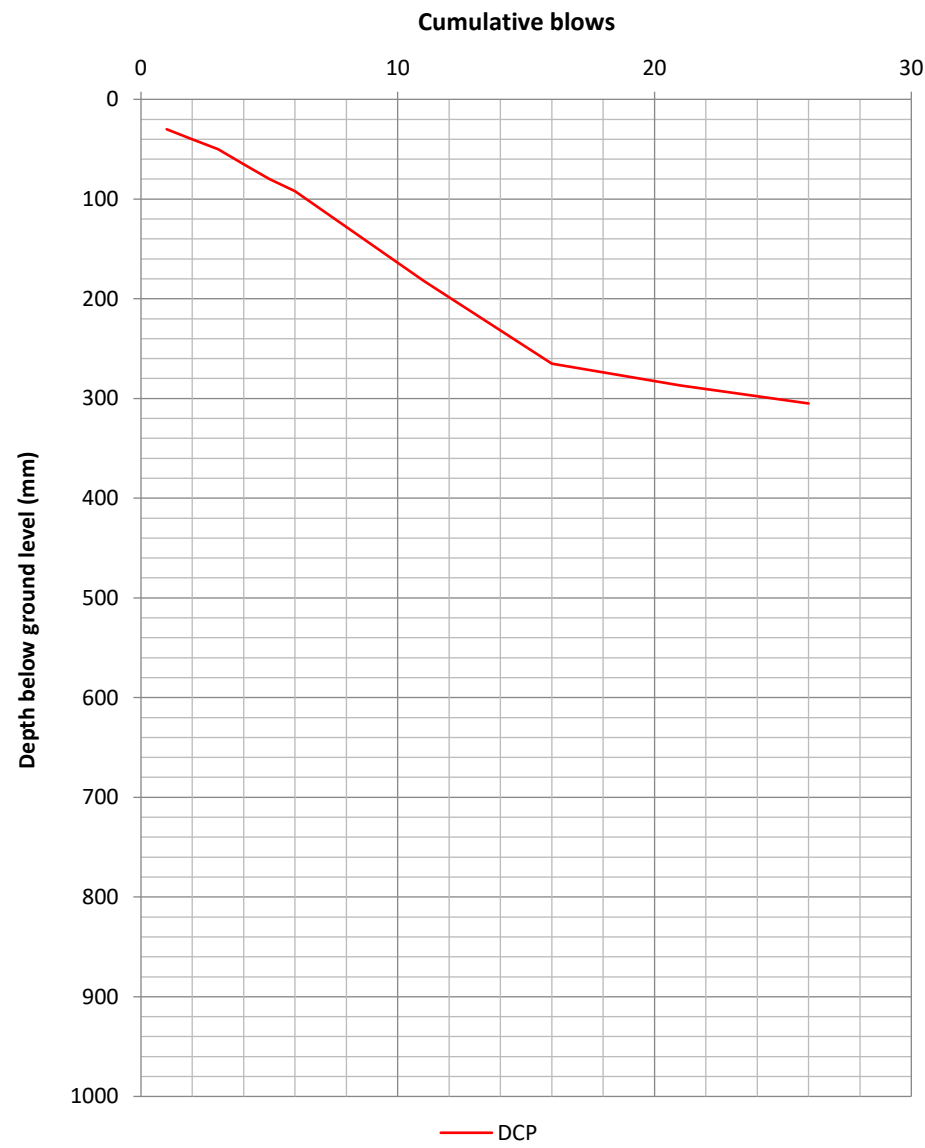
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	13.0	380	50	430
2	7.0	470	430	900

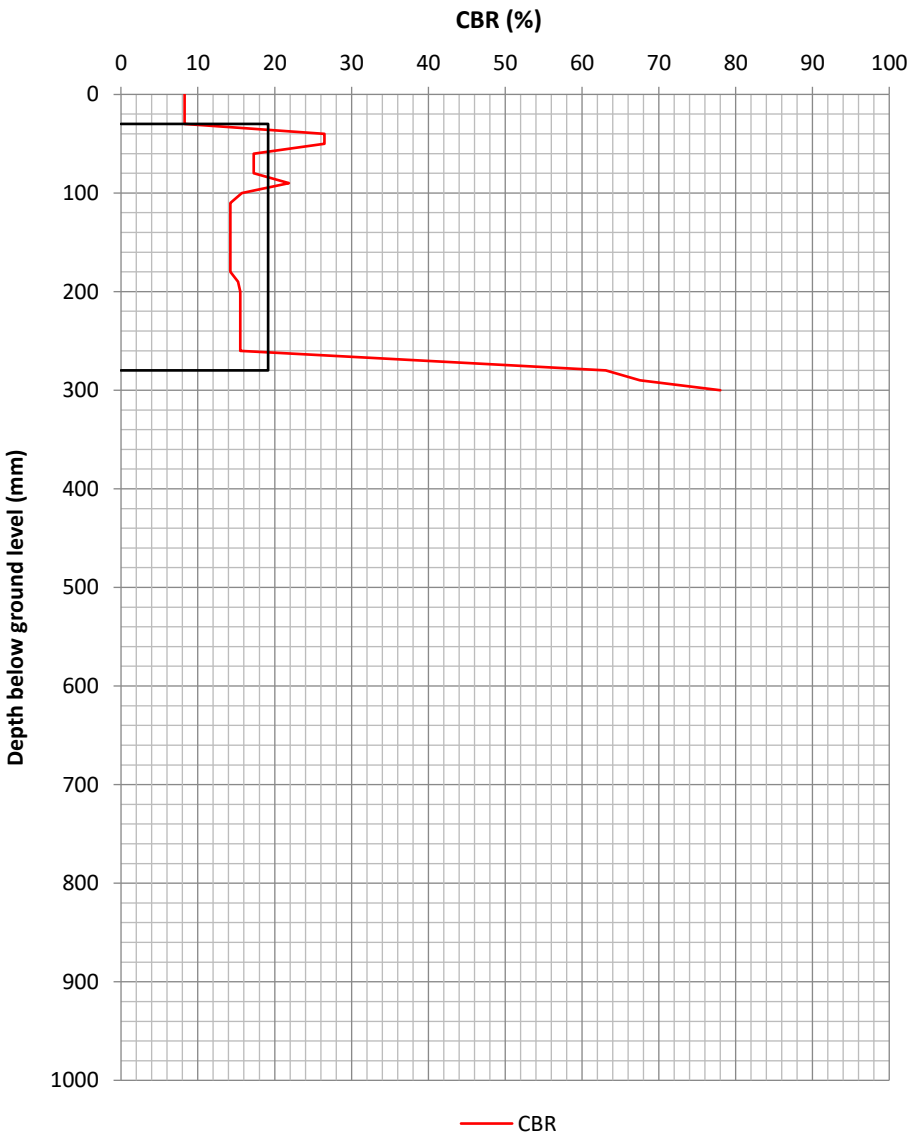
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP102	18/05/2022	0	40	JT

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	19.2	250	30	280

Notes

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

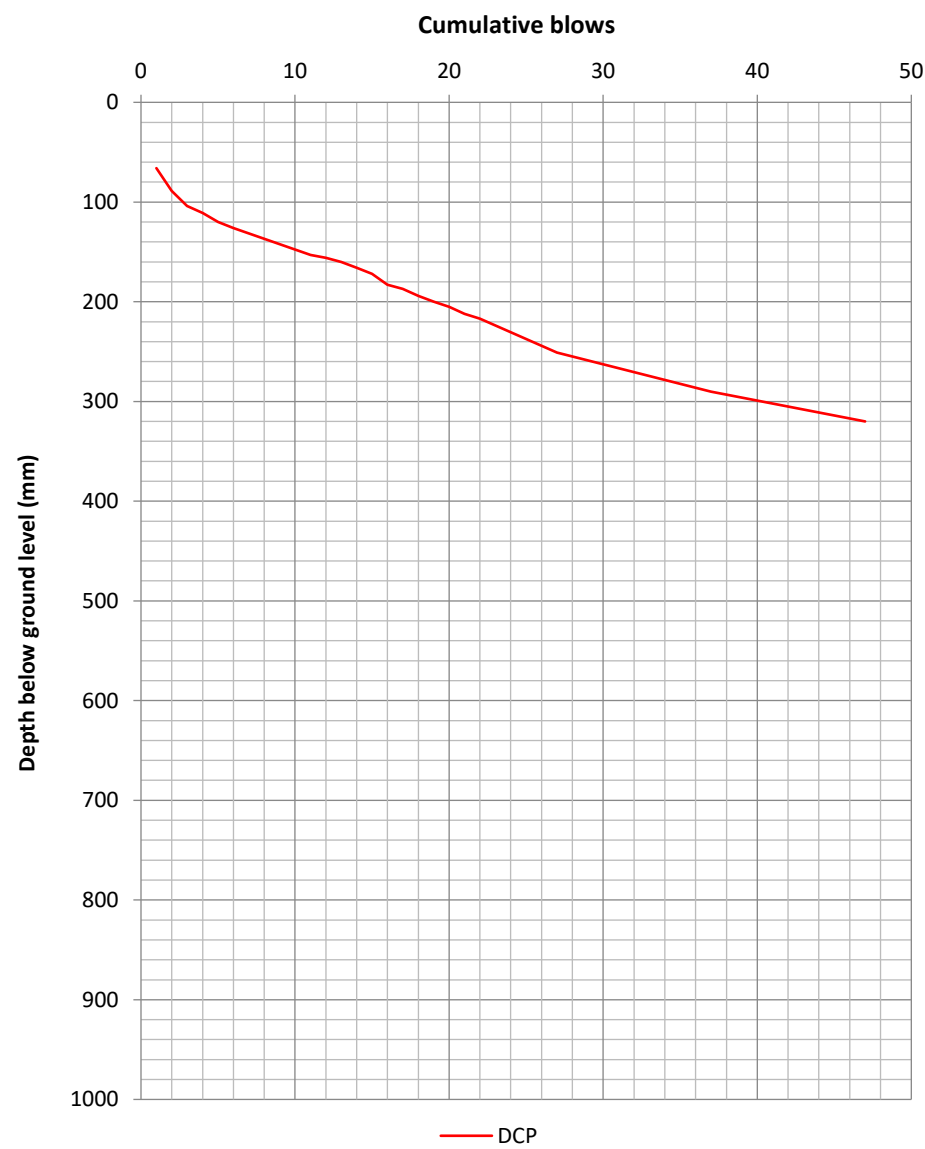
Calculations

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

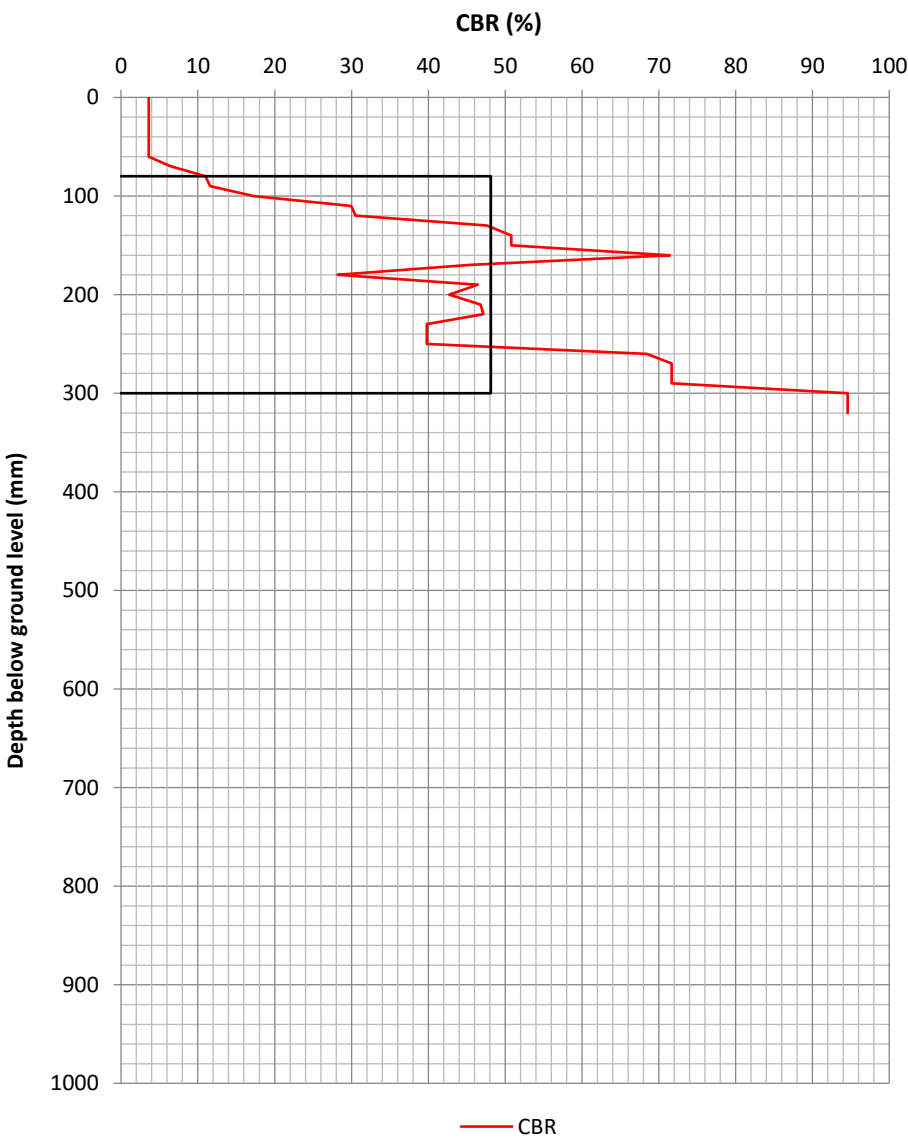
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP103	18/05/2022	0	38	JT

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	48.1	220	80	300

Notes

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

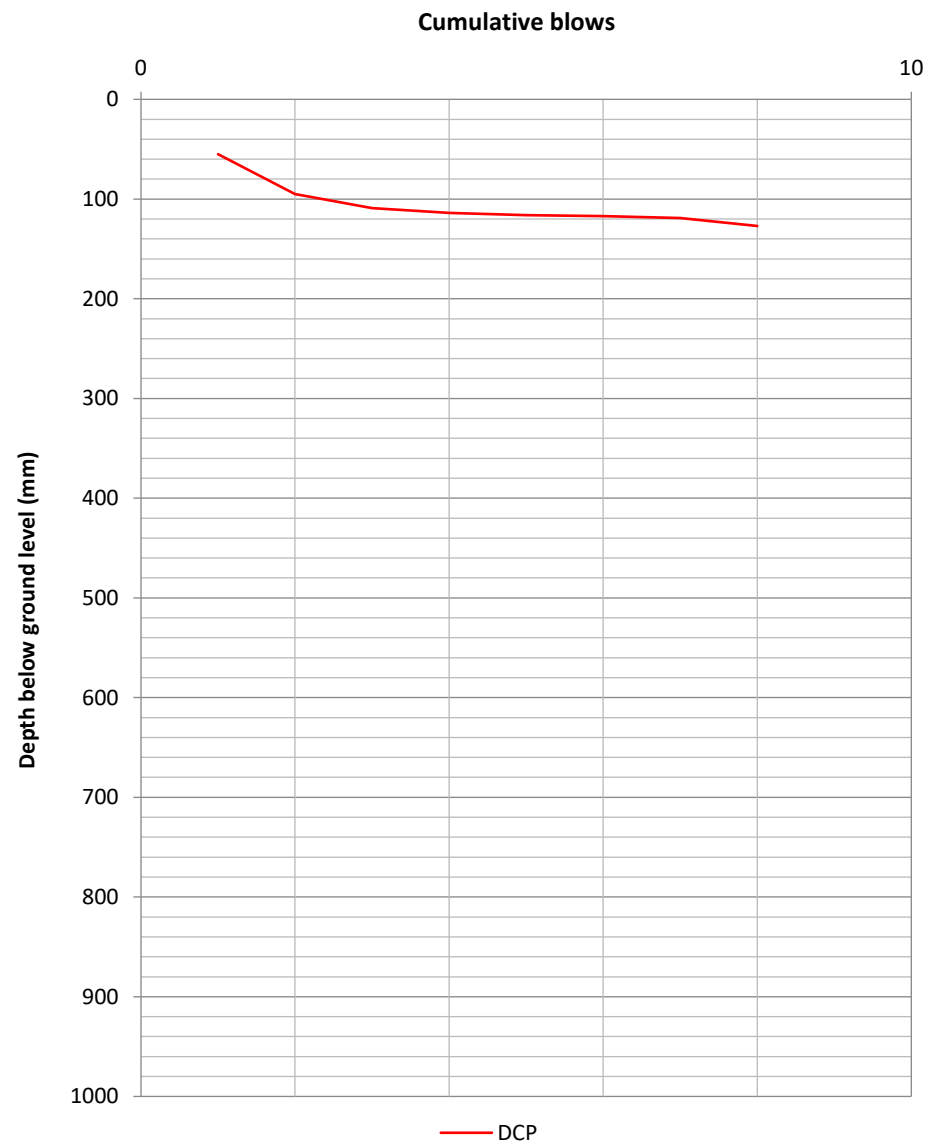
Calculations

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

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP104	18/05/2022	0	37	JT

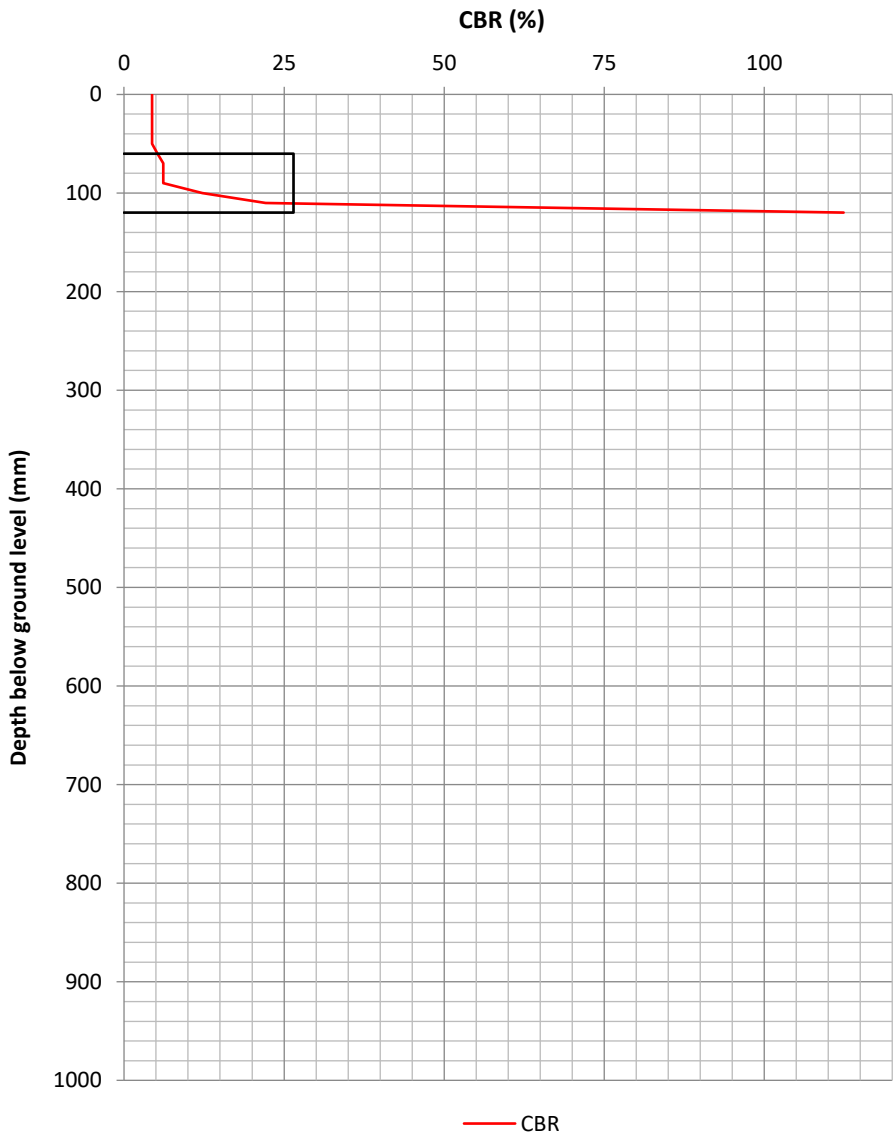
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

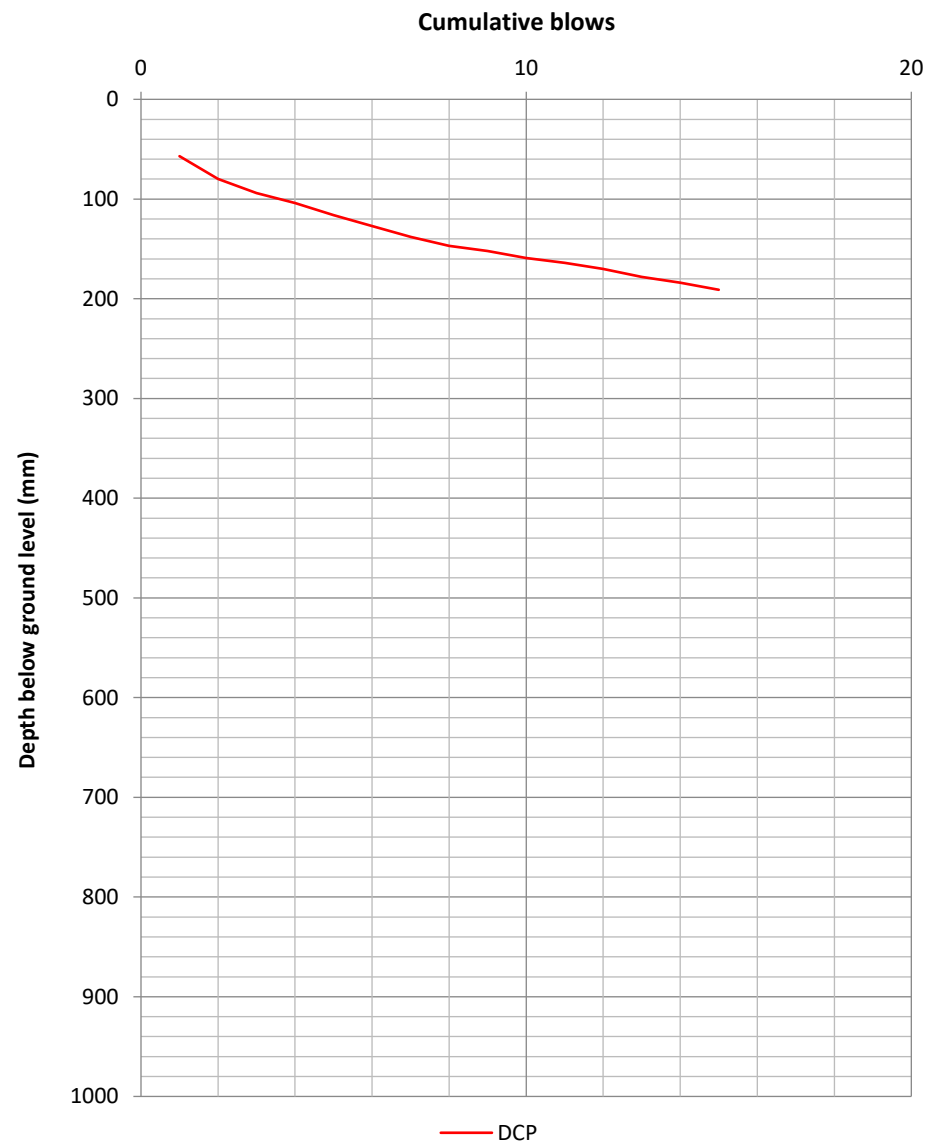
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	26.5	60	60	120

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP105	18/05/2022	0	46	JT

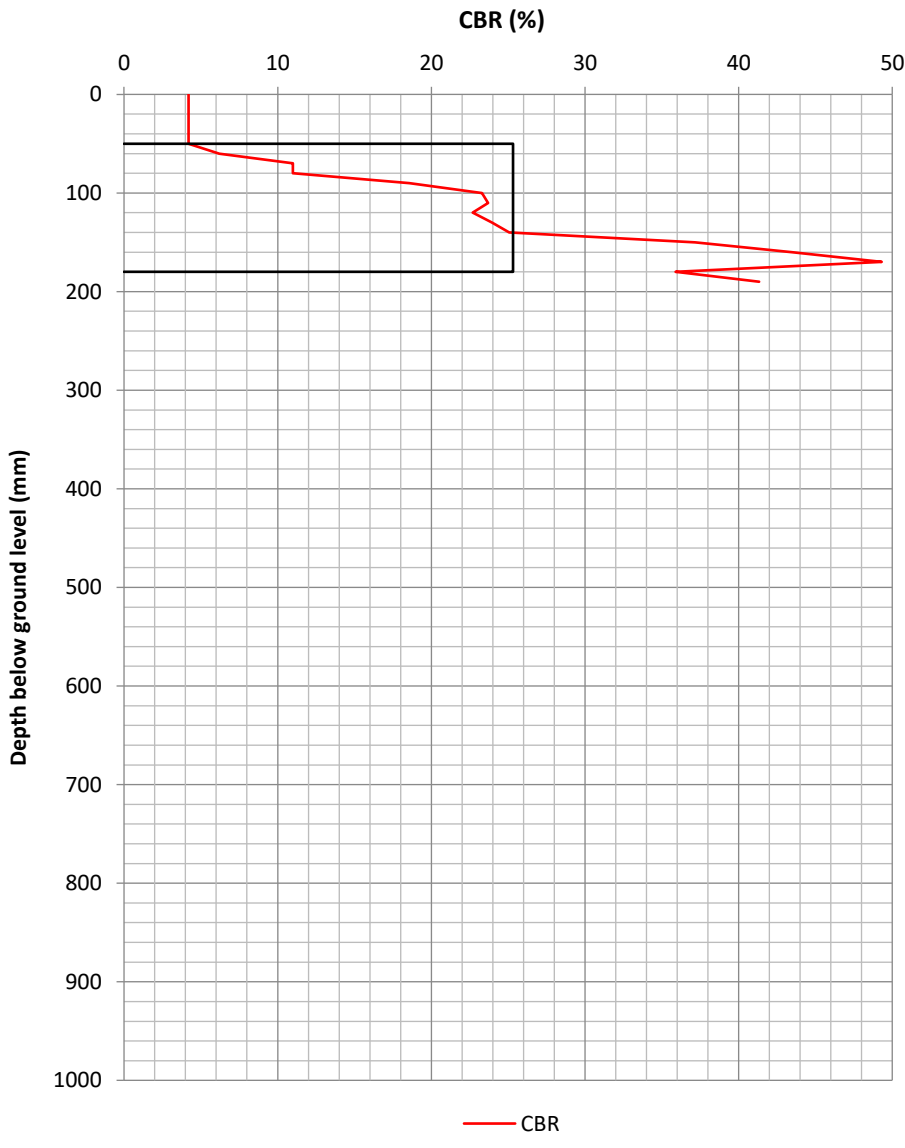
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

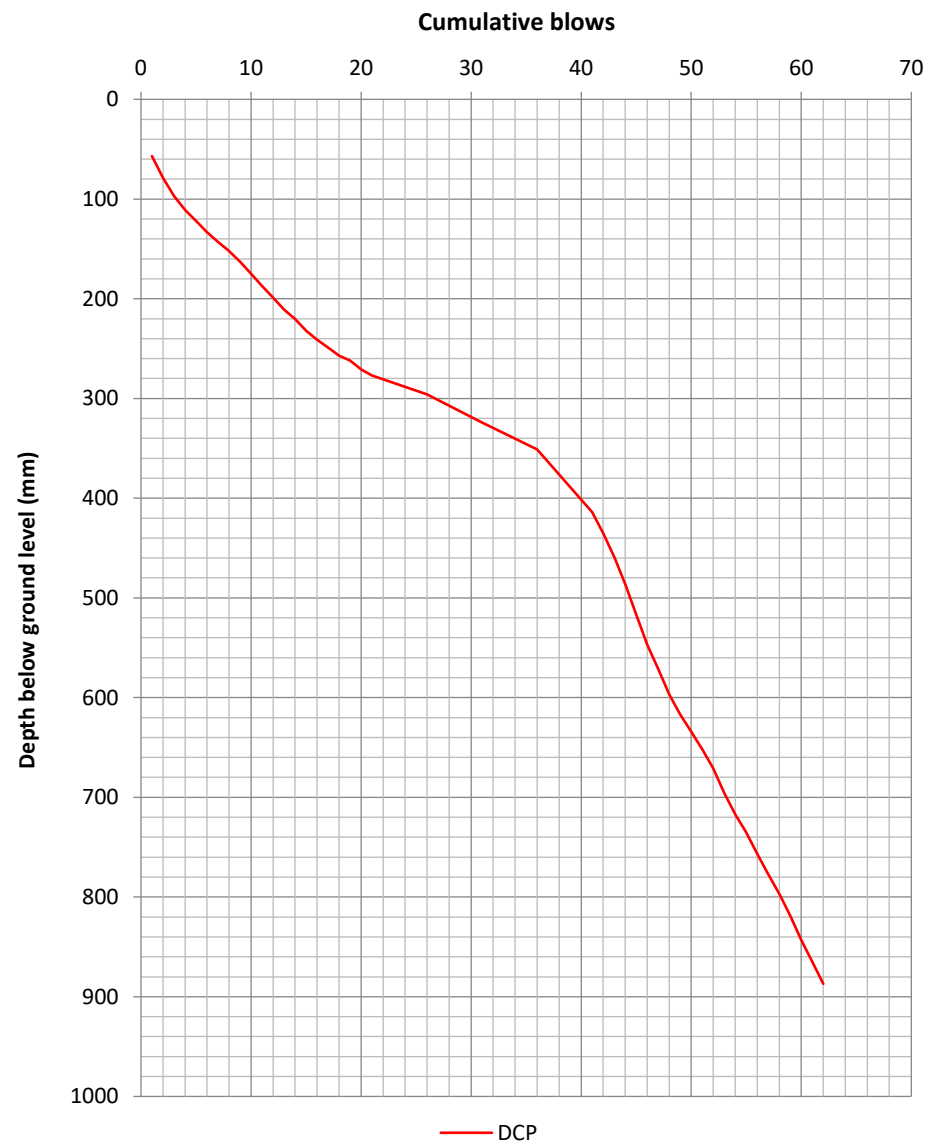
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	25.3	130	50	180

Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP105A	18/05/2022	0	43	JT

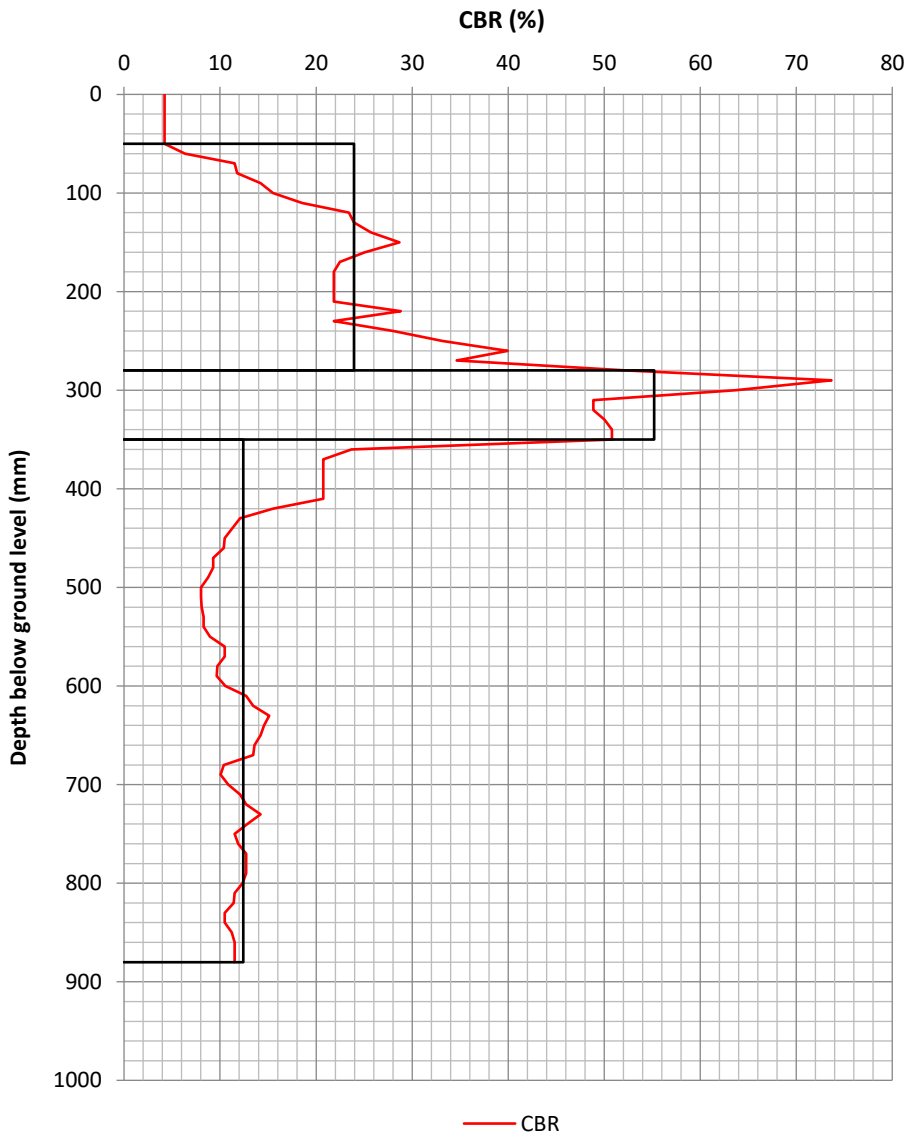
Plot showing number of blows against depth



Notes

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

Plot showing CBR (%) against depth



Calculations

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

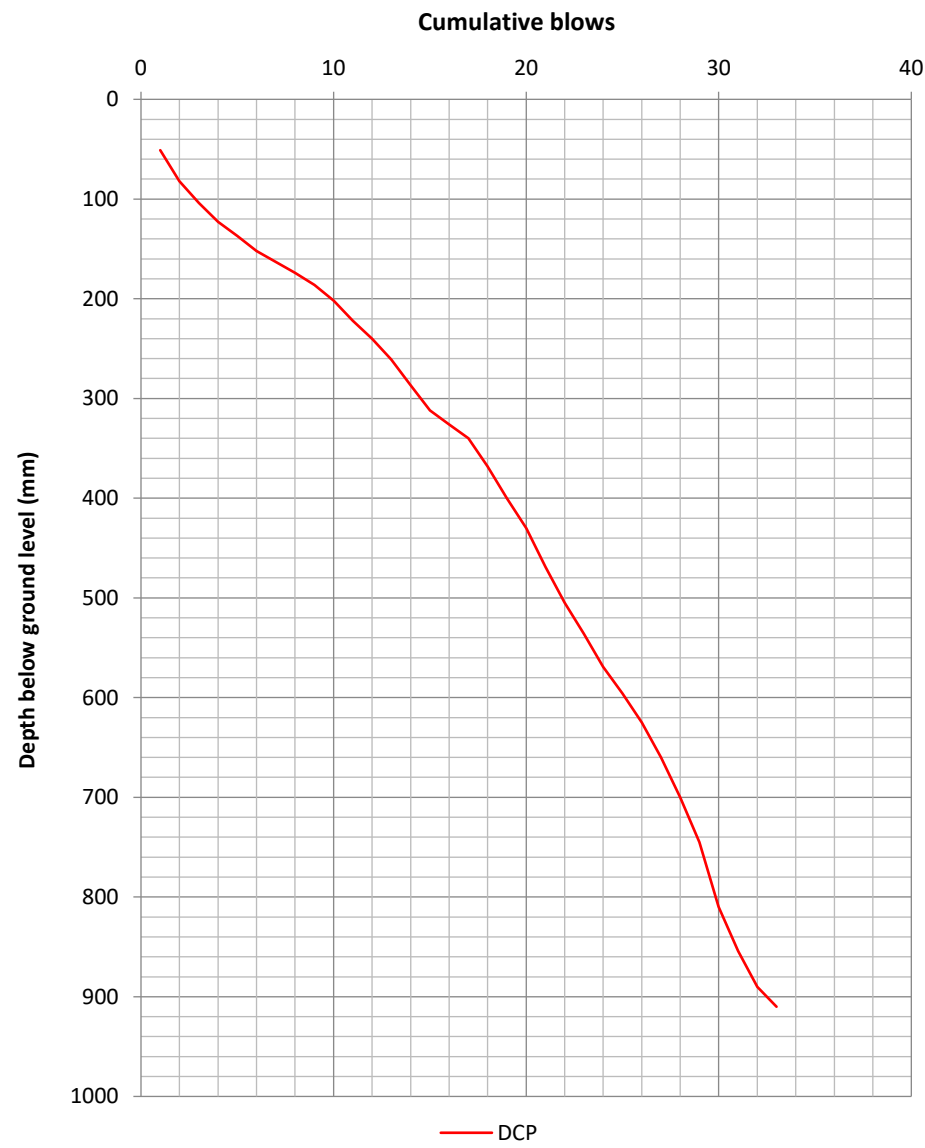
Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	24.0	230	50	280
2	55.2	70	280	350
3	12.4	530	350	880

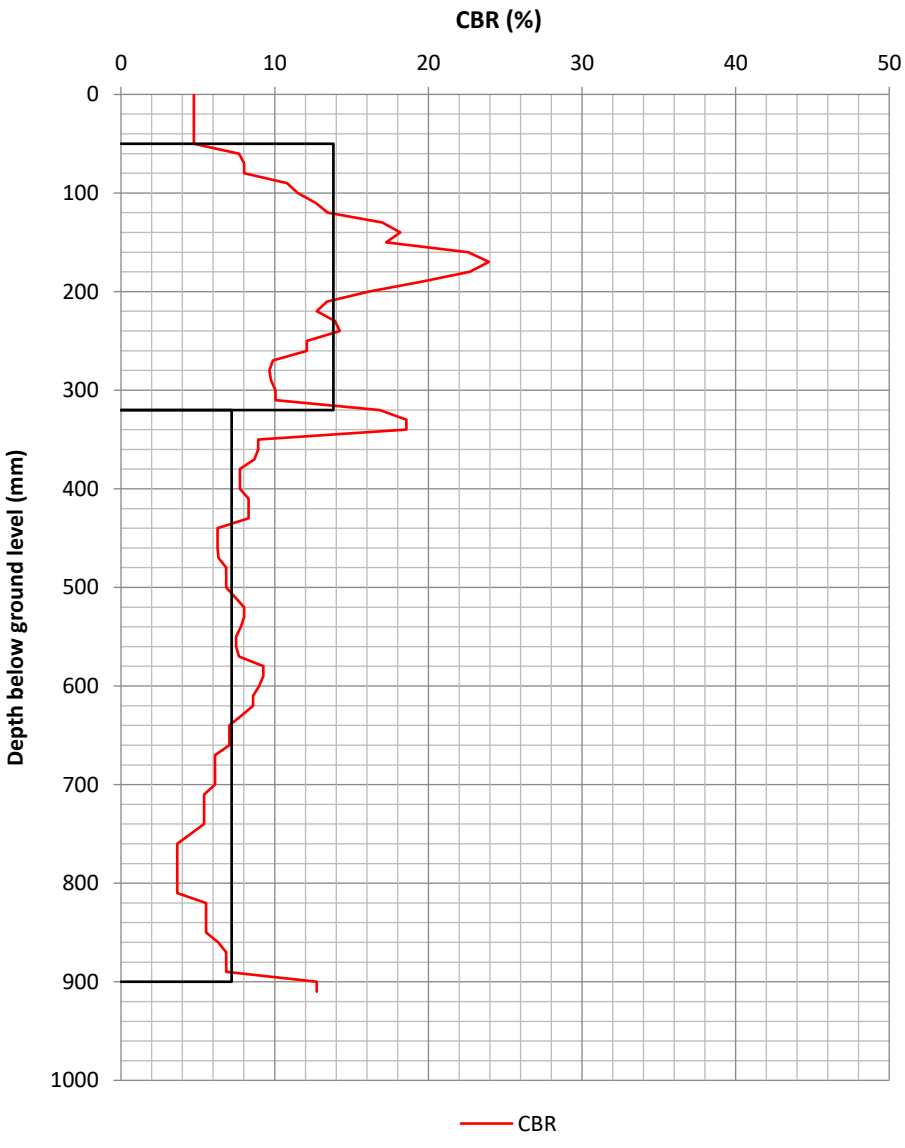
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP106	18/05/2022	0	40	

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	13.8	270	50	320
2	7.2	580	320	900

Notes

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

Calculations

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

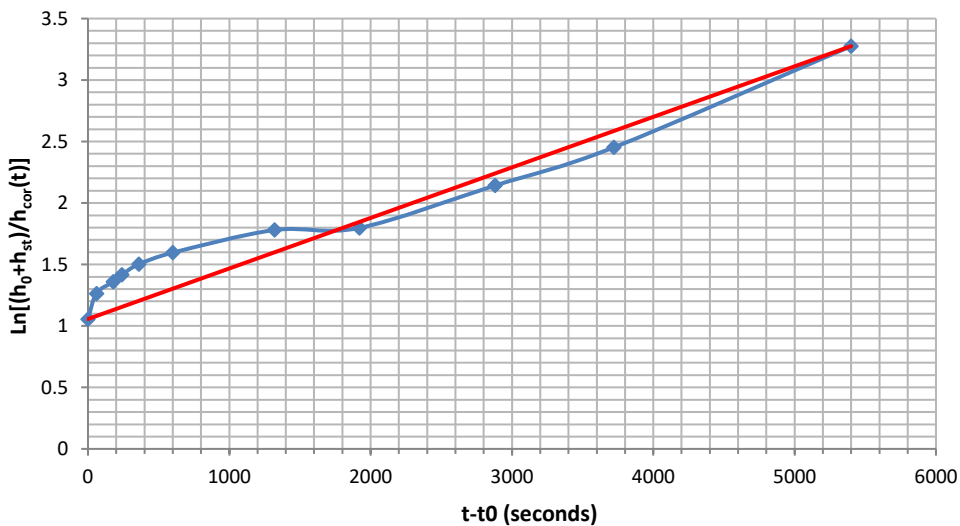
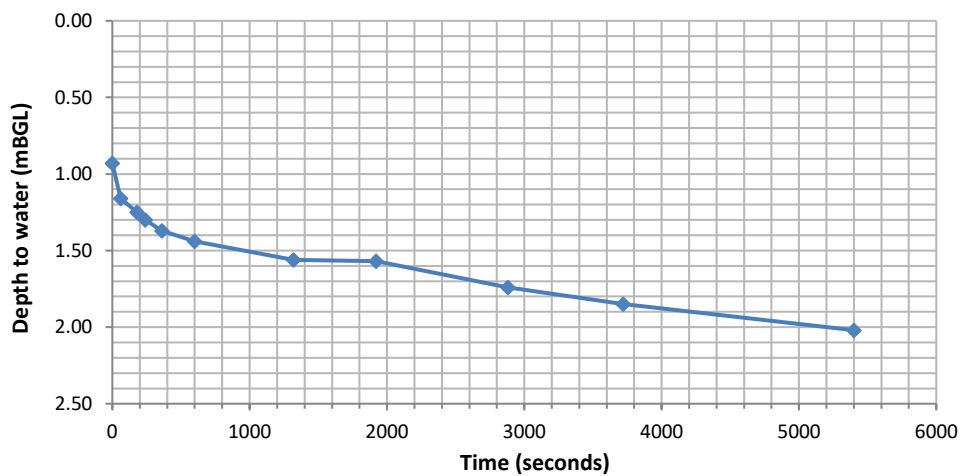
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

Location	Test number	Test method	Test system	Test date
WS101	1	Falling head	Open borehole	18/05/2022

Test base (m)	Test section length (m)	Test diameter (m)
3.30	3.30	0.087

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
-	0.93	2.37



F	Shape factor according BS EN ISO 22282-1:2012	4.790 m
S	Cross sectional area of test section	0.0059 m ²
h_{st}	Corrective term to initial static level	1.15E+00 m
α	Gradient of line alpha	4.11E-04 s ⁻¹
k	Permeability (α S / F)	5.10E-07 m/s

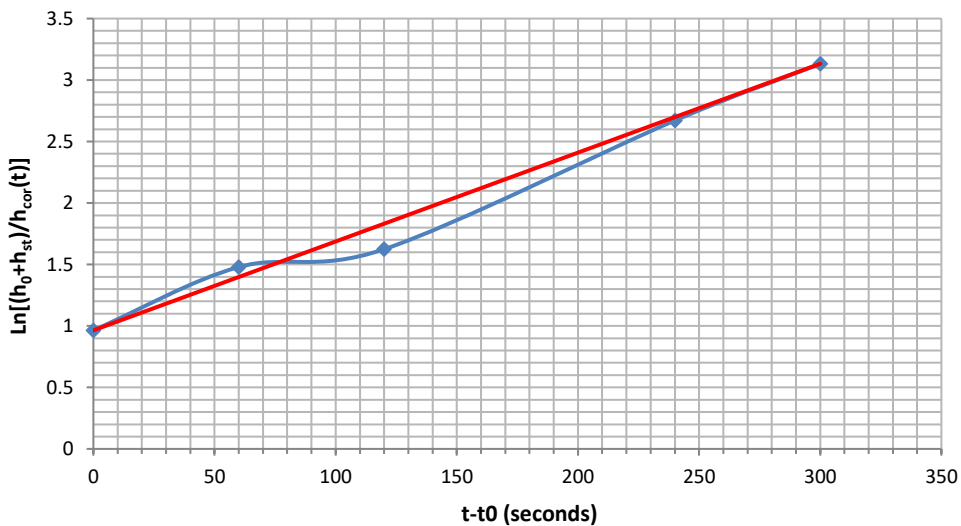
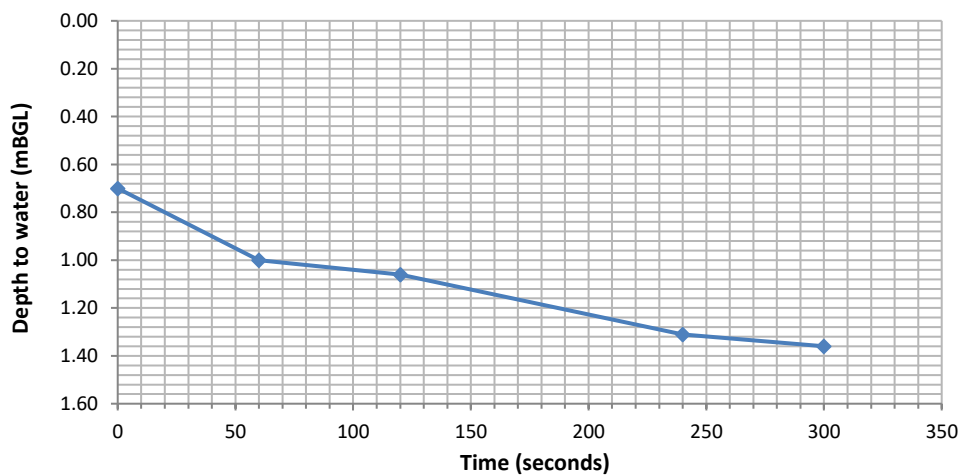
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

Location	Test number	Test method	Test system	Test date
WS101	2	Falling head	Open borehole	18/05/2022

Test base (m)	Test section length (m)	Test diameter (m)
2.05	2.05	0.087

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
-	0.7	1.35



F	Shape factor according BS EN ISO 22282-1:2012	3.343 m
S	Cross sectional area of test section	0.0059 m ²
h_{st}	Corrective term to initial static level	6.05E-01 m
α	Gradient of line alpha	7.23E-03 s ⁻¹
k	Permeability (α S / F)	1.29E-05 m/s

Table summarising Pocket Penetrometer results

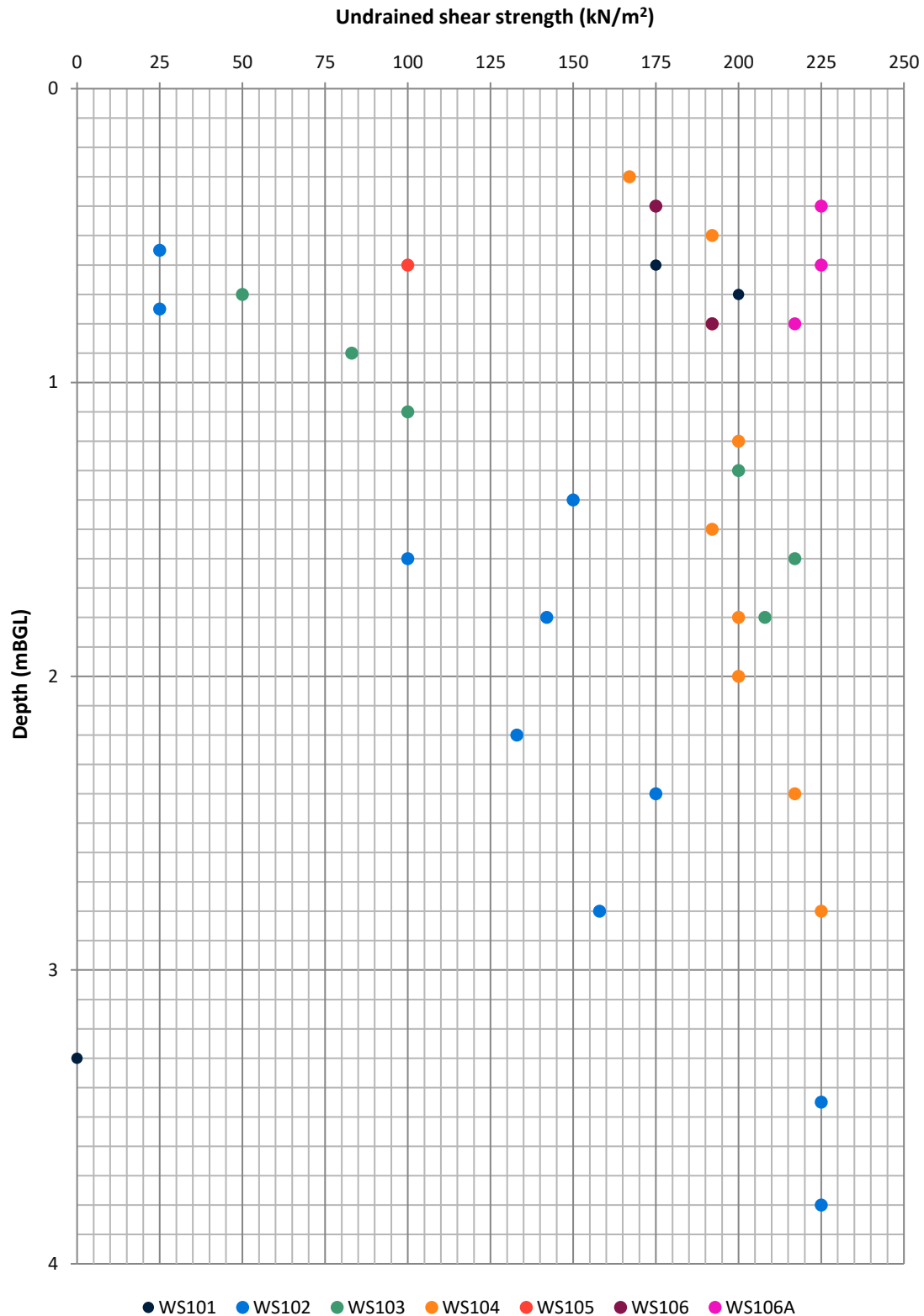
* Instrument limit reached.

Location	Start Depth (m)	Results 1-3	Average	Undrained Shear Strength (kN/m ²)
WS101	0.60	3.5/3.5/3.5	3.50	175
WS101	0.70	4/4/4	4.00	200
WS101	3.30	0	0.00	0
WS102	0.55	0.5/0.5/0.5	0.50	25
WS102	0.75	0.5/0.5/0.5	0.50	25
WS102	1.40	3/2/4	3.00	150
WS102	1.60	2/2/2	2.00	100
WS102	1.80	3/2/3.5	2.83	142
WS102	2.20	3/3/2	2.67	133
WS102	2.40	3.5/3.5/3.5	3.50	175
WS102	2.80	3.5/3/3	3.17	158
WS102	3.45	4.5/4.5/4.5	4.50	225
WS102	3.80	4.5/4.5/4.5	4.50	225
WS103	0.70	1/1.5/0.5	1.00	50
WS103	0.90	2/1.5/1.5	1.67	83
WS103	1.10	2/1.5/2.5	2.00	100
WS103	1.30	3/4.5/4.5	4.00	200
WS103	1.60	4/4.5/4.5	4.33	217
WS103	1.80	4.5/4/4	4.17	208
WS104	0.30	3/3/4	3.33	167
WS104	0.50	4/3.5/4	3.83	192
WS104	0.80	4/4.5/3	3.83	192
WS104	1.20	4/4/4	4.00	200
WS104	1.50	3.5/4/4	3.83	192
WS104	1.80	4/4/4	4.00	200
WS104	2.00	4/4/4	4.00	200
WS104	2.40	4.5/4/4.5	4.33	217
WS104	2.80	4.5/4.5/4.5	4.50	225
WS105	0.60	2/2/2	2.00	100
WS106	0.40	3.5/3.5/3.5	3.50	175
WS106	0.80	3.5/4/4	3.83	192
WS106A	0.40	4.5/4.5/4.5	4.50	225
WS106A	0.60	4.5/4.5/4.5	4.50	225
WS106A	0.80	4/4.5/4.5	4.33	217

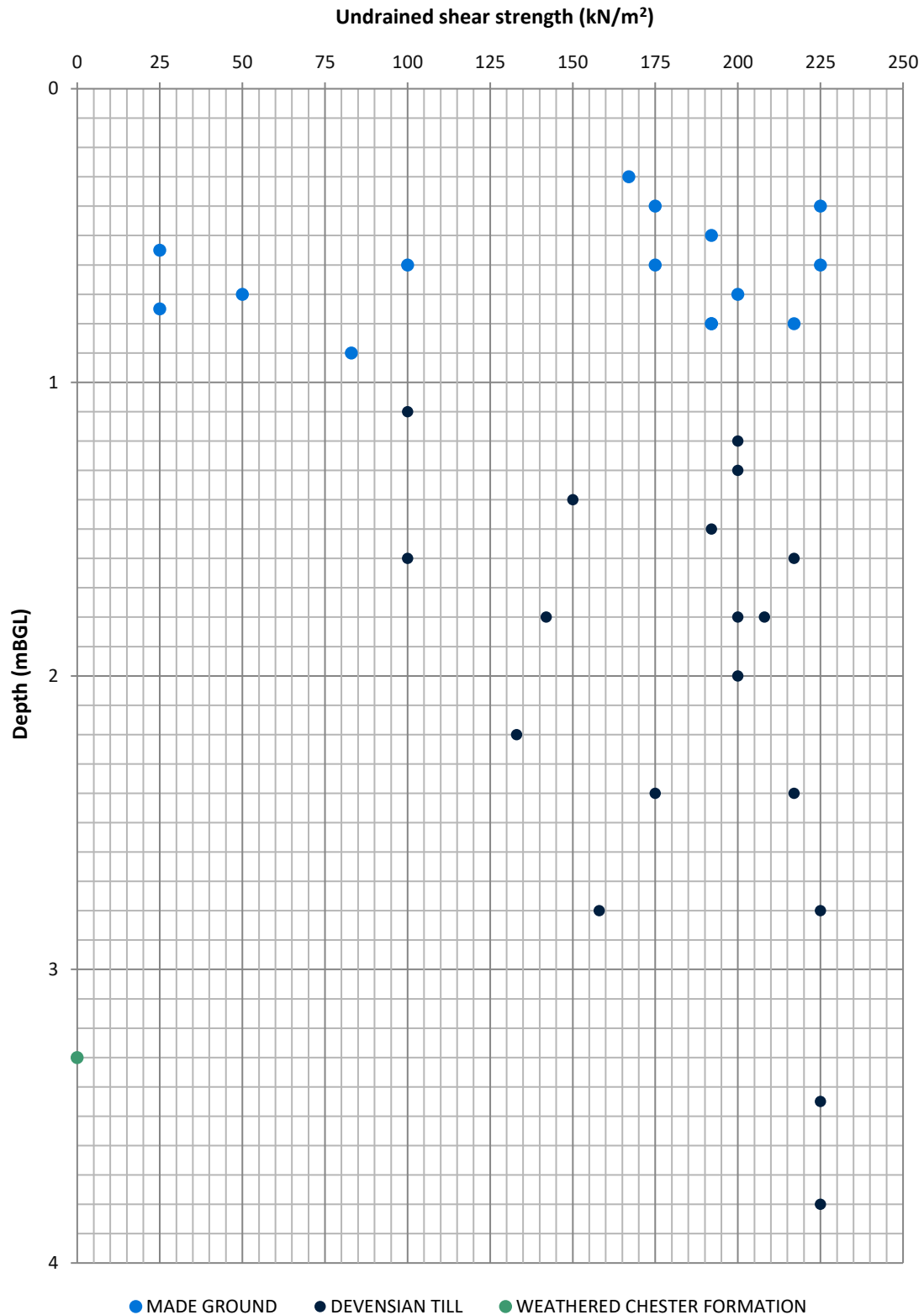
Table summarising Standard Penetration Test (SPT) results

Location	Start Depth (m)	Penetration (mm)					
		Seating 1-2	Main 1-4	Total Seating	Total Main	Total Seating	Total Main
WS101	1.00	4/5	7/4/3/4	9	18	150	300
WS101	2.00	4/4	4/2/3/4	8	13	150	300
WS101	3.00	3/2	2/4/6/6	5	18	150	300
WS101	4.00	5/10	10/8/7/14	15	39	150	300
WS102	1.00	2/2	2/1/2/2	4	7	150	300
WS102	2.00	3/3	3/3/4/4	6	14	150	300
WS102	3.00	4/3	4/3/4/5	7	16	150	300
WS102	4.00	4/5	6/7/9/12	9	34	150	300
WS103	1.00	1/2	1/2/3/3	3	9	150	300
WS103	2.00	2/2	4/5/6/6	4	21	150	300
WS103	3.00	5/8	11/11/15/13	13	50	150	275
WS104	1.00	2/2	1/2/3/3	4	9	150	300
WS104	2.00	2/2	3/2/3/3	4	11	150	300
WS104	3.00	4/14	45/5	18	50	150	75
WS105	1.00	2/1	2/2/3/3	3	10	150	300
WS105	2.00	11/15	15/21/14	26	50	150	185
WS106A	1.00	2/3	4/3/3/3	5	13	150	300
WS106A	2.00	9/11	19/21/10	20	50	150	165

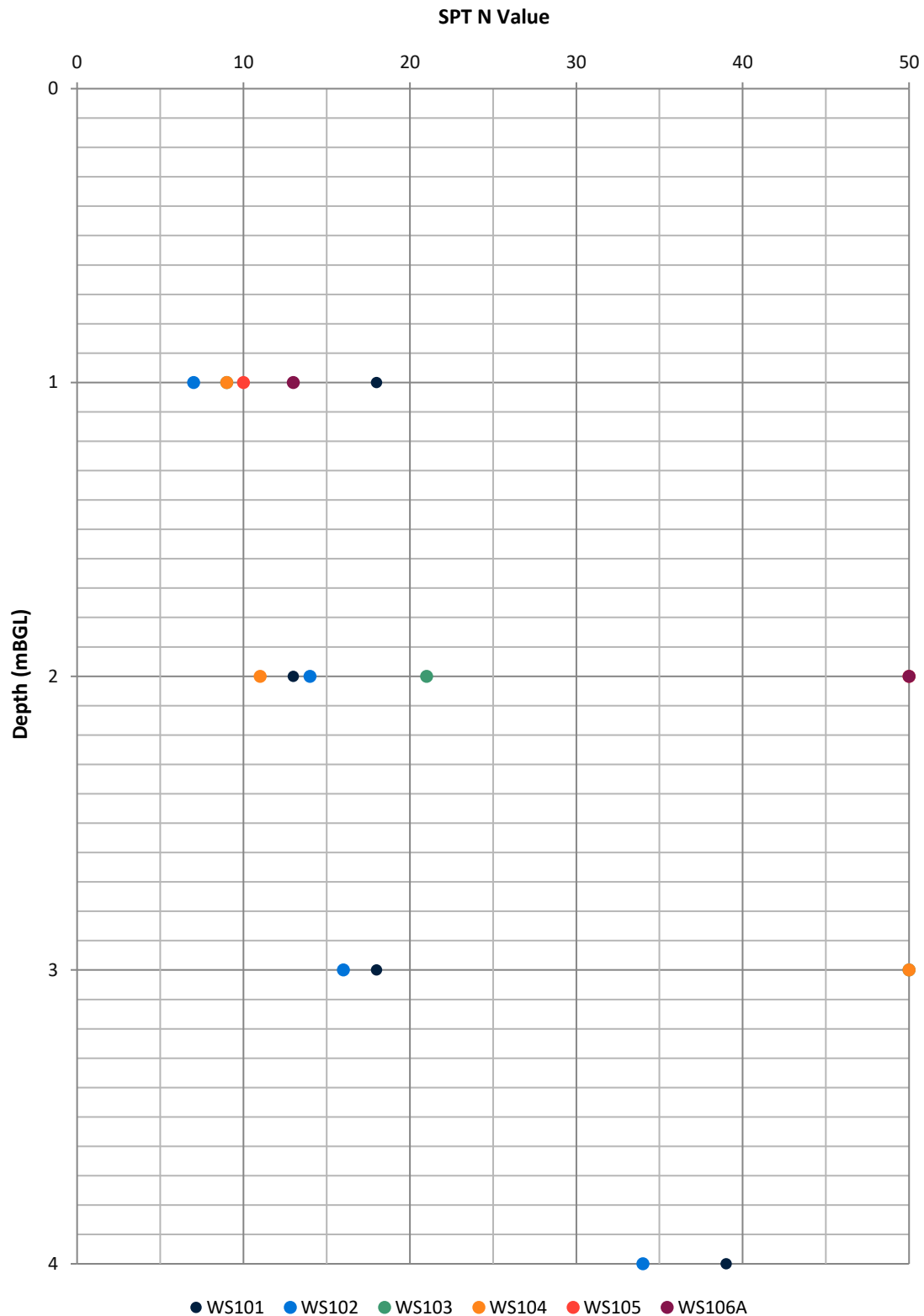
Plot summarising Pocket Penetrometer results versus depth filtered by location



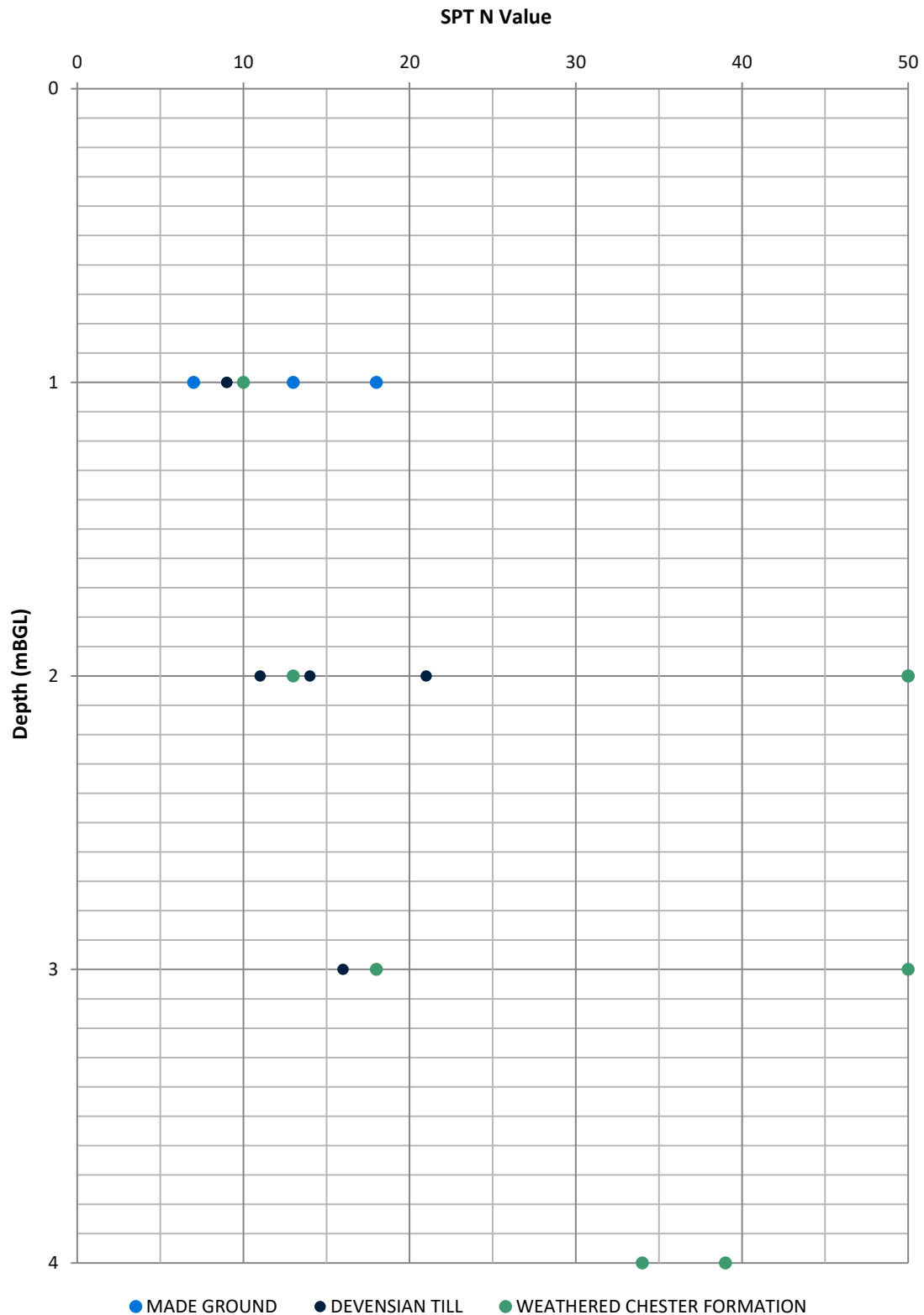
Plot summarising Pocket Penetrometer results versus depth filtered by geology



Plot summarising Standard Penetration Test (SPT) results versus depth filtered by location



Plot summarising Standard Penetration Test (SPT) results versus depth filtered by geology



Appendix D Geotechnical Laboratory Test Certificates



LABORATORY REPORT



4043

Contract Number: PSL22/3244

Report Date: 20 May 2022
Client's Reference: STU5625
Client Name: Soiltechnics
Cedar Barn
White Lodge
Walgrave
Northamptonshire
NN6 9PY

For the attention of:

Contract Title: Knowsley MCB, Huyton

Date Received: 6/5/2022
Date Commenced: 6/5/2022
Date Completed: 20/05/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

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(Director)

R Berriman
(Quality Manager)

S Royle
(Laboratory Manager)

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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/3244

Client Ref:**STU5625**

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

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



4043

PSL

Professional Soils Laboratory

Knowsley MCB, Huyton

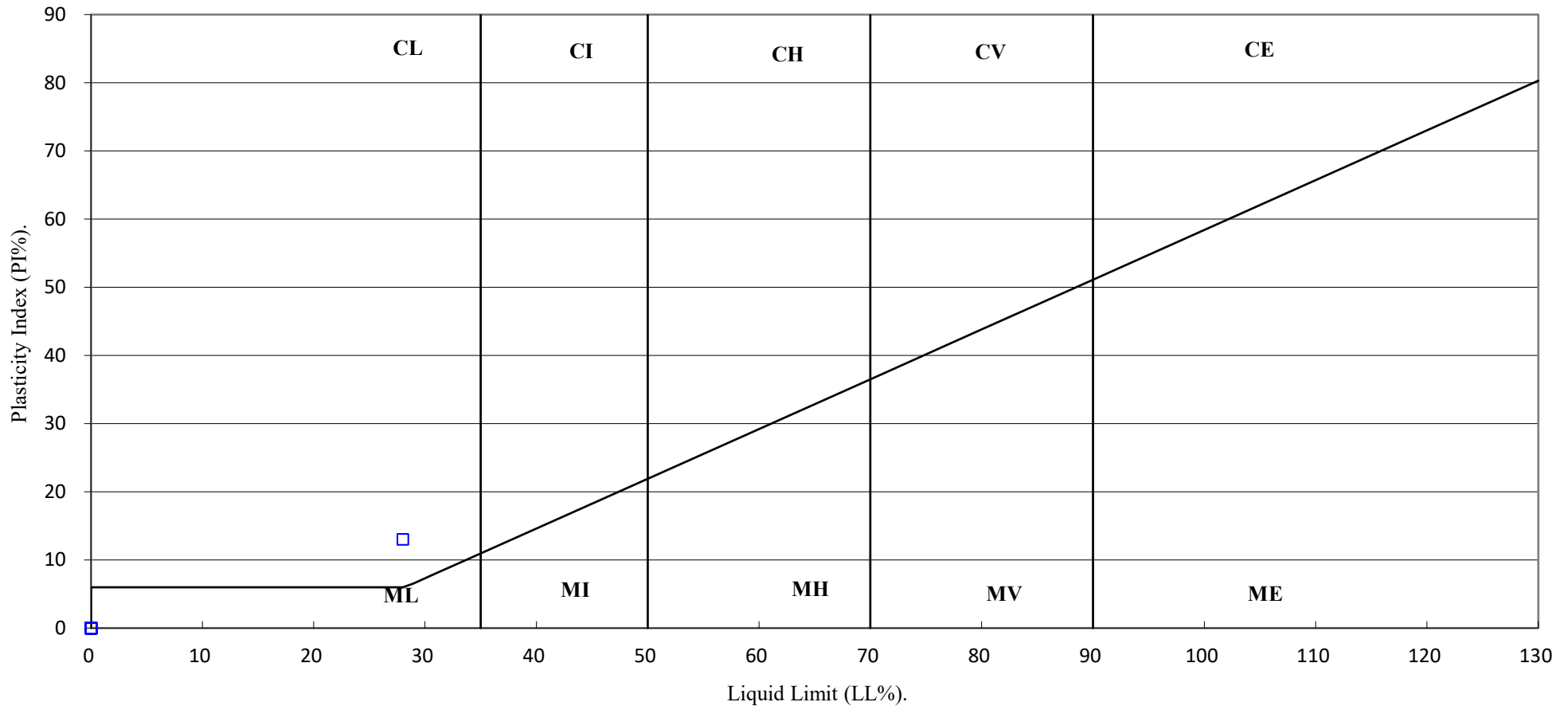
Contract No:

PSL22/3244

Client Ref:

STU5625

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL

Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/3244

Client Ref:

STU5625

PARTICLE SIZE DISTRIBUTION TEST

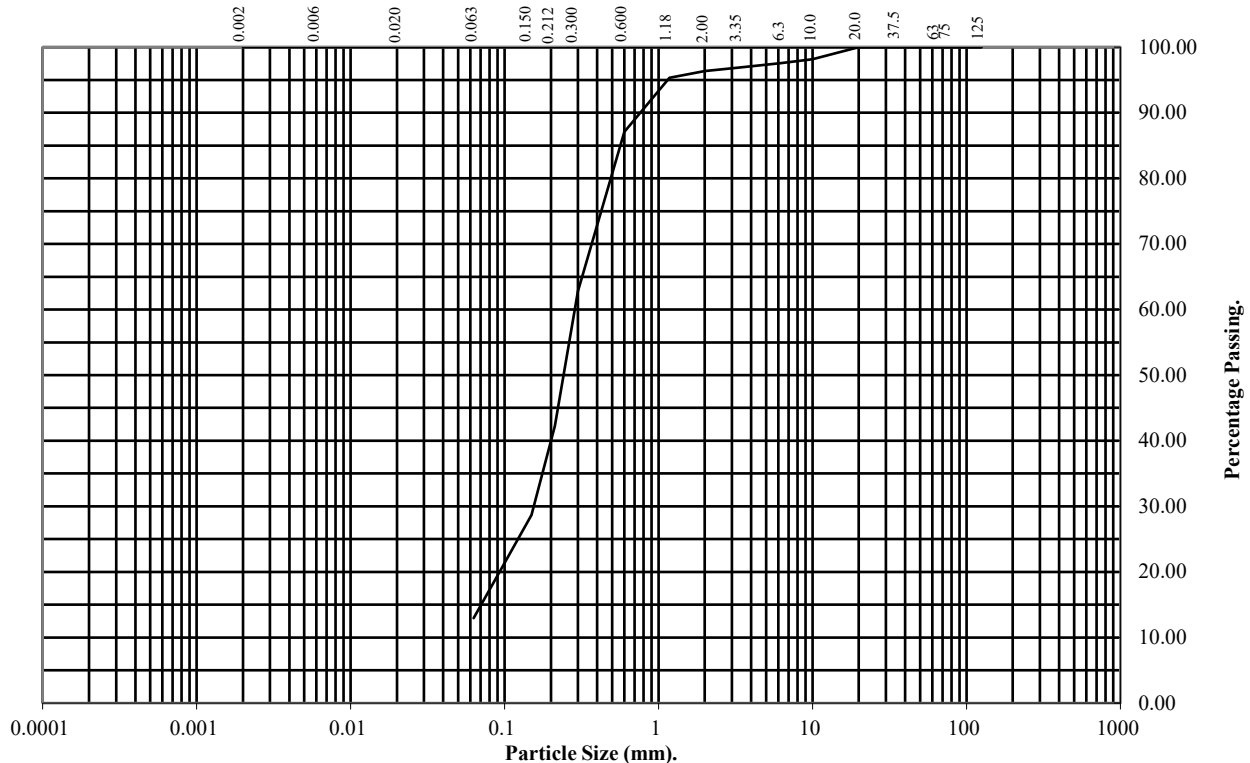
BS1377 : Part 2 : 1990

Wet Sieve, Clause 9.2

Hole Number: HP05 Top Depth (m): 0.70

Sample Number: Base Depth(m): 1.20

Sample Type: B



BS Test Sieve (mm)	Percentage Passing
125	100
75	100
63	100
37.5	100
20	100
10	98
6.3	98
3.35	97
2	96
1.18	95
0.6	87
0.3	63
0.212	42
0.15	29
0.063	13

Soil Fraction	Total Percentage
Cobbles	0
Gravel	4
Sand	83
Silt/Clay	13

Remarks:

See Summary of Soil Descriptions



PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:
PSL22/3244
Client Ref:
STU5625



Certificate of Analysis

Certificate Number 22-09669

Issued: 26-May-22

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 22-09669

Client Reference PSL22/3244

Order No (not supplied)

Contract Title (not supplied)

Description 2 Soil samples.

Date Received 20-May-22

Date Started 20-May-22

Date Completed 26-May-22

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 22-09669

Client Ref PSL22/3244

Contract Title

Lab No	2011809	2011810
Sample ID	HP02	HP03
Depth	0.70	0.50
Other ID	6	5
Sample Type	SOIL	SOIL
Sampling Date	24/04/2022	25/04/2022
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10
Inorganics					
pH	DETSC 2008#		pH	10.2	8.2
Chloride Aqueous Extract	DETSC 2055	1	mg/l	20	4.5
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	37	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	110	60
Sulphur as S, Total	DETSC 2320	0.01	%	0.06	0.06
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.16	0.07

Information in Support of the Analytical Results

Our Ref 22-09669
Client Ref PSL22/3244
Contract

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	inappropriate container for tests
2011809	HP02 0.70 SOIL	24/04/22	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2011810	HP03 0.50 SOIL	25/04/22	PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report



LABORATORY REPORT



4043

Contract Number: PSL22/4646

Report Date: 14 July 2022
Client's Reference: STU5625
Client Name: Soiltechnics
Cedar Barn
White Lodge
Walgrave
Northamptonshire
NN6 9PY

For the attention of: Alexa Band

Contract Title: Knowsley MCB, Huyton
Date Received: 8/7/2022
Date Commenced: 8/7/2022
Date Completed: 14/7/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
Doncaster DN4 0AR
tel: +44 (0)844 815 6641
fax: +44 (0)844 815 6642
e-mail: rberriman@prosoils.co.uk
awatkins@prosoils.co.uk

Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/4646

Client Ref:**STU5625**

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

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



4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

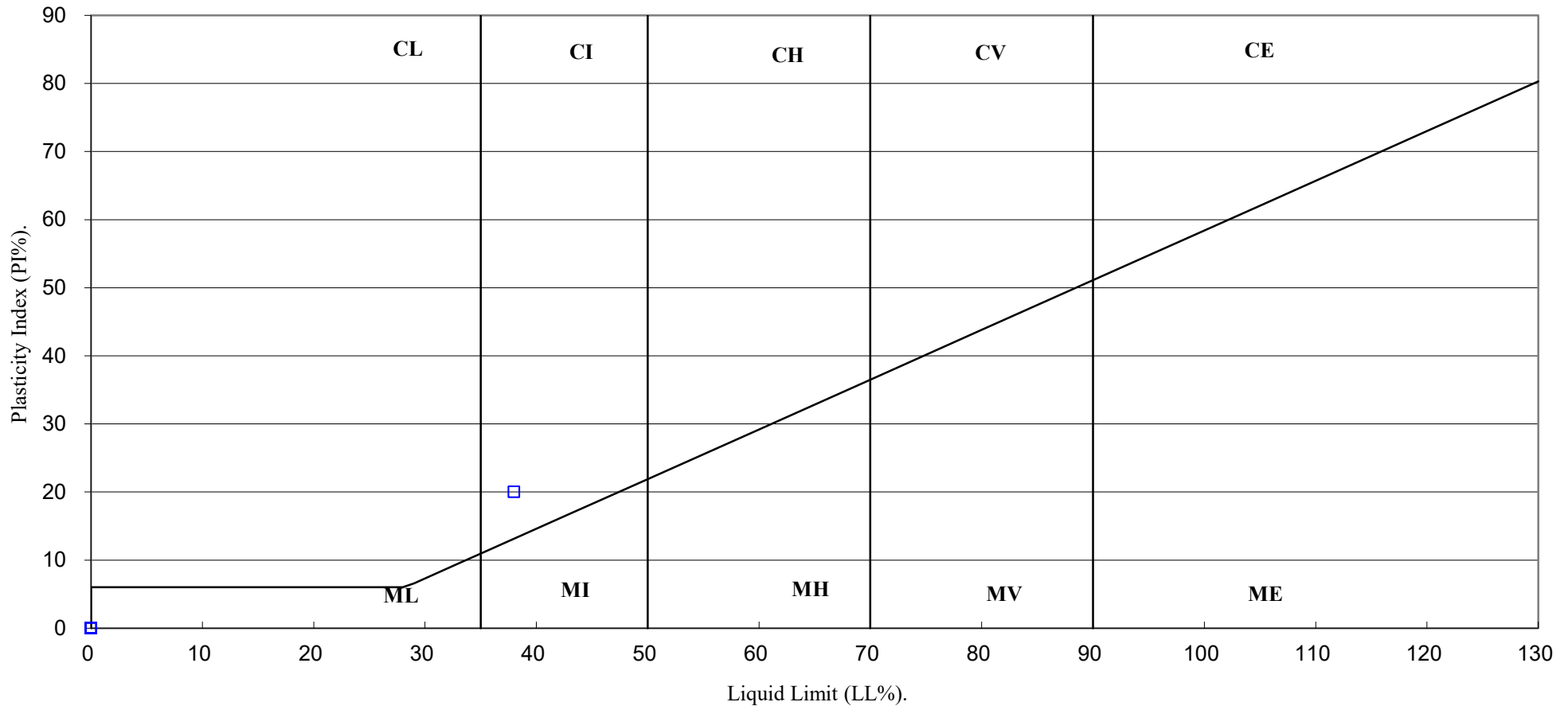
Contract No:

PSL22/4646

Client Ref:

STU5625

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/4646

Client Ref:

STU5625



Certificate of Analysis

Certificate Number 22-12669

Issued: 14-July-22

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 22-12669

Client Reference PSL22/4646

Order No (not supplied)

Contract Title Knowsley MCB, Huyton

Description 2 Soil samples.

Date Received 11-July-22

Date Started 11-July-22

Date Completed 14-July-22

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 22-12669

Client Ref PSL22/4646

Contract Title

Lab No	2071810	2071811
Sample ID	WS103	WS105
Depth	1.50	0.80
Other ID	5	4
Sample Type	SOIL	SOIL
Sampling Date	18/05/2022	18/05/2022
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10
Inorganics					
pH	DETSC 2008#		pH	9.2	8.6
Chloride Aqueous Extract	DETSC 2055	1	mg/l	26	7.5
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	42	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160	80
Sulphur as S, Total	DETSC 2320	0.01	%	0.09	0.11
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.22	0.10

Information in Support of the Analytical Results

Our Ref 22-12669
Client Ref PSL22/4646
Contract

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
2071810	WS103 1.50 SOIL	18/05/22		PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2071811	WS105 0.80 SOIL	18/05/22		PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Appendix E Chemical Laboratory Test Certificates



Alexa Band
Soiltechnics Ltd
White Lodge
Cedar Barn
Walgrave
NN6 9PY

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 22-04028

Site Reference: Knowsley MCB, Huyton

Project / Job Ref: STU5625

Order No: POR012519

Sample Receipt Date: 29/04/2022

Sample Scheduled Date: 06/05/2022

Report Issue Number: 1

Reporting Date: 18/05/2022

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

For Topsoil and WAC analysis the expanded uncertainty measurement should be considered while evaluating results against compliance values.



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate						
DETS Report No: 22-04028	Date Sampled	25/04/22	25/04/22			
Soiltechnics Ltd	Time Sampled	None Supplied	None Supplied			
Site Reference: Knowsley MCB, Huyton	TP / BH No	TS010.001	WAC010.001			
Project / Job Ref: STU5625	Additional Refs	TS01	WAC01			
Order No: POR012519	Depth (m)	0.10	0.00			
Reporting Date: 18/05/2022	DETS Sample No	596915	596916			

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
Total Cyanide	mg/kg	< 2	NONE	< 2			
Complex Cyanide	mg/kg	< 2	NONE	< 2			
Free Cyanide	mg/kg	< 2	NONE	< 2			
Organic Matter (SOM)	%	< 0.1	MCERTS	4.9			
Loss on Ignition @ 450°C	%	< 0.01	MCERTS	4.80			
Arsenic (As)	mg/kg	< 2	MCERTS	10			
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	0.5			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	56			
Lead (Pb)	mg/kg	< 3	MCERTS	138			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	16			
Selenium (Se)	mg/kg	< 2	MCERTS	< 3			
Vanadium (V)	mg/kg	< 1	MCERTS	18			
Zinc (Zn)	mg/kg	< 3	MCERTS	152			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Subcontracted analysis (S)



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Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 22-04028	Date Sampled	25/04/22				
Soiltechnics Ltd	Time Sampled	None Supplied				
Site Reference: Knowsley MCB, Huyton	TP / BH No	TS010.001				
Project / Job Ref: STU5625	Additional Refs	TS01				
Order No: POR012519	Depth (m)	0.10				
Reporting Date: 18/05/2022	DETS Sample No	596915				

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	0.34			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	0.56			
Fluorene	mg/kg	< 0.1	MCERTS	0.44			
Phenanthrene	mg/kg	< 0.1	MCERTS	3.39			
Anthracene	mg/kg	< 0.1	MCERTS	0.50			
Fluoranthene	mg/kg	< 0.1	MCERTS	3.02			
Pyrene	mg/kg	< 0.1	MCERTS	3.11			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	1.65			
Chrysene	mg/kg	< 0.1	MCERTS	1.57			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	1.68			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.67			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	1.57			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.74			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	0.19			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.67			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	20.1			



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - EPH Banded (Type D)						
DETS Report No: 22-04028	Date Sampled	25/04/22				
Soiltechnics Ltd	Time Sampled	None Supplied				
Site Reference: Knowsley MCB, Huyton	TP / BH No	TS010.001				
Project / Job Ref: STU5625	Additional Refs	TS01				
Order No: POR012519	Depth (m)	0.10				
Reporting Date: 18/05/2022	DETS Sample No	596915				

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	2			
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	1			
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	11			
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	36			
EPH (>C21 - C35)	mg/kg	< 6	NONE	92			
EPH (C8 - C35)	mg/kg	< 6	NONE	142			

Waste Acceptance Criteria Analytical Certificate - BS EN 12457/3																																							
DETS Report No: 22-04028		Date Sampled		25/04/22		<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="3" style="text-align: left; padding: 5px;">Landfill Waste Acceptance Criteria Limits</th> </tr> <tr> <th style="width: 33%; padding: 5px;">Inert Waste Landfill</th> <th style="width: 33%; padding: 5px;">Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill</th> <th style="width: 33%; padding: 5px;">Hazardous Waste Landfill</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">3%</td> <td style="text-align: center; padding: 5px;">5%</td> <td style="text-align: center; padding: 5px;">6%</td> </tr> <tr> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">10%</td> </tr> <tr> <td style="text-align: center; padding: 5px;">6</td> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">--</td> </tr> <tr> <td style="text-align: center; padding: 5px;">1</td> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">--</td> </tr> <tr> <td style="text-align: center; padding: 5px;">500</td> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">--</td> </tr> <tr> <td style="text-align: center; padding: 5px;">100</td> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">--</td> </tr> <tr> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">>6</td> <td style="text-align: center; padding: 5px;">--</td> </tr> <tr> <td style="text-align: center; padding: 5px;">--</td> <td style="text-align: center; padding: 5px;">To be evaluated</td> <td style="text-align: center; padding: 5px;">To be evaluated</td> </tr> </tbody> </table>				Landfill Waste Acceptance Criteria Limits			Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill	3%	5%	6%	--	--	10%	6	--	--	1	--	--	500	--	--	100	--	--	--	>6	--	--	To be evaluated	To be evaluated
Landfill Waste Acceptance Criteria Limits																																							
Inert Waste Landfill	Stable Non-reactive HAZARDOUS waste in non-hazardous Landfill	Hazardous Waste Landfill																																					
3%	5%	6%																																					
--	--	10%																																					
6	--	--																																					
1	--	--																																					
500	--	--																																					
100	--	--																																					
--	>6	--																																					
--	To be evaluated	To be evaluated																																					
Soiltechnics Ltd		Time Sampled		None Supplied																																			
Site Reference: Knowsley MCB, Huyton		TP / BH No		WAC010.001																																			
Project / Job Ref: STU5625		Additional Refs		WAC01																																			
Order No: POR012519		Depth (m)		0.00																																			
Reporting Date: 18/05/2022		DETS Sample No		596916																																			
Determinand		Unit		MDL																																			
TOC ^{MU}		%		< 0.1		2.6																																	
Loss on Ignition		%		< 0.01		3.60																																	
BTEX ^{MU}		mg/kg		< 0.05		< 0.05																																	
Sum of PCBs		mg/kg		< 0.1		< 0.1																																	
Mineral Oil ^{MU}		mg/kg		< 10		< 10																																	
Total PAH ^{MU}		mg/kg		< 1.7		< 1.7																																	
pH ^{MU}		pH Units		N/a		7.4																																	
Acid Neutralisation Capacity		mol/kg (+/-)		< 1		< 1																																	
Eluate Analysis				2:1		8:1		Cumulative 10:1		Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg (mg/kg)																													
				mg/l		mg/l		mg/kg																															
Arsenic ^U				< 0.01		< 0.01		< 0.2		0.5																													
Barium ^U				< 0.02		< 0.02		< 0.1		20																													
Cadmium ^U				< 0.0005		< 0.0005		< 0.02		0.04																													
Chromium ^U				< 0.005		< 0.005		< 0.20		0.5																													
Copper ^U				< 0.01		< 0.01		< 0.5		2																													
Mercury ^U				< 0.0005		< 0.0005		< 0.005		0.01																													
Molybdenum ^U				0.003		0.002		< 0.1		0.5																													
Nickel ^U				< 0.007		< 0.007		< 0.2		0.4																													
Lead ^U				< 0.005		< 0.005		< 0.2		0.5																													
Antimony ^U				0.009		< 0.005		< 0.05		0.06																													
Selenium ^U				< 0.005		< 0.005		< 0.05		0.1																													
Zinc ^U				0.005		0.019		< 0.2		4																													
Chloride ^U				2		2		18		800																													
Fluoride ^U				1		0.5		5.8		10																													
Sulphate ^U				2		2		< 20		1000																													
TDS				32		30		302		4000																													
Phenol Index				0.02		< 0.01		< 0.5		1																													
DOC				13.8		16		158		500																													
Leach Test Information																																							
Sample Mass (kg)				0.20																																			
Dry Matter (%)				86.6																																			
Moisture (%)				15.4																																			
Stage 1																																							
Volume Eluate L2 (litres)				0.32																																			
Filtered Eluate VE1 (litres)				0.15																																			
Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Samples Descriptions page describes if the test is performed on the dried or as-received portion Stated limits are for guidance only and DETS Ltd cannot be held responsible for any discrepancies with current legislation M Denotes MCERTS accredited test U Denotes ISO17025 accredited test																																							



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Sample Descriptions

DETS Report No: 22-04028	
Soiltechnics Ltd	
Site Reference: Knowsley MCB, Huyton	
Project / Job Ref: STU5625	
Order No: POR012519	
Reporting Date: 18/05/2022	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
\$ 596915	TS010.001	TS01	0.10	10.6	Brown loam
\$ 596916	WAC010.001	WAC01	0.00	13.4	Brown clay

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/s}

Unsuitable Sample ^{u/s}

\$ samples exceeded recommended holding times



DETS Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410



Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 22-04028

Soiltechnics Ltd

Site Reference: Knowsley MCB, Huyton

Project / Job Ref: STU5625

Order No: POR012519

Reporting Date: 18/05/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



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Water Analysis Certificate - Methodology & Miscellaneous Information	
DETS Report No: 22-04028	
Soiltechnics Ltd	
Site Reference: Knowsley MCB, Huyton	
Project / Job Ref: STU5625	
Order No: POR012519	
Reporting Date: 18/05/2022	

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Water	UF	Alkalinity	Determination of alkalinity by titration against hydrochloric acid using bromocresol green as the end point	E103
Water	F	Ammoniacal Nitrogen	Determination of ammoniacal nitrogen by discrete analyser.	E126
Water	UF	BTEX	Determination of BTEX by headspace GC-MS	E101
Water	F	Cations	Determination of cations by filtration followed by ICP-MS	E102
Water	UF	Chemical Oxygen Demand (COD)	Determination using a COD reactor followed by colorimetry	E112
Water	F	Chloride	Determination of chloride by filtration & analysed by ion chromatography	E109
Water	F	Chromium - Hexavalent	Determination of hexavalent chromium by acidification, addition of 1,5 diphenylcarbazide followed by	E116
Water	UF	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E115
Water	UF	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E115
Water	UF	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through liquid:liquid extraction with cyclohexane	E111
Water	F	Diesel Range Organics (C10 - C24)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	Dissolved Organic Content (DOC)	Determination of DOC by filtration followed by low heat with persulphate addition followed by IR dete	E110
Water	UF	Electrical Conductivity	Determination of electrical conductivity by electrometric measurement	E123
Water	F	EPH (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID	E104
Water	F	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of liquid:liquid extraction with hexane followed by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E104
Water	F	Fluoride	Determination of Fluoride by filtration & analysed by ion chromatography	E109
Water	F	Hardness	Determination of Ca and Mg by ICP-MS followed by calculation	E102
Leachate	F	Leachate Preparation - NRA	Based on National Rivers Authority leaching test 1994	E301
Leachate	F	Leachate Preparation - WAC	Based on BS EN 12457 Pt1, 2, 3	E302
Water	F	Metals	Determination of metals by filtration followed by ICP-MS	E102
Water	F	Mineral Oil (C10 - C40)	Determination of liquid:liquid extraction with hexane followed by GI-FID	E104
Water	F	Nitrate	Determination of nitrate by filtration & analysed by ion chromatography	E109
Water	UF	Monohydric Phenol	Determination of phenols by distillation followed by colorimetry	E121
Water	F	PAH - Speciated (EPA 16)	Determination of PAH compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E105
Water	F	PCB - 7 Congeners	Determination of PCB compounds by concentration through SPE cartridge, collection in dichloromethane	E108
Water	UF	Petroleum Ether Extract (PEE)	Gravimetrically determined through liquid:liquid extraction with petroleum ether	E111
Water	UF	pH	Determination of pH by electrometric measurement	E107
Water	F	Phosphate	Determination of phosphate by filtration & analysed by ion chromatography	E109
Water	UF	Redox Potential	Determination of redox potential by electrometric measurement	E113
Water	F	Sulphate (as SO4)	Determination of sulphate by filtration & analysed by ion chromatography	E109
Water	UF	Sulphide	Determination of sulphide by distillation followed by colorimetry	E118
Water	F	SVOC	Determination of semi-volatile organic compounds by concentration through SPE cartridge, collection in dichloromethane followed by GC-MS	E106
Water	UF	Toluene Extractable Matter (TEM)	Gravimetrically determined through liquid:liquid extraction with toluene	E111
Water	UF	Total Organic Carbon (TOC)	Low heat with persulphate addition followed by IR detection	E110
Water	F	TPH CWG (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C35. C5 to C8 by headspace GC-MS	E104
Water	F	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of liquid:liquid extraction with hexane, fractionating with SPE followed by GC-FID for C8 to C44. C5 to C8 by headspace GC-MS	E104
Water	UF	VOCs	Determination of volatile organic compounds by headspace GC-MS	E101
Water	UF	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E101

Key

F Filtered
UF Unfiltered

Parameter	Matrix Type	Suite Reference	Expanded Uncertainty Measurement	Unit
TOC	Soil	BS EN 12457	12.1	%
Loss on Ignition	Soil	BS EN 12457	20.4	%
BTEX	Soil	BS EN 12457	14.0	%
Sum of PCBs	Soil	BS EN 12457	21.1	%
Mineral Oil	Soil	BS EN 12457	9.0	%
Total PAH	Soil	BS EN 12457	13.9	%
pH	Soil	BS EN 12457	0.248	Units
Acid Neutralisation Capacity	Soil	BS EN 12457	18.0	%
Arsenic	Leachate	BS EN 12457	15.9	%
Barium	Leachate	BS EN 12457	14.4	%
Cadmium	Leachate	BS EN 12457	12.6	%
Chromium	Leachate	BS EN 12457	13.4	%
Copper	Leachate	BS EN 12457	13.1	%
Mercury	Leachate	BS EN 12457	16.2	%
Molybdenum	Leachate	BS EN 12457	13.6	%
Nickel	Leachate	BS EN 12457	16.0	%
Lead	Leachate	BS EN 12457	12.4	%
Antimony	Leachate	BS EN 12457	14.6	%
Selenium	Leachate	BS EN 12457	16.5	%
Zinc	Leachate	BS EN 12457	14.5	%
Chloride	Leachate	BS EN 12457	17.0	%
Fluoride	Leachate	BS EN 12457	12.0	%
Sulphate	Leachate	BS EN 12457	25.1	%
TDS	Leachate	BS EN 12457	10.0	%
Phenol Index	Leachate	BS EN 12457	12.9	%
DOC	Leachate	BS EN 12457	10.0	%
Clay Content	Soil	BS 3882: 2015	15.0	%
Silt Content	Soil	BS 3882: 2015	14.0	%
Sand Content	Soil	BS 3882: 2015	13.0	%
Loss on Ignition	Soil	BS 3882: 2015	20.4	%
pH	Soil	BS 3882: 2015	0.248	Units
Carbonate	Soil	BS 3882: 2015	12.0	%
Total Nitrogen	Soil	BS 3882: 2015	12.0	%
Phosphorus (Extractable)	Soil	BS 3882: 2015	24.0	%
Potassium (Extractable)	Soil	BS 3882: 2015	20.0	%
Magnesium (Extractable)	Soil	BS 3882: 2015	26.0	%
Zinc	Soil	BS 3882: 2015	14.9	%
Copper	Soil	BS 3882: 2015	16.0	%
Nickel	Soil	BS 3882: 2015	17.7	%
Available Sodium	Soil	BS 3882: 2015	23.0	%
Available Calcium	Soil	BS 3882: 2015	23.0	%
Electrical Conductivity	Soil	BS 3882: 2015	10.0	%



Alexa Band
Soiltechnics Ltd
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Cedar Barn
Walgrave
NN6 9PY

Derwentside Environmental Testing Services Ltd
Unit 1
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Kent
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t: 01622 850410

DETS Report No: 22-05372

Site Reference: Knowsley MCB, Huyton

Project / Job Ref: STU5625

Order No: POR012904

Sample Receipt Date: 21/06/2022

Sample Scheduled Date: 21/06/2022

Report Issue Number: 1

Reporting Date: 27/06/2022

Authorised by:

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.



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Soil Analysis Certificate						
DETS Report No: 22-05372		Date Sampled	18/06/22			
Soiltechnics Ltd		Time Sampled	None Supplied			
Site Reference: Knowsley MCB, Huyton		TP / BH No	WAC020.002			
Project / Job Ref: STU5625		Additional Refs	WAC02			
Order No: POR012904		Depth (m)	0.00			
Reporting Date: 27/06/2022		DETS Sample No	602112			

Determinand	Unit	RL	Accreditation				
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected			
Total Cyanide	mg/kg	< 2	NONE	< 2			
Complex Cyanide	mg/kg	< 2	NONE	< 2			
Free Cyanide	mg/kg	< 2	NONE	< 2			
Organic Matter (SOM)	%	< 0.1	MCERTS	1.1			
Loss on Ignition @ 450°C	%	< 0.01	MCERTS	2.40			
Arsenic (As)	mg/kg	< 2	MCERTS	3			
Beryllium (Be)	mg/kg	< 0.5	MCERTS	< 0.5			
W/S Boron	mg/kg	< 1	NONE	< 1			
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2			
Copper (Cu)	mg/kg	< 4	MCERTS	14			
Lead (Pb)	mg/kg	< 3	MCERTS	29			
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1			
Nickel (Ni)	mg/kg	< 3	MCERTS	15			
Selenium (Se)	mg/kg	< 2	MCERTS	< 3			
Vanadium (V)	mg/kg	< 1	MCERTS	26			
Zinc (Zn)	mg/kg	< 3	MCERTS	38			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
 Subcontracted analysis (S)



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Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 22-05372	Date Sampled	18/06/22				
Soiltechnics Ltd	Time Sampled	None Supplied				
Site Reference: Knowsley MCB, Huyton	TP / BH No	WAC020.002				
Project / Job Ref: STU5625	Additional Refs	WAC02				
Order No: POR012904	Depth (m)	0.00				
Reporting Date: 27/06/2022	DETS Sample No	602112				

Determinand	Unit	RL	Accreditation				
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.16			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	0.26			
Pyrene	mg/kg	< 0.1	MCERTS	0.24			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	0.12			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6			



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Soil Analysis Certificate - EPH Banded (Type D)						
DETS Report No: 22-05372	Date Sampled	18/06/22				
Soiltechnics Ltd	Time Sampled	None Supplied				
Site Reference: Knowsley MCB, Huyton	TP / BH No	WAC020.002				
Project / Job Ref: STU5625	Additional Refs	WAC02				
Order No: POR012904	Depth (m)	0.00				
Reporting Date: 27/06/2022	DETS Sample No	602112				

Determinand	Unit	RL	Accreditation				
EPH (>C8 - C10)	mg/kg	< 1	MCERTS	< 1			
EPH (>C10 - C12)	mg/kg	< 1	MCERTS	< 1			
EPH (>C12 - C16)	mg/kg	< 1	MCERTS	< 1			
EPH (>C16 - C21)	mg/kg	< 1	MCERTS	2			
EPH (>C21 - C35)	mg/kg	< 6	NONE	< 6			
EPH (C8 - C35)	mg/kg	< 6	NONE	< 6			



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Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 22-05372	
Soiltechnics Ltd	
Site Reference: Knowsley MCB, Huyton	
Project / Job Ref: STU5625	
Order No: POR012904	
Reporting Date: 27/06/2022	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
602112	WAC020.002	WAC02	0.00	11.3	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/S}

Unsuitable Sample ^{u/S}



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Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 22-05372

Soiltechnics Ltd

Site Reference: Knowsley MCB, Huyton

Project / Job Ref: STU5625

Order No: POR012904

Reporting Date: 27/06/2022

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 - C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



LABORATORY REPORT



4043

Contract Number: PSL22/4646

Report Date: 14 July 2022
Client's Reference: STU5625
Client Name: Soiltechnics
Cedar Barn
White Lodge
Walgrave
Northamptonshire
NN6 9PY

For the attention of: Alexa Band

Contract Title: Knowsley MCB, Huyton
Date Received: 8/7/2022
Date Commenced: 8/7/2022
Date Completed: 14/7/2022

Notes: Opinions and Interpretations are outside the UKAS Accreditation

A copy of the Laboratory Schedule of accredited tests as issued by UKAS is attached to this report. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced other than in full, without the prior written approval of the laboratory.

Checked and Approved Signatories:

A Watkins
(Director)

R Berriman
(Quality Manager)


S Royle
(Laboratory Manager)

L Knight
(Assistant Laboratory Manager)

S Eyre
(Senior Technician)

T Watkins
(Senior Technician)

5 – 7 Hexthorpe Road, Hexthorpe,
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Page 1 of

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

[illegible]

4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/4646

Client Ref:**STU5625**

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

[illegible]

SYMBOLS : NP : Non Plastic

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



4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

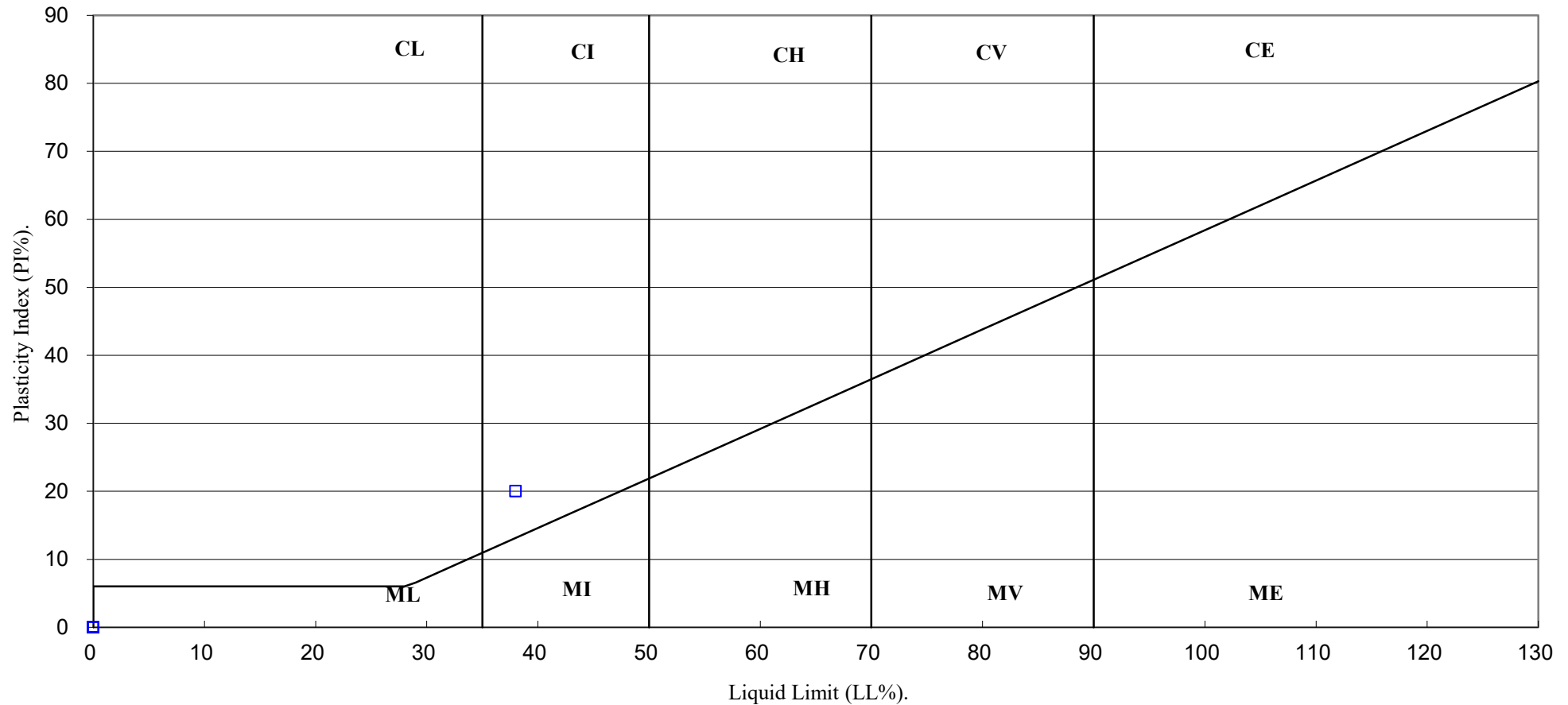
Contract No:

PSL22/4646

Client Ref:

STU5625

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



4043

PSL
Professional Soils Laboratory

Knowsley MCB, Huyton

Contract No:

PSL22/4646

Client Ref:

STU5625



Certificate of Analysis

Certificate Number 22-12669

Issued: 14-July-22

Client Professional Soils Laboratory Ltd
5/7 Hexthorpe Road
Hexthorpe
DN4 0AR

Our Reference 22-12669

Client Reference PSL22/4646

Order No (not supplied)

Contract Title Knowsley MCB, Huyton

Description 2 Soil samples.

Date Received 11-July-22

Date Started 11-July-22

Date Completed 14-July-22

Test Procedures Identified by prefix DETSn (details on request).

Notes Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Approved By

A handwritten signature in black ink, appearing to read "K. Bridgewood".

Kirk Bridgewood
General Manager



2139

Summary of Chemical Analysis

Soil Samples

Our Ref 22-12669

Client Ref PSL22/4646

Contract Title

Lab No	2071810	2071811
Sample ID	WS103	WS105
Depth	1.50	0.80
Other ID	5	4
Sample Type	SOIL	SOIL
Sampling Date	18/05/2022	18/05/2022
Sampling Time	n/s	n/s

Test	Method	LOD	Units		
Metals					
Magnesium Aqueous Extract	DETSC 2076*	10	mg/l	< 10	< 10
Inorganics					
pH	DETSC 2008#		pH	9.2	8.6
Chloride Aqueous Extract	DETSC 2055	1	mg/l	26	7.5
Nitrate Aqueous Extract as NO3	DETSC 2055	1	mg/l	42	< 1.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	160	80
Sulphur as S, Total	DETSC 2320	0.01	%	0.09	0.11
Sulphate as SO4, Total	DETSC 2321#	0.01	%	0.22	0.10

Information in Support of the Analytical Results

Our Ref 22-12669
Client Ref PSL22/4646
Contract

Containers Received & Deviating Samples

Lab No	Sample ID	Date		Containers Received	Holding time exceeded for tests	Inappropriate container for tests
		Sampled				
2071810	WS103 1.50 SOIL	18/05/22		PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	
2071811	WS105 0.80 SOIL	18/05/22		PT 1L	Total Sulphur ICP (7 days), pH + Conductivity (7 days)	

Key: P-Plastic T-Tub

DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

End of Report

Appendix F Chemical Analysis Assessment

GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	Not undertaken			
Chronic human health risk - Soils	Completed	30.06.2022	FQ	JP
Chronic human health risk - Groundwater vapour	Not undertaken			
Controlled waters risk - Surface water	Not undertaken			
Controlled waters risk - Drinking water	Not undertaken			
Controlled waters - Free phase indicator	Not undertaken			
Phytotoxicity	Not undertaken			
Ecotoxicity	Not undertaken			

Key

Assessment	Abbr.	GQRA Source (in order of preference)	Last Update
All	NGA	No guideline value available	-
Chronic human health risk - Soils	C4SL	Category 4 Screening Levels (DEFRA)	May 2021
	S4UL	Suitable 4 Use Levels (LQM)	August 2015
	ATK	Atrisk Soil Screening Values (Atkins)	June 2017
	CL:AIRE	Generic Assessment Criteria (CL:AIRE)	Jan 2010

Chronic human health risk (soils)

Scenario	
End user	Current and proposed site user
Receptor	Residential with homegrown produce
SOM	6.00%
GAC Preference	C4SLs over S4ULs
Unspeciated TPH GAC	Worst-case aliphatic/aromatic

Contaminant	Guideline source	Guideline value (mg/kg)	Max value (mg/kg)	Location	TS01
				Depth (m)	0.10
				Date	25/04/22
Inorganics - Metals					
Arsenic	C4SL	37	10		10
Beryllium	S4UL	1.7	<LoD		< 0.5
Boron	S4UL	290	<LoD		< 1
Cadmium	C4SL	22	0.5		0.5
Chromium (VI)	C4SL	21	<LoD		< 2
Copper	S4UL	2400	56		56
Cyanide - Free	ATK	34	<LoD		< 2
Lead	C4SL	200	138		138
Mercury	S4UL	40	<LoD		< 1
Nickel	S4UL	130	16		16
Selenium	S4UL	250	<LoD		< 3
Vanadium	S4UL	410	18		18
Zinc	S4UL	3700	152		152
Inorganics - Asbestos					
Asbestos Screen		N/A			Not Detected
Inorganics - Soil Parameters					
Organic matter		N/A			4.9
Organics - PAH & Phenol					
Acenaphthene	S4UL	1100	0.56		0.56
Acenaphthylene	S4UL	920	<LoD		< 0.1
Anthracene	S4UL	11000	0.5		0.5
Benzo(a)anthracene	S4UL	13	1.65		1.65
Benzo(a)pyrene	C4SL	5	1.57		1.57
Benzo(b)fluoranthene	S4UL	3.7	1.68		1.68
Benzo(ghi)perylene	S4UL	350	0.67		0.67
Benzo(k)fluoranthene	S4UL	100	0.67		0.67
Chrysene	S4UL	27	1.57		1.57
Dibenz(a,h)anthracene	S4UL	0.3	0.19		0.19
Fluoranthene	S4UL	890	3.02		3.02
Fluorene	S4UL	860	0.44		0.44
Indeno(1,2,3-cd)pyrene	S4UL	41	0.74		0.74
Naphthalene	S4UL	13	0.34	0.34	
Phenanthrene	S4UL	440	3.39	3.39	
Pyrene	S4UL	2000	3.11	3.11	
Organics - Banded TPH (unspeciated)					
EC >10-EC12 (unspeciated)	S4UL	380	1	1	
EC >12-EC16 (unspeciated)	S4UL	660	11	11	
EC >16-EC21 (unspeciated)	S4UL	930	36	36	
EC >21-EC35 (unspeciated)	S4UL	1700	92	92	

Appendix G Waste Classification and WAC Assessments

Waste Classification Assessment Summary

Waste population	Topsoil and Made Ground
Hazard assessment	Non-hazardous waste
List of waste code	17-05-04
List of waste description	Soil and stones other than those mentioned in 17-05-03

Hazard property	Assessment
HP1 - Explosive	Not hazardous by HP1
HP2 - Oxidising	Not hazardous by HP2
HP3 - Flammable	Not hazardous by HP3
HP4 - Irritant	Not hazardous by HP4
HP5 - STOT & aspiration toxicity	Not hazardous by HP5
HP6 - Acute toxicity	Not hazardous by HP6
HP7 - Carcinogenic	Not hazardous by HP7
HP8 - Corrosive	Not hazardous by HP8
HP9 - Infectious	Not hazardous by HP9
HP10 - Toxic for reproduction	Not hazardous by HP10
HP11 - Mutagenic	Not hazardous by HP11
HP12 - Release of an acute toxic gas	Not hazardous by HP12
HP13 - Sensitising	Not hazardous by HP13
HP14 - Ecotoxic	Not hazardous by HP14

Waste classification

Overall assessment	
Waste population	Topsoil and Made Ground
Hazard assessment	Non-hazardous waste
List of Waste code	17-05-04
List of waste description	Soil and stones other than those mentioned in 17-05-03
Is the statistical approach non-parametric, method B utilized?	No
Moisture content correction factor	No correction made

Asbestos assessment		
Query	Value	Assessment
Are bulk ACMs visually identifiable?	No	Non-hazardous
Have free fibres been detected?	No	Non-hazardous
What is the free fibre concentration (%)?	N/A	Non-hazardous

Flammability assessment	
Comment	Assessment
The waste is not considered flammable as it is a solid waste without a free draining liquid phase, and the TPH concentration and composition is not considered to present a likely flammable hazard.	Non-hazardous

Hydrocarbon assessment	
Query	Assessment
Is the origin of the oil contamination known?	Unknown oil
B(a)P : TPH ratio (%)	Not required
B(a)P marker assessment	Not required

pH assessment		
Query	Value	Assessment
Are all substances present in the waste known?	No	See pH assessment below
pH - Min	7.40	Non-hazardous
pH - Max	7.40	Non-hazardous

Oxidising assessment	
Comment	Assessment
Cr (VI) is the only compound with an oxidising hazard statement (H271). On review, the concentration is considered too low to present a viable oxidising hazard in a waste soil	Non-hazardous

Ecotoxic assessment			
Equation	Sum	Criteria	Assessment
WM3, Eq. 2	0.00%	25%	Non-hazardous
WM3 Eq. 3	0.00%	25%	Non-hazardous
WM3 Eq. 4	0.00%	25%	Non-hazardous

Compound hazard assessments

Hazard Property Description						Irritant			Specific Target Organ Toxicity / Aspiration Toxicity				Acute Toxicity								Carcinogenic		Corrosive	Toxic for reproduction		Mutagenic		Sensitizing		Ecotoxic				STOT				Carc.	Repr.								
Hazard Property						HP4			HP5				HP6								HP7		HP8	HP10		HP11		HP13		HP14				HP5				HP7	HP10								
Hazard Statement						H314	H311 and/or H319	H318	H304	H335	H372	H373	H300	H301	H302	H310	H311	H312	H330	H330	H331	H332	H330	H351	H314	H360	H361	H340	H411	H317	H334	H400	H410	H411	H413	H335 (OCS)	H372 (EAS)	H373 (CAS)	H373 (PSC4)	H350 (RAP) (DRA/A)	H361 (PASC4)						
Contaminant	Max. concentration (mg/kg)	Realistic worst case compound	Mass conversion factor	Misc. applicat?	Hazard Class / Compound concentration (%)	Skin Corr.1A	Skin Irrit.2 Eye Irrit.2	Eye Dam.1	Aq.p.Tox.1	STOT SE.3	STOT RE.1	STOT RE.2	Acute Tox.2 (Oral)	Acute Tox.3 (Oral)	Acute Tox.4 (Oral)	Acute Tox.1 (Dermal)	Acute Tox.3 (Dermal)	Acute Tox.4 (Dermal)	Acute Tox.1 (Inhal.)	Acute Tox.3 (Inhal)	Acute Tox.3 (Inhal)	Acute Tox.4 (Inhal)	Carc.1A Carc.1B	Carc.2	Skin Corr. 3A Skin Corr.1B	Repr.1A Repr.1B	Repr.2	Muta.1A Muta.1B	Muta.2	Skin Sens.1	Resp. Sens. 1	Aquatic Acute.1	Aquatic Chronic.1	Aquatic Chronic.2	Aquatic Chronic.4	STOT SE.3	STOT RE.1	STOT RE.2	STOT RE.2	Carc.1B	Repr.2						
Cyanide - Total	2.0	Salts of hydrogen cyanide, using sodium cyanide	1.88	N/A	0.000								0.000			0.000			0.000			0.000																									
Arsenic	10.0	Nickel diarsenide	1.78	N	0.002						0.002												0.002						0.002			0.002															
Arsenic (secondary)	10.0	Arsenic trioxide	1.32	N	0.001	0.001						0.001													0.001																						
Beryllium	0.5	Beryllium oxide	2.78	N	0.000					0.000		0.000							0.000			0.000							0.000																		
Cadmium	0.5	Cadmium sulfide	1.29	N	0.000																		0.000																								
Cadmium (secondary)	0.5	Cadmium oxide	1.14	N	0.000																																										
Chromium (VI)	2.0	Chromium (VI) trioxide	1.92	N/A	0.000	0.000													0.000			0.000																									
Copper	56.0	Copper (I) oxide	1.25	N	0.007																																										
Copper (secondary)	56.0	Copper(II) oxide	1.13	N	0.006			0.006														0.006																									
Lead	138.0	Lead compounds, using lead sulphate	1.46	N	0.020																	0.020			0.020																						
Mercury	1.0	Mercury dichloride	1.35	N	0.000	0.000							0.000									0.020			0.020																						
Nickel	16.0	Nickel carbonate	2.02	N	0.003	0.003																0.003																									
Selenium	3.0	Selenium compounds, using selenium dioxide	1.41	N	0.000							0.000										0.000																									
Zinc	152.0	Zinc sulphide	1.49	N	0.023	0.023																								0.023	0.023			0.023													
Vanadium	26.0	Vanadium pentoxide	1.79	N	0.005					0.005	0.005											0.005						0.005																			
Naphthalene	0.3	Naphthalene	1	N/A	0.000																		0.000																								
Acenaphthylene	0.1	Acenaphthylene	1	N/A	0.000																	0.000																									
Acenaphthene	0.6	Acenaphthene	1	N/A	0.000																																										
Fluorene	0.4	Fluorene	1	N/A	0.000																																										
Phenanthrene	3.4	Phenanthrene	1	N/A	0.000																	0.000																									
Anthracene	0.5	Anthracene	1	N/A	0.000																																										
Fluoranthene	3.0	Fluoranthene	1	N/A	0.000																	0.000																									
Pyrene	3.1	Pyrene	1	N/A	0.000																	0.000																									
Benzo(a)anthracene	1.7	Benzo(a)anthracene	1	N/A	0.000																		0.000																								
Chrysene	1.6	Chrysene	1	N/A	0.000																		0.000																								
Benzo(b)fluoranthene	1.7	Benzo(b)fluoranthene	1	N/A	0.000																		0.000																								
Benzo(k)fluoranthene	0.7	Benzo(k)fluoranthene	1	N/A	0.000																		0.000																								
Benzo(a)pyrene	1.6	Benzo(a)pyrene	1	N/A	0.000																		See specific assessment			0.000			0.000																	0.000	
Indeno(1,2,3-cd)pyrene	0.7	Indeno(1,2,3-cd)pyrene	1	N/A	0.000																			0.000																							
Dibenz(a,h)anthracene	0.2	Dibenz(a,h)anthracene	1	N/A	0.000																		See specific assessment																						0.000		
Benzo(ghi)perylene	0.7	Benzo(ghi)perylene	1	N/A	0.000																																										
Total TPH	142.0	Unknown oil	1	N/A	0.014					0.014													See specific assessment					0.014																			
Note:																																															
					Cut-off value (%)	1%	1%	1%	N/A	N/A	N/A	N/A	0.1%	0.1%	1%	0.1%	0.1%	1%	0.1%	0.1%	0.1%	1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.1%	0.1%	1%	1%	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
					Total (or greatest)	0.00%	0.00%	0.00%	0.01%	0%	0%	0.01%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0%	0.02%	0.00%	0.00%	0.02%	0.01%	0%	0.02%	0.02%	0.00%	0.00%	0.00%	0.00%	0%	0%	0%	0.02%	0%	0.02%	0%	0.02%	0%	0.02%	0%	
					Hazard threshold	1%	20%	10%	10%	10%	1%	10%	0.25%	5%	25%	0.25%	15%	55%	0.1%	0.5%	3.5%	22.5%	0.1%	1%	5%	0.3%	3%	0.1%	1%	10%	10%	WM3 eq.1	WM3 eq.2	WM3 eq.3 & eq.4	WM3 eq.4	1.0%	10.0%	0.1%	0.5%	0.01%	0.01%	2.5%					
					Hazardous	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	

Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	WAC01	
				Depth (m)	0.00	
				Date	25/04/22	
Parameters determined on the waste						
Total organic carbon	3	5	6		2.6	
Loss on ignition			10		3.6	
BTEX	6				< 0.05	
PCBs (7 congeners)	1				< 0.1	
Mineral oil	500				< 10	
PAH (17 congeners)	100				< 1.7	
pH		6			7.4	
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		< 1	
Limit values (mg kg ⁻¹) for compliance test using BN 12457-3 at L/S 10 l						
Arsenic	0.5	2	25		< 0.2	
Barium	20	100	300		< 0.1	
Cadmium	0.04	1	5		< 0.02	
Chromium (III)	0.5	10	70		< 0.20	
Copper	2	50	100		< 0.5	
Mercury	0.01	0.2	2		< 0.005	
Molybdenum	0.5	10	30		< 0.1	
Nickel	0.4	10	40		< 0.2	
Lead	0.5	10	50		< 0.2	
Antimony	0.06	0.7	5		< 0.05	
Selenium	0.1	0.5	7		< 0.05	
Zinc	4	50	200		< 0.2	
Chloride	800	15,000	25,000		18	
Fluoride	10	150	500		5.8	
Sulphate	1,000	20,000	50,000		< 20	
Total dissolved solids	4,000	60,000	100,000		302	
Phenol	1				< 0.5	
Dissolved organic carbon	500	800	1000		158	
Classifications						
Waste classification						Non-hazardous
Landfill type						Inert

Key Notes:

- 1) The values for total dissolved solids (TDS) can be used alternatively to the values for sulphate and chloride.
- 2) Soils with TOC values over the limit value may still be accepted provided the DOC value falls are below it's respective limit value.
- 3) In a hazardous waste, either the TOC or LOI must be used.