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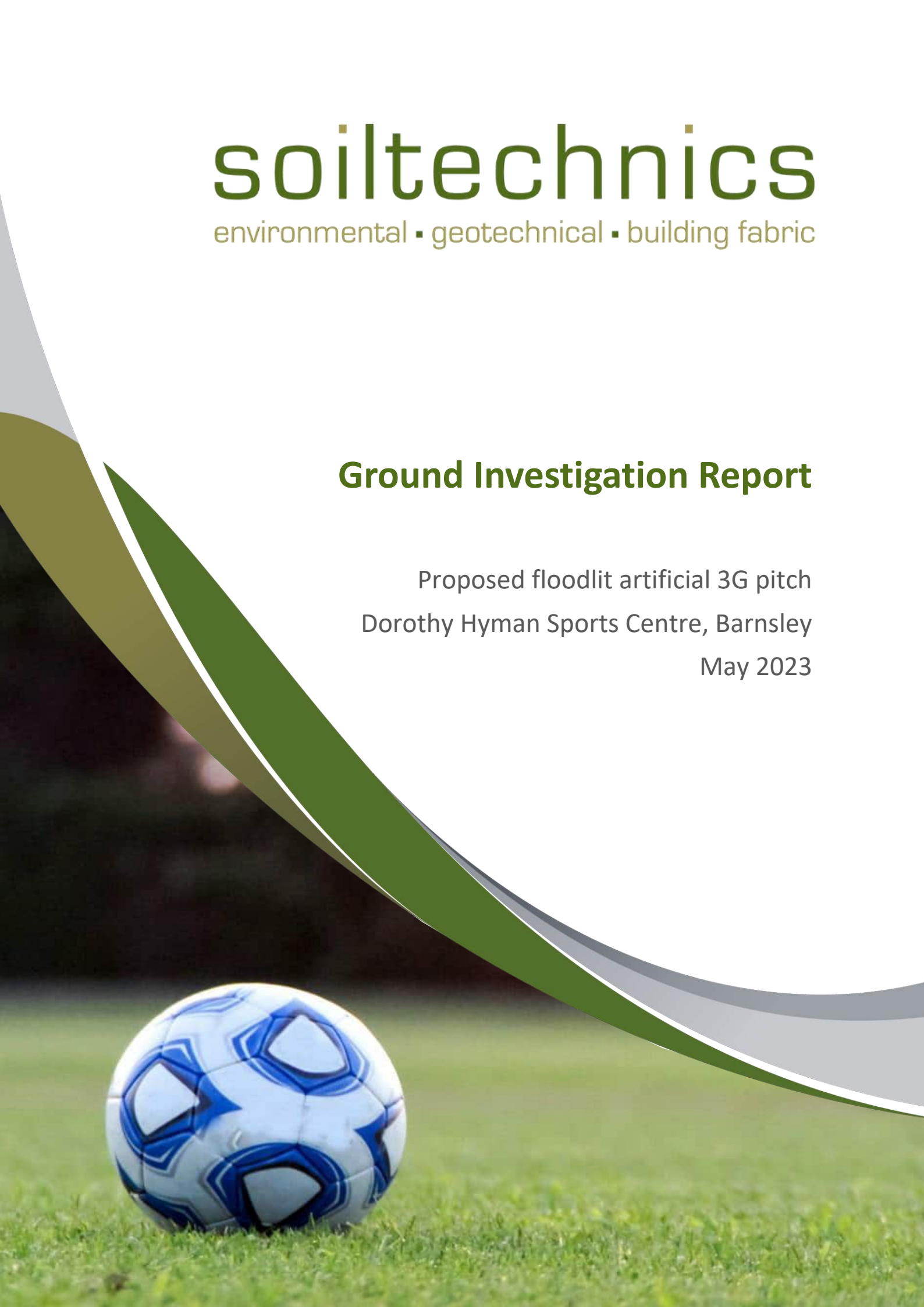
Ground Investigation Report

Proposed floodlit artificial 3G pitch

Dorothy Hyman Sports Centre, Barnsley

May 2023



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Dorothy Hyman Sports Centre, Barnsley

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Soiltechnics
Unit 9, Clarence Avenue
Trafford Park, Manchester
M17 1QS
0161 947 0270
mail@soiltechnics.net
www.soiltechnics.net

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Executive Summary

Development proposals and site description

The proposed development is for the construction of a 11v11 3G LED floodlit Football Turf Pitch (FTP).

Site history

Earliest mapping date from the mid 19th century indicates that the FTP location was unspecified open land. Playing fields were shown on site from the 1960s with a series of embankments and cuttings recorded to the south and west (assumed terraced to facilitate a playing field). Since 1984 the southern part of the site has been recorded as Dorothy Hyman Stadium.

Ground conditions

Topsoil was encountered to a maximum depth of 0.5m overlying localised, thin Made Ground to a maximum depth of 0.7m. Devensian Till was encountered in the east of the proposed FTP location only up to a maximum depth of 2.10m. Weathered bedrock deposits of Mexborough Rock were recorded in all boreholes from a minimum top depth of 0.3m in the west and centre of the site to a maximum of 2.1m in the east.

Coal mining and ground stability

A Coal Mining Consultants Report was commissioned by Soiltechnics and following review, there is no risk of land instability to the development from coal mining legacy.

Drainage and infiltration potential

Our infiltration testing indicated that the weathered Devensian Till are not suitable for soakaway type systems, however, the weathered Mexborough Rock could be suitable. Further testing would need to be undertaken to confirm rates for design purposes.

CBR assessment and pitch foundations

CBR design values of 4% for the Artificial Pitch have been established as suitable across the site. The placement and extent of conditioning applied to any fill placed at the site will dictate the CBR value used in design. Where the formation spans between cohesive and granular soils, it is recommended a geosynthetic reinforcement is introduced to minimise the potential effects of differential settlement between the differing soil types.

Floodlight foundations

In our opinion the naturally deposited Devensian Till (east of the FTP) and weathered Mexborough Rock (west and centre of the site) will adequately support pad foundations for the proposed floodlight bases, subject to achieving the minimum foundation depths specified. A concrete class of DS-1 and ACEC-1s is required.

Contamination and waste assessment

Laboratory testing indicates that the Topsoil present on site is suitable for reuse on-site or within a residential development. Topsoil would be suitable for disposal as non-hazardous waste (potentially inert at landfill operators' discretion) within a non-hazardous landfill site.

Recommendations for further works

Should soakaway systems be adopted on site, it is recommended this report is supplemented to include infiltration testing undertaken to BRE Digest 365 (2016) “Soakaway Design”, within natural soils utilising a machine excavator.

1 Introduction

1.1 Project Brief

1.1.1 The proposed development is for the construction of a 11v11 3G LED floodlit Football Turf Pitch (FTP). An existing site plan and proposed development plan is presented below in Figure 1-1. A plan is also presented in the Drawings section of this report.

Figure 1-1: Site location plan, with proposed FTP marked in green, existing in blue

1.1.2 The scope of works for the investigation has been completed in accordance with the framework agreement for a ground investigation utilising windowless sampling methods. The principal objectives of the ground investigation are to establish ground conditions at the site to assess the infiltration potential and provide design parameters for the artificial sports pitches, 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 and electrical survey was commissioned for the project, provided under separate cover.

1.1.4 Soiltechnics previously completed investigations for the existing FTP site to the north (marked in blue in Figure 1-1 above) in 2016. Results are discussed in the following sections.

1.2 Site Location and Description

1.2.1 The site is located to the east of the Dorothy Hyman Sports Centre at the following postal address:

Snydale Road
Cudworth
Barnsley

S72 8LH

1.2.2 The proposed Football Turf Pitch (FTP) lies within the grounds of Dorothy Hyman Sports Centre, approximately 5.0km to the east of Barnsley Town centre. Snydale Road to the west provides access to the site.

1.2.3 The proposed FTP location is currently comprised of a grassed playing field to the east of Dorothy Hyman Sports Centre. The northern and eastern boundaries comprise mature vegetation, with a second grassed pitch on the land immediately south. Land to the west rises steeply towards an artificial running track.

1.2.4 River Dearne is located approx. 1.5km to the south. Surface levels fall considerably from the west to east across the wider site, by approximately 15m. Based on topographical survey undertaken, levels within the proposed FTP area fall by c.1.5m to the east/southeast.

1.2.5 A selection of photographs taken on site are presented below.

Figure 1-2: From south of site looking east across the existing pitch

Figure 1-3: From south of site looking north across the existing pitch

Figure 1-4: From west of site looking west towards the slope and off-site running track

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 mapping dates from the 1850s and records the site as open fields. Playing fields were shown on site from the 1960s with a series of embankments and cuttings recorded to the south (assumed terraced to facilitate a creation of level playing fields). Since 1984 the southern part of the site has been recorded as Dorothy Hyman Stadium.

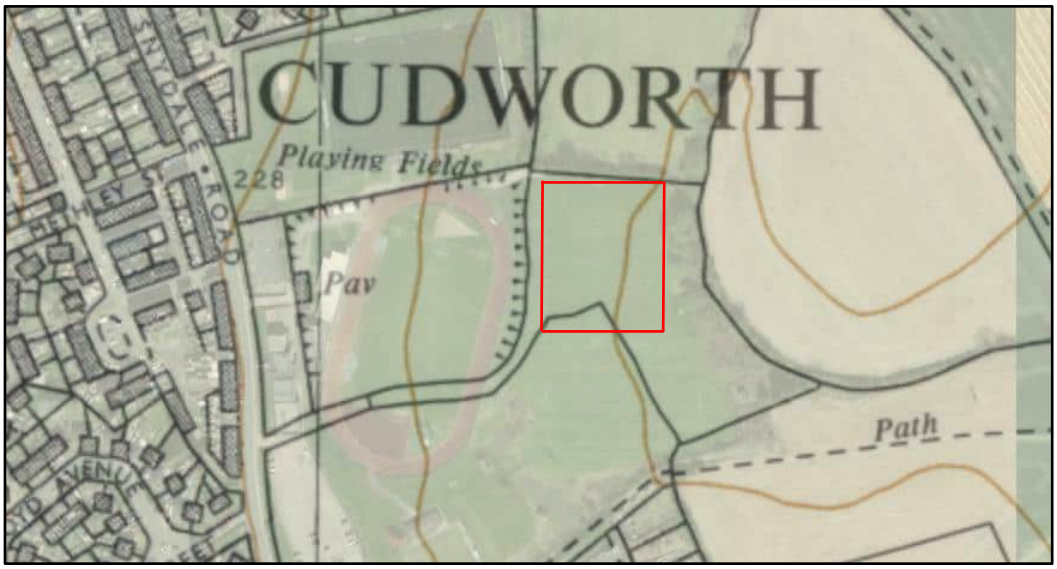


Figure 2-1: Historical mapping overlay circa. 1949-1972

2.2 Geology and Hydrogeology

2.2.1 Open-source British Geological Survey (BGS) mapping for the area shows there to be no naturally derived superficial deposits within the wider site, with artificial ground present across much of the central and southern part of the wider site and area of proposed FTP, likely associated with the historic terracing to the west of the wider site (see Figure 2-2 below).

2.2.2 The underlying bedrock is recorded as the Mexborough Rock, typically sandstone, which forms part of the Pennine Middle Coal Measures Formation (see Figure 2-3 below). Pennine Middle Coal Measures Formation typically comprises mudstone, siltstone and sandstone with coal seams, and may be present adjacent to the east.

2.2.3 Soiltechnics have previously undertaken fieldwork in December 2016 for the existing FTP to the northwest marked in blue on the location plan in Figure 1-1. Previous investigation indicated Made Ground deposits up to 0.55m bgl (where fully penetrated) overlying weathered Mexborough Rock formation, however, this area is not shown to be within the mapped extents of artificial ground.

Figure 2-2: Superficial deposits (proposed FTP in green)

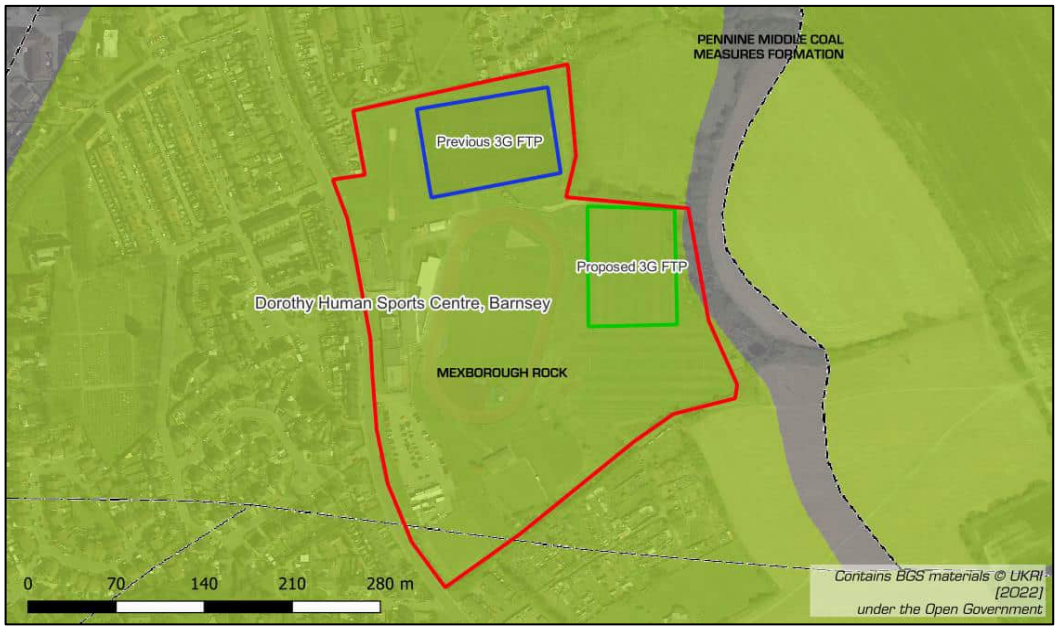


Figure 2-3: Bedrock deposits (proposed FTP in green)

2.2.4 Table 1 below summarises anticipated geological conditions on site:

Strata	Type	Approximate thickness	Typical soil type	Likely permeability
Topsoil	-	~0.3m	Organic soil	Moderate
Made Ground	Superficial	Variable	Variable	Variable
Mexborough Rock	Bedrock	Basal unit	Sandstone	Low to moderate

Table 1: Summary of anticipated geology and hydrogeology

2.3 Mining and Ground Stability

2.3.1 Coal Authority mapping data shows the site lies within a Coal Mining Reporting Area. A Development High Risk area lies immediately east of the wider site due to an outcropping coal seam and recorded shallow workings (see Figure 2-4 below).

2.3.2 Strata in the area dip towards the east therefore the coal seam and workings associated with the Development High Risk Area are not expected to extend beneath the proposed FTP.

2.3.3 A detailed coal mining consultants report has been commissioned (refer to Appendix B) and shows that there is no probable shallow workings or mine entries on or near to site. Past underground mining has occurred beneath the site, however, the shallowest workings are recorded at 387m depth.

2.3.4 We, therefore, consider the risk associated with land instability occurring due to coal mining legacy across the FTP area to be low.

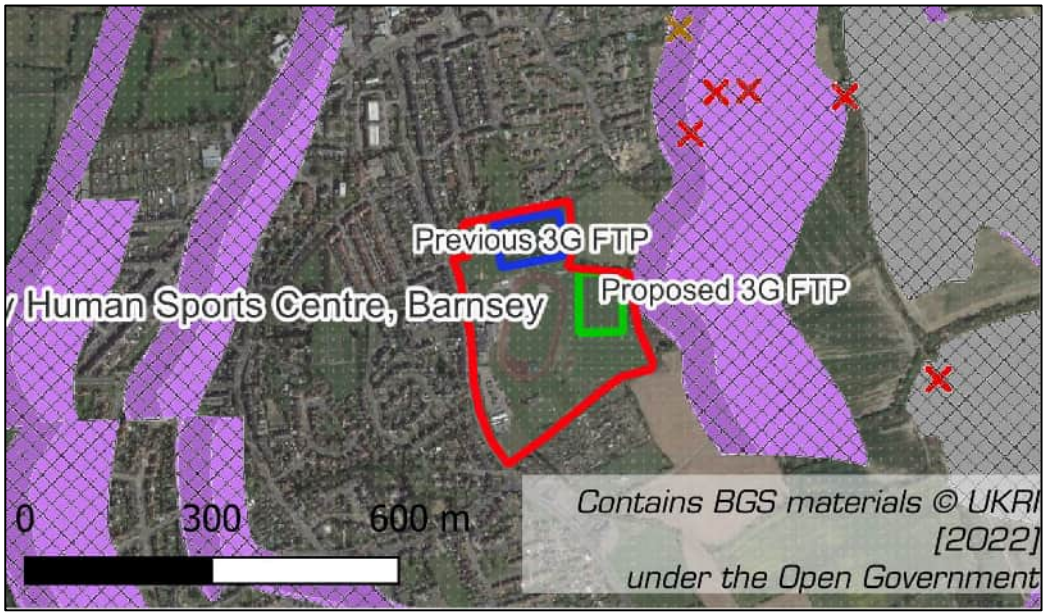


Figure 2-4: Coal Mining Specific Risks

2.4 Hydrology and Flood Risk

2.4.1 The River Dearne is located approx. 1.5km to the south.

2.4.2 According to Environment Agency flood maps, the site is within a Flood Zone 1, indicating there is less than a 0.1% chance of flooding from rivers or the sea in a year (see Figure 2-5 below).

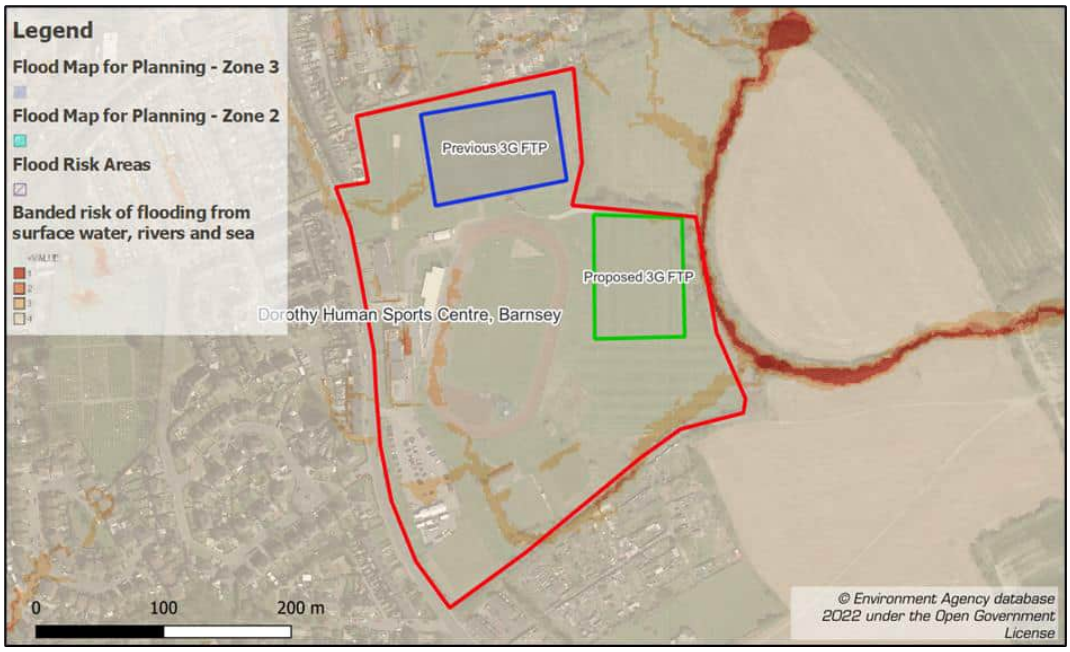


Figure 2-5: Flood risk mapping

2.5 Landfilling

2.5.1 Open-source Environment Agency landfill mapping data shows the closest landfill to the site to be approximately 0.5km to the southwest.

2.5.2 Artificial ground is mapped beneath the proposed FTP, however, given the nature of the development (pitch with no enclosed spaces), the risk from ground gases is considered to be low.

Figure 2-6: Proximity to landfill sites (outline of nearest former landfill in red hatching)

2.6 Enquiries with Statutory Undertakers

2.6.1 We have contacted a number of Statutory Undertakers (SU) 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 that no major services run directly through the site. A combined water sewer does, however, run adjacent to the eastern boundary of the proposed FTP.

2.6.3 Copies of the SU records are included in Appendix A.

3 Fieldwork

3.1 Fieldwork Summary

3.1.1 Fieldwork was undertaken on the 19th April 2023, and the works completed are summarised in Table 2 below. Exploratory hole logs are presented in Appendix C, and an exploratory hole location plan is presented as Drawing 01.

Exploratory hole ID	Method	Achieved depth (m bgl)	Purpose
WS01 to WS08	Windowless sampling techniques	1.2 to 3.36	Prove ground conditions for pitch/floodlights
DCP01 to DCP05	Dynamic cone penetrometer	0.48 to 0.90	Determine CBR value for proposed FTP

Table 2: Summary of fieldwork undertaken

3.1.2 All soils and rock encountered were described in accordance with BS 5930:2015+A1 (2020).

3.2 Site Restrictions

3.2.1 The current pitch is in use and therefore it was requested that no works were undertaken within the playing area.

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
Dynamic cone penetrometer	Highways England Document CS229 Data for Pavement Assessment
Permeability Test	BS EN 22282-2

Table 3: Summary of field testing undertaken

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

4 Ground Conditions

4.1 Overview

4.1.1 Ground conditions typically comprised Topsoil overlying Made Ground in the south and northeast, with such deposits absent elsewhere. Natural deposits of suspected Devensian Till and weathered Mexborough Rock Formation were encountered below.

4.1.2 Topsoil was encountered in all locations between 120mm and 500mm in thickness, comprising soft brown sandy clay.

4.1.3 Made Ground typically comprised dark brown, clayey, sand and gravel of clinker, brick, and sandstone. Made Ground was encountered to depths of 0.3m to a maximum depth of 0.7m.

4.1.4 Despite being absent from the BGS records, naturally derived deposits of suspected Devensian Till were noted underlying Topsoil in WS03-WS05 & WS07 along the eastern and southern FTP boundary to a maximum depth of 2.1m. Deposits generally comprised soft to stiff, orangish brown/grey clayey sand and gravelly clays, occasionally organic in places.

4.1.4.1 Weathered deposits of Mexborough Rock were encountered, comprising, grey sand and lithorelicts of sandstone, extending to the maximum exploratory depth of 3.4m. All boreholes terminated into more competent bedrock deposits, shallowest in the west of the site, deeper to the east.

4.1.5 Photographs representing the typical ground conditions are presented in Figures 4-1 and 4-2 below.

Figure 4-1: Photo of soil profile at WS01

Figure 4-2: Photo of soil profile at WS07

4.2 Groundwater

4.2.1 Suspected perched groundwater was observed as seepages in WS03 at 1.00m, WS04 at 3.1m and WS06 at 2.00m.

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 Topsoil and Made Ground.

4.4 Obstructions and Instability

4.4.1 The progress of the ground investigation works was not affected by near surface obstructions.

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 E, and the total number of geotechnical tests undertaken is summarised in Table 4 below:

Geological Unit	Test	Quantity
Devensian Till	Particle Size Density (coarse)	1
	Liquid Limit/Plastic Limit/Plasticity Index	1
	BRE SD1 Suite D (brownfield – pyrite present)	1
Mexborough Rock	Particle Size Density (coarse)	1
	BRE SD1 Suite D (brownfield – pyrite present)	2

Table 4: Summary of geotechnical laboratory testing

5.3 Chemical Testing

5.3.1 Chemical laboratory test certificates are presented in Appendix F, and the total number of chemical tests undertaken is summarised in Table 5 below:

Geological Unit	Testing Suite	Quantity
Topsoil	ST Basic classification suite (Metals, inorganics, PAH, banded TPH, asbestos	1
	Full WAC Suite (2-stage leachate)	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 taken from across all borehole positions. The composite sample was tested for the sole purpose of assessing the suitability of such soils for reuse off-site on a Residential Development. As such we have adopted generic screening values based upon a 'Residential with home grown produce' scenario in the first instance.

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).

6.1.3 Our analysis is presented in Appendix G, and the following table summarises the outcome of the Topsoil analysis.

Receptor group	CLEA model	Inorganic contaminants	Organic contaminants
Residential user (child), plant uptake	Residential with homegrown produce	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-site and offsite within a residential development.

6.1.5 Asbestos was not detected within the composite sample of the Topsoil.

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 Due to the thickness of the Made Ground it was not possible to obtain sufficient material for waste classification testing and the volumes of Made Ground likely to be generated during the development are likely very low.

6.2.3 One composite sample of the Topsoil from WS01-WS08 was obtained, referenced as TS01.

6.2.4 The assessment sheets are enclosed within Appendix H, and a summary of the findings is presented in the Table 7 below.

Stratum	Hazardous classification	Landfill classification
Topsoil	Non-hazardous	Topsoil is classified as non-hazardous due to fluoride content, however exceedance is so marginal (11mg/kg compared to inert threshold of 10mg/kg) may be accepted at inert landfills at the operators discretion

Natural soils	Non-hazardous	Inert based on soils being of natural original and unaffected by artificial contamination

Table 7: Summary of waste characterisation testing

6.2.5 It is recommended that Topsoil materials are re-used on site. This would need to be undertaken in accordance with a Material Management Plan (MMP).

7 Engineering Assessment

7.1 Ground Conditions Summary

7.1.1 Beneath the Topsoil across site Made Ground was encountered in WS02-WS03, WS05 and WS07, extending to basal depths of between 0.3m and 0.7m.

7.1.2 Beneath Made Ground, Devensian Till deposits were encountered along the eastern and southern boundary of the site only (WS03-WS05 & WS07) up to a depth of 2.1m. Directly underlying Made Ground/Topsoil (and Devensian Till were present) weathered deposits of the Mexborough Rock bedrock were observed. The top of the weathered Mexborough Rock were observed in the west of the site between 0.3-0.35m bgl and 2.0-2.1m in the east of the site.

7.2 Abnormal Ground Conditions

7.2.1 The Devensian Till deposits along the eastern boundary of the site (WS03-WS05) exhibited soft and organic characteristics to depths of 1.2-1.3m below existing ground levels. Based on the fall in site levels, such deposits could represent fill material, used to terrace the site. Such soils are not considered suitable to provide adequate support to proposed floodlight foundations.

7.3 Floodlight Foundations

7.3.1 Deposits of Made Ground across the site will not provide adequate support to proposed floodlights, in addition to the soft/organic suspected Devensian Till deposits to the east of the site.

7.3.2 The naturally deposited weathered Mexborough Rock will adequately support pad foundations for the proposed floodlight bases in the west and centre of the site (the area of WS1-WS2, WS6-WS8. With the exception of WS7 these deposits comprise sands and gravels.

7.3.3 The naturally deposited clay soils of the Devensian Till will adequately support pad foundations for the proposed floodlight bases in the east of the site, providing excavations achieve minimum depths of 1.5m below existing ground levels due to the presence of overlying soft/organic soils as described in paragraph 7.2.1. above.

7.3.4 Based on soils at and below likely founding depths comprising both cohesive and granular deposits, we have calculated bearing values based on both scenarios, and presented the lower bound conservative values within our following assessment.

7.3.5 Laboratory testing indicates the clay 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 and achieving the minimum foundation depth along the eastern boundary of the site of 1.5m below existing ground levels. In addition, the mature trees which border the east and north of the site will need consideration and could have an effect on overall foundation depth.

7.3.6 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.

7.3.7 Based on ground conditions and in-situ pocket penetrometer testing, a conservative undrained shear strength of 75kN/m^2 has been adopted for design purposes. The presumed bearing capacity to limit the effects of eccentricity should not exceed 135kN/m^2.

7.3.8 The results of calculations undertaken to determine the bearing values for pad type foundations are presented in Table 8 below.

Plan size of pad (m)	Ultimate bearing value (kN/m^2)	Presumed bearing value (kN/m^2)	Allowable bearing pressure (kN/m^2)
1.0 x 1.0	685	165	135
1.5 x 1.5	655	165	135
2.0 x 2.0	640	165	120

Table 8: Bearing values for cohesive strata

7.3.9 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. 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.

7.4 Artificial Pitch Foundation

7.4.1 We have determined CBR value for the proposed artificial pitch 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 D and the location of test positions are shown on Drawing 01.

7.4.2 We anticipate that the proposed artificial sports pitch will be located on existing ground levels with the formations located variably on the natural strata following the removal of Topsoil and thin Made Ground beneath. Soils are likely to comprise granular deposits (sands and gravels) to the west, and clays to the east.

7.4.3 In addition, based on site levels, there is the possibility that c.0.5-1m of site won fill could be placed in the eastern part of the site, cut/sourced from the western part of the site, to homogenise site levels and allow construction of a uniform playing surface.

7.4.4 Based on the anticipated founding depth and DCP results, a CBR design value of 4% can be adopted for soils that are likely to be representative of those which remain at or near pitch formation levels. The placement and extent of conditioning applied to any fill placed at the site will dictate the CBR value used in design.

7.4.5 It is recommended that the formation level is trimmed and rolled following the requirements outlined in the Specification for Highway Works Series 600. Such a process will identify any soft/loose areas, which should either be excavated out and backfilled with a suitable well compacted material similar to those exposed in the sides of the resulting excavation, or large cobbles of a good quality stone rolled into the formation to stabilise the 'soft/loose' area.

7.4.6 Where the formation spans between cohesive and granular soils, it is recommended a geosynthetic reinforcement is introduced to minimise the potential effects of differential settlement between the differing soil types.

7.4.7 The Devensian Till deposits are considered frost susceptible and this may override the CBR criteria for pavement foundation design purposes.

7.4.8 The silty nature of the Devensian Till/weathered Mexborough Rock deposits will render them moisture susceptible with small increases in moisture content giving rise to a rapid loss of support to construction plant. It is therefore recommended that the sub-base is laid as soon as practicable following establishment of formation.

7.5 Drainage and Infiltration Potential

7.5.1 The weathered Mexborough Rock was encountered as a granular material. Indicative infiltration testing was undertaken in WS01 and WS04 which were stable to 1.37m and 3.40m basal depth of each borehole respectively. During the test, the WS01 was filled to 0.42m bgl and WS04 was filled to 0.51m. An infiltration rate of 2.12 x 10^{-6}m/s was recorded for WS01 (weathered Mexborough Rock) and 6.32 x 10^{-8}m/s for WS04 (Devensian Till). Records are presented in Appendix D.

7.5.2 On the above assessment of the ground conditions, the Devensian Till deposits are not considered amenable to the use of soakaway type systems, however, the weathered Mexborough Rock deposits could be.

7.5.3 It should be noted that infiltration testing in boreholes uses notably less water than tests undertaken within soakaway trial pits. Accordingly, results within the weathered Mexborough Rock should be considered as an indication of the potential viability of soakaways. It is recommended that full soakaway tests should be undertaken at the site in accordance with BRE 365, to facilitate detailed drainage design.

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

7.5.5 As an alternative, it is possible that the FTP drainage could key into the existing surface water drainage system currently used by the school. Manholes were noted adjacent to the northeast and northwest of the western pitch boundary and are indicated on the topographical survey for the site. If this is considered an option for the development a comprehensive drainage assessment will be required to determine the potential impact on the capacity of the existing systems, to identify the invert levels of existing features, and to confirm drainage gradients achievable across the proposed FTP area.

7.5.6 In addition, a 375mm diameter combined sewer is present adjacent to the east of the site (refer to Section 2.6). Given the proximity of the combined sewer, this is considered to be a feasible and practical option for the disposal of surface water collected by the proposed pitch development, subject to obtaining relevant permissions. However, a comprehensive drainage assessment will be required to determine the potential impact on the capacity of the existing systems and to confirm drainage gradients will be achievable across the proposed pitch area

7.6 Aggressiveness of the ground to buried concrete

7.6.1 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).

7.6.2 The site is interpreted to be a brownfield site where pyrite is likely to be present.

7.6.3 The classification of each strata is presented below:

Stratum	Design sulphate classification	Aggressive chemical environment for concrete classification
Devensian Till	DS-1	ACEC-1s
Weathered Mexborough Rock	DS-1	ACEC-1s

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

8 Recommendations for further works

8.1.1 Should soakaway systems be adopted on site, it is recommended this report is supplemented to include infiltration testing undertaken to BRE Digest 365 (2016) "Soakaway Design", within natural soils utilising a machine excavator.

Drawings

Key:

- WLS
- Soakaway / Permeability Testing
- DCP (CBR)
- Site Boundary
- Proposed FTP Area

Notes

1) Base image provided by Google.

2) All drawn features are approximate.

REV	DATE	Comment on variation
A	Mayl 2023	First issue

soiltechnics
environmental • geotechnical • building fabric

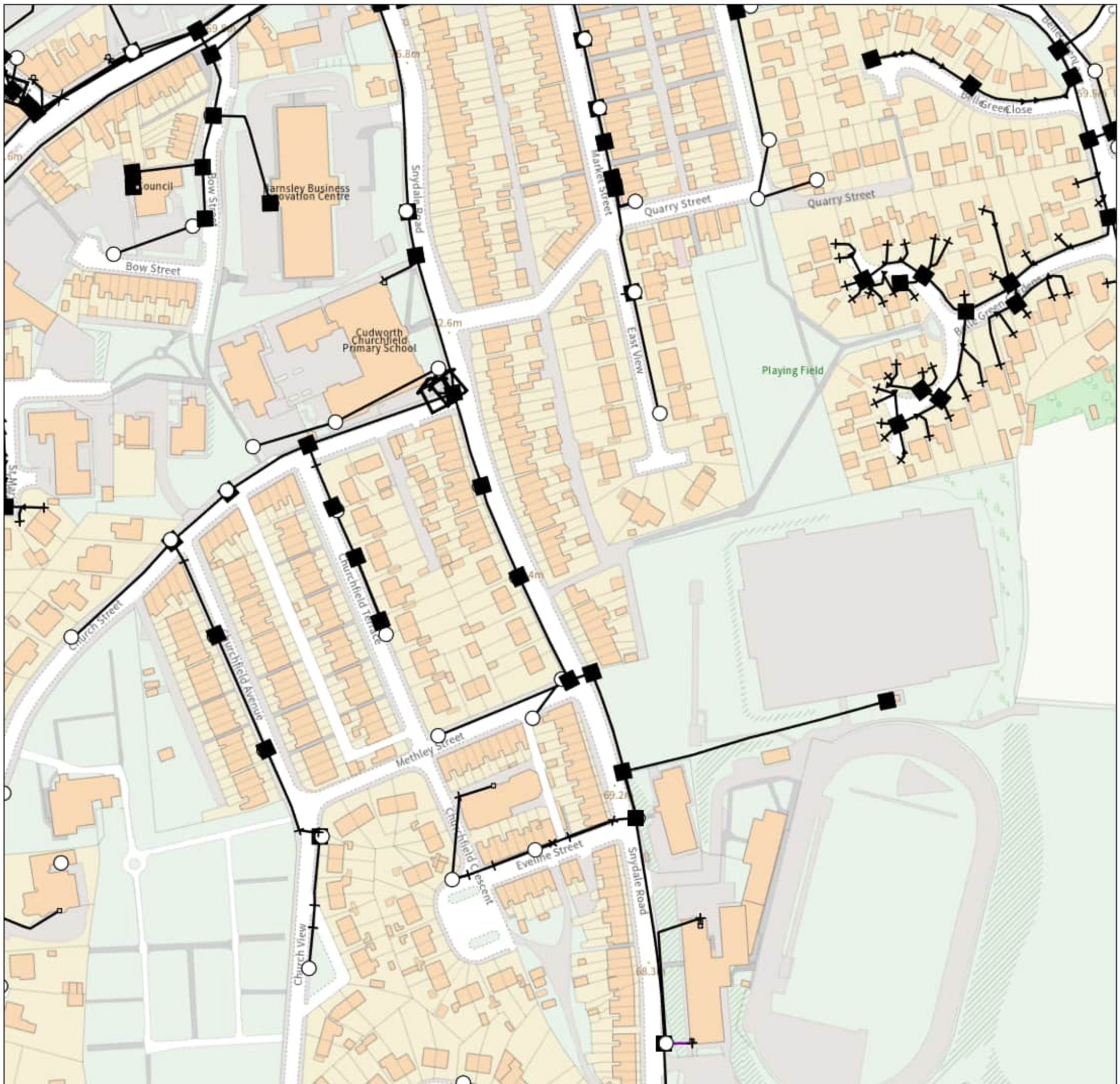
PROJECT
Dortohy Hyman Sports centre

TITLE
Exploratory Hole Location Plan

PROJECT No.	DRAWING	REVISION
STV5991	01	A

Appendix A Statutory Undertakers Responses

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
PCP		
Pole		
Box		
Manhole		
Cabinet		

Change Of State	+	Hatchings	
Split Coupling	×	Built	
Duct Tee	▲	Planned	
Building		Inferred	
Kiosk	K	Duct	

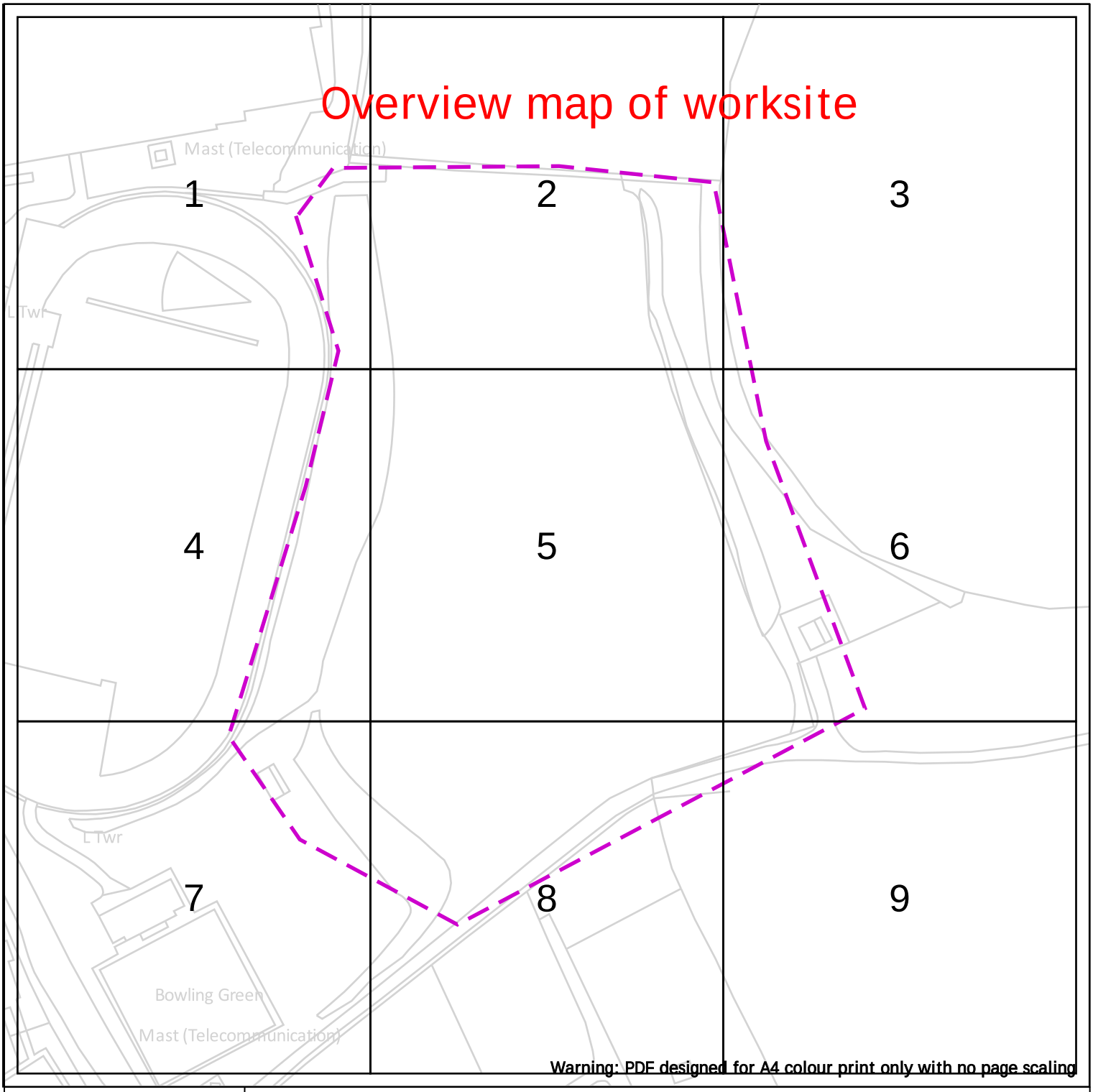
Other proposed plant is shown using dashed lines.
BT Symbols not listed above may be disregarded.
Existing BT Plant may not be recorded.
Information valid at time of preparation. Maps are only valid for 90 days after the date of publication.

	Pending Add	In Place	Pending Remove	Not In Use
Power Cable				
Power Duct				N/A

BT Ref : NCB12378B
Map Reference : (centre) SE3891808955
Easting/Northing : (centre) 438918,408955
Issued : 14/03/2023 12:38:09

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

Overview map of worksite



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

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: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

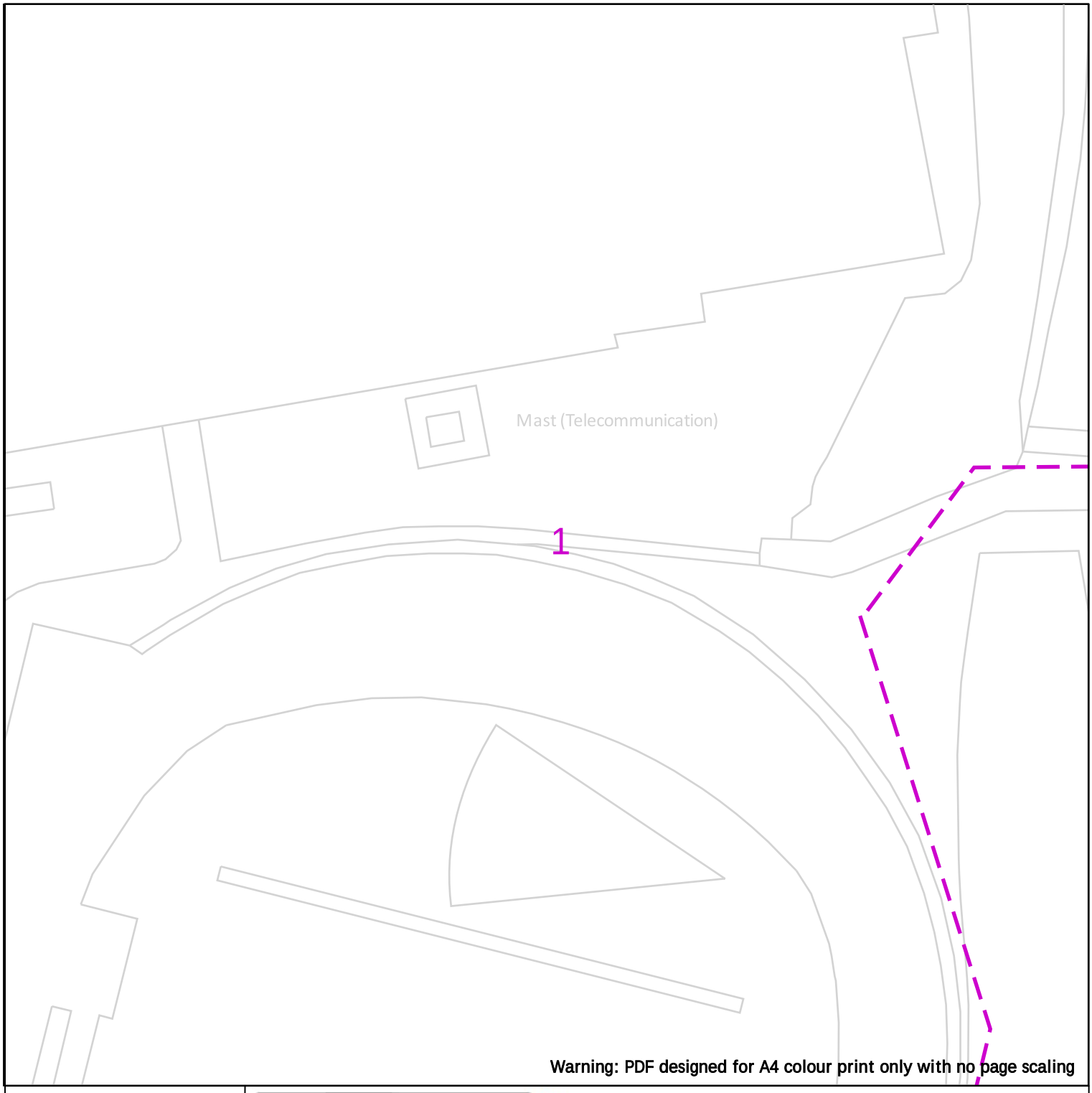
View extent: 100m, 100m

Scale: 1:1538 (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



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

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

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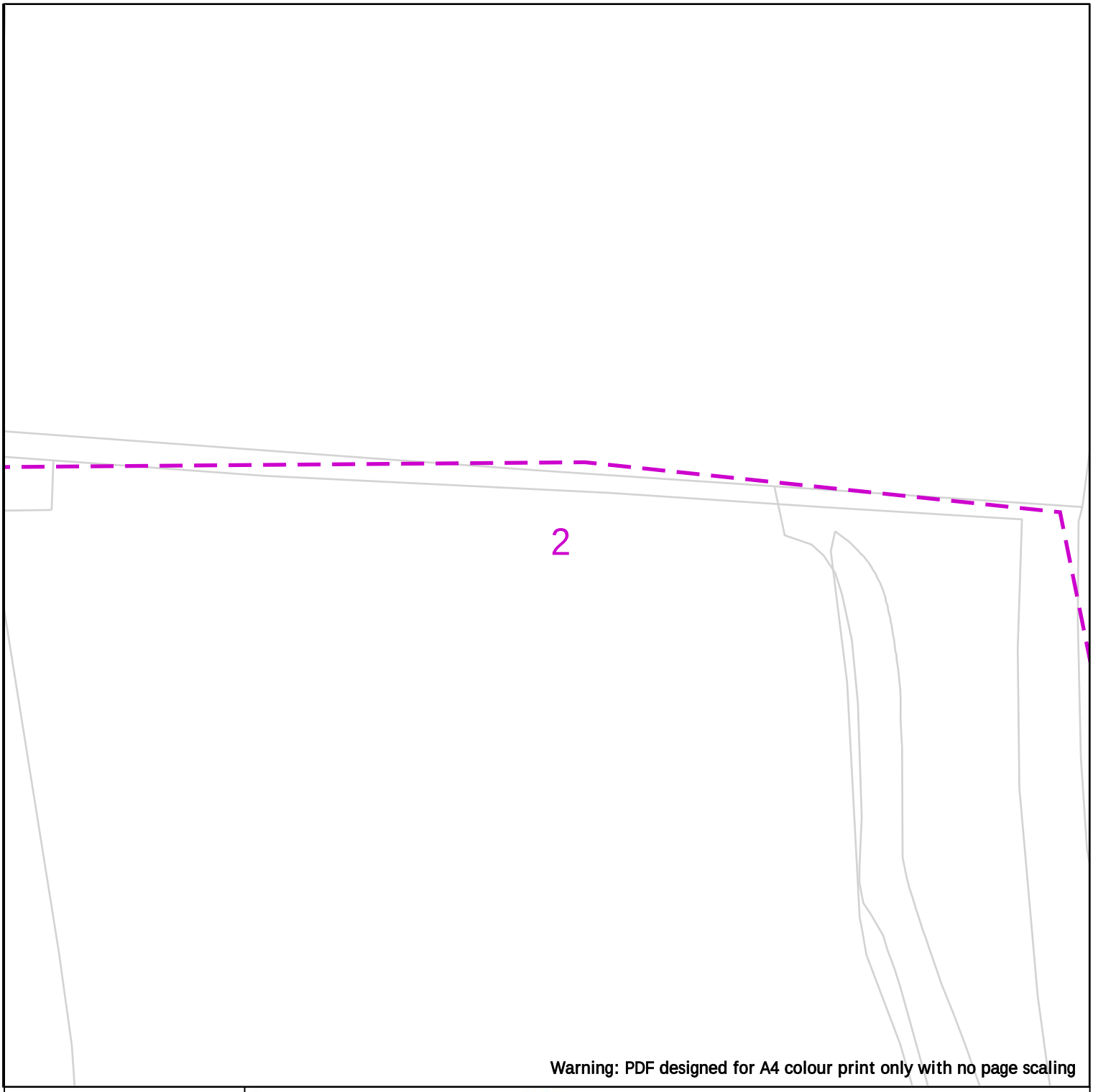

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25m

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LP Mains
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IP Mains
LHP Mains

Valve
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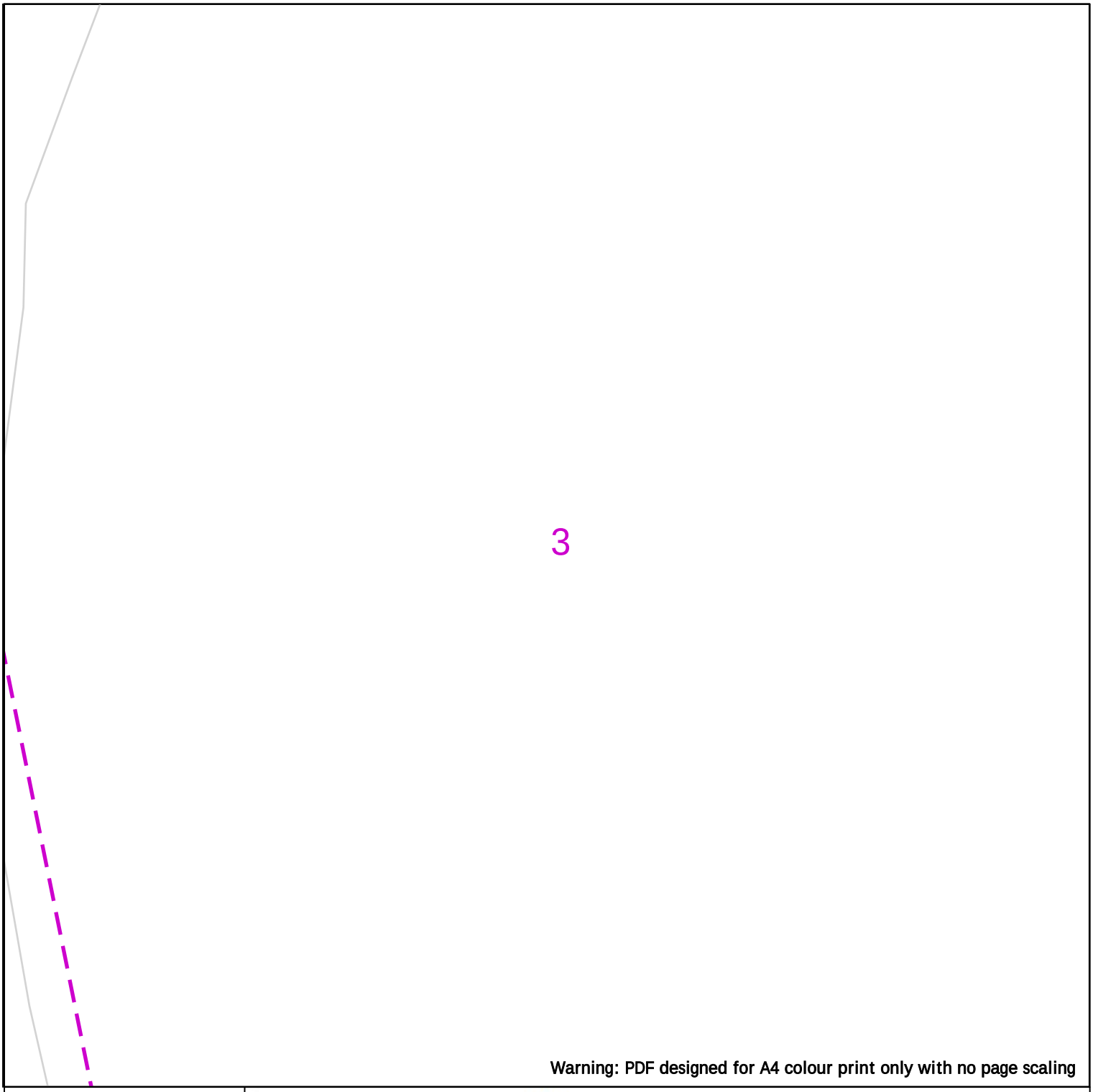

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25m

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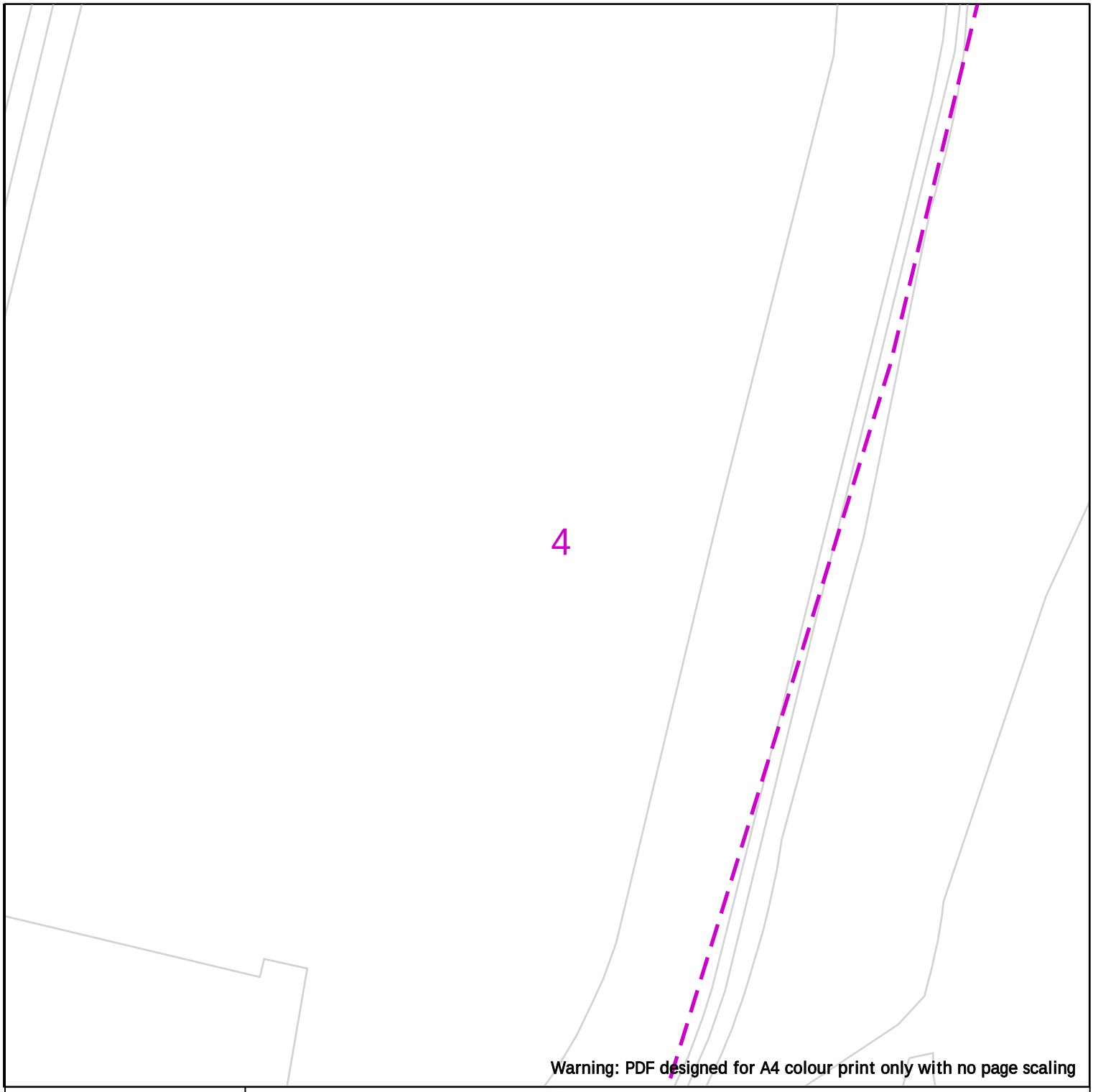

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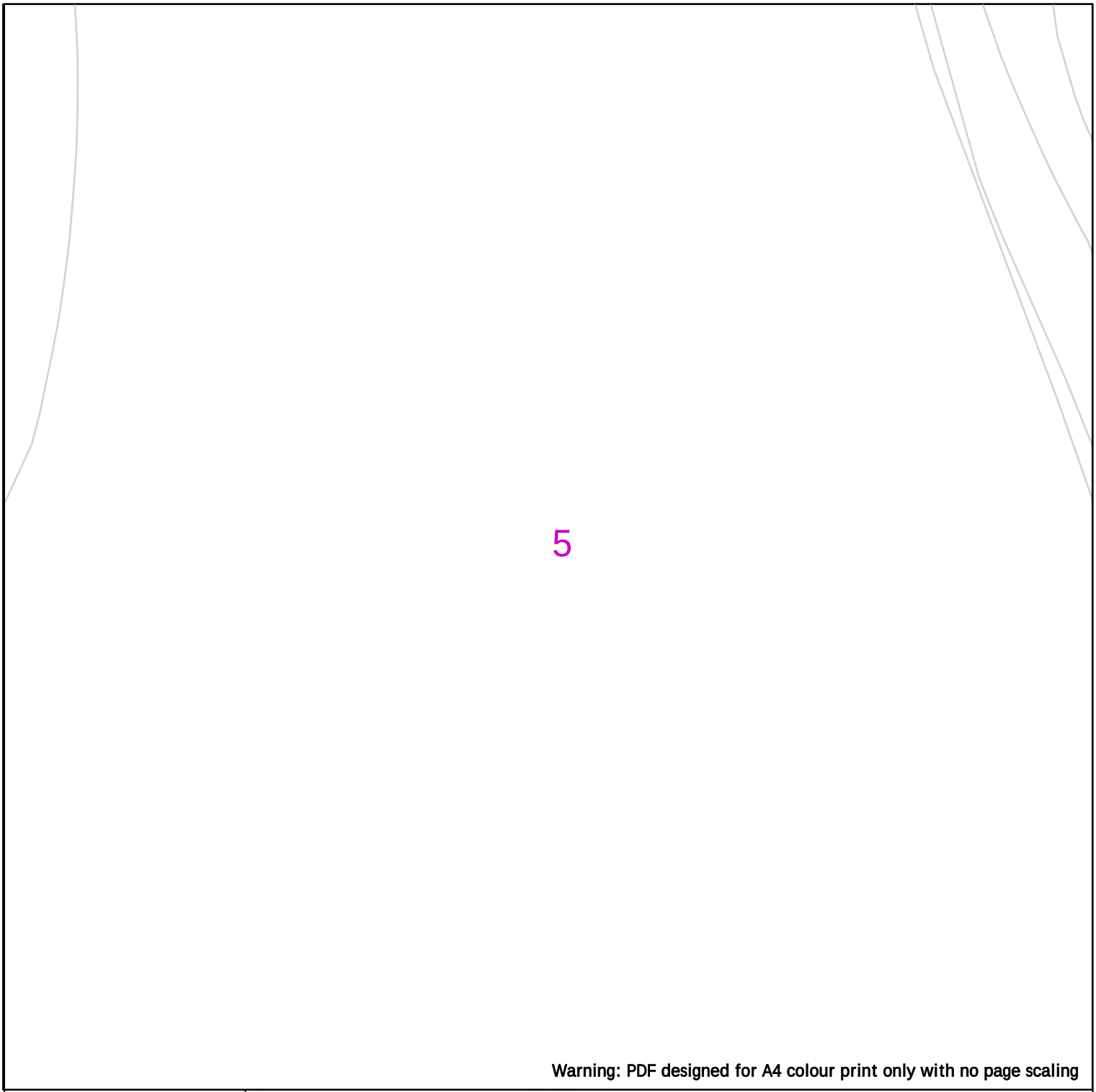

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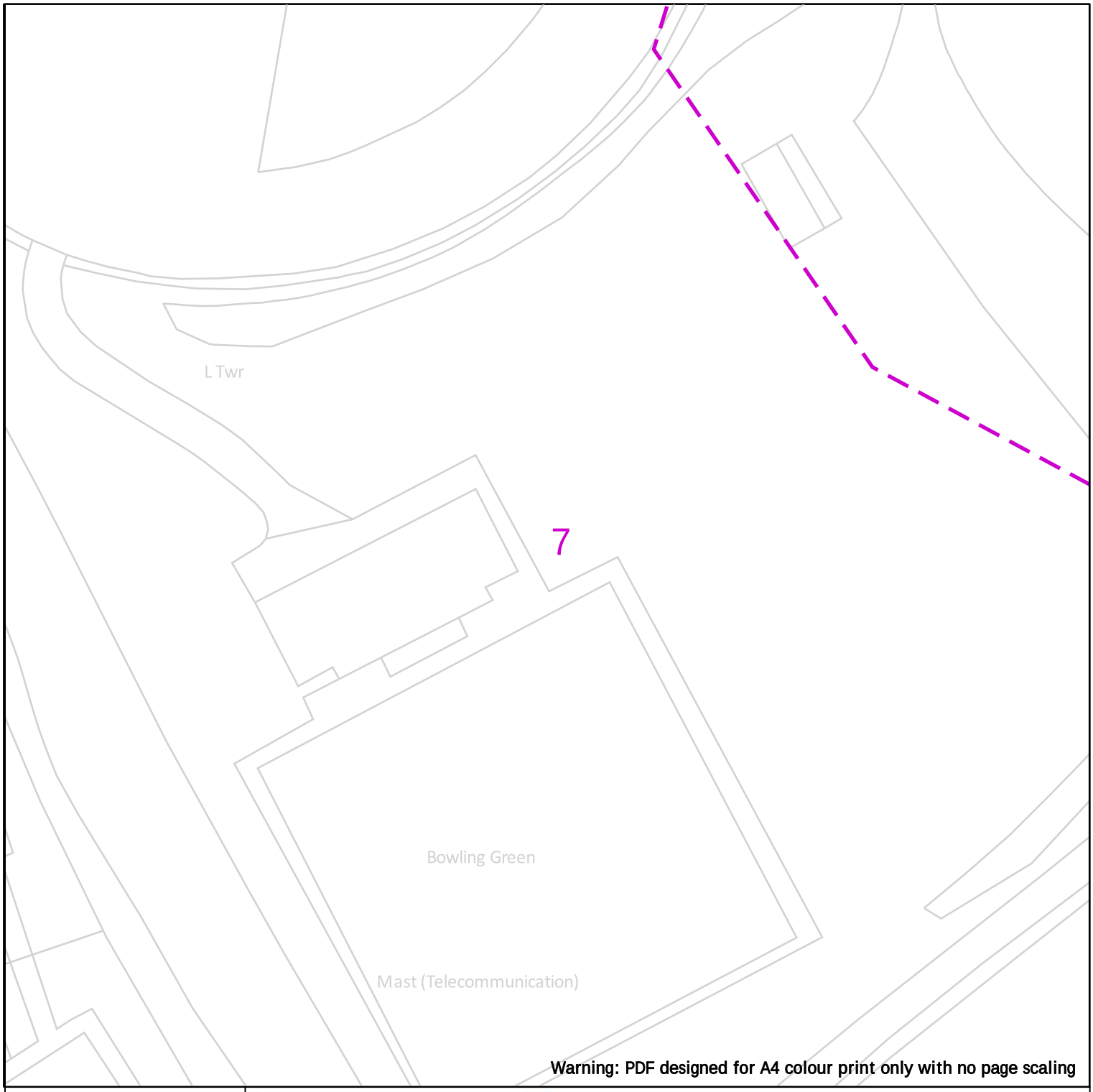

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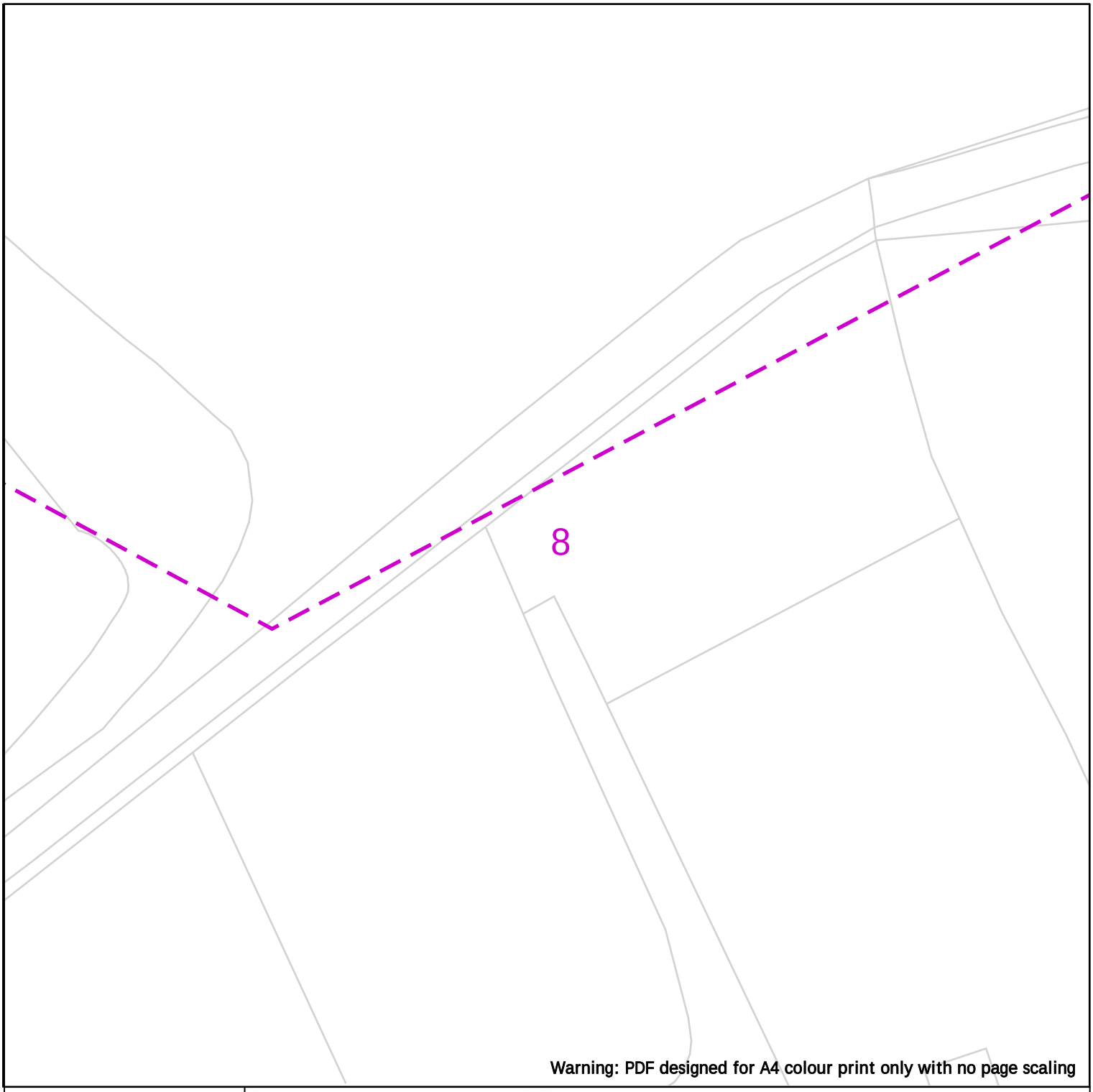

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25m

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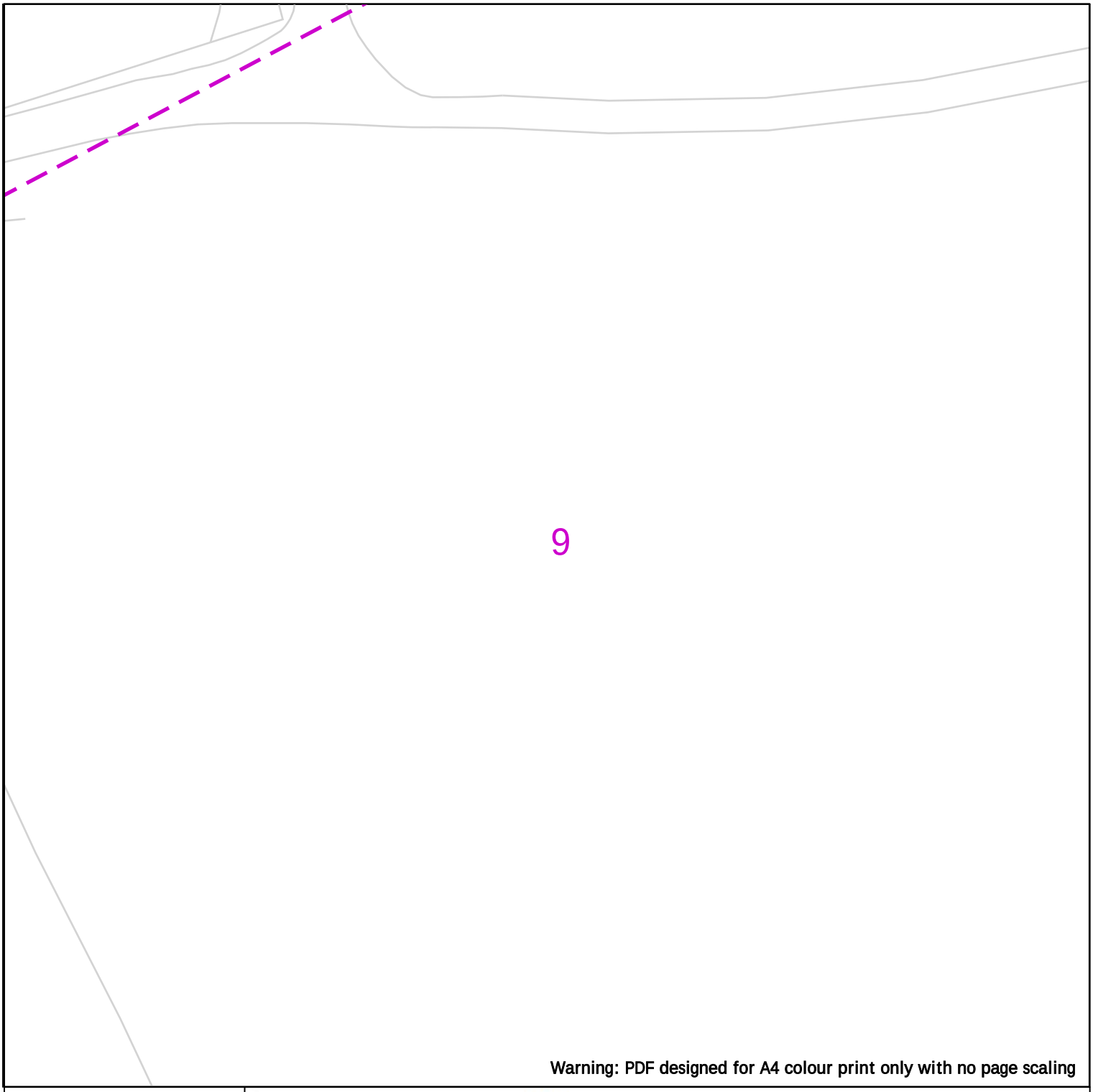

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25m

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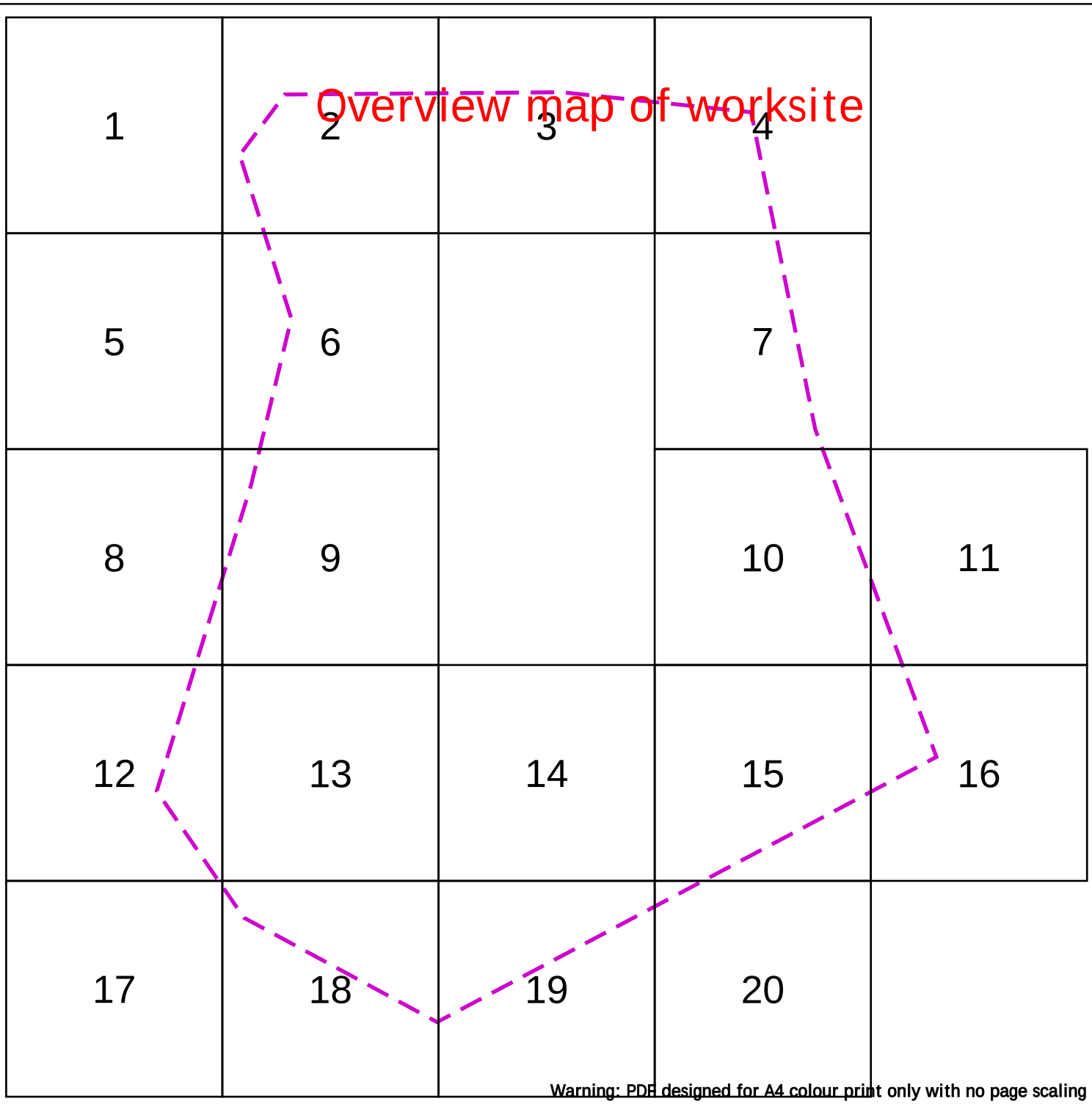

Warning: PDF designed for A4 colour print only with no page scaling

Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
- Flow Stop - Open
- Flow Stop - Closed
- Valve - Open
- Valve - Closed
- Transmission Valve - Open
- Transmission Valve - Closed

Network Asset
- CP Point
- Dip Point
- Drain Point
- End Closure
- Flow Measure
- Gas Conditioner
- Governor
- MEG Point
- Meter
- OMR
- Oiling Point

Network Asset (continued)
- Pig Trap
- Pipe Joint
- Pressure Measurement
- Purge Point
- Reducer
- Stand Pipe
- Syphon
- Tee
- Test Point

Non-Network Asset
- Outlet
- Inlet
- Depth of Cover
- Crossover Connection
- Change in Material
- Change in Diameter

NTS

IGT Area
- IGT Site
- Infill Site
- LPG Site
- OMR's

Pipeline
- Contact Zone

Environment
- SAM
- SSSI

Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

Scale: 1:1281 (When plotted at A4)

IMPORTANT NOTICES

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

1

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

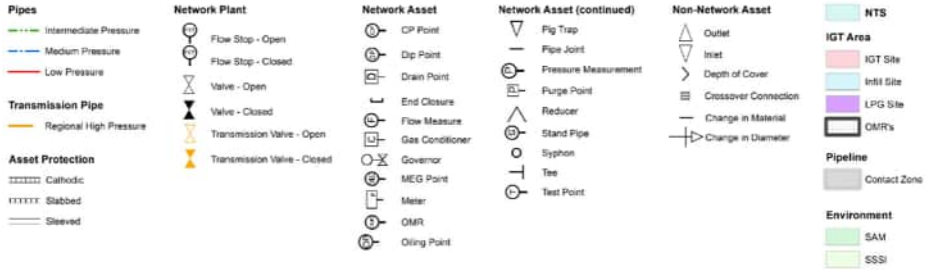
Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:



Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

Scale: 1:250 (When plotted at A4)

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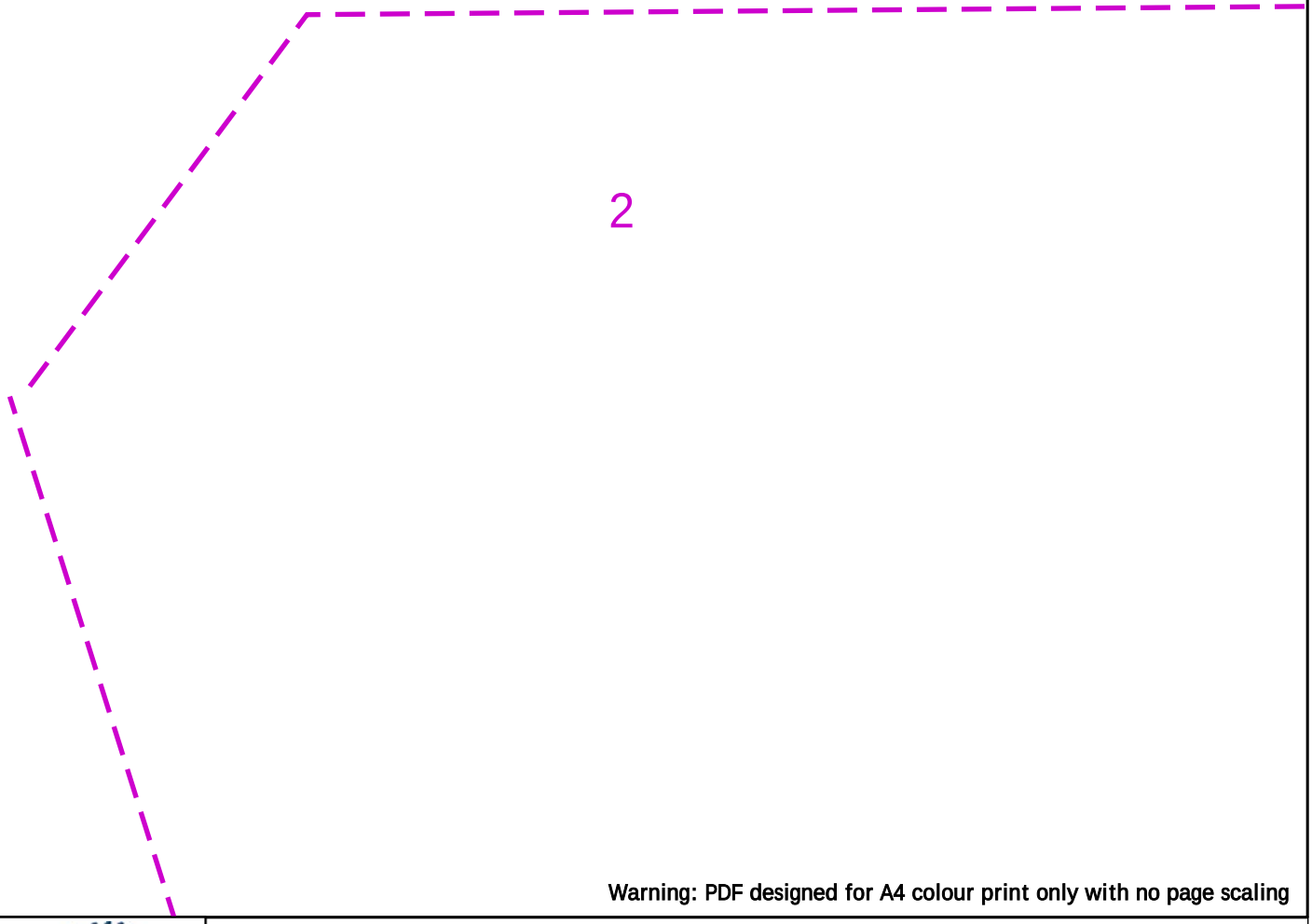

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Northern Gas Networks

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100m

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
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- Flow Stop - Closed
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Network Asset
- CP Point
- Dip Point
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- NTS

IGT Area
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- Infill Site
- LPG Site
- OMR's

Pipeline
- Contact Zone

Environment
- SAM
- SSSI

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Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

Scale: 1:250 (When plotted at A4)

IMPORTANT NOTICES

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

3

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Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
- Flow Stop - Open
- Flow Stop - Closed
- Valve - Open
- Valve - Closed
- Transmission Valve - Open
- Transmission Valve - Closed

Network Asset
- CP Point
- Dip Point
- Drain Point
- End Closure
- Flow Measure
- Gas Conditioner
- Governor
- MEG Point
- Meter
- OMR
- Oiling Point

Network Asset (continued)
- Pig Trap
- Pipe Joint
- Pressure Measurement
- Purge Point
- Reducer
- Stand Pipe
- Syphon
- Tee
- Test Point

Non-Network Asset
- Outlet
- Inlet
- Depth of Cover
- Crossover Connection
- Change in Material
- Change in Diameter

NTS

IGT Area
- IGT Site
- Infill Site
- LPG Site
- OMR's

Pipeline
- Contact Zone

Environment
- SAM
- SSSI

Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

Scale: 1:250 (When plotted at A4)

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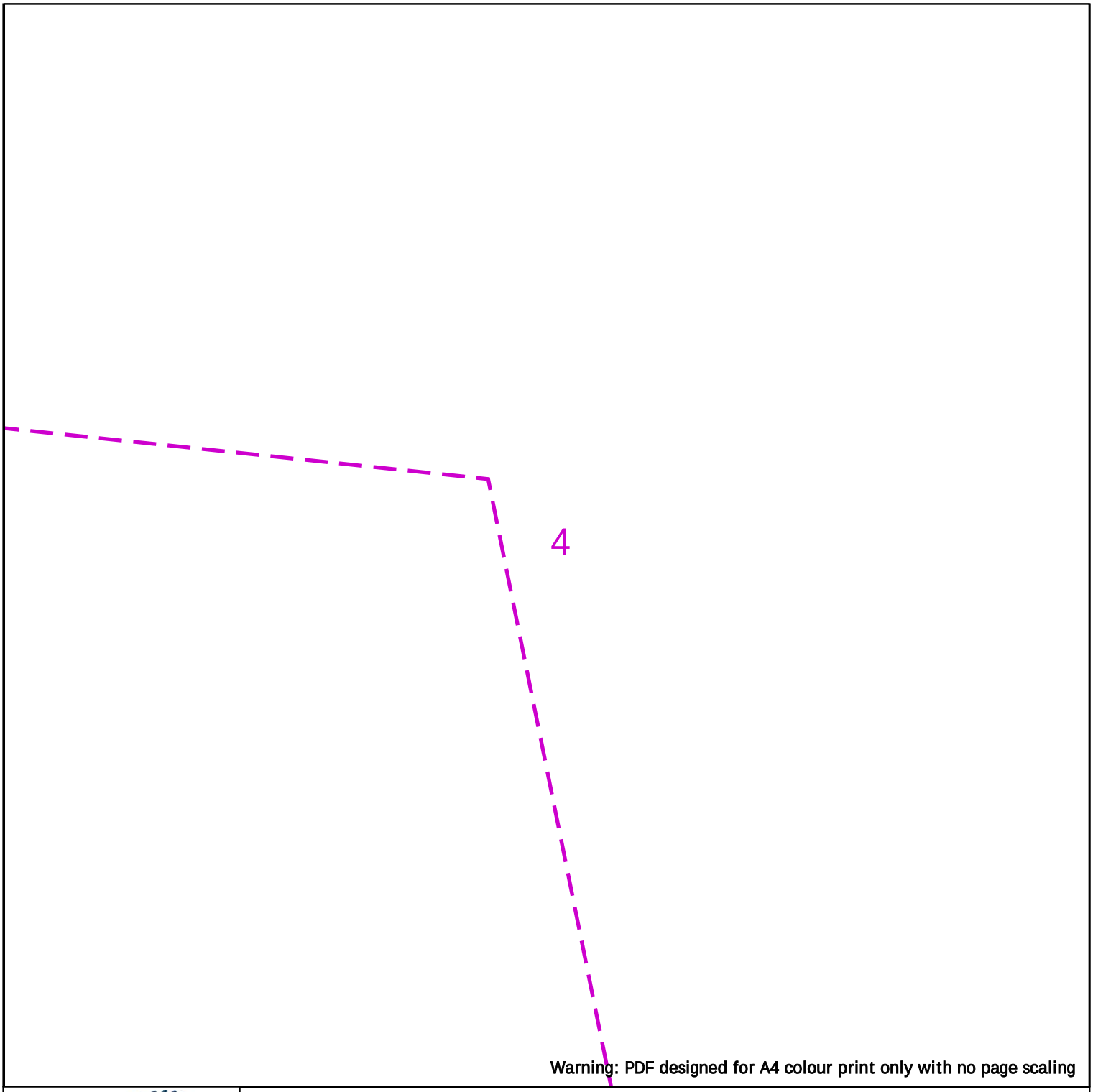

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Northern Gas Networks

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100m

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
- Flow Stop - Open
- Flow Stop - Closed
- Valve - Open
- Valve - Closed
- Transmission Valve - Open
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Network Asset
- CP Point
- Dip Point
- Drain Point
- End Closure
- Flow Measure
- Gas Conditioner
- Governor
- MEG Point
- Meter
- OMR
- Oiling Point

Network Asset (continued)
- Pig Trap
- Pipe Joint
- Pressure Measurement
- Purge Point
- Reducer
- Stand Pipe
- Syphon
- Tee
- Test Point

Non-Network Asset
- Outlet
- Inlet
- Depth of Cover
- Crossover Connection
- Change in Material
- Change in Diameter

NTS

IGT Area
- IGT Site
- Infill Site
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- OMR's

Pipeline
- Contact Zone

Environment
- SAM
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Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
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Your Scheme/Reference: STV5991

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5

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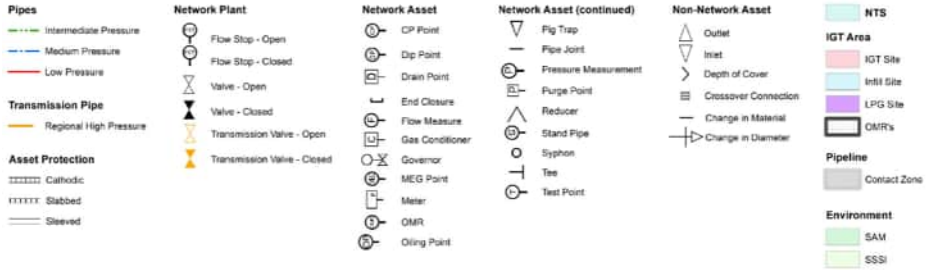
Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:



Date Requested: 14/03/2023
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Site Location: 439120 408838
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Your Scheme/Reference: STV5991

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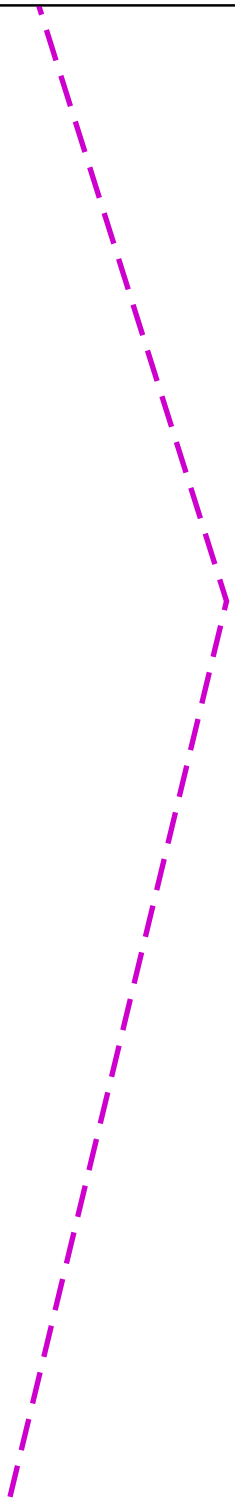

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Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:

Pipes
Intermediate Pressure
Medium Pressure
Low Pressure

Transmission Pipe
Regional High Pressure

Asset Protection
Cathodic
Slabbed
Sleeved

Network Plant
Flow Stop - Open
Flow Stop - Closed
Valve - Open
Valve - Closed
Transmission Valve - Open
Transmission Valve - Closed

Network Asset
CP Point
Dip Point
Drain Point
End Closure
Flow Measure
Gas Conditioner
Governor
MEG Point
Meter
OMR
Oiling Point

Network Asset (continued)
Pig Trap
Pipe Joint
Pressure Measurement
Purge Point
Reducer
Stand Pipe
Syphon
Tee
Test Point

Non-Network Asset
Outlet
Inlet
Depth of Cover
Crossover Connection
Change in Material
Change in Diameter

NTS

IGT Area
IGT Site
Infill Site
LPG Site
OMR's

Pipeline
Contact Zone

Environment
SAM
SSSI

Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
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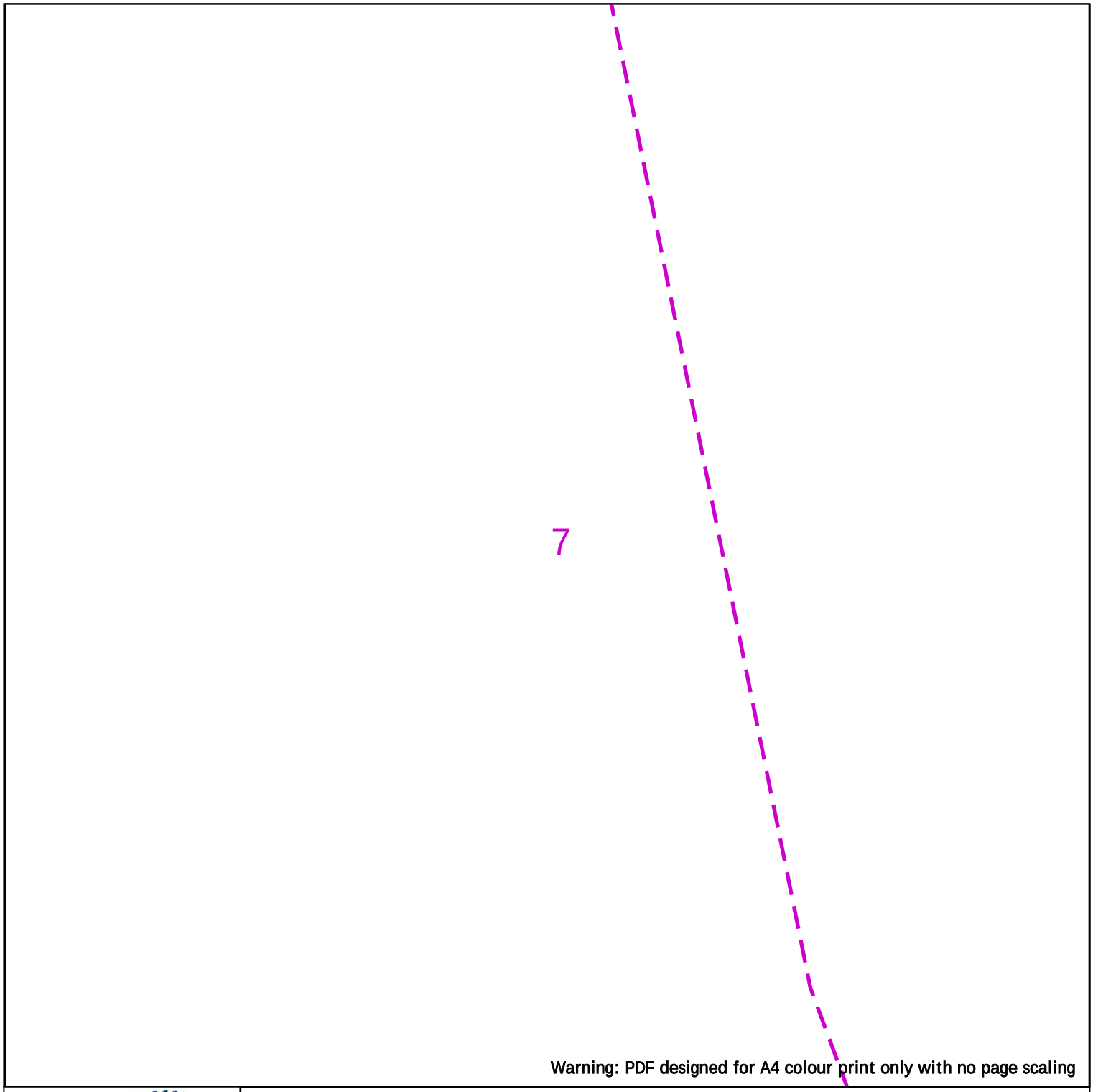

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Northern Gas Networks

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100m

Dig Sites Area: Line:

Pipes
Intermediate Pressure
Medium Pressure
Low Pressure

Transmission Pipe
Regional High Pressure

Asset Protection
Cathodic
Slabbed
Sleeved

Network Plant
Flow Stop - Open
Flow Stop - Closed
Valve - Open
Valve - Closed
Transmission Valve - Open
Transmission Valve - Closed

Network Asset
CP Point
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End Closure
Flow Measure
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Network Asset (continued)
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Non-Network Asset
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Inlet
Depth of Cover
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OMR's
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Date Requested: 14/03/2023
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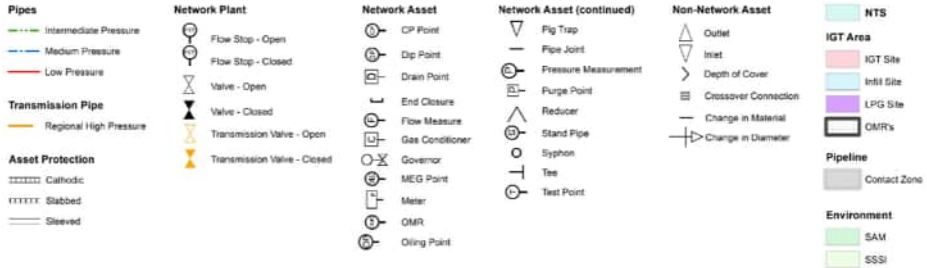
Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:



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Site Location: 439120 408838
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Northern Gas Networks

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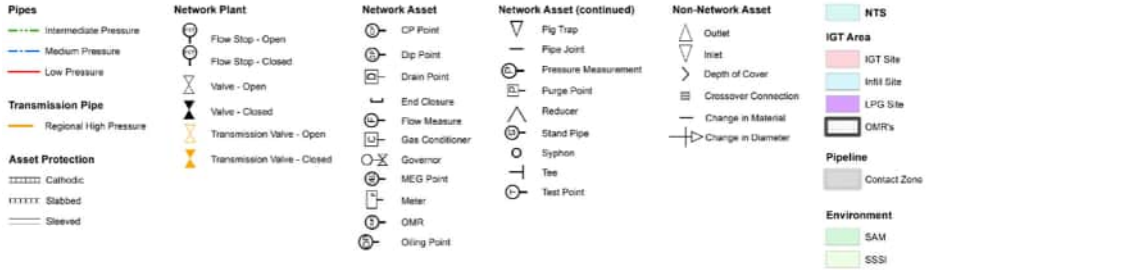
100m

Dig Sites Area: Line:



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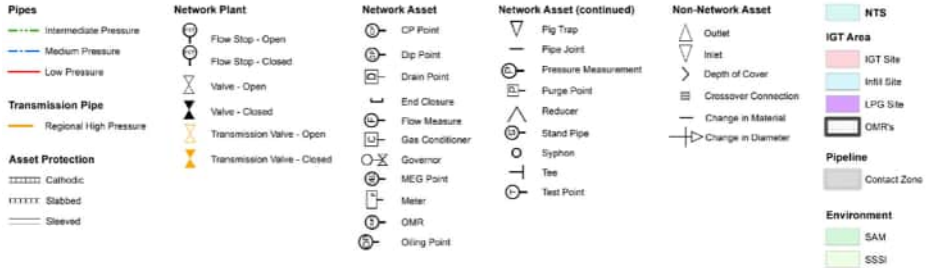
Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:



Date Requested: 14/03/2023
Job Reference: 28835445
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Northern Gas Networks

Contact Us

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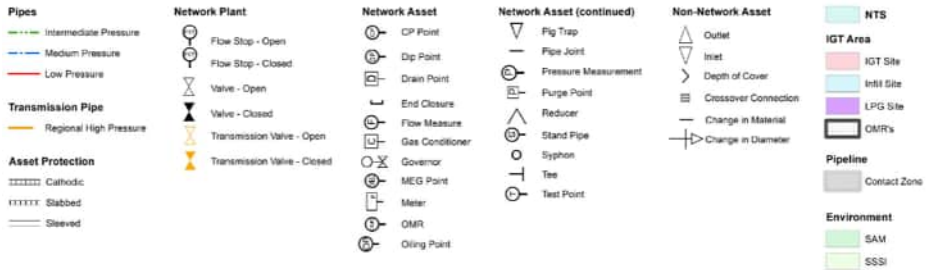
100m

Dig Sites Area: Line:



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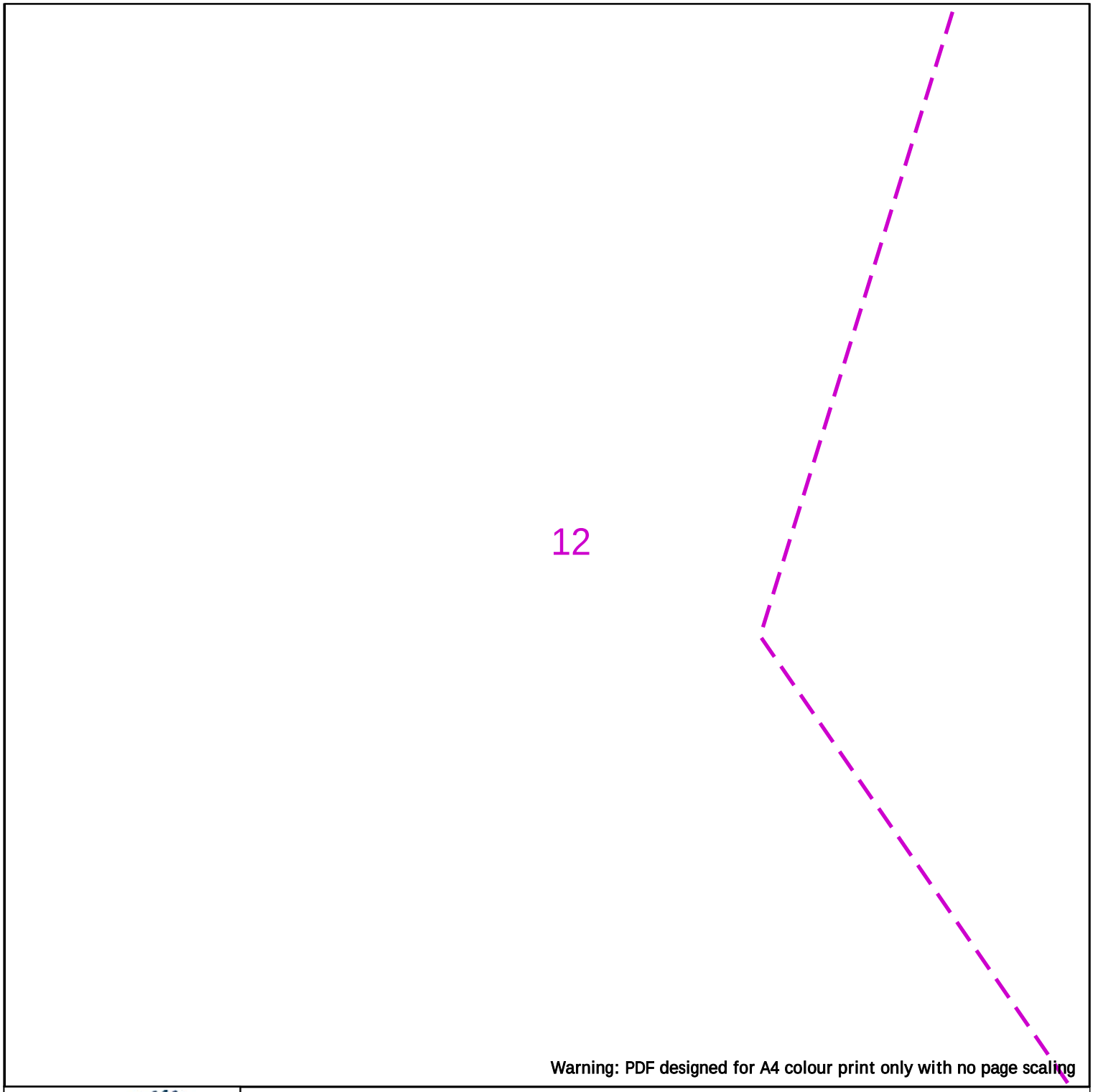

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Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
- Flow Stop - Open
- Flow Stop - Closed
- Valve - Open
- Valve - Closed
- Transmission Valve - Open
- Transmission Valve - Closed

Network Asset
- CP Point
- Dip Point
- Drain Point
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- Governor
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Network Asset (continued)
- Pig Trap
- Pipe Joint
- Pressure Measurement
- Purge Point
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Non-Network Asset
- Outlet
- Inlet
- Depth of Cover
- Crossover Connection
- Change in Material
- Change in Diameter

- NTS

IGT Area
- IGT Site
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Pipeline
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Environment
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Date Requested: 14/03/2023
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Site Location: 439120 408838
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100m

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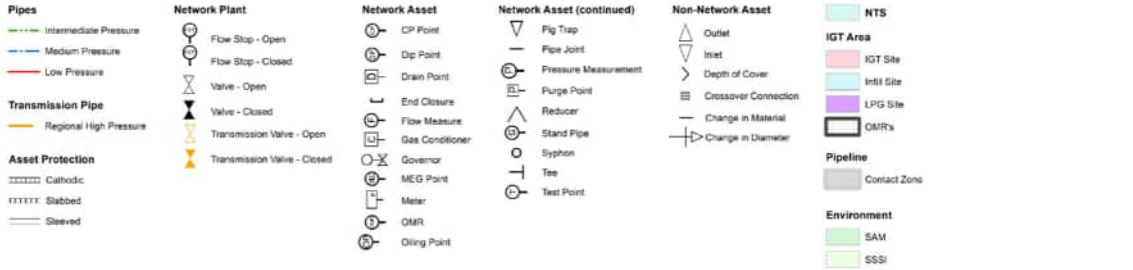

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Site Location: 439120 408838
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Site Location: 439120 408838
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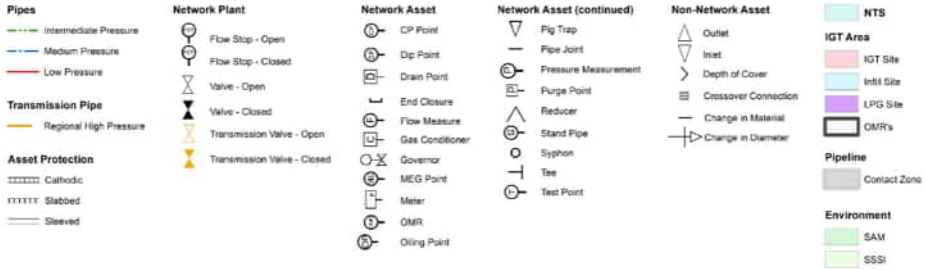
Your Scheme/Reference: STV5991

Scale: 1:250 (When plotted at A4)

100m

Dig Sites Area: Line:



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15

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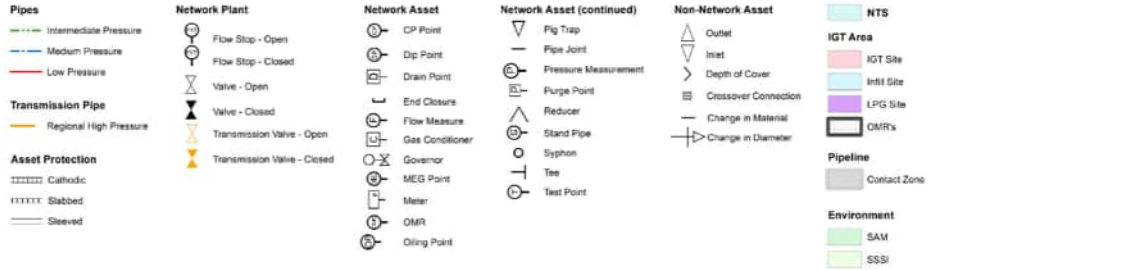
100m

Dig Sites Area: Line:



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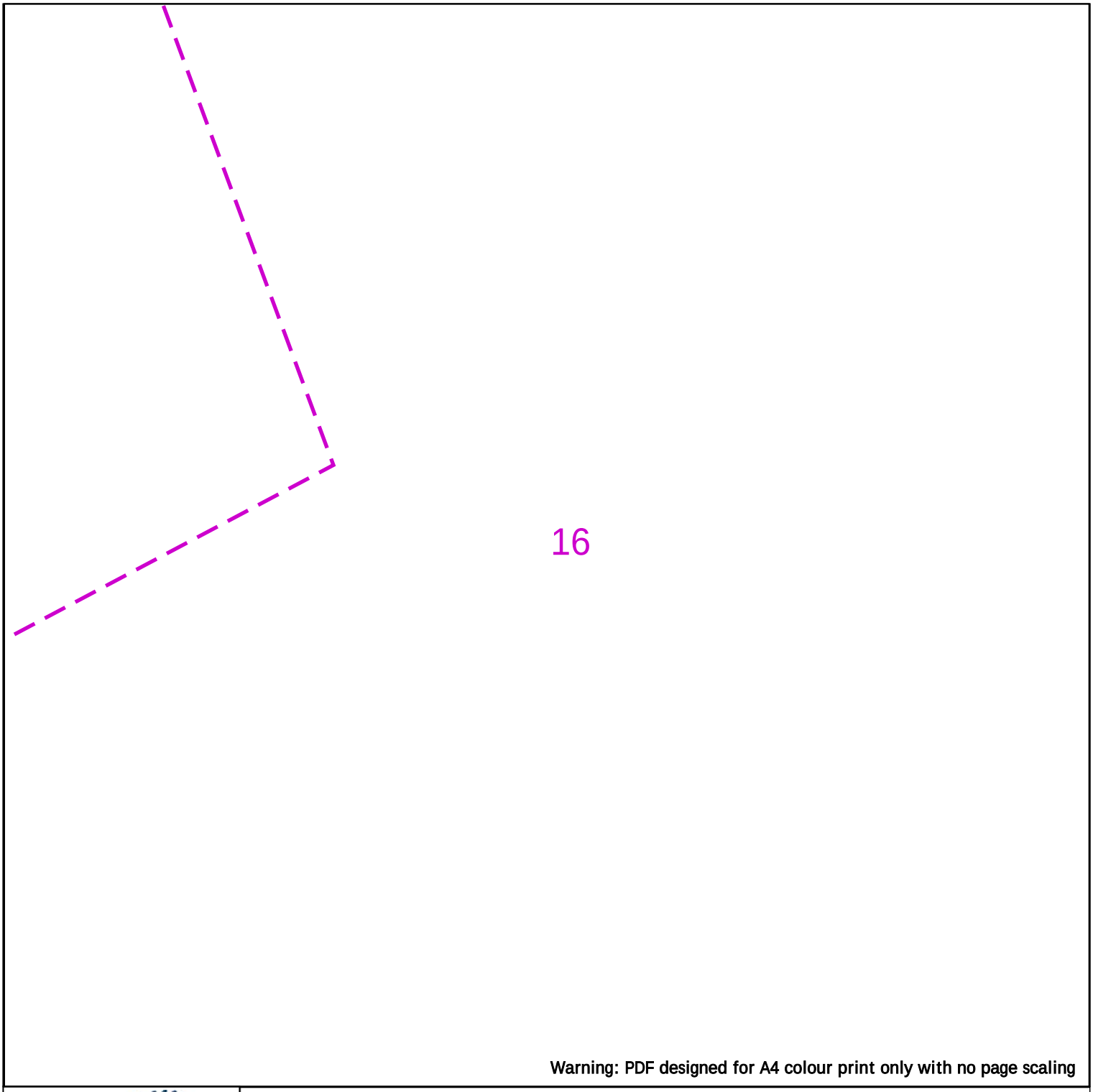
Report damage immediately – KEEP EVERYONE AWAY FROM THE AREA
0800 111 999



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

Northern Gas Networks

Contact Us

General Enquiries: 0800 040 7766

100m

Dig Sites Area: Line:

Pipes
- Intermediate Pressure
- Medium Pressure
- Low Pressure

Transmission Pipe
- Regional High Pressure

Asset Protection
- Cathodic
- Slabbed
- Sleeved

Network Plant
- Flow Stop - Open
- Flow Stop - Closed
- Valve - Open
- Valve - Closed
- Transmission Valve - Open
- Transmission Valve - Closed

Network Asset
- CP Point
- Dip Point
- Drain Point
- End Closure
- Flow Measure
- Gas Conditioner
- Governor
- MEG Point
- Meter
- OMR
- Oiling Point

Network Asset (continued)
- Pig Trap
- Pipe Joint
- Pressure Measurement
- Purge Point
- Reducer
- Stand Pipe
- Syphon
- Tee
- Test Point

Non-Network Asset
- Outlet
- Inlet
- Depth of Cover
- Crossover Connection
- Change in Material
- Change in Diameter

- NTS

IGT Area
- IGT Site
- Infill Site
- LPG Site
- OMR's

Pipeline
- Contact Zone

Environment
- SAM
- SSSI

Date Requested: 14/03/2023
Job Reference: 28835445
Site Location: 439120 408838
Requested by: Miss Lauren Wenham

Your Scheme/Reference: STV5991

Scale: 1:250 (When plotted at A4)

IMPORTANT NOTICES

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17

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

Northern Gas Networks

Contact Us

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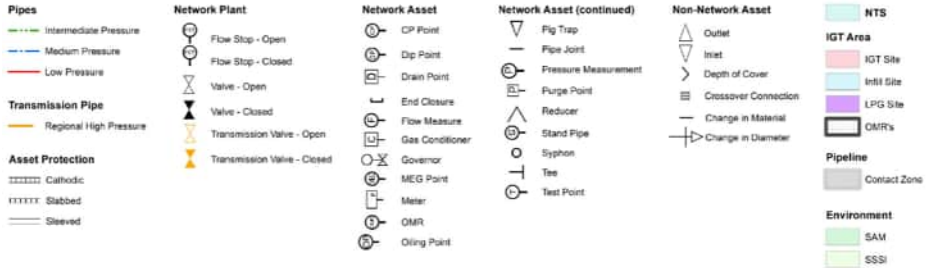
100m

Dig Sites Area: Line:



Date Requested: 14/03/2023
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Site Location: 439120 408838
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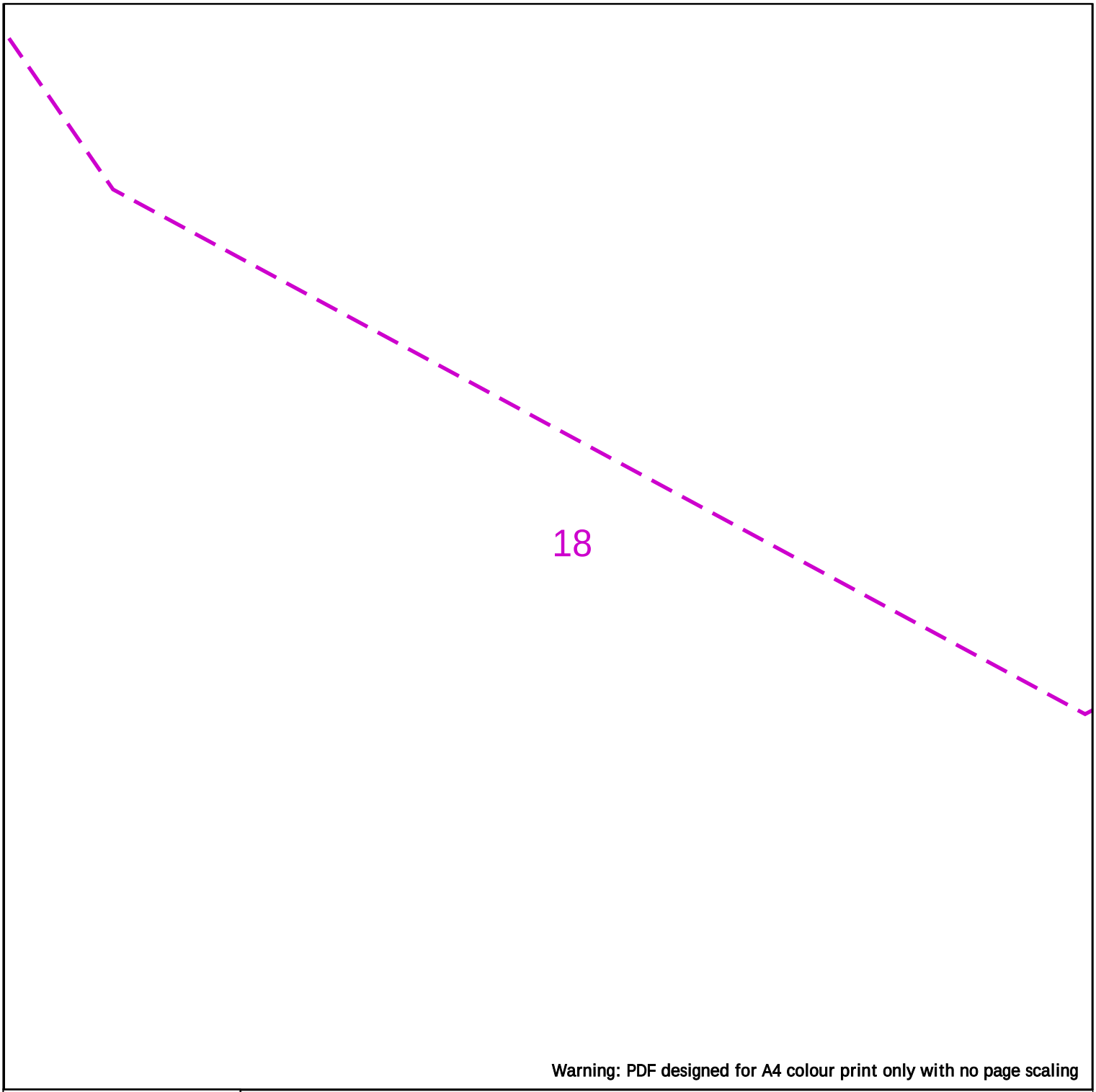

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Northern Gas Networks

Contact Us

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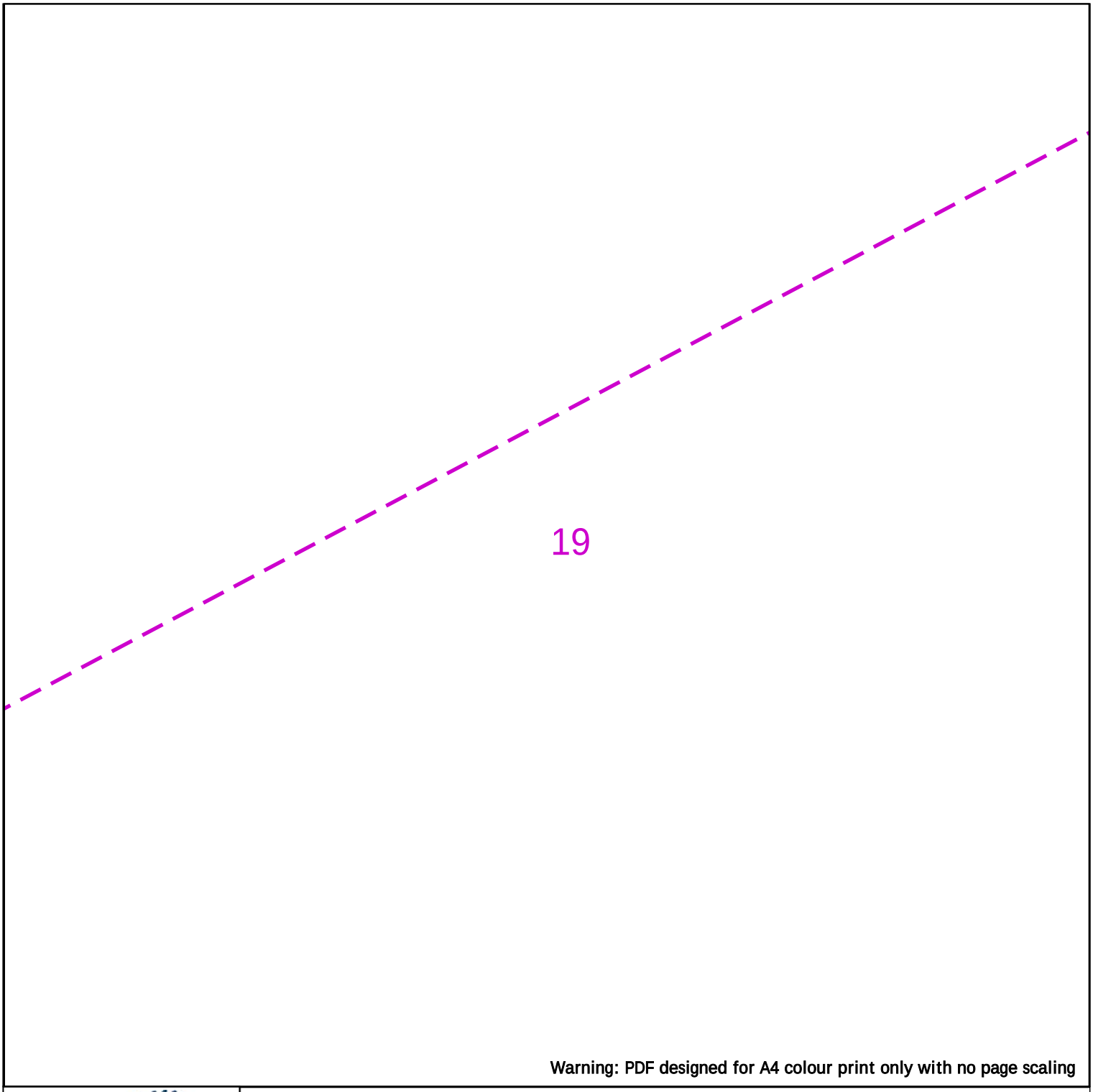

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Northern Gas Networks

Contact Us

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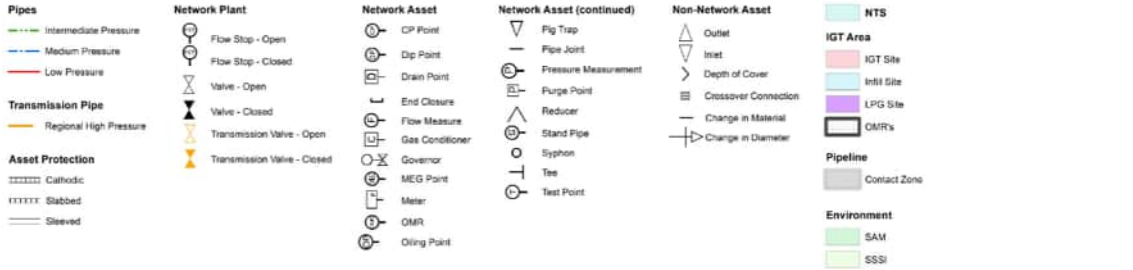

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YORKSHIRE WATER
PROTECTION OF MAINS AND SERVICES

1. The position of Yorkshire Water Services Ltd (YWS) apparatus shown on the existing mains record drawing(s) indicates the ***general*** position and nature of our apparatus and the accuracy of this information cannot be guaranteed. Any damage to YWS apparatus as a result of your works may have serious consequences and you will be held responsible for all costs incurred. Prior to commencing major works, the exact location of apparatus must be determined on site, if necessary by excavating trial holes. The actual position of such apparatus and that of service pipes which have not been indicated must be established on site by contacting the Customer Helpline on 0845 124 24 24 for both water and sewerage.

2. The public sewer and water network is lawfully retained in its existing position and the sewerage and water undertaker is entitled to have it remain so without any disturbance. The provisions of section 159 of the Water Industry Act 1991 provides that the undertaker may "inspect, maintain, adjust, repair or alter" the network. Those rights are given to enable the undertaker to perform its statutory duties. Any development of the land or any other action that unacceptably hindered the exercise of those rights would be unlawful. The provisions contained in Section 185 of the Water Industry Act 1991 state that where it is reasonable to do so, a person may require the water supply undertaker to alter or remove a pipe where it is necessary to enable that person to carry out a proposed change of use of the land. The provisions contained in Section 185 also require the person making the request to pay the full cost of carrying out the necessary works.

3. Ground levels over existing YWS apparatus are to be maintained. Sewers in highways will ***generally*** be laid to give 1200mm of cover from finished ground level working to kerb races, other permanent identification of the limits of the road or to an agreed line and level. Substantial increases or decreases to this 1200mm depth of cover will result in the sewer being re-laid at your expense. Water mains and services will ***generally*** be laid with a minimum of 750mm depth of cover however some mains and services usually those installed over 50 years ago may have less ground cover.

4. If surface levels are to be decreased / increased significantly the effects on existing water supply apparatus will be carefully considered and if any alterations are necessary, the costs of the alterations will be recharged to you in full. Outlets on fire hydrants must be no more than 300mm below the new levels and all surface boxes must be adjusted as part of the scheme.

5. To enable future repair works to be carried out without hindrance; any pipe, cable, duct, etc. installed parallel to a water main or service pipe should not be installed directly over or within 300mm of a water main or service pipe or 1000mm of a waste water asset. Where a pipe, cable, duct, etc. crosses a main or service it should preferably cross perpendicular or at an angle of no less than 45o and with a minimum clearance of 150mm. These requirements apply to activities within an existing highway and are relevant to the installation of pipes, cables, ducts, etc. up to and including 250mm in diameter *(see illustration below)*. Necessary protection measures for installations greater than 250mm in diameter and/or in private land will need to be agreed on an individual basis. Installations within a new development site must comply with the National Joint Utilities Group publication Volume 2: NJUG Guidelines On The Positioning Of Underground Utilities Apparatus For New Development Sites.

6. All excavation works near to YW apparatus should be by hand digging only.

7. Backfilling with a suitable material to a minimum 300mm above YW apparatus is required.

8. Adequate support must be provided where any works pass under YW apparatus.

9. Jointing chambers, lighting columns and other structures must be installed in such a way that future repair or maintenance works to YW apparatus will not be hindered.

10. Apparatus such as; railings, sign posts, etc. must not be placed in such a way that they prevent access to or full operation of controlling valves, hydrants or similar apparatus. YWS surface boxes must not be covered or buried. Any adjustment, alteration or replacement of manhole covers must be agreed on site prior to the commencement of the works with a YWS Inspector who may be contacted via our Call Centre on 0845 124 24 24.

11. Explosives shall not be used within 100 metres of any Yorkshire Water Services apparatus or installations.

12. Vibrating plant should not be used directly over any apparatus. Movement or operation by vehicles or heavy plant is not to be permitted in the immediate vicinity of YWS plant or apparatus unless there has been prior consultation and, if necessary, adequate protection provided without cost to YWS.

13. ***Under no circumstances*** should thrust boring or similar trenchless techniques commence until the actual position of the Company's mains/services along the proposed route have been confirmed by trial holes.

14. Any alterations to the highway should be notified following the procedures outlined in the New Road and Street Works Act 1991 Code of Practice; Measures Necessary Where Apparatus Is Affected By Major Works (Diversionary Works).

15. You will be held responsible for any damage or loss to YWS apparatus during and after completion of work, caused by yourselves, your servant or agent. Any damage caused or observed to YWS plant or apparatus should be immediately reported to YWS. Should YW incur any costs as a result of non-compliance with the above, all costs will be rechargeable in full.

16. You should ensure that nothing is done on the site to prejudice the safety or operation of YWS employees, plant or apparatus.

17. In accordance with the New Roads and Street Works Act 1991, Chapter 22, Part 3, Section 80. The location of any identified YW asset "*which is not marked, or is wrongly marked, on the records made available*" should be communicated back to Yorkshire Water. The location of the apparatus should be identified on copies of the supplied plans which should be returned to Yorkshire Water (Asset Records Team) with photographic supporting evidence where possible.

18. The Government has decided that responsibility for private sewers serving two or more properties and lateral drains (the section of pipe beyond the boundary of a single property, connecting it to the public sewer) will be transferred to the water companies on Oct 1 2011.

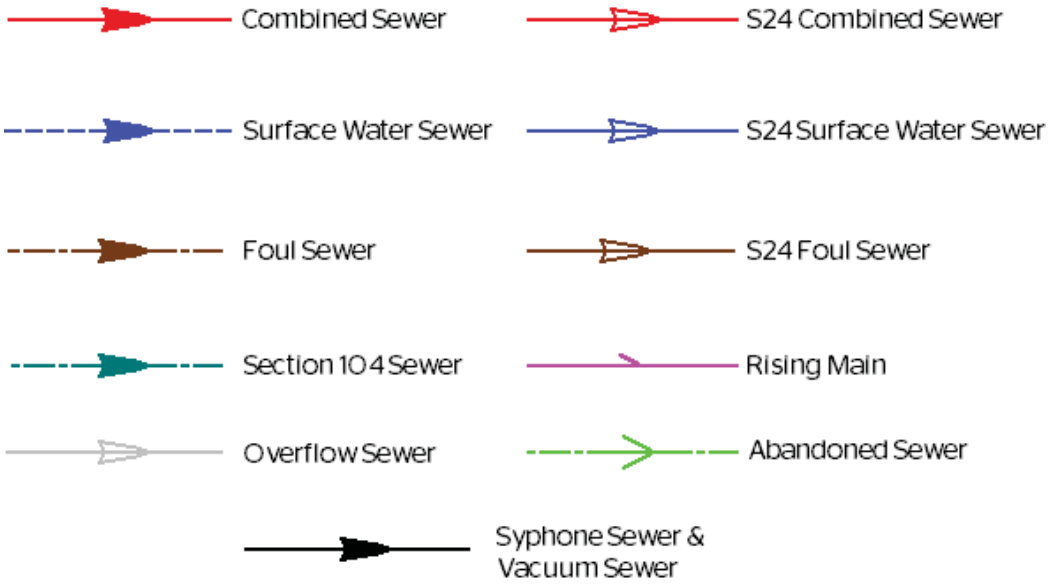
Private pumping stations will also transfer during the period 1 October 2011 – 1 Oct 2016. Records of these assets may not yet be shown on the existing mains record drawing(s). If you encounter any of these assets you must inform Yorkshire Water Services Ltd (YWS).

19. Please note that the information supplied on the enclosed plans is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.

20. This information is for guidance only and the position and depth of any YW apparatus is approximate only. Likewise, the nature and condition of any YW apparatus cannot be guaranteed. YW has no responsibility for recording the locations of privately owned apparatus. As of 1 October 2011, there may be some lateral drains and/or public sewers which are not documented on YW records but may still be present. For the avoidance of doubt, this information is not a substitute for appropriate professional and/or legal advice. YW accepts no responsibility for any inaccuracy or omissions in this information. The actual position of YW apparatus must be determined on site by excavating trail holes by hand. YW requires a minimum of two working days' written notice of the intention to excavate any trial holes before any excavation can be undertaken. If there are any queries in this respect please contact Yorkshire Water on 0845 124 24 24.

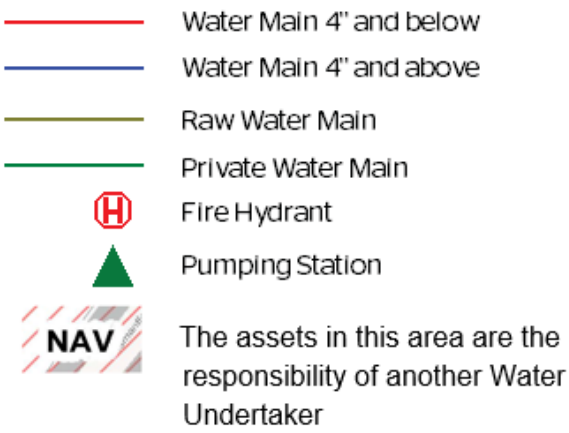
Property Identfier

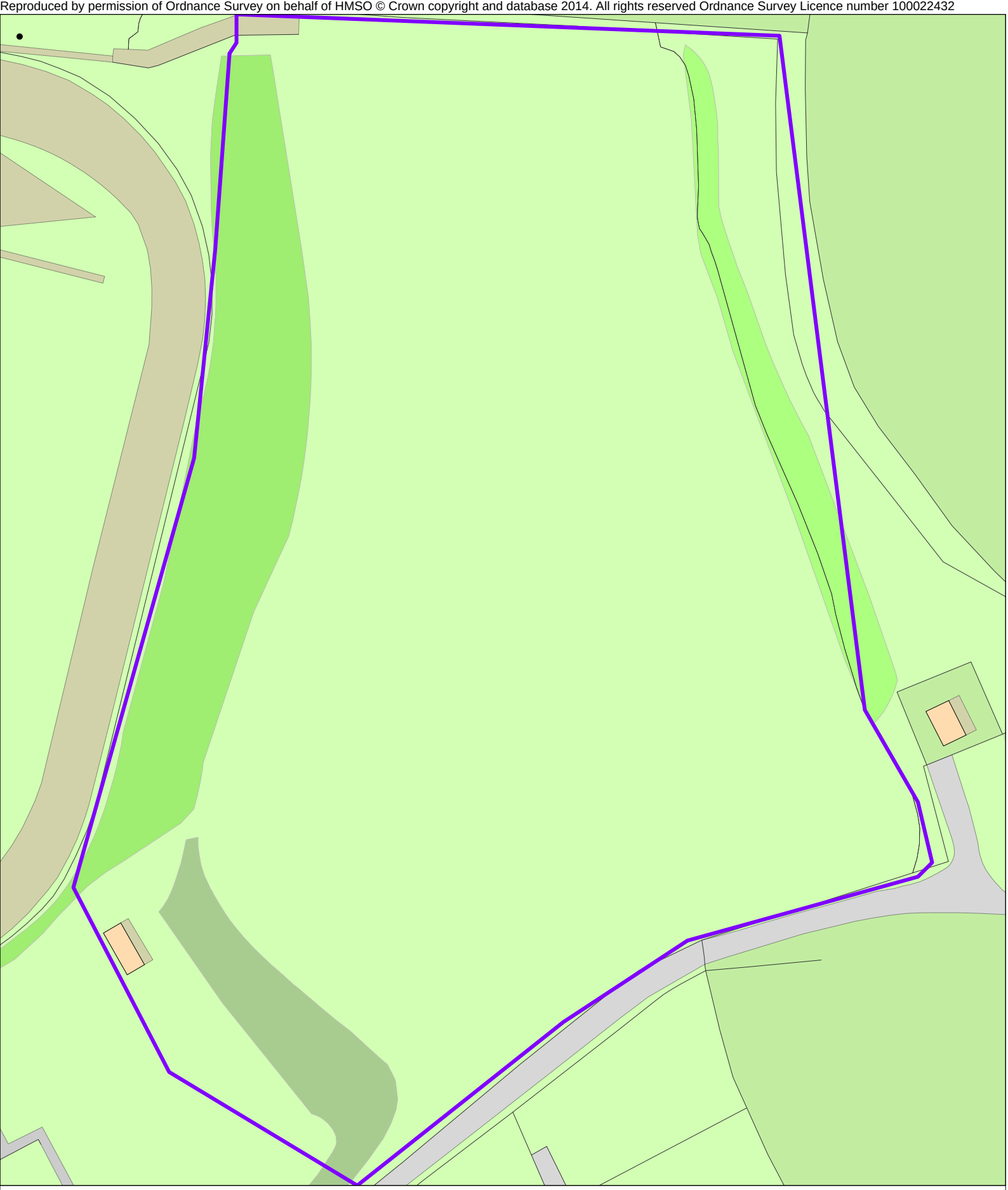
Sewer Legend



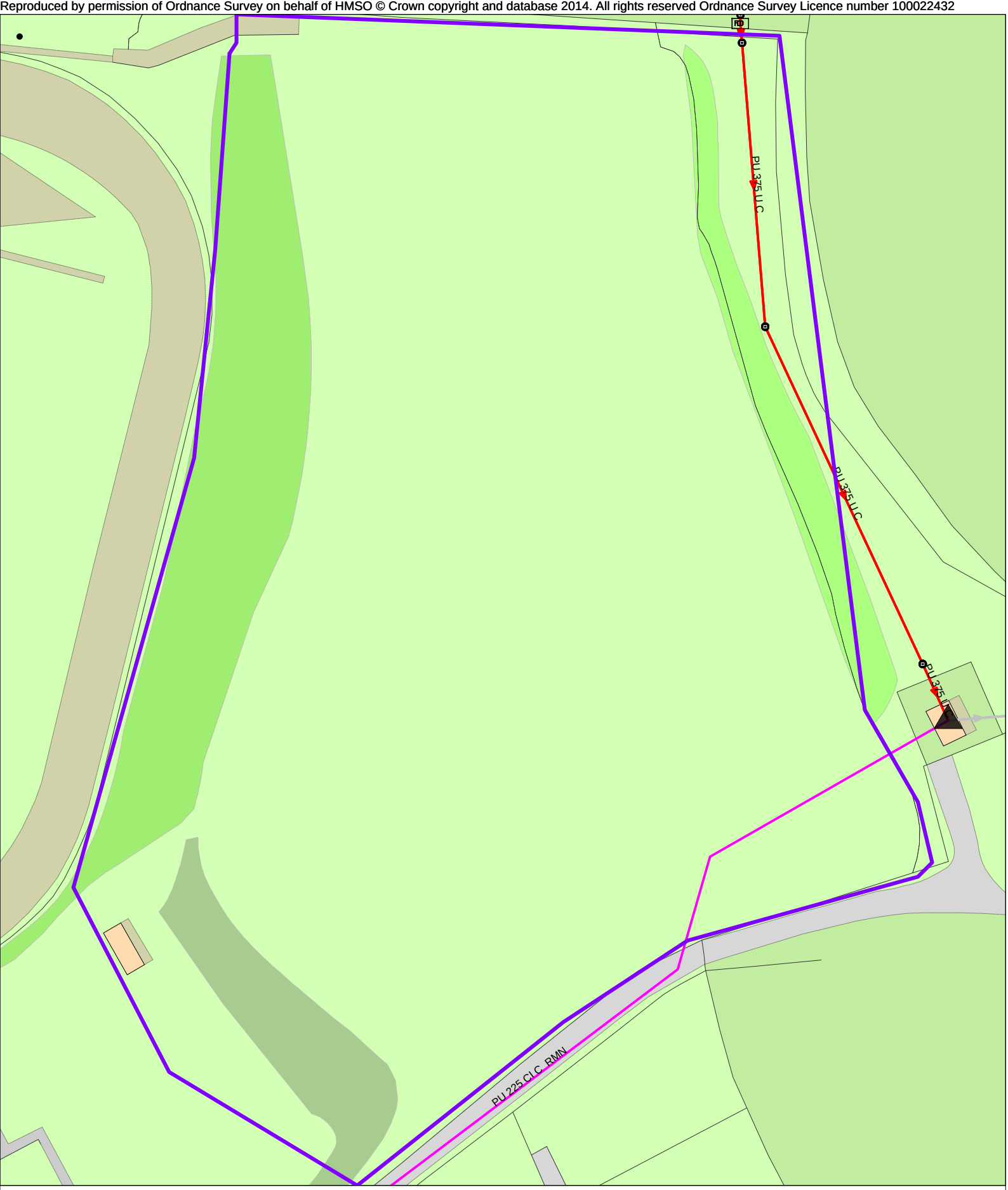
Please note that the direction of flow arrows may not always appear depending on the scale of the map.

Water Legend





Public Clean Water Network 14/03/2023 13:19:09 OS Grid Coordinates: 439077 : 408671 Map Name : SE3908NW svcGISSafeMovePD



Public Waste Water Network 14/03/2023 13:19:10 OS Grid Coordinates: 439077 : 408671 Map Name : SE3908NW svcGISSafeMovePD

LB350474

W1850/02-10
SECT ANGLE

W1850/02-11
INTER

W1850/02-12
INTER

W1850/02-13
TERM

SNYDALE ROAD SEWAGE PS 22191

861/00-1

EAST VIEW

BELLE GREEN GARDENS

SNYDALE ROAD

EVELINE STREET

HIGH ROYD AVENUE

SAXON STREET

HEFIELD CRESCENT

Path (um)

Track

Playing Field

Youth Centre

Snydale Road Social and Working Men's Club

Dorothy Hyman Stadium

Running Track

Dorothy Hyman Sports Centre

Car Park

Bowling Green

Mast (Telecommunication)

Allotment Gardens

Pinfold Cottages

High Royd Lodge

High Royd House

The Bungalow

Fairways

Four Winds

Royd

Shelter

52.9m

70.4m

69.2m

68.3m

67.4m

66.4m

0 25 50 meters

N

Northern Powergrid Holdings Company

The position of our equipment is shown on the plan as accurately as possible, it may have changed since the plan was produced. Therefore the position of our equipment and those services which may not be shown should be established on site. Electricity cables not owned by Northern Powergrid Holdings Company may be laid in this area and may not be shown on this plan. Where private cables are shown, the information should not be regarded as accurate and should be used for guidance purposes only. In all cases, accurate information should be obtained from the owner of such cables prior to the commencement of work on site.

Reference should be made to HSE Guidance:
HSG47 Avoiding Danger from Underground Services and ***GS6 Avoiding Danger from Overhead Power Lines***

Version 1.8 1st Jan 2022 **Call Centre Phone Numbers:** If the area is located in: North East call 0800 668877, Yorkshire or North Lincs call 0800 375675.

Underground Cables:
132kV, 66kV, 33kV, 25kV, Less than 3.3kV, 20kV, 11kV, 6kV, Aux, LV Mains, LV Service, LV Service Assumed Route, LV Service Logical Connection, Duct

Overhead Conductors:
132kV, 66kV, 33kV, 25kV, 20kV, 11kV, 6kV, 3kV, LV Mains, LV Service, Aux

Warning - Work in progress in this area

Original Print Size A0

Date Printed: 14-Mar-2023 Scale: 1:500

OS Grid Reference: SE3907908800

Printed By: nicola.rosindal

Title: Dorothy Hyman Centre

NORTHERN POWERGRID
MAINS RECORD

Enquiry Confirmation

LSBUD Ref: 28835445

Date of enquiry: 14/03/2023
Time of enquiry: 12:35

Enquirer

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

Enquiry Details

Scheme/Reference	STV5991		
Enquiry type	Planned Works	Work category	Development Projects
Start date	16/03/2023	Work type	Commercial/industrial
End date	16/03/2023	Site size	0 metres square
Searched location	XY= 439167, 408801	Work type buffer*	75 metres
Confirmed location	439120 408838		
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.

Site Map

Enquiry Confirmation

LSBUD Ref: 28835445

Date of enquiry: 14/03/2023
Time of enquiry: 12:35

Asset Owners

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

Enquiry Confirmation

LSBUD Ref: 28835445

Date of enquiry: 14/03/2023
Time of enquiry: 12:35

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
Northern Gas Networks Limited	08000407766 (opt 5)	0800111999	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		
Angus Energy	AWE Pipeline	B & D Energy Limited
Balfour Beatty Investments Limited	BOC Limited (A Member of the Linde Group)	Box Broadband
BP Exploration Operating Company Limited	BPA	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	EDF Energy Renewables Ltd
EirGrid	Eleclink Limited	Electricity North West Limited
Energy Assets Networks	ENI & Himor c/o Penspen Ltd	EnQuest NNS Limited
EP Langage Limited	ESP Utilities Group	ESSAR
Esso Petroleum Company Limited	euNetworks Fiber UK Ltd	EXA Infrastructure
Exolum Pipeline System	Fulcrum Electricity Assets Limited	Fulcrum Pipelines Limited
Gamma	Gas Networks Ireland (UK)	Gateshead Energy Company
Gigaclear Ltd	Harbour Energy	Heathrow Airport LTD
Humbly Grove Energy	IGas Energy	INEOS FPS Pipelines
INEOS Manufacturing (Scotland and TSEP)	INOVYN ChlorVinyls Limited	INOVYN Enterprises Limited
Intergen (Coryton Energy or Spalding Energy)	Jurassic Fibre Ltd	Last Mile
Mainline Pipelines Limited	Manchester Jetline Limited	Manx Cable Company
Marchwood Power Ltd (Gas Pipeline)	Melbourn Solar Limited	Moray East Offshore Windfarm
MUA Group Limited	National Gas Transmission	National Grid Electricity Distribution
National Grid Electricity Transmission	Neos Networks	Northumbrian Water Group
NPower CHP Pipelines	NTT Global Data Centers EMEA UK Ltd	NYnet Ltd
Ogi	Oikos Storage Limited	Ørsted
Palm Paper Ltd	Perenco UK Limited (Purbeck Southampton Pipeline)	Petroineos
Phillips 66	Portsmouth Water	Premier Transmission Ltd (SNIP)
Redundant Pipelines - LPDA	RWE - Great Yarmouth Pipeline (Bacton to Great Yarmouth Power Station)	RWEnpower (Little Barford and South Haven)
SABIC UK Petrochemicals	SAS Utility Services Ltd	Scottish and Southern Electricity Networks
Scottish Power Generation	Seabank Power Ltd	SES Water
SGN	Shell	Shell NOP

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

Enquiry Confirmation

LSBUD Ref: 28835445

Date of enquiry: 14/03/2023
Time of enquiry: 12:35

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
CityFibre	asset.team@cityfibre.com	033 3150 7282	Not Notified
Colt	plantenquiries@catelecomuk.com	01227768427	Not Notified
Equans	nrswa.uk@equans.com	0800 130 3600	Not Notified
GTC	https://pe.gtc-uk.co.uk/PlantEnqMembership	01359240363	Not Notified
Lumen Technologies	plantenquiries@instalcom.co.uk	02087314613	Not Notified
Mobile Broadband Network Limited	mbnl.plant.enquiries@turntown.com	01212 621 100	Not Notified
Northern Powergrid	Safediggingplans@northernpowergrid.com	01912294294	Not Notified
Sky UK Limited	nrswa@sky.uk	02070323234	Not Notified
Sota	SOTA.plantenquiries@instalcom.co.uk		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
Yorkshire Water	safemove@yorkshirewater.com	03332206664	Not Notified

Appendix B Coal Authority Consultants report

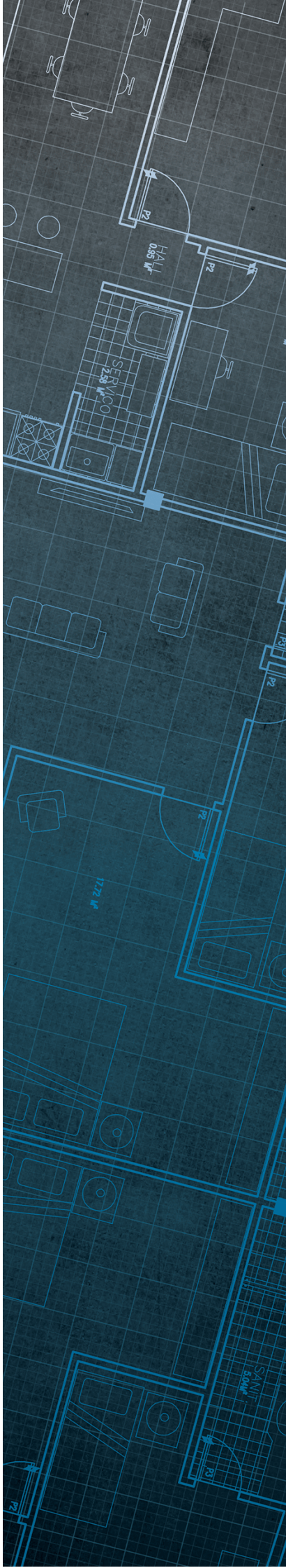
The Coal Authority

Consultants

Coal Mining Report

Barnsley Premier Leisure
Dorothy Hyman Sports Centre
Snydale Road
Cudworth
Barnsley
S72 8LH

Date of enquiry:	**5 April 2023**
Date enquiry received:	**5 April 2023**
Issue date:	**5 April 2023**
Our reference:	**51003348230001**
Your reference:	**STV5991**



Consultants

Coal Mining Report

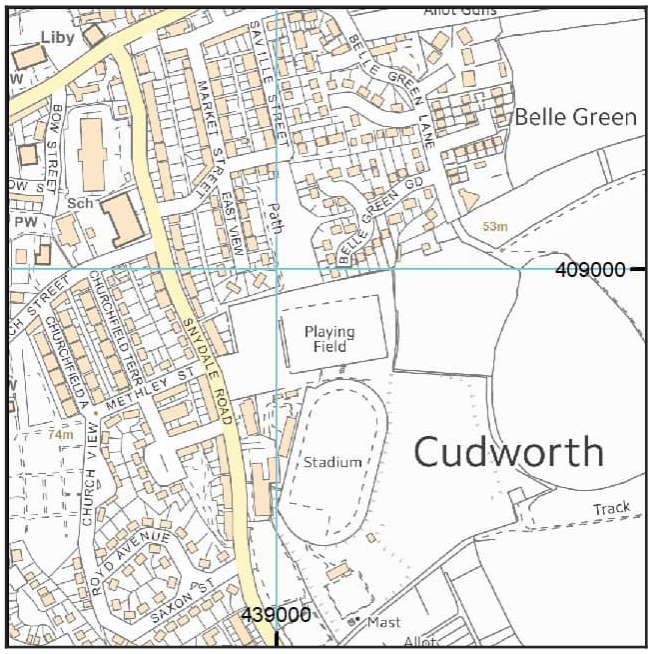
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

Soiltechnics Limited

Enquiry address

Barnsley Premier Leisure
Dorothy Hyman Sports Centre
Snydale Road
Cudworth
Barnsley
S72 8LH



Approximate position of property

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
WHARNCLIFFE / WOODMOOR	WINTER	Coal	64WO	323	North-West	7.6	South-East	81	1958
WHARNCLIFFE	WINTER	Coal	64XY	325	North	9.0	East	92	1956
unnamed	BEAMSHAW LOW	Coal	64XG	355	North	8.6	East	76	1962
WHARNCLIFFE	KENT THICK	Coal	64WJ	376	North-West	8.5	South-East	102	1966
WHARNCLIFFE	KENT THICK	Coal	64WT	387	Beneath Property	4.8	East	104	1967
MONK BRETTON	BARNSLEY	Coal	64WX	403	South	3.7	East	213	1900
WHARNCLIFFE	BARNSLEY	Coal	64XR	435	North	7.4	East	170	1924
MONK BRETTON	BARNSLEY	Coal	64WZ	446	West	8.7	South-East	213	1900
MONK BRETTON	BARNSLEY	Coal	64XO	453	Beneath Property	5.2	East	213	1966
GRIMETHORPE	TOP HAIGH MOOR	Coal	64X2	504	South-East	4.6	East	122	1942
WHARNCLIFFE	TOP HAIGH MOOR	Coal	64X4	514	North-West	10.3	South-East	130	1943
WHARNCLIFFE	TOP HAIGH MOOR	Coal	64XZ	518	North-West	10.6	East	117	1942
GRIMETHORPE	FENTON	Coal	64X5	638	South	3.6	East	190	1980
GRIMETHORPE	FENTON	Coal	R41	665	South-East	4.1	East	190	1980
GRIMETHORPE	PARKGATE	Coal	64X7	668	South	5.9	North-East	118	1942
GRIMETHORPE	PARKGATE	Coal	64XW	713	North	7.1	East	112	1942

Probable unrecorded shallow workings

None.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NE526	16053	NE522
13347	M697	16047
NE527	NE747	NE997

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

No outcrops recorded.

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

None recorded within 50 metres of the enquiry boundary.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

Section 46 notices
No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices
The property is in an area where notices to withdraw support were given in 1946 and 1977.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk.**

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines
Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips
Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations
Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites
Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence
Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Mine water treatment schemes
Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining
Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing
Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders
Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices
Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices
Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land
Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The Coal Authority

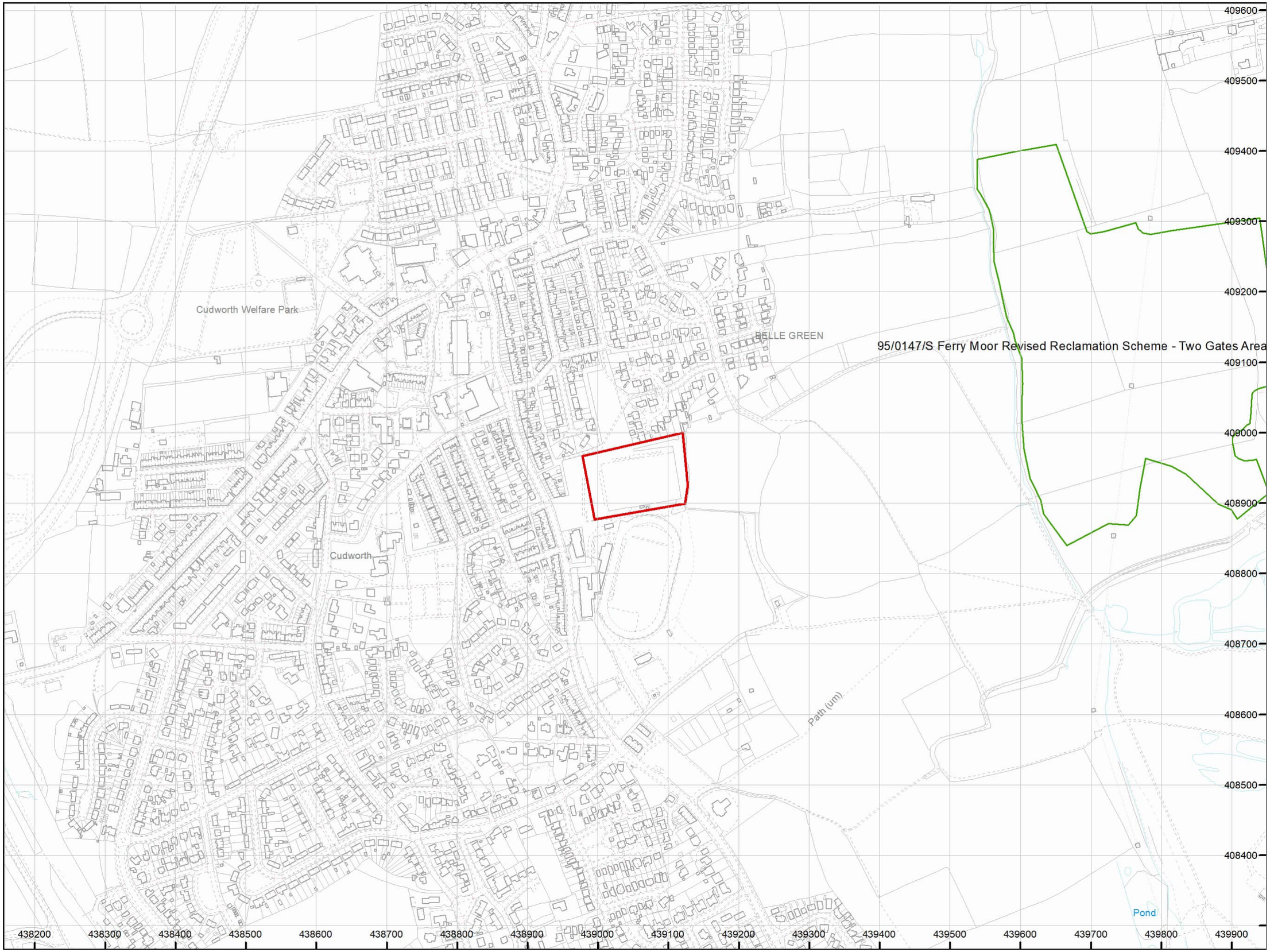
Summary of findings

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown

Opencast mine licence area



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

Appendix C Exploratory hole records

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Key to legends

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

Note: Composite soil types are signified by combined symbols.

Key to 'test results' and 'sampling' columns

Test result		
Depth		Records depth that the test was carried out (i.e.: at 2.10m or between 2.10m and 2.55m)
Result		PP – Pocket penetrometer result reported as an equivalent undrained shear strength (kN/m^2) by applying a factor of 50. SV – Hand held shear vane result reported as an undrained shear strength (kN/m^2). Where multiple readings are taken at the same level the average value is shown on the log. * Signifies that instrument limit reached.
		SPT – Standard Penetration Test result (N value) (uncorrected)[1,2,3] SPT(c) – Standard Penetration Test result (solid cone) (N value) (uncorrected)[1,2,3]
		UT – Undisturbed sample 100mm diameter sampler with number of blows of driving equipment required to obtain sample

Sampling		
From (m) To (m)		Records depth of sampling
Type	D	Disturbed sample
	B	Bulk disturbed sample
	ES	Environmental sample
	W	Water sample
	U	Undisturbed thick-walled sample 100mm diameter sampler
	UT	Undisturbed thin walled sample 100mm diameter sampler
	UTF	Failed undisturbed sample

Note 1: Seating blows recorded in brackets.

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

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

Water observations

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

▼ Water level observed after specified delay in drilling

▽ Water strike

Installation details

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

Density

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

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STV5991

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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 over brown slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.30												
	Brown sandy clayey fine to coarse angular to subangular GRAVEL of sandstone. (WEATHERED MEXBOROUGH ROCK)	0.45												
	Greyish brown sandy slightly clayey fine to medium GRAVEL of sandstone. (WEATHERED MEXBOROUGH ROCK)	0.65										0.65		D
	Very dense mottled black and brown sandy slightly clayey fine to coarse angular to subangular GRAVEL of sandstone. (WEATHERED MEXBOROUGH ROCK)					S 1.00 - 1.44	(6) 50/290mm					1.00	1.44	D
	BOREHOLE TERMINATED AT 1.44m	1.44												

Notes Borehole terminated due to competency of weathered bedrock. Infiltration testing performed at base.	**Title** Dynamic windowless sampling record				**Date(s)** 18/04/2023
	Recovery details		**Method** Windowless sampler	**Logged by** CB	**Sheet number** Sheet 1 of 1
Groundwater observations No groundwater encountered	Range (m) 0.00 - 1.00	Recovery (%) 100	**Level (m OD)** -	**Compiled by** KD	**Revision** A
			Co-ordinates -	**Checked by** DH	**WS01**

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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 over brown slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.12												
	Dark brown very gravelly clayey SAND. Gravel is fine to medium angular to subangular clinker, ceramic, brick and sandstone. (MADE GROUND)	0.35												
	Greyish brown and light brown gravelly fine to medium SAND. Gravel is fine to medium angular to subangular sandstone lithorelicts. (WEATHERED MEXBOROUGH ROCK)	0.40										0.50	0.60	D
	Very dense greyish brown very sandy fine to coarse GRAVEL of sandstone lithorelicts. (WEATHERED MEXBOROUGH ROCK)					S 1.00 - 1.20	(25) 50/45mm							
	BOREHOLE TERMINATED AT 1.20m	1.20												

Notes Borehole terminated due to competency of weathered bedrock.	**Title** Dynamic windowless sampling record				**Date(s)** 18/04/2023
	Recovery details		**Method** Windowless sampler	**Logged by** CB	**Sheet number** Sheet 1 of 1
	Range (m)	Recovery (%)			
Groundwater observations No groundwater encountered.	0.00 - 1.00	100	**Level (m OD)** -	**Compiled by** KD	**Revision** A
			Co-ordinates -	**Checked by** DH	**WS02**

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass over dark brown slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.25												
	Dark brown sandy clayey fine to medium angular to subangular GRAVEL of clinker, coal, brick and glass. (MADE GROUND)	0.40										0.40		D
	Greyish brown and light brown slightly gravelly clayey fine to medium SAND. Gravel is fine to medium subangular to subrounded sandstone. (DEVENSIAN TILL)	0.70								PP 0.75	PP=138	0.70		D
	Stiff brown mottled orangish brown slightly sandy slightly gravelly silty CLAY with some plant remains. Gravel is fine to medium subangular to subrounded sandstone and quartz. (DEVENSIAN TILL)	1.10				S 1.20 - 1.65	(2) 7					1.20		D
	...from 0.7m depth, becoming silt.	1.30								PP 1.45	PP=83	1.50		D
	...from 1m depth, becoming very soft.													
	Grey clayey SILT. Organic odour noted. (DEVENSIAN TILL)	1.80								PP 1.80	PP=113	1.80		D
	Stiff grey mottled orangish brown slightly sandy CLAY with rare plant remains. (DEVENSIAN TILL)	2.10				S 2.00 - 2.43	(6) 50/280mm							
	Stiff dark grey mottled orangish brown slightly sandy CLAY with occasional plant remains. (DEVENSIAN TILL)	2.43												
	Very dense greyish brown and light brown sandy fine to medium angular to subrounded GRAVEL of sandstone. (WEATHERED MEXBOROUGH ROCK)													
	BOREHOLE TERMINATED AT 2.43m													

Notes
Borehole terminated due to competency of weathered bedrock.

Groundwater observations
Groundwater encountered at 1m depth, filling borehole to 0.9m.

Title
Dynamic windowless sampling record

Recovery details

Range (m)	Recovery (%)
1.00 - 2.00	90

Method
Windowless sampler

Level (m OD)
-

Co-ordinates
-

Logged by
CB

Compiled by
KD

Checked by
DH

Date(s)
18/04/2023

Sheet number
Sheet 1 of 1

Revision
A

WS03

Dorothy Hyman Sports Centre, Barnsey
STV5991

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INSTALL	STRATA DESCRIPTION	DEPTH (m)	REDUCED LVL (m OD)	LEGEND	WATER STRIKES	SPT TESTING TYPE / DEPTH (m)	SPT TESTING RESULT	SPT TESTING CASING DEPTH (m)	SPT TESTING WATER LEVEL (m)	OTHER IN SITU TESTING TYPE / DEPTH (m)	OTHER IN SITU TESTING RESULT	SAMPLING FROM (m)	SAMPLING TO (m)	SAMPLING TYPE
	Grass over orangish brown slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.21												
	Soft brown slightly sandy slightly gravelly CLAY with rare pockets of sand. Gravel is fine to coarse subangular to subrounded sandstone, quartz, coal and mudstone. (DEVENSIAN TILL)											0.70		B
	Firm becoming stiff brown mottled grey slightly gravelly slightly silty CLAY. Gravel is fine to coarse subangular to subrounded sandstone, quartz and mudstone. (DEVENSIAN TILL)	1.20				S 1.20 - 1.65	(2) 6			PP 1.20	PP=104	1.20		D
										PP 1.60	PP=75	1.60		D
	Firm grey occasionally organish grey mottled slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded mudstone and sandstone. Organic odour noted. (DEVENSIAN TILL)	1.80 2.00				S 2.00 - 2.45	(3) 14			PP 1.90	PP=104	1.90		D
										PP 2.20	PP=79	2.20		D
	Stiff organish brown mottled grey slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular to subrounded sandstone. (DEVENSIAN TILL)									PP 2.50	PP=217	2.50		D
	Greyish brown fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	2.80 2.90												
	Orangish brown fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	3.00				S 3.00 - 3.36	(19) 50/215mm					3.00	3.36	D
	Extremely weak greyish brown SANDSTONE. (WEATHERED MEXBOROUGH ROCK)	3.36												
	BOREHOLE TERMINATED AT 3.36m													

Notes
Borehole terminated due to competency. Infiltration testing performed.

Groundwater observations
Groundwater encountered at 3.1m depth, filling borehole to 3m.

Title
Dynamic windowless sampling record

Recovery details

Range (m)	Recovery (%)
1.00 - 2.00	95
2.00 - 3.00	100

Method
Windowless sampler

Logged by
CB

Level (m OD)
-

Compiled by
KD

Co-ordinates
-

Checked by
DH

Date(s)
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Revision
A

WS04

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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 over dark brown slightly gravelly slightly sandy CLAY with occasional rootlets. (TOPSOIL)													
	Dark brown sandy slightly clayey fine to medium angular to subrounded GRAVEL of sandstone, clinker and brick. (MADE GROUND)	0.50												
	Soft to firm orangish brown mottled greyish brown slightly gravelly sandy CLAY with rare bands of sand. Gravel is fine subangular to subrounded sandstone. (DEVENSIAN TILL)	0.70										0.80		D
												1.00	1.20	D
	Stiff orangish brown and grey slightly gravelly slightly sandy CLAY with occasional plant remains. Gravel is fine to medium subangular to subrounded sandstone. (DEVENSIAN TILL)	1.20				S 1.20 - 1.65	(3) 9			PP 1.20	PP=146			
										PP 1.50	PP=225	1.50		D
										PP 1.80	PP=208	1.80		D
	Very dense grey gravelly fine to medium SAND. Gravel is fine to medium angular to subangular sandstone lithorelicts. (WEATHERED MEXBOROUGH ROCK)	2.00				S 2.00 - 2.22	(25) 50/75mm							
	BOREHOLE TERMINATED AT 2.22m	2.22												

Notes
Borehole terminated due to competency of weathered bedrock.

Groundwater observations
No groundwater encountered.

Title
Dynamic windowless sampling record

Recovery details

Range (m)	Recovery (%)
1.00 - 2.00	95

Method
Windowless sampler

Level (m OD)
-

Co-ordinates
-

Logged by
CB

Compiled by
KD

Checked by
DH

Date(s)
18/04/2023

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Revision
A

WS05

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STV5991

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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 over dark brown slightly gravelly slightly sandy CLAY with occasional rootlets and pockets of sand. Gravel is fine to medium subangular to subrounded sandstone and coal. (TOPSOIL)													
	Medium dense grey and orangish brown silty fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	0.50				S 1.00 - 1.45	(6) 13					0.55 1.00 1.20	0.85	B D D
	Orangish brown and brown fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	1.40												
	Very dense grey mottled brown fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	1.60				S 2.00 - 2.20	(25) 50/55mm							
	BOREHOLE TERMINATED AT 2.20m	2.20												

Notes
Borehole terminated due to competency of weathered bedrock.

Groundwater observations
Groundwater encountered at 2m depth, filling borehole to 1.8m.

Title
Dynamic windowless sampling record

Recovery details		Method	Logged by	Date(s)
Range (m)	Recovery (%)	Windowless sampler	CB	18/04/2023
0.00 - 1.00	100	Level (m OD)	Compiled by	Sheet number
1.00 - 2.00	80	-	KD	Sheet 1 of 1
		Co-ordinates	Checked by	Revision
		-	DH	A

WS06

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STV5991

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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 over dark brown slightly sandy CLAY with occasional rootlets. (TOPSOIL)	0.20												
	Dark brown sandy clayey fine to medium angular to subangular GRAVEL of sandstone, clinker, brick and coal. (MADE GROUND)	0.30								PP 0.50	PP=200	0.50		D
	Stiff orangish brown mottled grey slightly sandy CLAY. (DEVENSIAN TILL)					S 0.80 - 1.00	(25) 50/45mm			PP 0.90	PP=225	0.80		D
	Stiff multicoloured slightly gravelly slightly sandy CLAY. Gravel is fine to medium angular to subangular sandstone. (WEATHERED MEXBOROUGH ROCK)	1.40										1.50		D
	Grey sandy fine to coarse angular to subangular GRAVEL of sandstone. (WEATHERED MEXBOROUGH ROCK)	1.90										1.90		D
	BOREHOLE TERMINATED AT 2.00m	2.00												

Notes
Borehole terminated due to competency of weathered bedrock.

Groundwater observations
No groundwater encountered

Title
Dynamic windowless sampling record

Recovery details		Method	Logged by	Date(s)
Range (m)	Recovery (%)	Windowless sampler	CB	18/04/2023
0.00 - 1.00	100			Sheet number
1.00 - 2.00	90	Level (m OD)	Compiled by	Sheet 1 of 1
		-	KD	Revision
		Co-ordinates	Checked by	A
		-	DH	**WS07**

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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 over dark brown slightly gravelly slightly sandy CLAY with occasional rootlets. Gravel is fine to medium subangular to subrounded sandstone and coal. (TOPSOIL)	0.35												
	Orangish brown slightly gravelly slightly clayey fine to medium SAND. Gravel is fine to medium subangular to subrounded sandstone. (WEATHERED MEXBOROUGH ROCK)	0.70										0.50		D
	Brown and greyish brown gravelly slightly clayey fine to medium SAND. (WEATHERED MEXBOROUGH ROCK)	0.95										0.80		D
	Medium dense to very dense grey sandy fine to medium angular to subangular GRAVEL of weathered sandstone. (WEATHERED MEXBOROUGH ROCK)					S 1.00 - 1.45	(3) 13							
						S 1.80 - 2.17	(25) 50/220mm							
	BOREHOLE TERMINATED AT 2.17m	2.17												

Notes
Borehole terminated due to competency of weathered bedrock.

Groundwater observations
No groundwater encountered

Title
Dynamic windowless sampling record

Recovery details		Method	Logged by
Range (m)	Recovery (%)	Windowless sampler	CB
0.00 - 1.00	90	Level (m OD)	Compiled by
1.00 - 1.80	0	-	KD
		Co-ordinates	Checked by
		-	DH

Date(s)
18/04/2023

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WS08

Appendix D In situ test results

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Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP01	126	1
DCP01	198	2
DCP01	245	3
DCP01	275	4
DCP01	288	5
DCP01	297	6
DCP01	303	7
DCP01	335	12
DCP01	376	17
DCP01	428	22
DCP01	467	27
DCP01	494	32
DCP02	123	1
DCP02	211	2
DCP02	232	3
DCP02	251	4
DCP02	266	5
DCP02	291	6
DCP02	313	7
DCP02	330	8
DCP02	352	9
DCP02	364	10
DCP02	378	11
DCP02	430	16
DCP02	500	21
DCP02	540	26
DCP02	580	31
DCP02	581	36
DCP03	112	1
DCP03	140	2
DCP03	171	3
DCP03	202	4
DCP03	221	5
DCP03	244	6
DCP03	262	7
DCP03	281	8
DCP03	302	9
DCP03	331	10
DCP03	351	11
DCP03	372	12
DCP03	393	13
DCP03	416	14
DCP03	442	15

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Dynamic Cone Penetrometer (DCP) raw data

Location	Penetration below ground level (mm)	Cumulative blows
DCP03	485	16
DCP03	551	17
DCP03	590	18
DCP03	668	19
DCP03	742	20
DCP03	804	21
DCP03	853	22
DCP03	900	23
DCP04	184	1
DCP04	202	2
DCP04	219	3
DCP04	222	4
DCP04	241	5
DCP04	342	10
DCP04	372	11
DCP04	391	12
DCP04	406	13
DCP04	503	16
DCP04	534	17
DCP04	567	18
DCP04	633	19
DCP04	714	20
DCP04	783	21
DCP04	844	22
DCP04	911	23
DCP05	117	1
DCP05	182	2
DCP05	245	3
DCP05	319	4
DCP05	393	5
DCP05	459	6
DCP05	534	7
DCP05	592	8
DCP05	635	9
DCP05	674	10
DCP05	715	11
DCP05	773	12
DCP05	820	13
DCP05	864	14
DCP05	891	15
DCP05	922	16

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Dynamic Cone Penetrometer (DCP) summary

Location	Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
DCP01	1	2.4	200	0	200
DCP01	2	6.4	75	200	275
DCP01	3	33.2	205	275	480
DCP02	1		210	0	210
DCP02	2	13.0	150	210	360
DCP02	3	21.2	140	360	500
DCP02	4	33.5	77	500	577
DCP03	1	11.6	230	210	440
DCP03	2	4.8	160	440	600
DCP03	3	3.9	298	600	898
DCP04	1		180	0	180
DCP04	2	17.5	55	180	235
DCP04	3	12.3	170	235	405
DCP04	4	7.7	165	405	570
DCP04	5	3.4	330	570	900
DCP05	1		120	0	120
DCP05	2	3.5	480	120	600
DCP05	3	5.3	262	600	862

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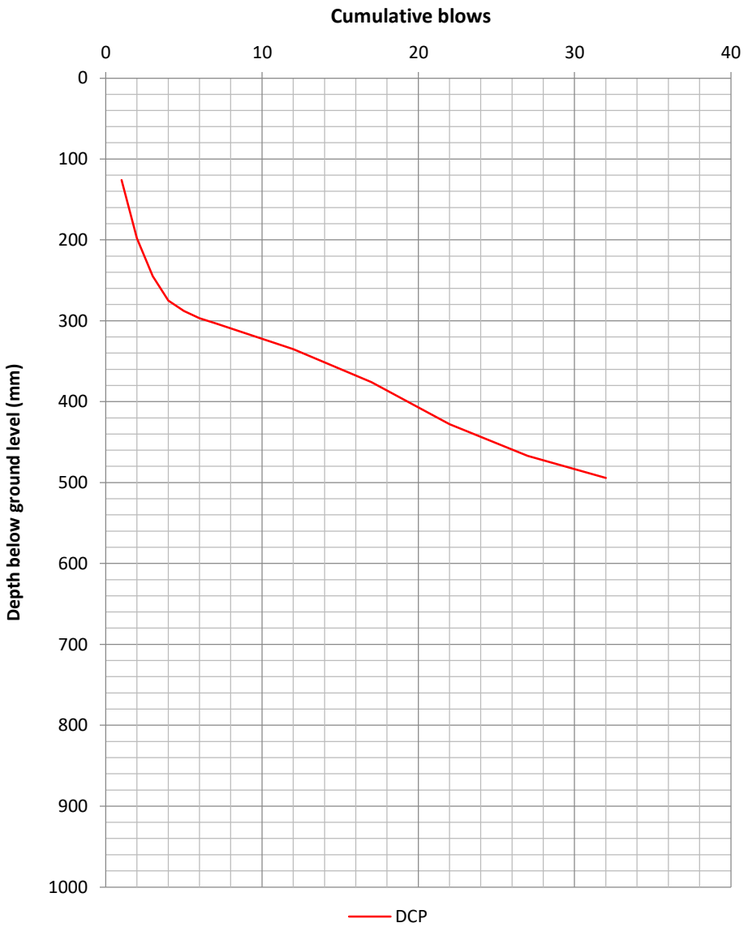
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP01	18/04/2023	0	35	CB

Plot showing number of blows against depth



Plot showing CBR (%) against depth

Layer properties

Layer No.	CBR (%)	Thickness (mm)	Start depth (mmBGL)	Base depth (mmBGL)
1	**2.4**	200	0	200
2	**6.4**	75	200	275
3	**33.2**	205	275	480

Notes

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

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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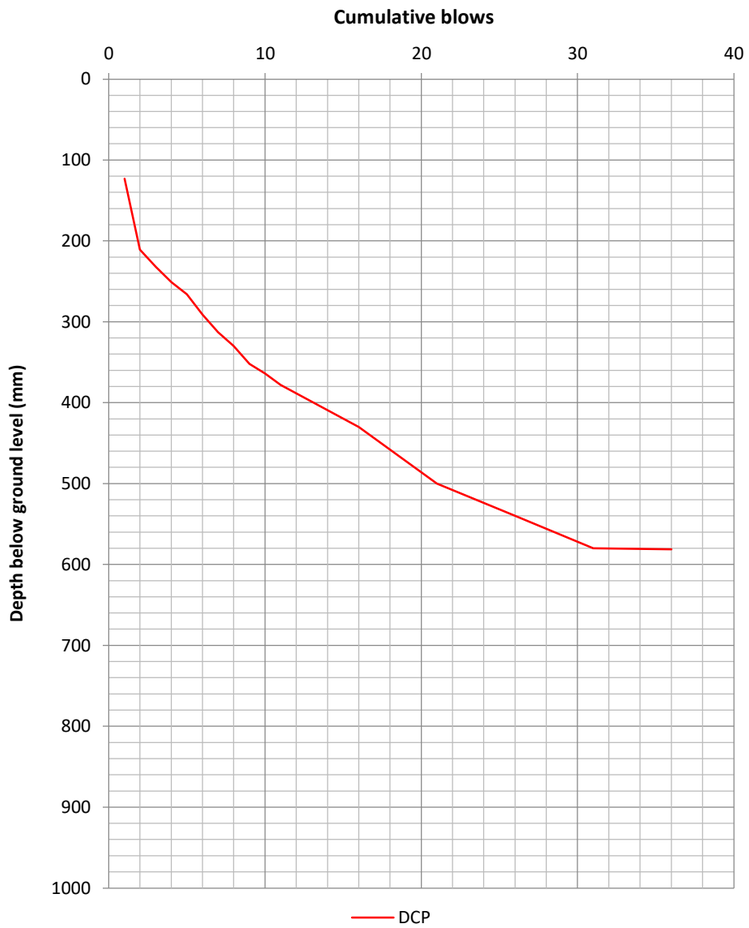
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP02	18/04/2023	1	41	CB

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		210	0	210
2	**13.0**	150	210	360
3	**21.2**	140	360	500
4	**33.5**	77	500	577

Notes

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

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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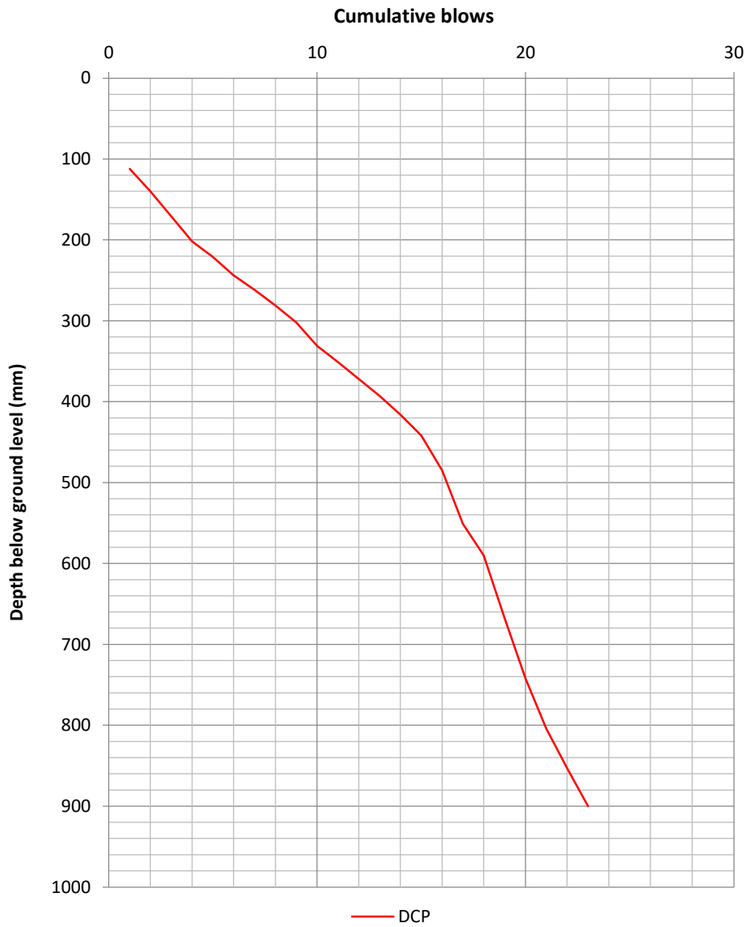
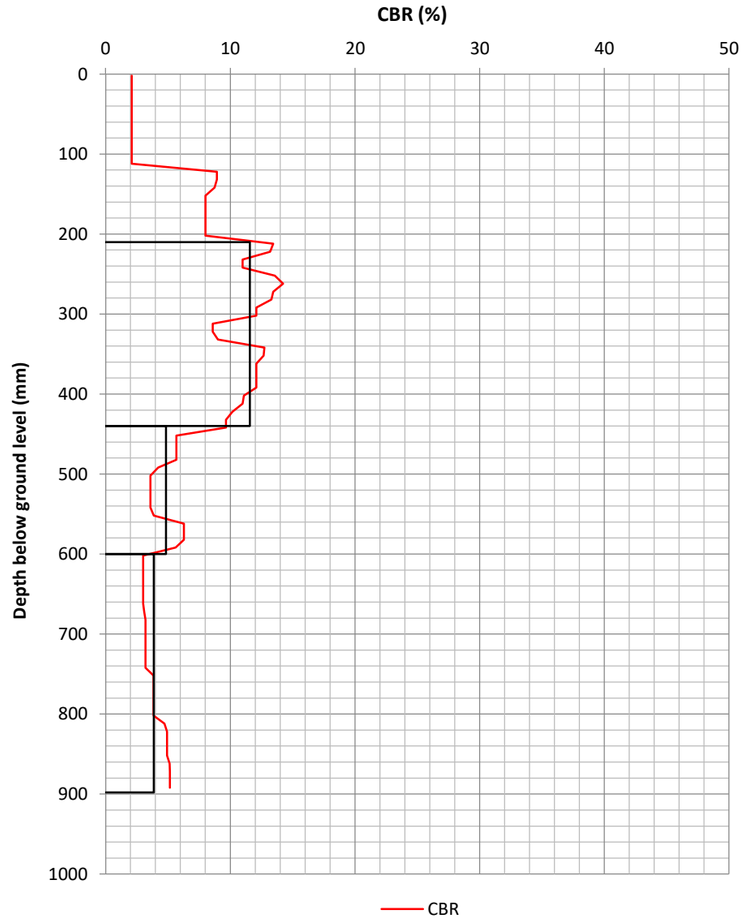
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP03	18/04/2023	2	52	CB

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	**11.6**	230	210	440
2	**4.8**	160	440	600
3	**3.9**	298	600	898

Notes

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

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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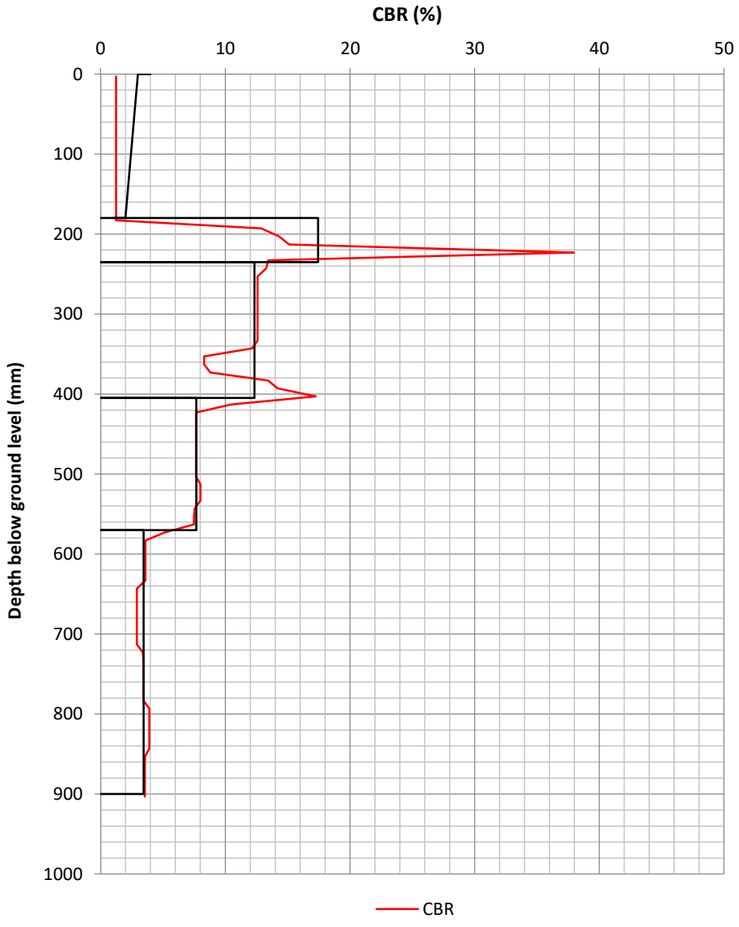
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP04	18/04/2023	3	42	CB

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		180	0	180
2	**17.5**	55	180	235
3	**12.3**	170	235	405
4	**7.7**	165	405	570
5	**3.4**	330	570	900

Notes

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

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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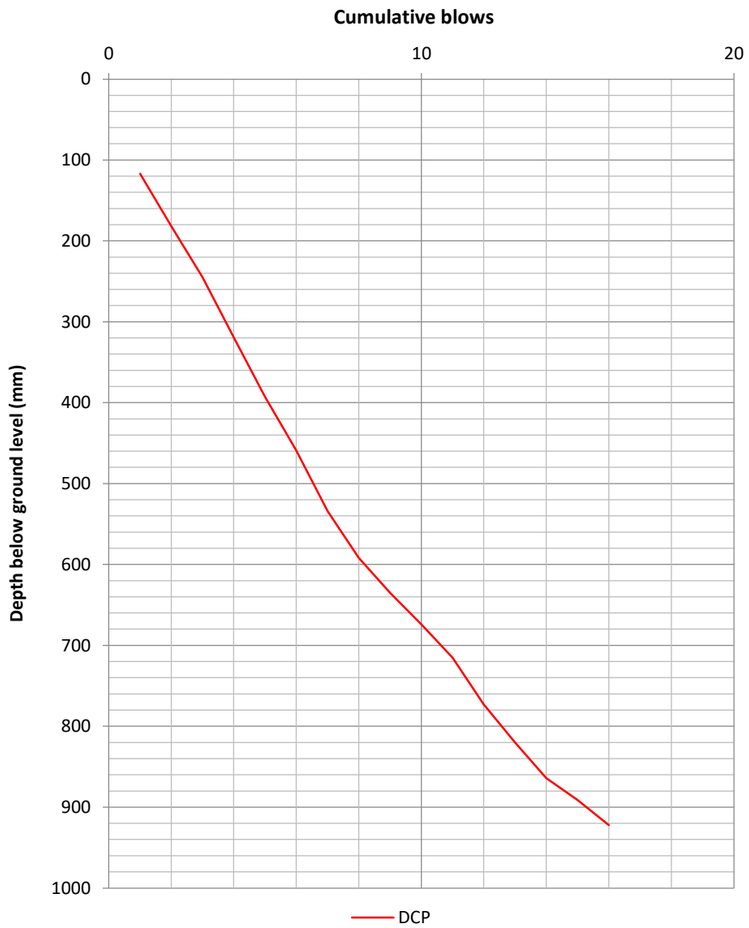
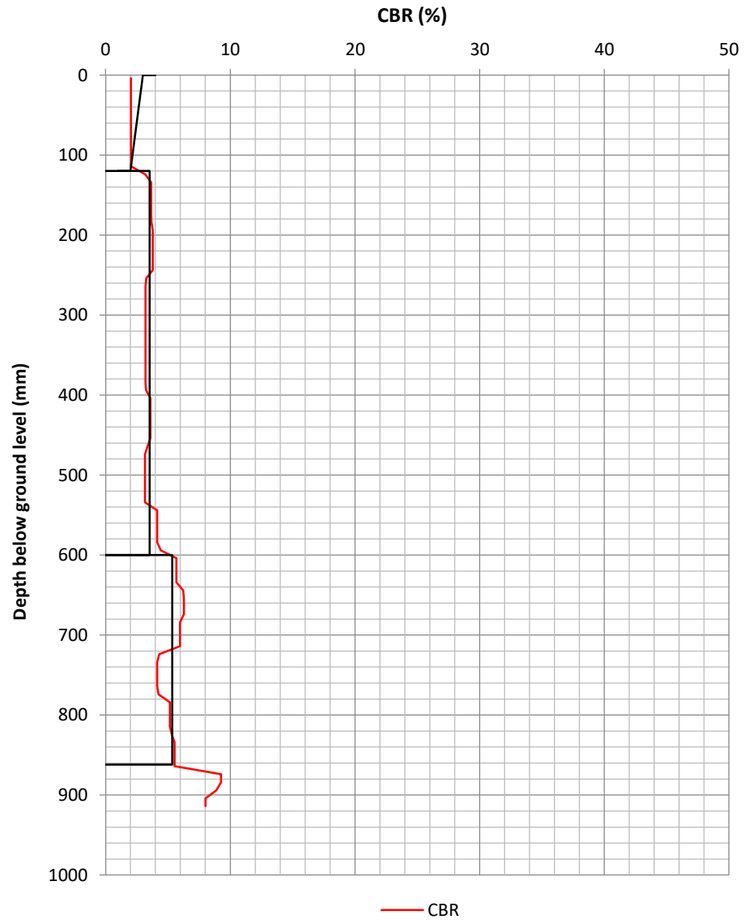
Dynamic Cone Penetrometer (DCP) test

Location	Date of test	Start depth (mm)	Zero reading (mm)	Operator
DCP05	18/04/2023	4	33	CB

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		120	0	120
2	**3.5**	480	120	600
3	**5.3**	262	600	862

Notes

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

Calculations

Log10 (Uncorrected (UC) CBR) = 2.48 - 1.057Log10(mm/blow)

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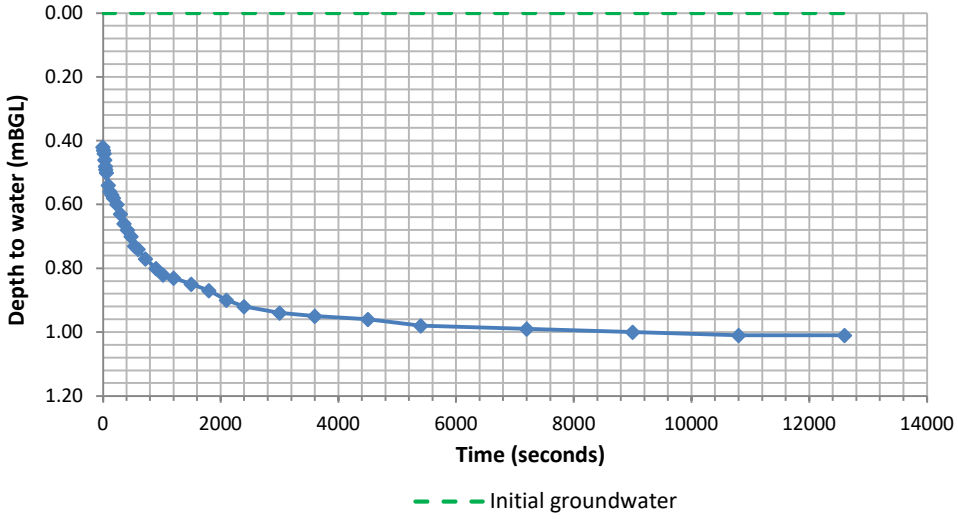
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

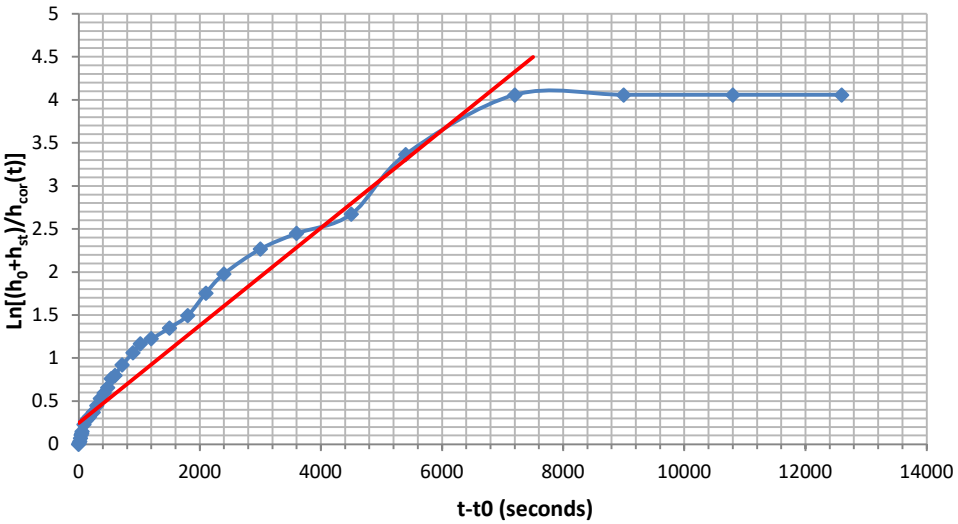
Location	Test number	Test method	Test system	Test date
WS01	1	Falling head	Open borehole	18/04/2023

Test base (m)	Test section length (m)	Test diameter (m)
1.00	1.00	0.1

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
-	0.42	0.58





F	Shape factor according BS EN ISO 22282-1:2012	2.097 m
S	Cross sectional area of test section	0.0079 m^2
h_{st}	Corrective term to initial static level	0.00E+00 m
α	Gradient of line alpha	5.67E-04 s^{-1}
k	**Permeability (α S / F)**	**2.12E-06 m/s**

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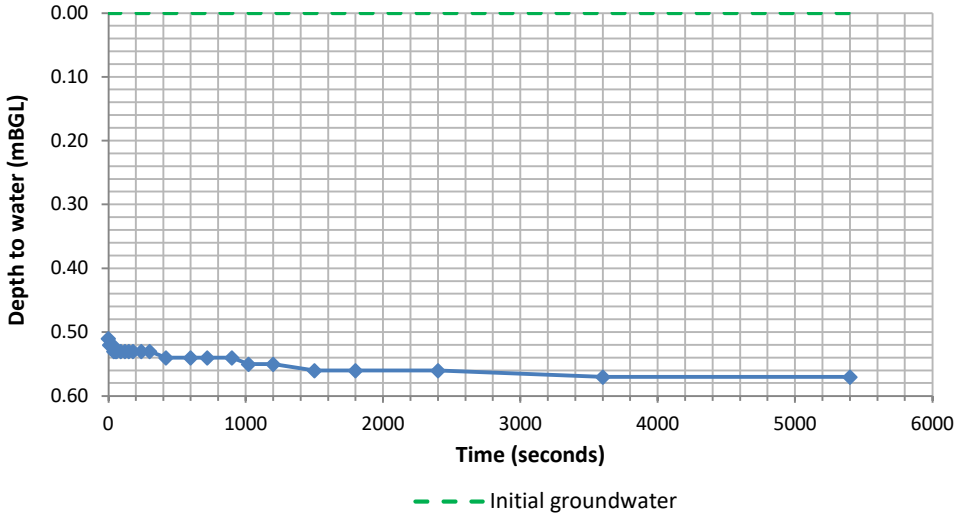
Permeability test in a borehole using open systems (BS EN ISO 22282-2:2012)

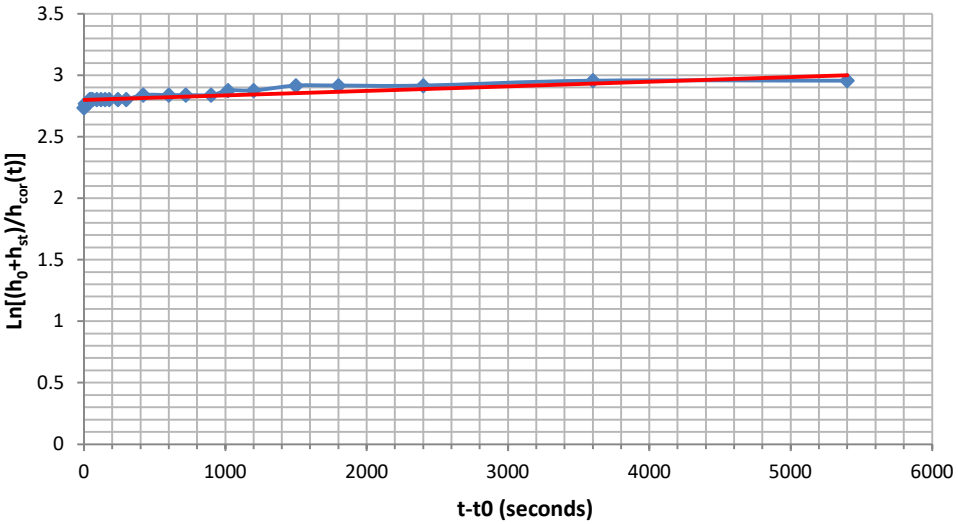
Location	Test number	Test method	Test system	Test date
WS04	1	Falling head	Open borehole	18/04/2023

Test base (m)	Test section length (m)	Test diameter (m)
3.00	3.00	0.1

Variables at start of test

Groundwater (mBGL)	Water after injection (mBGL)	Change in head (m)
-	0.51	2.49





F	Shape factor according BS EN ISO 22282-1:2012	4.604 m
S	Cross sectional area of test section	0.0079 m^2
h_{st}	Corrective term to initial static level	2.19E+00 m
α	Gradient of line alpha	3.70E-05 s^{-1}
k	**Permeability (α S / F)**	**6.32E-08 m/s**

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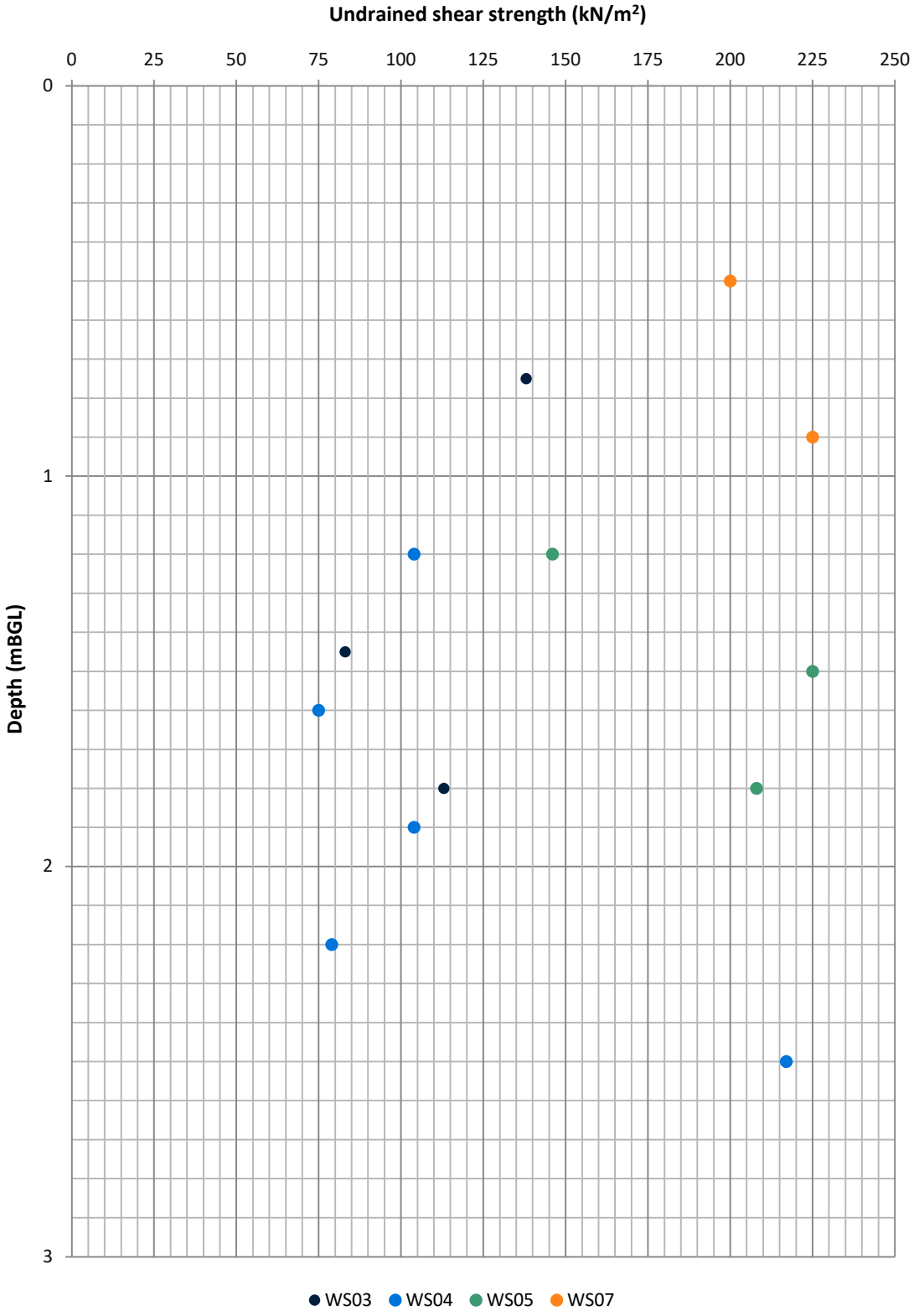
Plot summarising Pocket Penetrometer results versus depth filtered by location



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Plot summarising Pocket Penetrometer results versus depth filtered by geology

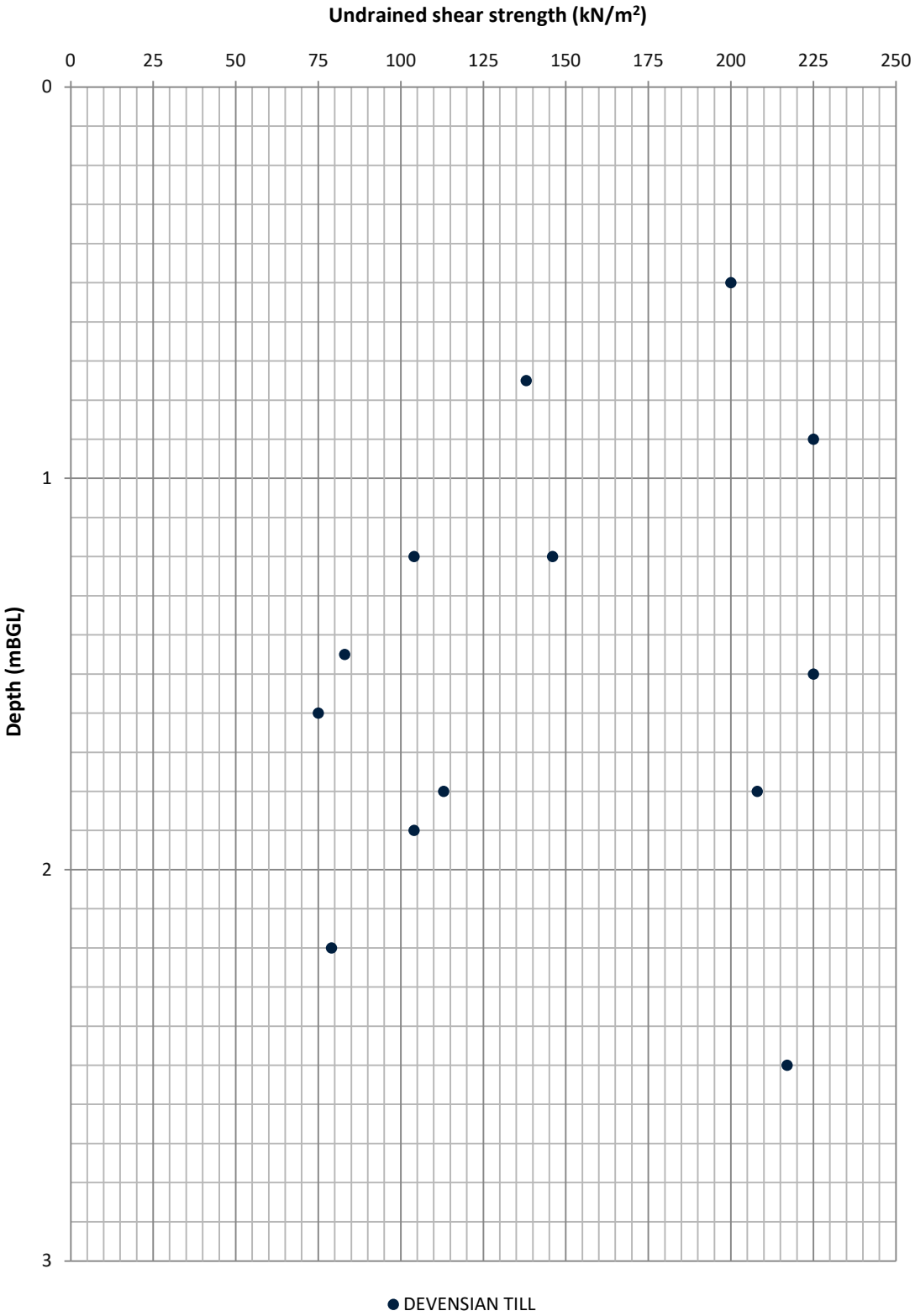

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Table summarising Pocket Penetrometer results

** Instrument limit reached.*

Location	Start Depth (m)	Results 1-3	Average	Undrained Shear Strength (kN/m^2)
WS03	0.75	2.75/2.75/2.75	2.75	138
WS03	1.45	1.75/1.75/1.5	1.67	83
WS03	1.80	2.25/2.25/2.25	2.25	113
WS04	1.20	2/2/2.25	2.08	104
WS04	1.60	1.5/1.25/1.75	1.50	75
WS04	1.90	2/2/2.25	2.08	104
WS04	2.20	1.5/1.5/1.75	1.58	79
WS04	2.50	4/4.5/4.5	4.33	217
WS05	1.20	3/3/2.75	2.92	146
WS05	1.50	4.5/4.5/4.5	4.50	225
WS05	1.80	4/4/4.5	4.17	208
WS07	0.50	4/4/4	4.00	200
WS07	0.90	4.5/4.5/4.5	4.50	225

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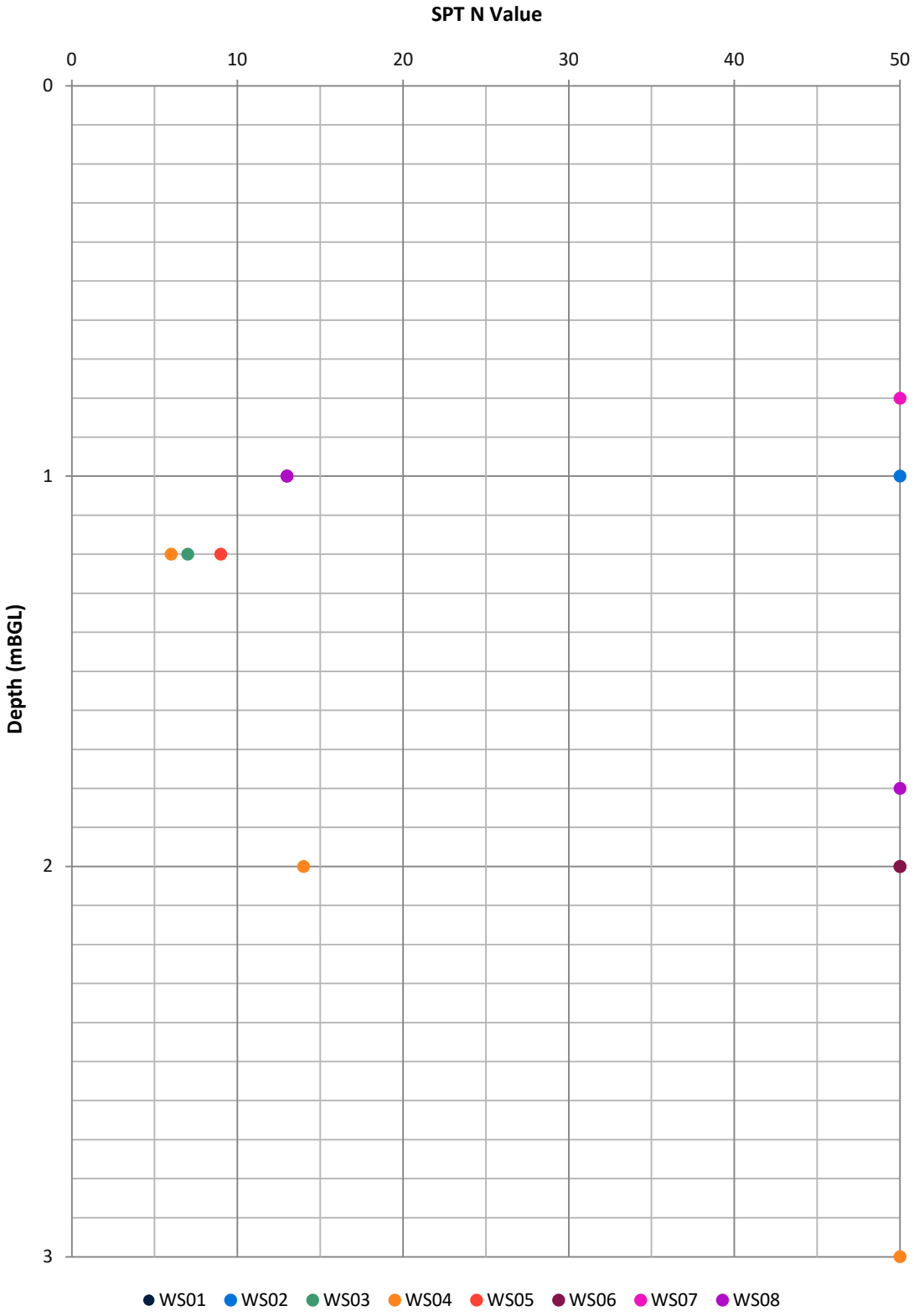
Plot summarising Standard Penetration Test (SPT) results versus depth filtered by location



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

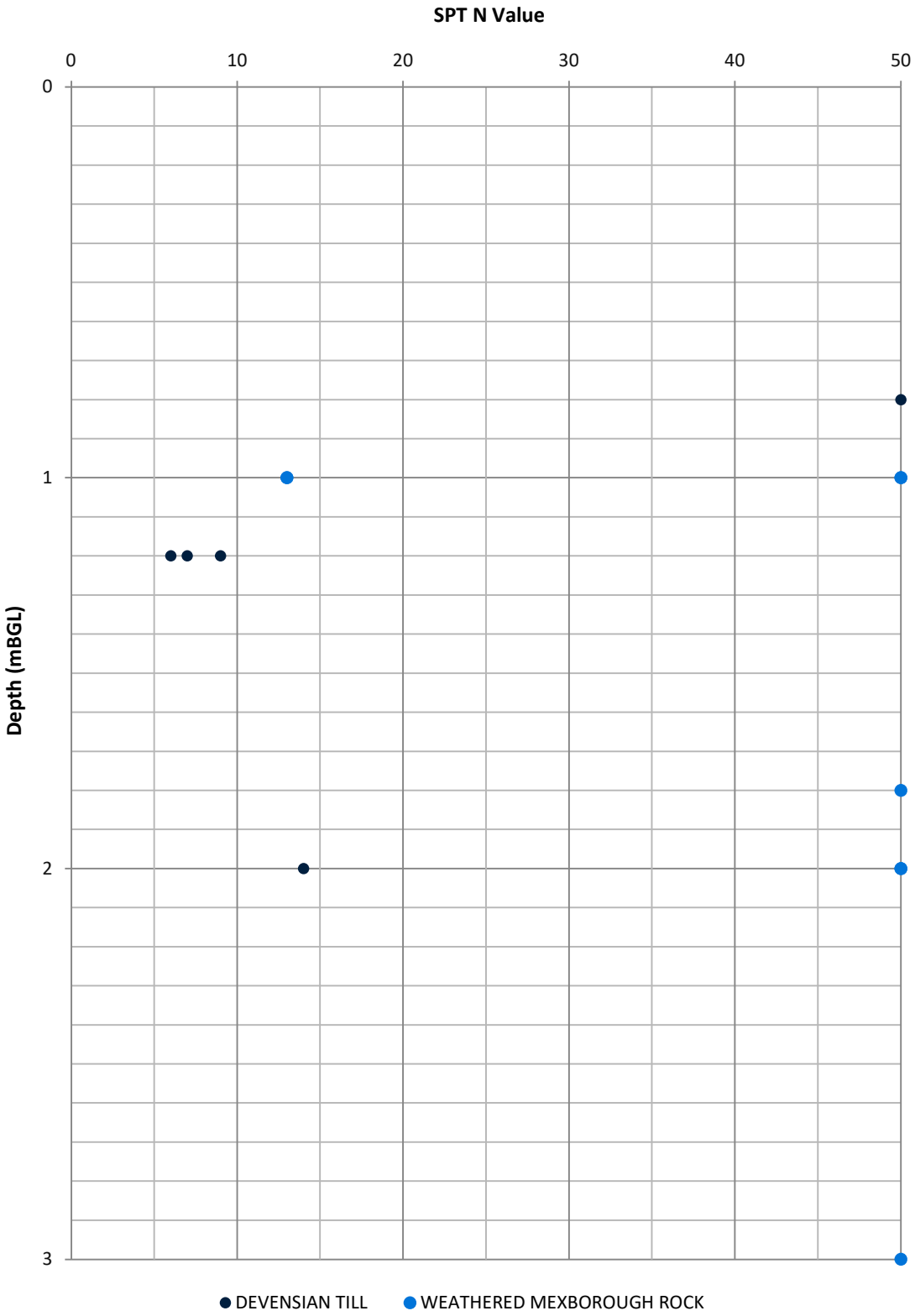

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Table summarising Standard Penetration Test (SPT) results

Location	Start Depth (m)					Penetration (mm)	
		Seating 1-2	Main 1-4	Total Seating	Total Main	Total Seating	Total Main
WS01	1.00	3/3	6/10/20/14	6	50	150	290
WS02	1.00	13/12	25	25	50	150	45
WS03	1.20	1/1	1/1/2/3	2	7	150	300
WS03	2.00	3/3	5/11/18/16	6	50	150	280
WS04	1.20	1/1	1/1/2/2	2	6	150	300
WS04	2.00	1/2	3/3/3/5	3	14	150	300
WS04	3.00	8/11	20/22/8	19	50	150	215
WS05	1.20	1/2	2/2/2/3	3	9	150	300
WS05	2.00	20/5	50	25	50	150	75
WS06	1.00	3/3	3/3/4/3	6	13	150	300
WS06	2.00	14/11	50	25	50	150	55
WS07	0.80	15/10	50	25	50	150	45
WS08	1.00	1/2	3/3/3/4	3	13	150	300
WS08	1.80	15/10	20/27/3	25	50	150	220

Appendix E Geotechnical Laboratory Test Certificates

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

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

UKAS TESTING 4041

Environmental Science

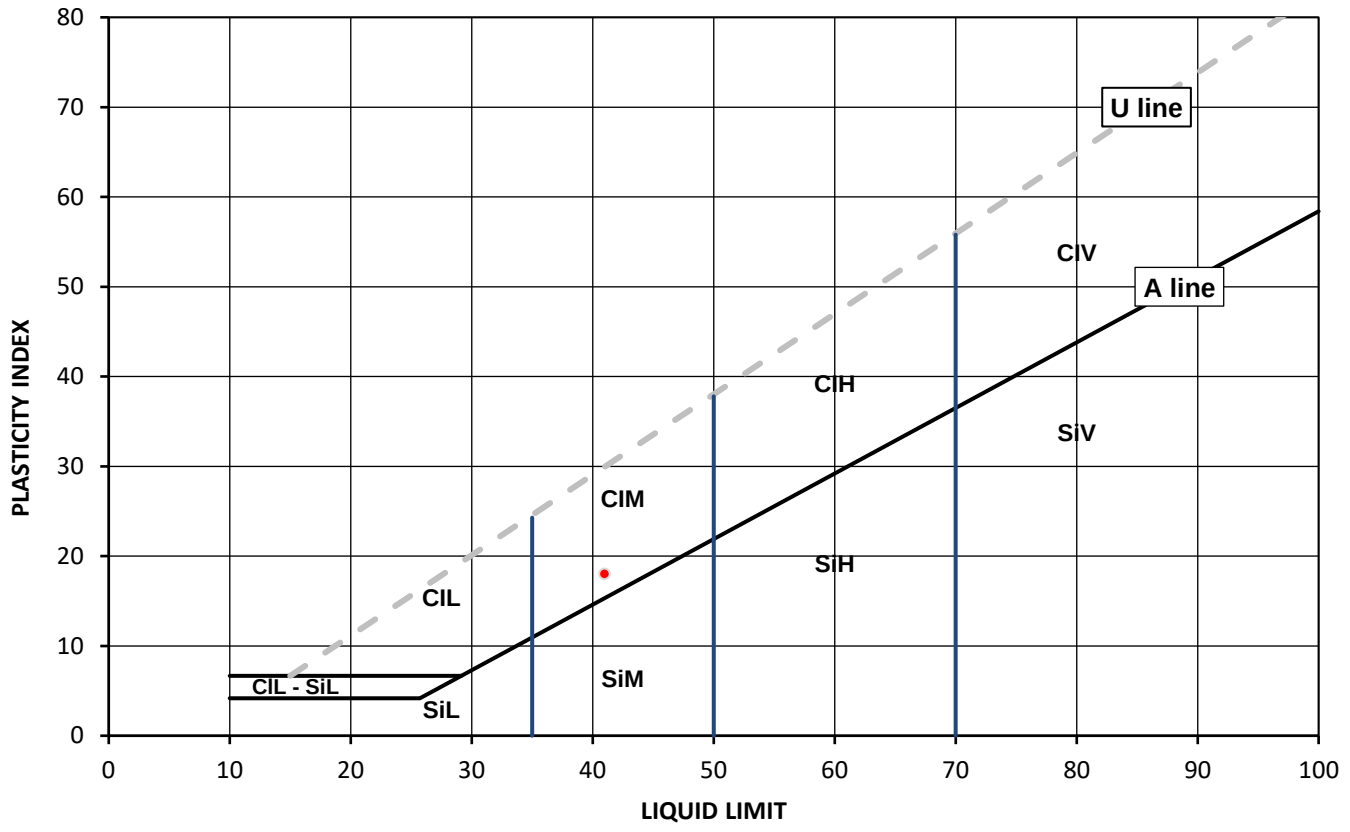
Client:	Soiltechnics Limited	Client Reference:	STV5991
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-29453-1
		Date Sampled:	18/04/2023
		Date Received:	20/04/2023
Contact:	Admin	Date Tested:	26/04/2023
Site Address:	Dorothy Hyman Sports Centre Barnsey	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2654193	Depth Top [m]:	1.20
Hole No.:	WS04	Depth Base [m]:	Not Given
Sample Reference:	WS041.201	Sample Type:	D
Sample Description:	Brownish grey slightly gravelly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
25	41	23	18	93



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

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

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

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 09/05/2023

GF 232.12

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

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

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

4041

Client: Soiltechnics Limited

Client Address: Cedar Barn, White Lodge,
Walgrave, Northampton,
NN6 9PY

Contact: Admin

Site Address: Dorothy Hyman Sports Centre Barnsey

Client Reference: STV5991
Job Number: 23-29453-1
Date Sampled: 18/04/2023
Date Received: 20/04/2023
Date Tested: 26/04/2023
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2654193	WS04	WS041.201	1.20	Not Given	D	Brownish grey slightly gravelly sandy CLAY		25	Sample was quartered, oven dried at 106.2 °C			

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 09/05/2023

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

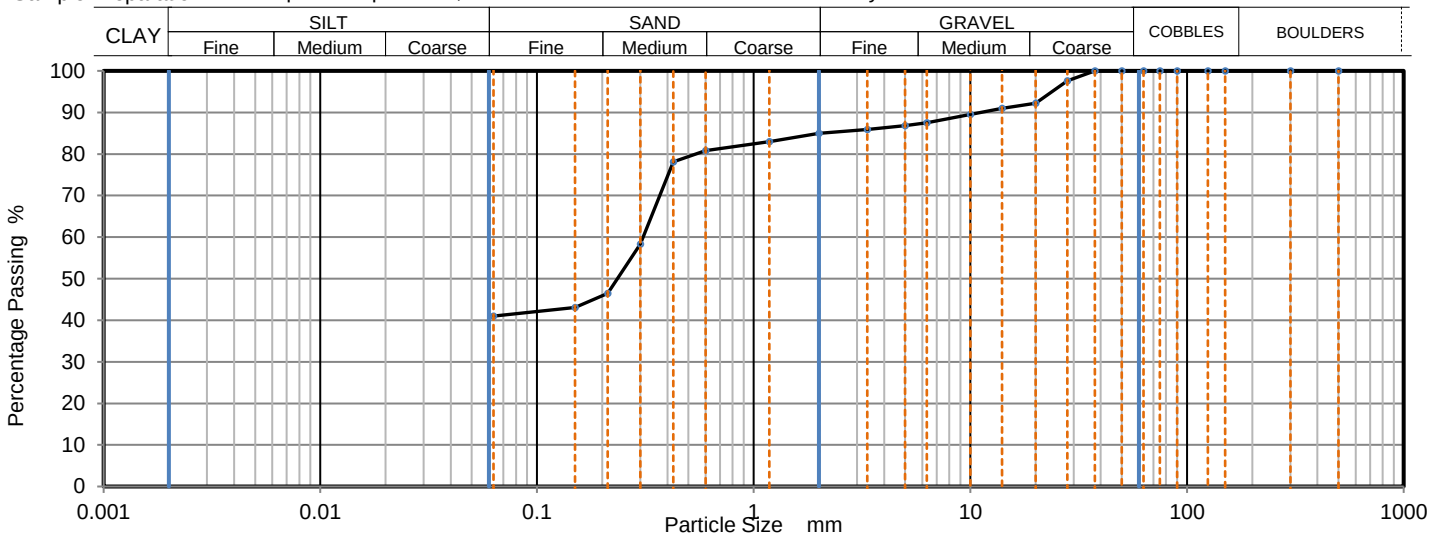
4041

Client:	Soiltechnics Limited	Client Reference:	STV5991
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-29453-1
		Date Sampled:	18/04/2023
		Date Received:	20/04/2023
Contact:	Admin	Date Tested:	26/04/2023
Site Address:	Dorothy Hyman Sports Centre Barnsey	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2654192	Depth Top [m]:	0.70
Hole No.:	WS04	Depth Base [m]:	Not Given
Sample Reference:	WS040.707	Sample Type:	B
Sample Description:	Dark brown sandy CLAY		
Sample Preparation:	Sample was quartered, oven dried at 106.5 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	98		
20	92		
14	91		
10	90		
6.3	88		
5	87		
3.35	86		
2	85		
1.18	83		
0.6	81		
0.425	78		
0.3	58		
0.212	47		
0.15	43		
0.063	42		

Sample Proportions	% dry mass
Very coarse	0
Gravel	15
Sand	43
Fines <0.063mm	42

Grading Analysis		
D100	mm	37.5
D60	mm	0.309
D30	mm	
D10	mm	
Uniformity Coefficient		> 4.9
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 09/05/2023

GF 100.22

TEST CERTIFICATE

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Tested in Accordance with: BS 1377-2: 1990

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

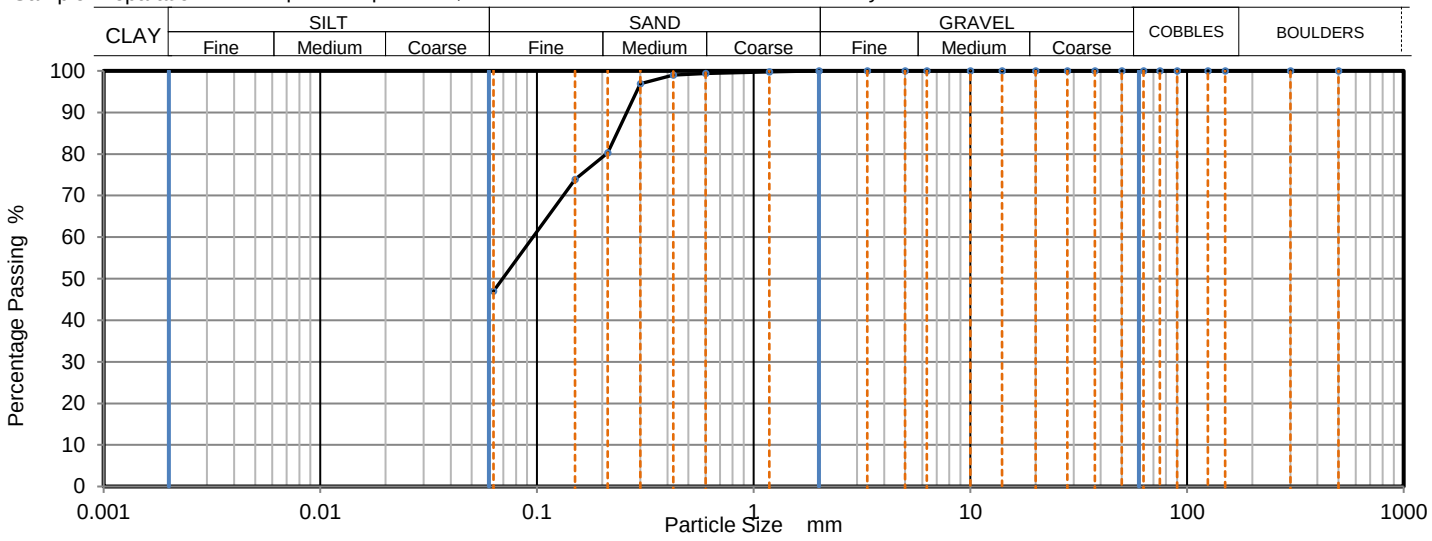
4041

Client:	Soiltechnics Limited	Client Reference:	STV5991
Client Address:	Cedar Barn, White Lodge, Walgrave, Northampton, NN6 9PY	Job Number:	23-29453-1
		Date Sampled:	18/04/2023
		Date Received:	20/04/2023
Contact:	Admin	Date Tested:	26/04/2023
Site Address:	Dorothy Hyman Sports Centre Barnsey	Sampled By:	Not Given

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

Test Results:

Laboratory Reference:	2654194	Depth Top [m]:	0.55
Hole No.:	WS06	Depth Base [m]:	0.85
Sample Reference:	WS060.551	Sample Type:	B
Sample Description:	Brownish grey sandy CLAY		
Sample Preparation:	Sample was quartered, oven dried at 106.0 °C and broken down by hand.		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
500	100		
300	100		
150	100		
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	100		
10	100		
6.3	100		
5	100		
3.35	100		
2	100		
1.18	100		
0.6	99		
0.425	99		
0.3	97		
0.212	80		
0.15	74		
0.063	48		

Sample Proportions	% dry mass
Very coarse	0
Gravel	0
Sand	52
Fines <0.063mm	48

Grading Analysis		
D100	mm	3.35
D60	mm	0.0948
D30	mm	
D10	mm	
Uniformity Coefficient		> 1.5
Curvature Coefficient		

Uniformity and Curvature Coefficient calculated in accordance with BS EN ISO 14688-2:2018

Note: Tested in Accordance with BS1377:Part 2:1990, clause 9.2

Remarks:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 09/05/2023

GF 100.22

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

e: admin@soiltechnics.net

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

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

Analytical Report Number : 23-29454

Project / Site name:	Dorothy Hyman Sports Centre Barnsey	**Samples received on:**	20/04/2023
Your job number:	STV5991	**Samples instructed on/ Analysis started on:**	20/04/2023
Your order number:	POR015244	**Analysis completed by:**	27/04/2023
Report Issue Number:	1	**Report issued on:**	28/04/2023
Samples Analysed:	3 soil samples		

Izabela Wójcik

Signed:

Izabela Wójcik
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

Excel copies of reports are only valid when accompanied by this PDF certificate.

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

Analytical Report Number: 23-29454
Project / Site name: Dorothy Hyman Sports Centre Barnsey
Your Order No: POR015244

Lab Sample Number				2654195	2654196	2654197
Sample Reference				WS01	WS03	WS07
Sample Number				WS010.652	WS030.705	WS070.501
Depth (m)				1.00-1,39	0.70	0.50
Date Sampled				18/04/2023	18/04/2023	18/04/2023
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	5.7	22	14
Total mass of sample received	kg	0.001	NONE	0.7	0.7	0.7

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7	6.1	5
Total Sulphate as SO4	%	0.005	MCERTS	0.014	0.057	0.053
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.024	0.054	0.044
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	23.6	53.8	43.6
Total Sulphur	%	0.005	MCERTS	0.007	0.042	0.026

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

Analytical Report Number : 23-29454

Project / Site name: Dorothy Hyman Sports Centre Barnsey

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2654195	WS01	WS010.652	1.00-1,39	Brown clay and sand.
2654196	WS03	WS030.705	0.7	Brown clay with vegetation.
2654197	WS07	WS070.501	0.5	Brown clay.

Analytical Report Number : 23-29454
Project / Site name: Dorothy Hyman Sports Centre Barnsey

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

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

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Appendix F Chemical Laboratory Test Certificates

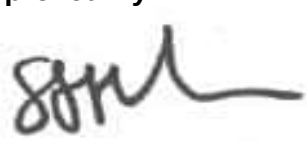
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13045-1
Initial Date of Issue:	25-Apr-2023
Client	Soiltechnics Limited
Client Address:	Cedar Barn White Lodge Walgrave Northampton Northamptonshire NN6 9PY
Contact(s):	Admin
Project	STV5991 Dorothy Hyman Sports Centre, Barnsey

Quotation No.:		**Date Received:**	20-Apr-2023
Order No.:	POR015243	**Date Instructed:**	20-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	5	**Results Due:**	26-Apr-2023
Date Approved:	25-Apr-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - Soil

Project: STV5991 Dorothy Hyman Sports Centre, Barnsey

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-13045
Quotation No.:			**Chemtest Sample ID.:**		1626832
Order No.: POR015243			Client Sample Ref.:		1
			Client Sample ID.:		TS010.001
			Sample Location:		TS01
			Sample Type:		SOIL
			Top Depth (m):		0.0
			Bottom Depth (m):		0.3
			Date Sampled:		18-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
ACM Type	U	2192		N/A	-
Asbestos Identification	U	2192		N/A	No Asbestos Detected
Moisture	N	2030	%	0.020	15
Soil Colour	N	2040		N/A	Brown
Other Material	N	2040		N/A	Stones and Roots
Soil Texture	N	2040		N/A	Sand
pH	M	2010		4.0	7.3
Boron (Hot Water Soluble)	M	2120	mg/kg	0.40	< 0.40
Cyanide (Complex)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Free)	M	2300	mg/kg	0.50	< 0.50
Cyanide (Total)	M	2300	mg/kg	0.50	< 0.50
Arsenic	M	2455	mg/kg	0.5	13
Beryllium	U	2455	mg/kg	0.5	1.1
Cadmium	M	2455	mg/kg	0.10	0.30
Chromium	M	2455	mg/kg	0.5	17
Copper	M	2455	mg/kg	0.50	25
Mercury	M	2455	mg/kg	0.05	0.13
Nickel	M	2455	mg/kg	0.50	17
Lead	M	2455	mg/kg	0.50	47
Selenium	M	2455	mg/kg	0.25	0.93
Vanadium	U	2455	mg/kg	0.5	24
Zinc	M	2455	mg/kg	0.50	71
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50
LOI	M	2610	%	0.10	11
Organic Matter	M	2625	%	0.40	2.6
TPH >C5-C6	N	2670	mg/kg	1.0	< 1.0
TPH >C6-C7	N	2670	mg/kg	1.0	< 1.0
TPH >C7-C8	N	2670	mg/kg	1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1.0	< 1.0
TPH >C10-C12	N	2670	mg/kg	1.0	< 1.0
TPH >C12-C16	N	2670	mg/kg	1.0	5.2
TPH >C16-C21	N	2670	mg/kg	1.0	7.7
TPH >C21-C35	N	2670	mg/kg	1.0	20

Results - Soil

Project: STV5991 Dorothy Hyman Sports Centre, Barnsey

Client: Soiltechnics Limited			**Chemtest Job No.:**		23-13045
Quotation No.:			**Chemtest Sample ID.:**		1626832
Order No.: POR015243			Client Sample Ref.:		1
			Client Sample ID.:		TS010.001
			Sample Location:		TS01
			Sample Type:		SOIL
			Top Depth (m):		0.0
			Bottom Depth (m):		0.3
			Date Sampled:		18-Apr-2023
			Asbestos Lab:		DURHAM
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Total TPH >C5-C35	N	2670	mg/kg	10	32
Naphthalene	M	2800	mg/kg	0.10	< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10
Acenaphthene	M	2800	mg/kg	0.10	< 0.10
Fluorene	M	2800	mg/kg	0.10	< 0.10
Phenanthrene	M	2800	mg/kg	0.10	0.26
Anthracene	M	2800	mg/kg	0.10	< 0.10
Fluoranthene	M	2800	mg/kg	0.10	0.60
Pyrene	M	2800	mg/kg	0.10	0.45
Benzo[a]anthracene	M	2800	mg/kg	0.10	< 0.10
Chrysene	M	2800	mg/kg	0.10	< 0.10
Benzo[b]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[k]fluoranthene	M	2800	mg/kg	0.10	< 0.10
Benzo[a]pyrene	M	2800	mg/kg	0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene	M	2800	mg/kg	0.10	< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10
Benzo[g,h,i]perylene	M	2800	mg/kg	0.10	< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0
Total Phenols	M	2920	mg/kg	0.10	< 0.10

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Allkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

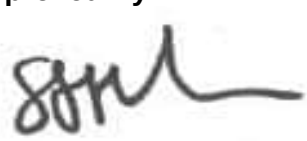
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	23-13048-1
Initial Date of Issue:	28-Apr-2023
Client	Soiltechnics Limited
Client Address:	Cedar Barn White Lodge Walgrave Northampton Northamptonshire NN6 9PY
Contact(s):	Admin
Project	STV5991 Dorothy Hyman Sports Centre, Barnsey

Quotation No.:		**Date Received:**	20-Apr-2023
Order No.:	POR015243	**Date Instructed:**	20-Apr-2023
No. of Samples:	1		
Turnaround (Wkdays):	7	**Results Due:**	28-Apr-2023
Date Approved:	28-Apr-2023		

Approved By:



Details: Stuart Henderson, Technical Manager

Results - 2 Stage WAC

Project: STV5991 Dorothy Hyman Sports Centre, Barnsey

							Landfill Waste Acceptance Criteria Limits		
Chemtest Job No:	23-13048								
Chemtest Sample ID:	1626845								
Sample Ref:	1								
Sample ID:	TS010.001								
Sample Location:	TS01								
Top Depth(m):	0.0								
Bottom Depth(m):	0.3								
Sampling Date:	18-Apr-2023								
Determinand	**SOP**	**Accred.**	**Units**				**Inert Waste Landfill**	**Stable, Non-reactive hazardous waste in non-hazardous Landfill**	**Hazardous Waste Landfill**
Total Organic Carbon	2625	M	%			1.6	3	5	6
Loss On Ignition	2610	M	%			11	--	--	10
Total BTEX	2760	M	mg/kg			< 0.010	6	--	--
Total PCBs (7 Congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC	2670	M	mg/kg			52	500	--	--
Total (Of 17) PAH's	2700	N	mg/kg			< 2.0	100	--	--
pH	2010	M				7.3	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.0080	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative mg/kg 10:1**	**Limit values for compliance leaching test using BS EN 12457 at L/S 10 l/kg**		
Arsenic	1455	U	0.0010	0.0011	0.0019	0.011	0.5	2	25
Barium	1455	U	0.25	0.10	0.50	1.1	20	100	300
Cadmium	1455	U	< 0.00011	< 0.00011	< 0.00011	< 0.00011	0.04	1	5
Chromium	1455	U	0.0006	0.0010	0.0011	0.0098	0.5	10	70
Copper	1455	U	0.0075	0.0044	0.015	0.0052	2	50	100
Mercury	1455	U	< 0.00005	< 0.00005	< 0.00005	< 0.00005	0.01	0.2	2
Molybdenum	1455	U	0.0025	0.0032	0.0050	0.032	0.5	10	30
Nickel	1455	U	0.0023	0.0010	0.0046	0.011	0.4	10	40
Lead	1455	U	< 0.0005	0.0007	< 0.0005	0.0068	0.5	10	50
Antimony	1455	U	0.0009	0.0005	0.0018	0.0055	0.06	0.7	5
Selenium	1455	U	0.0009	< 0.0005	0.0018	0.0007	0.1	0.5	7
Zinc	1455	U	0.003	0.005	0.006	0.047	4	50	200
Chloride	1220	U	1.7	< 1.0	< 10	< 10	800	15000	25000
Fluoride	1220	U	0.96	1.1	1.9	11	10	150	500
Sulphate	1220	U	3.8	< 1.0	< 10	< 10	1000	20000	50000
Total Dissolved Solids	1020	N	100	100	210	1000	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	U	15	9.5	< 50	98	500	800	1000

Solid Information	
Dry mass of test portion/kg	0.175
Moisture (%)	15

Leachate Test Information	
Leachant volume 1st extract/l	0.318
Leachant volume 2nd extract/l	1.400
Eluant recovered from 1st extract/l	0.122

Waste Acceptance Criteria

Landfill WAC analysis (specifically leaching test results) must not be used for hazardous waste classification purposes. This analysis is only applicable for hazardous waste landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Test Methods

SOP	Title	Parameters included	Method summary
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1610	Total/Dissolved Organic Carbon in Waters	Organic Carbon	TOC Analyser using Catalytic Oxidation
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.
2010	pH Value of Soils	pH	pH Meter
2015	Acid Neutralisation Capacity	Acid Reserve	Titration
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2610	Loss on Ignition	loss on ignition (LOI)	Determination of the proportion by mass that is lost from a soil by ignition at 550°C.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)
2760	Volatile Organic Compounds (VOCs) in Soils by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics.(cf. USEPA Method 8260)*please refer to UKAS schedule	Automated headspace gas chromatographic (GC) analysis of a soil sample, as received, with mass spectrometric (MS) detection of volatile organic compounds.
2815	Polychlorinated Biphenyls (PCB) ICES7Congeners in Soils by GC-MS	ICES7 PCB congeners	Acetone/Hexane extraction / GC-MS
640	Characterisation of Waste (Leaching C10)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge
650	Characterisation of Waste (Leaching WAC)	Waste material including soil, sludges and granular waste	ComplianceTest for Leaching of Granular Waste Material and Sludge

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix G Chemical Analysis Assessment

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GQRA Screening

Assessments	Status	Date	Created by	Reviewed By
Acute human health risk - Soils	*Not undertaken*			
Chronic human health risk - Soils	Completed	16.05.2023	CB	DH
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	Proposed site user
Receptor	Residential with homegrown produce
SOM	1.00%
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)	0.00 - 0.30
				Date	18/04/23
Inorganics - Metals					
Arsenic	C4SL	37	13		13
Beryllium	S4UL	1.7	1.1		1.1
Boron	S4UL	290	<LoD		< 0.40
Cadmium	C4SL	22	0.3		0.3
Chromium (III)	S4UL	910	17		17
Chromium (VI)	C4SL	21	<LoD		< 0.50
Copper	S4UL	2400	25		25
Cyanide - Free	ATK	34	<LoD		< 0.50
Lead	C4SL	200	47		47
Mercury	S4UL	40	0.13		0.13
Nickel	S4UL	130	17		17
Selenium	S4UL	250	0.93		0.93
Vanadium	S4UL	410	24		24
Zinc	S4UL	3700	71		71
Inorganics - Asbestos					
Asbestos Type		N/A			-
Asbestos Screen		N/A			No Asbestos Detected
Inorganics - Soil Parameters					
Organic matter		N/A			2.6
Organics - PAH & Phenol					
Acenaphthene	S4UL	210	<LoD		< 0.10
Acenaphthylene	S4UL	170	<LoD		< 0.10
Anthracene	S4UL	2400	<LoD		< 0.10
Benzo(a)anthracene	S4UL	7.2	<LoD		< 0.10
Benzo(a)pyrene	C4SL	5	<LoD		< 0.10
Benzo(b)fluoranthene	S4UL	2.6	<LoD		< 0.10
Benzo(ghi)perylene	S4UL	320	<LoD		< 0.10
Benzo(k)fluoranthene	S4UL	77	<LoD		< 0.10
Chrysene	S4UL	15	<LoD		< 0.10
Dibenz(a,h)anthracene	S4UL	0.24	<LoD		< 0.10
Fluoranthene	S4UL	280	0.6		0.6
Fluorene	S4UL	170	<LoD		< 0.10
Indeno(1,2,3-cd)pyrene	S4UL	27	<LoD		< 0.10
Naphthalene	S4UL	2.3	<LoD		< 0.10
Phenanthrene	S4UL	95	0.26		0.26
Phenol	S4UL	120	<LoD		< 0.10
Pyrene	S4UL	620	0.45		0.45
Organics - Banded TPH (unspeciated)					
EC >5-EC6 (unspeciated)	S4UL	42	<LoD		< 1.0
EC >6-EC7 (unspeciated)	S4UL	70	<LoD		< 1.0
EC >7-EC8 (unspeciated)	S4UL	13	<LoD		< 1.0
EC >08-EC10 (unspeciated)	S4UL	27	<LoD		< 1.0
EC >10-EC12 (unspeciated)	S4UL	74	<LoD		< 1.0
EC >12-EC16 (unspeciated)	S4UL	140	5.2		5.2
EC >16-EC21 (unspeciated)	S4UL	260	7.7		7.7
EC >21-EC35 (unspeciated)	S4UL	1100	20		20

Appendix H Waste Classification and WAC Assessments

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Waste classification

Overall assessment	
Waste population	Topsoil (Composite Sample)
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 utilised?	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	7.30	Non-hazardous
pH - Max	7.30	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		Sensitising		Ecotoxic				Substance specific concentration limits					
						Hazard Property	HP4			HP5				HP6								HP7		HP8	HP10		HP11		HP13		HP14				STOT				Carc.	Repr.
						Hazard Statement	H314	H315 and/or H319	H318	H304	H335	H372	H373	H300	H301	H302	H310	H311	H312	H330	H330	H331	H332	H350	H351	H314	H360	H361	H340	H341	H317	H334	H400	H410	H411	H413	H335 (CrO3)	H372 (CdS)	H373 (CdS)	H373 (PbSO4)	H350 (BaP) (Da,ha)	H361 (PbSO4)
Contaminant	Max. concentration (mg/kg)	Realistic worst case compound	Mass conversion factor	M/C applied?	Hazard Class / Compound concentration (%)		Skin Corr.1A	Skin Irrit.2 Eye Irrit.2	Eye Dam.1	Asp.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.2 (Inhal)	Acute Tox.3 (Inhal)	Acute Tox.4 (Inhal)	Carc.1A Carc.1B	Carc.2	Skin Corr.1A 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	0.5	Salts of hydrogen cyanide, using sodium cyanide	1.88	N/A	0.000									0.000			0.000			0.000	0.000												0.000	0.000							
Arsenic	13.0	Nickel diarsenide	1.78	N	0.002							0.002												0.002						0.002				0.002	0.002						
Arsenic (secondary)	13.0	Arsenic trioxide	1.32	N	0.002		0.002							0.002												0.002															
Beryllium	1.1	Beryllium oxide	2.78	N	0.000			0.000			0.000	0.000			0.000					0.000	0.000			0.000						0.000											
Cadmium	0.3	Cadmium sulfide	1.29	N	0.000							See specific assessment	See specific assessment			0.000								0.000				0.000		0.000						0.000							
Cadmium (secondary)	0.3	Cadmium oxide	1.14	N	0.000															0.000	0.000												0.000	0.000							
Chromium (III)	17.0	Chromium (III) oxide	1.46	N	0.002			0.002								0.002										0.002				0.002	0.002				0.002						
Chromium (VI)	0.5	Chromium (VI) trioxide	1.92	N/A	0.000		0.000				See specific assessment	0.000			0.000			0.000		0.000	0.000			0.000		0.000		0.000		0.000	0.000	0.000					0.000						
Copper	25.0	Copper (I) oxide	1.25	N	0.003																												0.003	0.003							
Copper (secondary)	25.0	Copper(II) oxide	1.13	N	0.003				0.003							0.003							0.003																		
Lead	47.0	Lead compounds, using lead sulphate	1.46	N	0.007								See specific assessment			0.007							0.007		0.007		0.007						0.007	0.007					0.007		0.007
Mercury	0.1	Mercury dichloride	1.35	N	0.000		0.000					0.000		0.000												0.000		0.000		0.000				0.000	0.000						
Nickel	17.0	Nickel carbonate	2.02	N	0.003			0.003				0.003				0.003							0.003	0.003				0.003		0.003	0.003	0.003								
Selenium	0.9	Selenium compounds, using selenium dioxide	1.41	N	0.000								0.000		0.000							0.000											0.000	0.000							
Zinc	71.0	Zinc sulphide	1.49	N	0.011			0.011																						0.011	0.011		0.011							
Vanadium	24.0	Vanadium pentoxide	1.79	N	0.004						0.004	0.004				0.004							0.004				0.004		0.004					0.004						
Naphthalene	0.1	Naphthalene	1	N/A	0.000											0.000								0.000									0.000	0.000							
Acenaphthylene	0.1	Acenaphthylene	1	N/A	0.000			0.000			0.000					0.000	0.000			0.000	0.000																				
Acenaphthene	0.1	Acenaphthene	1	N/A	0.000			0.000																									0.000	0.000							
Fluorene	0.1	Fluorene	1	N/A	0.000			0.000			0.000																						0.000	0.000							
Phenanthrene	0.3	Phenanthrene	1	N/A	0.000											0.000																	0.000	0.000							
Anthracene	0.1	Anthracene	1	N/A	0.000			0.000			0.000																			0.000			0.000	0.000							
Fluoranthene	0.6	Fluoranthene	1	N/A	0.000			0.000								0.000																	0.000	0.000							
Pyrene	0.5	Pyrene	1	N/A	0.000			0.000			0.000																						0.000	0.000							
Benzo(a)anthracene	0.1	Benzo(a)anthracene	1	N/A	0.000																			0.000									0.000	0.000							
Chrysene	0.1	Chrysene	1	N/A	0.000																			0.000					0.000				0.000	0.000							
Benzo(b)fluoranthene	0.1	Benzo(b)fluoranthene	1	N/A	0.000																			0.000									0.000	0.000							
Benzo(k)fluoranthene	0.1	Benzo(k)fluoranthene	1	N/A	0.000																			0.000									0.000	0.000							
Benzo(a)pyrene	0.1	Benzo(a)pyrene	1	N/A	0.000																			See specific assessment			0.000		0.000		0.000		0.000	0.000					0.000		
Indeno(1,2,3-cd)pyrene	0.1	Indeno(1,2,3-cd)pyrene	1	N/A	0.000																				0.000																
Dibenz(a,h)anthracene	0.1	Dibenz(a,h)anthracene	1	N/A	0.000																			See specific assessment									0.000	0.000					0.000		
Benzo(ghi)perylene	0.1	Benzo(ghi)perylene	1	N/A	0.000																												0.000	0.000							
Total TPH	32.0	Unknown oil	1	N/A	0.003					0.003		0.003												See specific assessment			0.003	See specific assessment					0.003								
Benzene		Benzene	1	N/A																																					
Toluene		Toluene	1	N/A																																					
Ethylbenzene		Ethylbenzene	1	N/A																																					
Xylenes		Xylenes	1	N/A																																					
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	0.1%	0.1%	1%	1%	N/A	N/A	N/A	N/A	N/A	N/A
				Total (or greatest)		0.00%	0.00%	0.00%	0.00%	(0%)	(0%)	(0%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	(0%)	(0.01%)	0.00%	(0.01%)	(0%)	(0%)	(0%)	(0.01%)	(0.01%)	0.00%	0.00%	0.00%	0.00%	(0%)	(0%)	(0%)	(0.01%)	(0%)	(0.01%)
				Hazard threshold		1%	20%	10%	10%	20%	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.2	WM3 eq.3 & eq.4		WM3 eq.4	1.0%	10.0%	0.1%	0.5%	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

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Waste acceptance

Parameter	Inert waste landfill	Stable non-reactive hazardous waste in a non-hazardous landfill cell (SNRHW)	Hazardous waste landfill	Location	TS01
				Depth (m)	0.00 - 0.30
				Date	18/04/23
Parameters determined on the waste					
Total organic carbon	3	5	6		1.6
Loss on ignition			10		11
BTEX	6				< 0.010
PCBs (7 congeners)	1				< 0.10
Mineral oil	500				52
PAH (17 congeners)	100				< 2.0
pH		6			7.3
Acid neutralisation capacity (pH 6)		To be evaluated	To be evaluated		0.008
Limit values (mg kg^{-1}) for compliance test using BN 12457-3 at L/S 10 l					
Arsenic	0.5	2	25		0.011
Barium	20	100	300		1.1
Cadmium	0.04	1	5		< 0.00011
Chromium (III)	0.5	10	70		0.0098
Copper	2	50	100		0.0052
Mercury	0.01	0.2	2		< 0.00005
Molybdenum	0.5	10	30		0.032
Nickel	0.4	10	40		0.011
Lead	0.5	10	50		0.0068
Antimony	0.06	0.7	5		0.0055
Selenium	0.1	0.5	7		0.0007
Zinc	4	50	200		0.047
Chloride	800	15,000	25,000		< 10
Fluoride	10	150	500		11
Sulphate	1,000	20,000	50,000		< 10
Total dissolved solids	4,000	60,000	100,000		1000
Phenol	1				< 0.50
Dissolved organic carbon	500	800	1000		98
Classifications					
Waste classification					**Non-hazardous**
Landfill type					Non-hazardous

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.