Phase I & II Geo-Environmental Assessment

The Seam, Barnsley

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The Seam, Barnsley

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1 Introduction

1.1 Appointment

Arcadis LLP (Arcadis) was appointed by Barnsley Metropolitan Borough Council (BMBC) to complete a Geo-Environmental Assessment for the site of Phase 1 of The Seam, Barnsley town centre's digital business district.

1.2 Proposed Development

The Seam is the new name for the town centre's digital business district, a new digital campus neighbourhood within the town centre. Phase 1 will deliver a new multi-storey car park (MSCP) within the north of the site, an active travel hub (ATH) within the southern site area and public realm green space.

Two future development plots also lie within Phase 1. Proposals for Plot 1 include residential with ground floor commercial units, and possible hotel usage. Plot 2 proposals include low rise / high density residential development such as back-to-back townhouses or smaller apartment blocks. The blueprint plan for the wider Seam development is presented in Appendix A for reference. The Phase 1 redline boundary is illustrated on Figure 1 in Section 2 of this report.

1.3 Existing Information

Several phases of ground investigation have previously been undertaken at the site. These are detailed in the following reports which have been made available to Arcadis for review:

- Ground Investigation Report, Courthouse Leisure Scheme, Barnsley, prepared for The Barnsley Miller Partnership. WSP Environmental, ref: 90913LE, November 1999.
- Report on a Site Investigation, Courthouse Leisure Scheme, Barnsley, prepared for The Barnsley Miller Partnership. WSP Environmental, ref: 21108LE, January 2001.
- Preliminary Land Contamination and Geotechnical Risk Assessment, Courthouse Redevelopment Barnsley, prepared for Barnsley Metropolitan Borough Council. Hamson Barron Smith, ref: 23-24-18-1-6011/DSR1, October 2017.
- Ground Investigation Report, Courthouse Redevelopment Barnsley, prepared for Barnsley Metropolitan Borough Council. Hamson Barron Smith, ref: 23-24-18-1-6011/GIR1, June 2018.
- Review of existing documentation at the Courthouse Campus site, Barnsley, prepared for BDP. Hydrock, ref: 15398-GNST-HYD-TDN-001, August 2020.
- Coal Mining Risk Assessment, Courthouse Campus, Barnsley, prepared for BDP. Hydrock, ref: 15398-HYD-XX-XX-RP-GE-0001, August 2020.
- Coal Mining Ground Investigation Report, Digital Campus, Barnsley, prepared for BDP. Hydrock, ref: 15398-HYD-XX-XX-RP-GE-0003, January 2021.

Additionally, a historical ground investigation was completed in the 1980s by South Yorkshire County Council and the logs from this phase of investigation have also been made available for review.

During the production of this report the information available in the above documents has been reviewed and a summary of findings is presented in Section 5.

1.4 Objectives

As part of the Phase 1 development scheme there was a need to obtain and assess information on ground conditions and potential related issues at the site.

This report details the results of a desk-based study designed to:

- Establish the environmental setting of the site including the geology, hydrology, and hydrogeology.
- Evaluate the environmental sensitivity of the site.
- Assess the likely environmental condition of the site based on its current and historical use, and that of the immediate surrounding area.
- Assess the existing information relating to ground conditions at the site, to identify potential geo-environmental development constraints and data gaps.
- Develop a Conceptual Site Model (CSM) to produce a preliminary risk assessment identifying and qualitatively assessing risks to potential Human Health and Controlled Water receptors.

Following on from the desk-based study, a supplementary intrusive ground investigation has been scoped and completed to fulfil the following objectives:

- To investigate the extent and nature of any ground contamination and environmental conditions related to any historical or current on-site and off-site land-uses identified in the Phase I Conceptual Site Model (CSM);
- To assess the potential for hazardous ground gas emissions and provide an indication of future mitigatory measures; and,
- To prepare an interpretive report detailing the above and provide recommendations for remediation measures and any other further work required.

1.5 Scope of Works

To achieve the objectives the following scope of desk-based work was defined and undertaken:

- Review and evaluate the published and readily available information concerning the site including:
    - Recent Ordnance Survey (OS) maps;
    - Public register and environmental information – provided by Groundsure;
    - Historical Ordnance Survey maps – provided by Groundsure;
    - britainfromabove.org.uk website;
    - BRE Radon Atlas;
    - British Geological Survey (BGS) published maps and online GeoIndex including relevant archive borehole records;
    - The Environment Agency (EA) website; and
    - The Coal Authority (CA) website.
- Obtain a preliminary Unexploded Ordnance (UXO) screening assessment, to provide an indication on the likelihood of UXO being present beneath the site;
- Review previous reports relevant to the site which have been provided to Arcadis;
- Develop a Conceptual Site Model and prepare a Preliminary Risk Assessment in line with UK regulatory guidance; and
- Outline any potential contamination risks associated with the ground conditions at the site.

Subsequently, a scope of supplementary intrusive ground investigation was carried out consisting of cable percussion boreholes with rotary core follow-on, dynamic windowless sampler boreholes, mechanically excavated trial pits and hand-dug pits, groundwater and ground gas monitoring and laboratory testing.

The findings of the intrusive works are presented in this report with a geo-environmental assessment and interpretation of the ground, ground gas and groundwater conditions.

1.6 Reliability of Information / Limitations

Arcadis warrants that the services performed were conducted in a competent and professional manner in accordance with sound consulting practices and procedures.

Arcadis cannot warrant the actual property conditions described in this report beyond matters amenable to confirmation within the limits of this report.

Arcadis' liability, pursuant to the terms of the appointment of Arcadis by BMBC, is strictly limited to the work undertaken and the matters contained and specifically referred to in this report.

A copy of Arcadis' Study Limitations is presented in Section 14.

1.7 Reliance

It is understood that the current report will be prepared for the use of BMBC. The contents of this report may not be used or relied upon by any person other than this party without the express written consent and authorisation of Arcadis.

2 Site Setting

2.1 Site Location

The site is located immediately north of Barnsley town centre and is bordered to the southeast by Eldon Street North, to the east by railway lines, and to the west by County Way. The centre of the site is located roughly at National Grid Reference 434634, 406750, and an indicative post code for the site is S70 2JW. The site location and current site layout plan is presented in Figure 1 below.



Figure 1 – Site Location and Layout Plan. © 2021 Google

2.2 Site Description

The Phase 1 site covers an area of approximately 2.1ha and the majority of the site is covered by surface level car parking. The wider area has been developed with several platforms and slopes. Much of the current site area lies on one platform; this area slopes from 97m above ordnance datum (AOD) in the south to 95m AOD in the north. The area to the west of this main parcel, lies at a higher elevation of roughly 101m AOD where it lies within the current site extents. The change in elevation between these two areas is accommodated by steep heavily vegetated slopes to the north and retaining walls to the south. A vegetated mound is also present within the north of the site, which approaches 101m AOD at its highest elevation.

2.3 Surrounding Land Uses

The current land uses surrounding the site are described below:

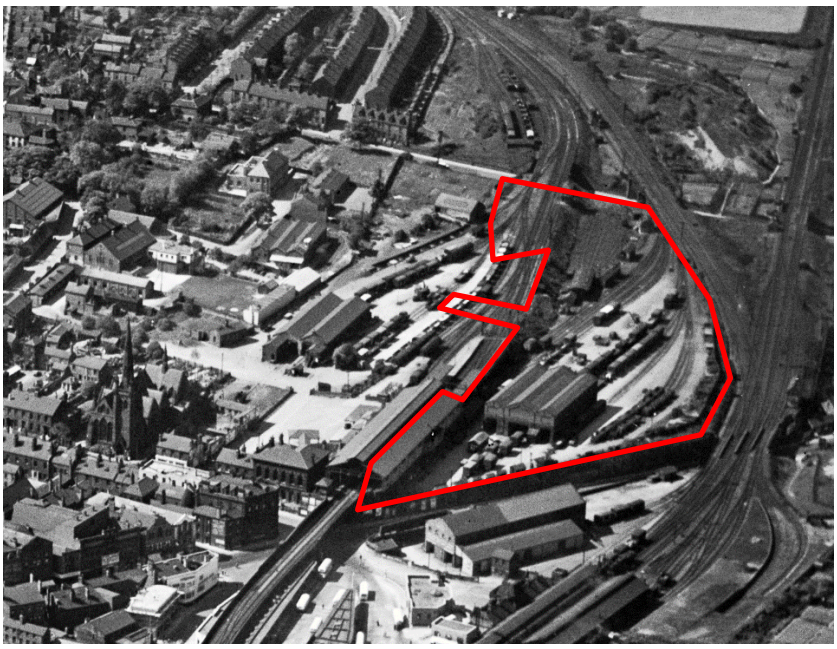
- North – A635 Old Mill Lane with Barnsley College beyond.
- South – Eldon Street North with commercial properties and Barnsley Interchange beyond.
- East – Railway lines with residential housing beyond.
- West – Further surface level car parking and County Way. The Digital Media Centre is a relatively new office building which is located adjacent to the southwest of the site.

3 Site History

3.1 On-site History

Based on a review of historical maps provided by Groundsure and several aerial photographs uncovered on the Britain from Above website from the c1940s (both presented in Appendix B) the site history and any potential contaminative impacts are summarised below.

Table 1 - On-Site History

Year	Details	Potential Source of Contamination
1850	Railway sidings are present across the southern and central site area. These branch off the mainline which runs along the eastern site boundary. A good's shed is located in the southwest of the site. The northern site area appears to comprise undeveloped agricultural land.	Railway Sidings Good's Shed
1889 - 1966	The entire site now appears to be occupied by railway sidings and the good's shed associated with the Courthouse Station shown in the south-western corner of the site. The sidings appear to have been constructed on raised embankments. A small building structure is depicted between the sidings in the northern site area by 1961. 	Railway Sidings Good's Shed Made Ground
1972 - 1975	The railway sidings have been removed. However, the good's shed building and small structure to the north of the site are still depicted. Courthouse Station previously in the south-western corner of the site has been demolished.	Good's Shed
1977 - 1981	The site appears to principally be used as surface car parking.	Car Parking
1982 - 2003	Two council / government office buildings have been constructed within the central site area. The rest of the site is labelled as car parking. By 1991, an elevated mound is depicted in the north of the site.	Made Ground Car Parking

2010 - Present	The entirety of the site is set to surface car parking. A Covid-19 testing centre was briefly located within the north of the site during the pandemic.	Car Parking

3.2 Potentially Contaminative History of the Surrounding Area

Based on historical maps provided by Groundsure (presented in Appendix B) the pertinent and potentially contaminative history of the area surrounding the site is summarised below.

Table 2 - Off-Site History

Year	Details	Potential Source of Contamination
1850	The site is shown on the northern periphery of Barnsley town centre. The Barnsley and Wakefield branch of the Lancashire and Yorkshire Railway runs along the eastern boundary of the site to a railway station roughly 100m south. Eldon Street runs along the southern boundary of the site and is labelled as Wharncliffe Cut where it runs beneath the railway bridge. Mill Lane is shown along the northern boundary of the site. Ground workings are shown approximately 20m north of the site. Honey Well Colliery is labelled roughly 400m north and Barnsley Colliery is labelled roughly 400m northwest.	Railway Infrastructure Collieries Ground Workings
1889 - 1893	Railway sidings extend offsite to the west where a second good's shed is located. A timber yard is shown approximately 90m to the southwest. Towards the railway station to the south is a further good's shed, an engine shed, a railway foundry and a timber yard.	Railway Infrastructure Timber Yard
1906	A tramway is present along Eldon Street to the south of the site and tanks are labelled roughly 40m west of the northern site area. Terraced residential development has taken place beyond the railway line to the northeast.	Tramway Tanks
1929	Boro' Colliery is labelled roughly 450m southeast of the site.	Colliery
1961 - 1962	A builder's yard and 'works' are present 80m and 130m west of the site. Garages are also present approximately 110m west of the southern site area, and also 180m and 240m southwest. Various works and a depot are shown 200 – 300m south of the site.	Builder's Yard Various Works Garages Depot
1972 - 1977	A corporation depot and an electricity board depot are shown 50m west and 100m southeast respectively. The 'works' 130m west of the site is now labelled as a printing works.	Depots Printing Works

3.3 Site History Summary

The site had been developed by the mid-1800s with railway sidings present in central and southern half of the site and a station to the south. The railway sidings were expanded in the late 1800s until they covered the majority of the site with associated goods sheds.

The railway infrastructure was removed in the 1960s and the site converted principally to car parking. In the 1980s two council office buildings were constructed in the northern part of the site; these remained until the early 2000s.

The surrounding land use was a mixture of residential properties, commercial and industrial land. The majority of the industrial land has been demolished and has either been redeveloped or is currently derelict brownfield land.

4 Environmental Setting

4.1 Geology

The regional geological information pertaining to the site was gained from a review of the BGS 1:50,000 scale maps (Barnsley, Sheet 87, 2008), BGS online GeoIndex website and a site-specific Groundsure Insight report (Appendix C). This was supplemented where relevant by information presented in the previous ground investigation reports and borehole logs made available for review as referenced in Section1.

Table 3 – Summary of Published Geology

Unit	Published Information	Borehole Record Information
Superficial Deposits		
Artificial	Made Ground deposits are indicated across the entire site. The 1:50,000 map suggests this falls into the category of mainly colliery spoil and infill.	The previous investigations onsite recorded variable thickness of Made Ground across the site generally to depths of between 1.0 and 8.0m bgl. The Made Ground is typically described as loose to medium dense black, brownish grey and brown clayey ashy subangular to subrounded fine to coarse gravel of mudstone, siltstone, sandstone, brick and coal. The cohesive Made Ground was recorded as soft to firm gravelly clay.
Superficial	None indicated.	-
Bedrock		
Bedrock	Pennine Middle Coal Measures (PMCM) Formation – the northern half of the site is indicated to be underlain by a distinct sandstone unit (Kent's Rock). The southern half of the site is indicated to be underlain by interbedded grey mudstone, siltstone and pale grey sandstone, commonly with coal seams. The Low Beamshaw and the Top Beamshaw coal seams are indicated to outcrop roughly through the centre and south of the site respectively, and dip to the east at a shallow angle. The Kent's Thin coal seam is also indicated to be present at relatively shallow depth beneath the western part of the site, deepening to the east.	During the previous investigations, the Made Ground onsite was recorded to be underlain by solid geology of the Pennine Middle Coal Measures. This is typically described as weathered to a firm slightly gravelly clay near the surface with intact bedrock beneath. In the northern half of the site the Kent's Rock sandstone subcrops beneath the Made Ground. The Hydrock 2020 investigation generally recorded approximately 14-15m of sandstone beneath Made Ground within the centre of the site. This overlies a 1m thick coal seam with mudstone recorded below. Across the southern site area, interbedded mudstone, siltstone and sandstone are present beneath the Made Ground, overlying the Kent's Rock at depth.
Faults	No major regional geological faults are indicated onsite or within close proximity to the site on the BGS mapping. However, a South Yorkshire Mining Service (SYMAS) Mineral Report completed for the site in 2017 (Ref; M864/10) and the plans presented in that document suggest a small fault of approximately 2m displacement may cross the site in a roughly north-south orientation.	

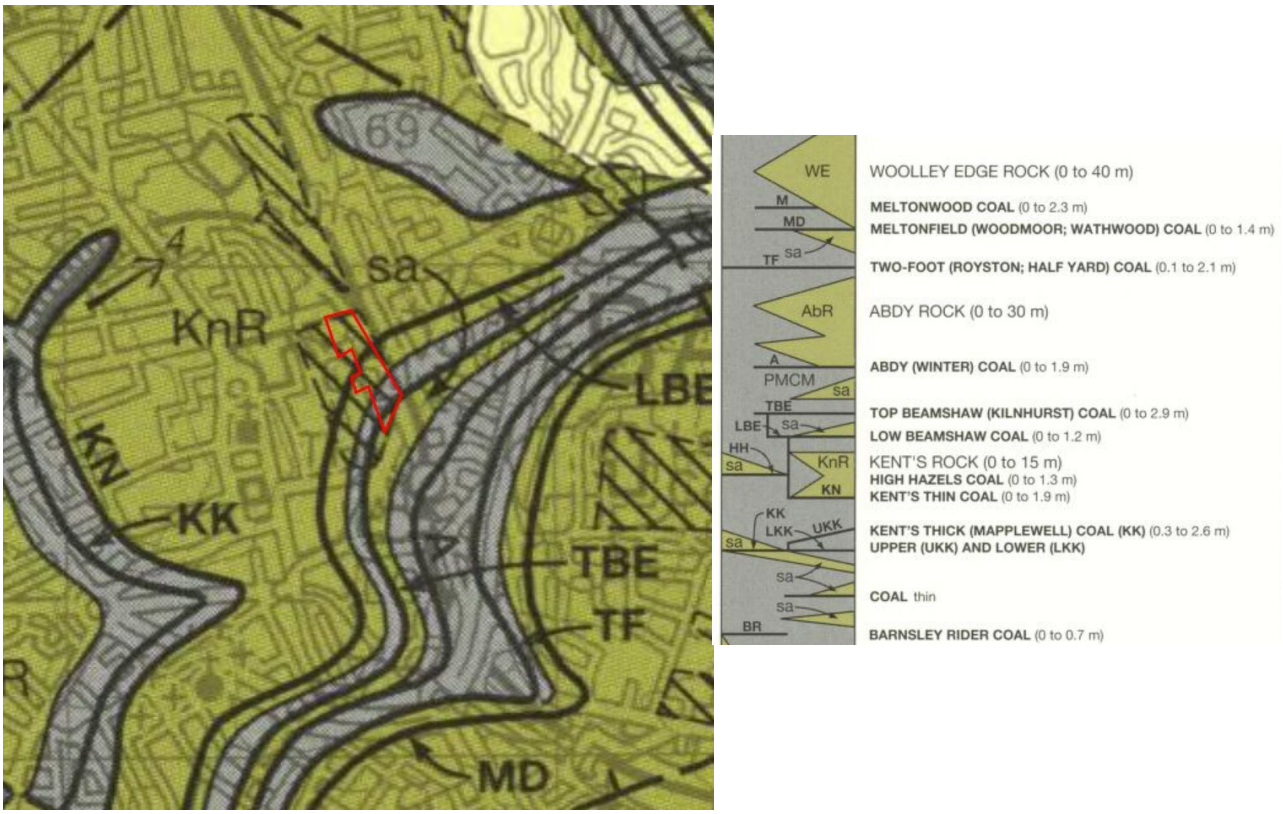


Figure 2 - Map of Published Geology. Extract of BGS 1:50,000 Series Sheet 87, Barnsley, Solid and Drift Geology, 2008.

Hatching – Made Ground. Green - Pennine Middle Coal Measures Bedrock (sandstone). Grey - Pennine Middle Coal Measures Bedrock (mudstone, siltstone and sandstone). Dashed Line – fault. Thick solid line – coal outcrop.

4.2 Radon Affected Areas

Review of the Indicative Radon Map of the UK shows that some parts of the searched 1km grid square are in bands of elevated radon potential. Maximum radon potential indicated to be 1-3 %.

The Groundsure report, accurate to 50m suggests that the site is not in a Radon affected area, as less than 1% of properties are above the action level. On this basis, radon measures are unlikely to be required for new enclosed structures on the site.

4.3 Ground Stability Issues

The Groundsure report indicates the following with regards to ground stability issues:

- Negligible risk from ground dissolution of soluble rocks
- Negligible to very low risk from shrink swell clays and compressible deposits.
- Negligible to low risk from running sands.
- Very low risk from collapsible deposits and landslides.

4.4 Mining Activity

A review of the Coal Authority's online interactive web map viewer indicates that the site lies partially within a Coal Authority Development High Risk Area which appears to be related to two outcrops of coal within the southern half of the site, and 'probable' shallow coal mine workings associated with these. Therefore, a detailed Coal Mining Risk Assessment has been completed by Arcadis for the site:

- Coal Mining Risk Assessment, The Seam, Barnsley, prepared for Barnsley Metropolitan Borough Council. Arcadis, ref: 10052406-ARL-XX-XX-RP-GE-0002-01, June 2022.

4.5 Hydrogeology and Groundwater Vulnerability

4.5.1 Aquifer Classification

The Groundsure report indicates that the bedrock geology is classified as a Secondary A Aquifer. Generally, these comprise permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

4.5.2 Groundwater Vulnerability

An assessment of the vulnerability of the groundwater beneath the site to a pollutant discharged at ground level is presented in the Groundsure report. Groundwater vulnerability at the site has been assessed as Medium, characterised by the presence of a secondary bedrock aquifer with no overlying superficial strata.

4.5.3 Groundwater Abstraction

The Groundsure report found one active record relating to licensed groundwater abstractions within 1km of the site. This is located 694m east of the site for groundwater from a borehole within the coal measures for spray irrigation use by Barnsley Football Club. There are no active potable abstractions within 2km of the site.

4.5.4 Protection Zones

The site does not lie within 500m of a groundwater Source Protection Zone (SPZ).

4.6 Hydrogeology

4.6.1 Surface Water Features

The Groundsure report indicates that the nearest surface waterbodies are Sough Dike and an unnamed stream located 175m south and 211m northeast of the site respectively.

4.6.2 Flooding Risk

The Groundsure report indicates that the site is in Flood Zone 1 and is not at risk of flooding from rivers and sea. A small area within the centre of the site is indicated to have a low risk of surface water flooding. However, there are no records of historical flood events from rivers, the sea, groundwater or surface water.

4.6.3 Discharge Consents

The Groundsure report includes eight records of licensed discharges to controlled waters within 500m of the site. These all relate to sewer storm overflows. The nearest is located 201m south.

4.6.4 Pollution Incidents

The Groundsure report includes records of two substantiated pollution incidents since 2006 within 500m of the site. The nearest at 368m south involved an unidentified pollutant in an incident in 2001 which had a minor impact to air.

4.7 Landfills and Waste Management Activities

The Groundsure report did not identify any active or recent landfill sites within 500m of the site. There are two EA records of historical landfills within 500m of the site. The nearest is located 99m north at a site off Old Mill Lane and involved inert and commercial waste, last recorded in 1989.

There are five records of historical waste sites within 500m of the site. The nearest are located 332m east and relate to a scrap yard taken from historic mapping between 1970 to 1990.

There is one record of an EA licensed waste site within 500m of the site. This relates to a site at Harborough Hill Road, located 118m east. The license was surrendered in 1999.

Eleven waste exemption records are recorded within 500m of the site. The nearest is located 119m south and involves screening and blending of waste.

4.8 Current Industrial Land Use

The Groundsure report indicates there are thirty-seven potentially contaminative industrial sites within 250m of the study site. None are located onsite. The offsite records relate to a variety of activities including a tyre store, bus station and railway station and electrical features.

There is one record of an open petrol filling station within 500m of the site, located 489m northeast.

The site is not designated as Contaminated Land under Part 2a of the Environmental Protection Act 1990.

Four records of licensed pollutant releases (Part A(2)/B) have been found within 500m of the site. The nearest is 263m northeast of the site relating to Walter Fisher Ltd for the use of waste oil burner.

4.9 Environmental Designations

The Groundsure report did not identify any of the following statutory protected sites within 1km of the site: Site of Special Scientific Interest (SSSI), Conserved Wetland Site (Ramsar Sites), National Nature Reserve (NNR), Special Area of Conservation (SAC), Special Protection Area (SPA), RAMSAR, Biosphere Reserves, Forest Parks, Marine Conservation Zones, Proposed Ramsar Sites, Possible Special Areas of Conservation (pSAC) or Potential Special Protection Areas (pSPA).

However, the report indicates the site is located 452m northeast of the South and West Yorkshire Greenbelt and 804m northeast of the Dearne Valley Park Local Nature Reserve. The site is also within a nitrite vulnerable zone.

4.10 Unexploded Ordnance Screening Assessment

A search of Zetica UXO Risk Map identified the site is located within an area of low risk from UXO. A copy of the Risk Map is presented in Appendix D.

5 Previous Work

The following sections provide a summary of the previous phases of intrusive ground investigation carried out at the site and their findings.

5.1 WSP – Ground Investigation Report, Nov 1999

WSP Environmental (WSP) undertook a ground investigation in 1999 across the southern half of the site in support of a proposed multi-screen cinema.

The scope of the 1999 WSP investigation comprised:

- The formation of five cable percussion boreholes to depths of between 2.1 and 10.3m bgl;
- The formation of eight boreholes by rotary percussive techniques to depths of 5 and 8m bgl;
- Soil chemical laboratory testing (metals, phenols, sulphate, total petroleum hydrocarbons (TPH) and pH); and,
- Three ground gas monitoring visits.

Recorded ground conditions comprised Made Ground of varying thickness between 1.1m in the southwest, increasing to 3m in the centre of the site. Made Ground was generally found to comprise firm to stiff clay with mudstone and sandstone gravel. Natural firm to stiff slightly gravelly silty clay was recovered beneath the Made Ground with thicknesses of between 0.65 and 6.6m. Weak mudstone was proven at depths between 1.75 and 8.5m bgl. A band of dull black coal, 0.6m thick, was recorded in several boreholes along the southern end of the Eldon Street North Retaining wall at a depth of between 3 and 5m bgl. Resting groundwater was recorded in two locations at around 2.5m, all other exploratory holes remained dry.

Behind the Eldon Street North retaining wall Made Ground was found to approach a thickness of 7m to the north, reducing to 2m towards the southern end, comprising a mudstone fill material. Two of the rotary holes encountered mortared brickwork to around 7m bgl indicative of a buttressed type retaining wall design.

No obvious visual/olfactory evidence of soil or groundwater contamination was noted. The report concluded that the overall environmental risk as a result of the ground conditions was low based on the results of the chemical laboratory testing, however barrier pipe for new potable water supplies might be needed.

The limited ground gas monitoring undertaken recorded low concentrations of carbon dioxide (<1.7%v/v) and no elevated concentrations of methane or detectable flow rates. WSP concluded that specialist gas protection measures would not be required for the development.

5.2 WSP – Report on a Site Investigation, Jan 2001

WSP undertook a further phase of ground investigation in 2001 in support of a proposed leisure development including restaurants and a health club. This investigation focussed on the area of land adjacent west of the site, outside of the Phase 1 redline boundary. However, the observations made will provide valuable information for site conceptualisation.

The scope of the 2001 WSP investigation comprised:

- The formation of seven cable percussion boreholes to depths of between 4.2 and 9.7m bgl;

- Soil chemical laboratory testing (metals, sulphate and pH); and,
- Limited geotechnical laboratory analysis on cohesive subsoils.

Recorded ground conditions comprised Made Ground of varying thickness between 2.3m in the southwest, increasing to 7m in the northeast (behind the retaining wall along the current western site boundary). Made Ground was generally found to comprise medium dense fine to coarse angular sandstone gravel. Natural firm to stiff slightly gravelly silty clay was recovered beneath the Made Ground with thicknesses of between 0.2 and 2.3m. Weak mudstone was proven at depths between 3.5 and 8.9m bgl. Groundwater was not encountered during the investigation.

No obvious visual/olfactory evidence of soil or groundwater contamination was noted. The report concluded that the site could be redeveloped for the proposed end-use without the need for remediation, however the importation of clean topsoil for landscaping was recommended.

5.3 HBS – Ground Investigation Report, June 2018

Following completion of a Preliminary Risk Assessment in 2017, Hamson Barron Smith (HBS) undertook a ground investigation in 2018 in support of a proposed mixed-use development potentially including a multi-storey car park.

The scope of the 2018 HBS investigation comprised:

- The formation of nineteen windowless sample boreholes to a maximum depth of 3.45m bgl;
- Falling head infiltration tests in two of the boreholes;
- Seven dynamic probe holes adjacent to select boreholes;
- Two machine excavated trial pits to establish foundations of the retaining wall along the western site boundary;
- The formation of seven rotary open hole boreholes to 25.5mbgl;
- Soil chemical laboratory testing (metals, phenols, sulphate, TPH, total organic carbon (TOC), polycyclic aromatic hydrocarbons (PAH), asbestos screen, pH, waste acceptance criteria (WAC) and leachate analysis);
- Limited geotechnical laboratory analysis on recovered soil samples; and,
- Two ground gas monitoring visits.

The exploratory work was carried out across a wider site footprint; however, several boreholes were formed within the current site boundary and the below paragraphs provide a summary of information obtained from these locations.

Recorded ground conditions comprised Made Ground of varying thickness between 1.1 to 8.0m within the current site area. Made Ground was generally found to comprise loose to medium dense clayey sandy fine to medium gravel, interbedded locally with soft to firm gravelly clay. The Made Ground was recorded as underlain by the Pennine Middle Coal Measures weathered to a firm slightly gravelly clay towards the surface. Solid strata generally comprised sandstone bedrock to the north, and mudstone and siltstone across the central and southern site areas. Voids were recorded in four borehole locations on the site, at depths of between 12.60 and 22.40mbgl. Intact coal was also observed at shallow depth in one borehole in the southern site area by the Eldon Street North retaining wall. Groundwater was not encountered during the investigation.

No obvious visual/olfactory evidence of soil or groundwater contamination was noted. The report concluded that the risk to human health from site soils is generally low under a commercial end-use base on the chemical

laboratory testing, however several PAHs may present a risk to the end users, and asbestos was identified in one sample. The report also concluded that the ground conditions present at the site are unlikely to pose a significant risk to controlled waters.

The limited ground gas monitoring undertaken recorded low concentrations of carbon dioxide (<1.5%v/v) and no elevated concentrations of methane or detectable flow rates. HBS concluded that the site was likely not significantly affected by ground gas, however further development specific monitoring would be required to satisfy guidelines.

5.4 Hydrock – Coal Mining Ground Investigation Report, January 2021

In 2020, Hydrock completed a review of the previous site investigations and highlighted several recommendations for further investigation and assessment predominantly to understand the risk to the site from past coal mining activities. Hydrock subsequently completed a desk-based Coal Mining Risk Assessment, and then undertook an additional phase of ground investigation, reported in January 2021.

The scope of the 2021 Hydrock investigation comprised:

- The formation of ten rotary open-hole boreholes to a depth of 30m bgl.

Recorded ground conditions comprised Made Ground of varying thickness between 1.0 to 10.0m. Made Ground was generally found to comprise clayey ashy fine to coarse gravel of mudstone, brick, coal and sandstone. The Made Ground was recorded as underlain by the Kent's Rock sandstone in the north of the site, and predominantly mudstone across the southern site area. Evidence of potential mine workings were recorded in three boreholes drilled behind the Eldon Street North retaining wall. A loss of flush within soft or broken ground was recorded at a depth of 12.2m bgl in the northernmost borehole along the retaining wall, and at around 19m bgl further south along the retaining wall.

6 Preliminary Conceptual Site Model

This section summarises the findings of this desk-based assessment and site reconnaissance in the form of a geo-environmental conceptual site model (CSM).

The CSM provides a qualitative evaluation of potentially active “pollutant linkages” at the site; these being plausible scenarios whereby a contamination source is connected to a possible receptor by one or more pathways:

- Potential sources of contamination: these include any actual or potentially contaminating materials and activities, located either on or near the site;
- Potential pathways for contamination migration: these comprise the routes or mechanisms by which contaminants may migrate from the source to the receptor including environmental migration pathways and human health exposure pathways; and
- Potential receptors of contamination including present and/or future land users, ecological systems, water resources and property.

6.1 Potential Contamination Sources

Table 4 - Potential Sources of Contamination

Source	Potential Contaminants of Concern
On-site	
Made Ground	Asbestos, metals, Polycyclic Aromatic Hydrocarbons (PAH), hydrocarbons, inorganics. Ground Gas – potentially elevated concentrations if Made Ground contains a high organic content.
Vehicle Parking	Hydrocarbons, lubricants and solvents (volatile organic compounds) from potential spills/leaks from vehicle parking or maintenance activities.
Historical Railway Sidings and Good’s Shed	Lubricating oils, hydrocarbons, PAH, solvents, sulphate, metals.
Off-site	
Railway Land	Lubricating oils, hydrocarbons, PAH, solvents, sulphate, metals.
Tanks (historically located 40m west)	Fuel oils / hydrocarbons.
Timber Yard (historically located 90m southwest)	Metals, asbestos, solvents, inorganic compounds.
Garage (historically located 110m west)	Hydrocarbons.
Printing Works (historically located 130m west)	Metals, PAH, TPH, solvents, asbestos.

6.2 Contamination Pathways

Potential migration pathways based on the sites perceived current condition and the proposed end use for commercial and potentially residential apartment blocks are discussed below.

6.2.1 Airborne Migration Pathways

Airborne pathways via which particulate and/or vaporised ground contaminants can migrate to sensitive receptors within soil (air pores), and the above ground atmosphere:

- Significant hard standing is anticipated as part of the redevelopment plans; however, areas of landscaping may be included. As such, particulate inhalation due to dust generation is a potentially active pathway. During development works, sub-surface soils will be exposed at the surface and therefore dust and airborne fibres have the potential to be generated and inhaled by site operatives if not appropriately managed or mitigated.
- Vapour inhalation pathways in relation to soil are potentially active irrespective of site status. A vapour inhalation pathway in relation to isolated / perched groundwater may be potentially active if a shallow groundwater body is identified during intrusive investigation.
- Vertical migration of permanent ground gases (CO2, CH4, O2), including those generated by potential soil/groundwater contamination, and subsequent accumulation in confined spaces leading to asphyxiation and/or explosion is considered potentially active.

6.2.2 Direct Contact Exposure Pathways

Pathways via which ground contaminants can migrate to human receptors by ingestion and/or absorption:

- While the majority of the site area will be covered in some form of hard standing; landscaped areas may be present. As such, direct contact pathways in relation to soil are considered active.
- A direct contact pathway in relation to isolated / perched groundwater may be potentially active if a shallow groundwater body is identified during intrusive investigation.
- Direct contact pathways will be active throughout the construction phase when the sub-surface soils are exposed in excavations / reduced-level digs.

6.2.3 Aqueous Migration Pathways

Pathways via which ground contaminants can migrate to controlled water receptors:

- Leaching of contaminants in the shallow soils is likely to be negligible in areas of hardstanding where infiltration of rainfall would be minimal. However, in areas of soft landscaping infiltration of rainfall may occur prompting the migration of any dissolved-phase contamination; as such this pathway is considered potentially active.
- Lateral migration of potential on-site, and off-site contamination onto site, is considered active, as groundwater within the Bedrock is considered likely mobile. It is unknown whether a shallow groundwater table exists and what its viability is as a medium for transport of contamination.
- Certain types of contamination have the potential to permeate plastic water supply pipes and impact drinking water quality. The type and extent of contamination on site will need to be confirmed, therefore this is considered a potentially active pathway.

6.3 Contamination Receptors

With reference to Part 2a of the Environmental Protection Act (1990), the potential receptors to be considered in any contaminated land scenario can be categorised as follows.

6.3.1 Human Health

For the purposes of this assessment a commercial/residential scenario has been assumed. Therefore, site users and employees, and residential end-users are the primary receptors of concern with regards to contamination risk.

Contamination risks to construction workers are not appraised by chronic (long term) exposure human health risk assessments. There are no appropriate published criteria applicable to the assessment of potential risks to construction workers. The potential risks should be addressed by a site-specific construction workers risk assessment and implementation of appropriate health and safety measures, to adequately mitigate any potential risks. All works should be conducted in accordance with the CDM regulations 2015 or any other relevant guidance. Construction workers are not considered further as human health receptors.

Users of the adjacent buildings (neighbouring residents) could also be at risk. However, for exposure to occur, active cross-boundary migration pathways would be required.

6.3.2 Property (buildings, landscaping etc)

The proposed development will include new structures and associated infrastructure, the concrete of which could be subject to potential sulphate attack (naturally occurring or originating from contamination).

6.3.3 Controlled Waters

Groundwater beneath the site requires consideration and protection. The Bedrock strata beneath the site is classified as a Secondary A Aquifer, and there is therefore the potential for mobility both laterally and vertically. Hence, groundwater resources are considered to potentially be at risk from contamination originating on-site or off-site.

Sough Dike is the nearest surface water feature and is located 175m south of the site. Considering the distance from site it is considered unlikely for any potential pollutants to reach the watercourse. Therefore, for the purposes of this report surface waters have not been considered as a potential receptor.

6.4 Preliminary Qualitative Risk Assessment

Based on the CSM the following table presents the plausible Source-Pollutant-Receptor (SPR) linkages that apply to this site, including the likelihood of risk to receptor.

Table 5 – Preliminary Qualitative Risk Assessment

Potential Receptor	Potential Source	Potential Pathway	Risk
Future End-Users Site staff and maintenance workers Site visitors Residents	**On-Site Sources** Made Ground, railway infrastructure and vehicle parking.	**Soil Leaching / Aqueous Migration** **Dermal Contact & Ingestion** **Particulate/Fibre Inhalation** **Vapour Inhalation**	**Moderate**
	Off-Site Point Sources Railway infrastructure, historical tanks, timber yard, garage and printing works.	**Soil Leaching / Aqueous Migration** **Vapour Inhalation**	**Low - Moderate**
	Permanent Ground Gas	**Vapour Inhalation**	**Moderate**
Controlled Waters Groundwater in underlying Secondary A bedrock aquifer	**Made Ground** and **On-Site Sources**	**Soil Leaching / Aqueous Migration**	**Moderate**
Property Future structures	**Sulphate** impacted soil and groundwater	**Chemical Attack**	**Moderate**
	Ground Gas	**Structural Damage** due to explosion of combustible gas	**Low - Moderate**
Property Future landscaping	**Contaminated Soil** – phytotoxic contaminants	**Vegetation Root Uptake**	**Moderate** (easily mitigated by providing clean planting medium)
Property Future water supply pipes	**Organic Contamination**	**Impacts to drinking water quality**	**Moderate**

*Based on a worst-case residential land-use scenario without any mitigation/remediation measures

6.5 Overall Environmental Risk

The site is currently used for surface car parking. Historically the site was developed with railway sidings and associated infrastructure, and later with council office buildings. The potential for the underlying soil to be impacted by contamination cannot be discounted at this stage, however, previous phases of ground investigation completed at the site have not identified any significant gross contamination impacts.

Based on the information contained within the preliminary risk assessment, it is considered by Arcadis that the site represents a Moderate Risk to potential receptors from potentially contaminated ground.

PHASE 2 GROUND INVESTIGATION

7 Ground Investigation Scope & Methodology

The supplementary intrusive investigation was designed, specified and administered by Arcadis. The works were undertaken by Structural Soils Ltd (SSL). A copy of SSL' Factual Report is presented in Appendix E which includes full details of the ground investigation methodology.

The following scope of ground investigation work was completed:

- Twelve cable percussion boreholes advanced to depths of between 4.25 and 9.34m bgl.
- Rotary core follow-on within ten of the above boreholes to depths of between 16.0 and 21.5m bgl.
- Eleven windowless sample boreholes advanced to depths of between 1.44 and 5.45m bgl.
- Ten shallow trial pit excavations.
- Plate load testing and BRE 365 soakaway testing in four of the trial pits.
- Installation of gas and groundwater monitoring wells within selected boreholes.
- Chemical laboratory analysis of soil, soil leachate and groundwater samples.
- Geotechnical analysis of soil and rock core samples.
- A programme of ground gas and groundwater monitoring to include 6no rounds of monitoring.

The main phase of the intrusive works was completed between 14th March – 20th April 2022. The positions of the cable percussion boreholes were located to target the potential footprints of the proposed development plots, or to investigate retaining wall fill. The purpose of the rotary core follow-on was to confirm the presence or otherwise of shallow mine workings / coal seams beneath the development plots to allow assessment of the mining risk at the site (assessed separately), and to validate the historical borehole data.

The windowless sample boreholes and trial pits were positioned to supplement the above and provide a reasonable coverage of the site for an assessment of the general site shallow ground conditions, and to allow for in-situ permeability and soil load bearing capacity testing within likely areas future landscaping and pavement.

The positions of the exploratory holes are shown on the Exploratory Hole Location Plan included in SSL' Factual Report which is presented in Appendix E. The logs, including full details of the ground conditions encountered, samples obtained, and in-situ testing carried out are also presented in Appendix E.

8 Ground Conditions

8.1 Stratigraphy

A detailed description of the ground conditions encountered at the site during the intrusive investigation is included on the borehole logs within the SSL Factual Report in Appendix E. Presented in the table below is a summary of the ground conditions encountered beneath the site.

Table 6 – Site Stratigraphy

Type	Interpreted Soil Type/geologic unit	Base Depth Range (m bgl)	General Description and Interpretation
Anthropogenic	Made Ground	0.30 (ATP109 & ATP110) – 7.80 (ABH109)	Bituminous material hardstanding. Made Ground across the southern site area comprised brown or blackish grey ashy sandy fine to coarse angular gravel of brick, concrete and limestone with cobbles of brick and localised hydrocarbon odours. Made Ground within the northern site area comprised variable granular strata including clayey gravelly sand and sandy gravel with fragments of concrete, limestone and brick.
Bedrock	Pennine Middle Coal Measures – Weathered	None recorded – 8.50 (ABH106)	The upper PMCM was recorded as generally completely weathered to soft to stiff dark brown or grey sandy gravelly clay. Completely weathered sandstone was also recorded as orangish and yellowish slightly gravelly slightly clayey coarse sand. In the areas of deepest Made Ground, completely weathered strata of the PMCM was occasionally not recorded.
	Pennine Middle Coal Measures - Solid	21.50 (ABH106) Base not proven	In the north of the site, solid strata of the PMCM was recorded as weak to medium strong brown sandstone (Kent's Rock) overlying a very weak to weak coal seam (Kent's Thin). This was underlain by very weak to moderately weak thinly laminated dark grey mudstone, siltstone and sandstone layers. In the south of the site, solid strata of the PMCM was recorded as very weak to moderately weak thinly laminated brown grey mudstone and siltstone, and medium strong sandstone layers.

8.2 Hydrogeology

Table 7 – Site Hydrogeology

Data	Findings
Groundwater Elevations	During the monitoring undertaken to date, where groundwater was consistently measured in the deep boreholes, resting groundwater elevations were measured between 81.17m AOD (ABH105) and 86.02m AOD (ABH101).

	Depth to groundwater in these boreholes was measured between 9.54m bgl (ABH101) and 14.78m bgl (ABH105).
Hydrogeological Regime	The shallower monitoring wells installed within the Made Ground were generally found to be dry during the follow-up monitoring. Groundwater was found to be resting within sandstone of the Pennine Middle Coal Measures.
Groundwater Flow	A groundwater flow direction cannot be inferred from the limited groundwater level data obtained from the monitoring completed. However, a review of the on-site geology, general topography of the surrounding area and local hydrology suggests groundwater flow is likely towards the River Dearne to the east.

8.3 Soil & Groundwater Quality

Table 8 – Soil & Groundwater Quality

Data	Findings
Visual or olfactory evidence of contamination - soil	ABH104: Strong asphalt and hydrocarbon odour in Made Ground (0.4 - 0.6m bgl). ABH105: Strong tar / asphalt odour in Made Ground (0.4 – 1.4m bgl). ABH112: Strong asphalt and tar odour in Made Ground (0.1 – 0.2m bgl). ABH112: Slight asphalt and tar odour in Made Ground (0.35 – 0.80m bgl). ATP102: Strong asphalt and tar odour in Made Ground (0.25 – 1.40m bgl). ATP104: Made Ground containing fragments of domestic waste including a glass milk bottle and a towel (0.3 – 0.7m bgl). Coal fragments, ashy material and occasional slag and clinker was encountered in Made Ground across the site.
Visual or olfactory evidence of contamination - groundwater	None recorded.
NAPL	NAPL was not encountered on soil or within groundwater.
Laboratory Analysis	Results of the laboratory analysis are presented in the appendices of SSL's Factual Report in Appendix E.

9 Contamination Assessment

9.1 Chemical Testing

Samples for contamination testing were sent to Envirolab Limited, an MCERTS and UKAS accredited chemical testing laboratory.

The contamination testing carried out is summarised below. The results are included within the SSL Factual Report included in Appendix E.

- Soil Testing
  - Metals inc. arsenic, cadmium, chromium (total), chromium (hexavalent), lead, mercury, selenium, copper, nickel, zinc;
  - Speciated polycyclic aromatic hydrocarbons (PAH);
  - Total petroleum hydrocarbons criteria working group (TPH CWG);
  - Soluble sulphate and pH;
  - Soluble organic matter (SOM) and total organic carbon (TOC);
  - Total phenols;
  - Total cyanide;
  - Asbestos screen; and
  - Waste Acceptance Criteria (WAC) testing.
- Soil Leachate and Groundwater Testing
  - Sulphate and pH;
  - Metals inc. arsenic, cadmium, chromium (total), chromium (hexavalent), lead, mercury, copper, nickel, zinc;
  - TPH CWG;
  - PAH;
  - Phenols; and
  - Total cyanide.

9.2 Assessment Methodology

In line with LCRM (Environment Agency, 2021), a Tier 1 Preliminary Risk assessment was initially completed within the first sections of this report. A Tier 2 Generic Quantitative Risk Assessment (GQRA) has also been undertaken to determine the significance of the measured concentrations of contaminants from the chemical analysis.

The GQRA comprises the comparison of the measured concentrations with Generic Assessment Criteria (GAC) which comprise “Suitable 4 Use Levels” (S4UL’s) as published by LQM/CIEH (Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3223. All rights reserved). Where no S4UL has been published, Generic Assessment Criteria values derived using the CLEA model adopting the appropriate assumptions and input parameters provided in the SR series of reports have been used.

S4UL’s have been derived in line with developments in UK human health risk assessment since 2009, in particular the additional land uses, and exposure assumptions presented in Defra's recent C4SL guidance. However, the S4ULs are all based on Health Criteria that represent minimal or tolerable levels of risks to health as described in the Environment Agency's SR2 guidance, ensuring that the resulting assessment criteria are 'suitable for use' under planning.

The results of the soil, soil leachate and groundwater GQRA are presented in the tables in Appendix F, and these are summarised in the following sections.

9.3 Tier 2 Screening Assessment - Human Health

The redevelopment proposals comprise a number of end-uses for the site, and therefore a GQRA has been undertaken on a plot-by-plot basis using the most applicable land-use scenario in each instance.

9.3.1 Multi-storey Car Park, Active Travel Hub & Public Realm

A large proportion of the site will be redeveloped to deliver a new multi-storey car park within the north of the site, an active travel hub within the southern site area and connecting public realm space as illustrated in Figure 3 below. A GQRA has been undertaken using laboratory results for the exploratory holes within this area of the site, and on the basis that these development proposals fall under the '**commercial'** land-use scenario.

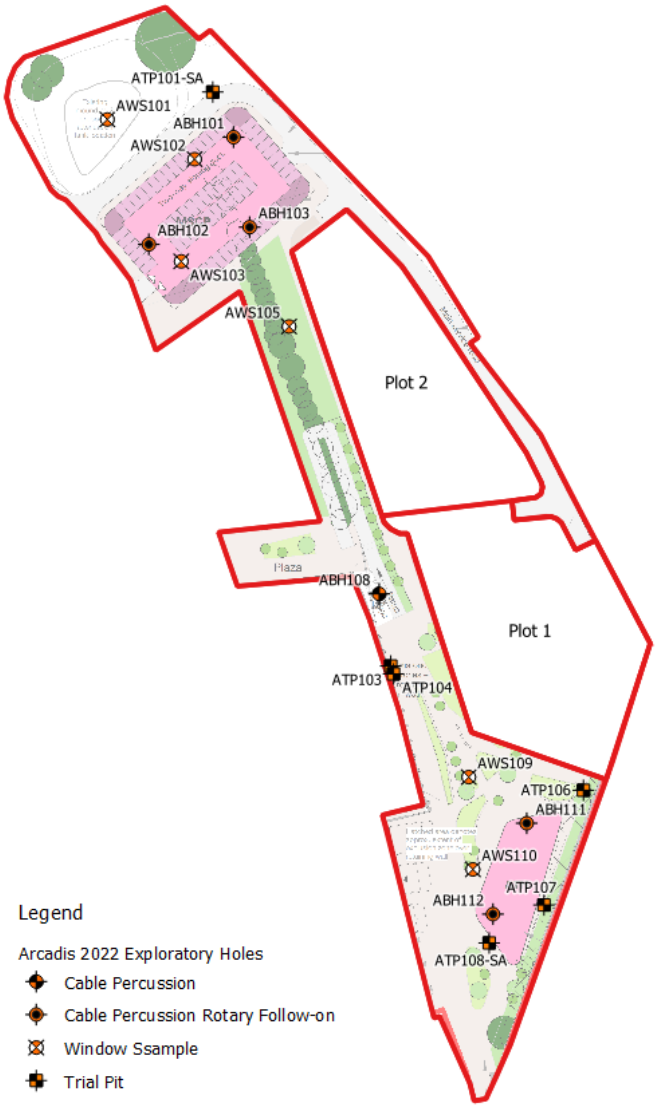


Figure 3 – Arcadis 2022 Exploratory Hole Locations over development concept blueprint plan - Multi-storey Car Park, Active Travel Hub & Public Realm

A total of twenty-six soil samples were scheduled for chemical laboratory analysis. Exceedances of the GACs, where above the test limit of detection, are highlighted in the table below.

Table 9 – Comparison of Soil Concentrations with 'Commercial' GAC – MSCP, ATH & Public Realm

Receptor	Soil samples with measured contaminant concentrations in excess of the GAC	GAC (mg/kg)	No. exceeding	Exceedance concentration range (mg/kg)
Human Health (Commercial – 1% Soil Organic Matter (SOM))	**Benzo(b)fluoranthene:** ABH112 0.15m	44	1	123
	Benzo(a)pyrene: ABH112 0.15m	35	1	104
	Dibenz(a,h)anthracene: ABH112 0.15m	3.5	1	12.7

Twelve samples were screened for asbestos containing material (ACM). No asbestos was identified in any of the samples analysed.

9.3.2 Development Plot 1

Proposals for Plot 1 include an apartment block with ground floor commercial units, and possible hotel usage as illustrated in Figure 4 below. A GQRA has been undertaken using laboratory results for the exploratory holes within this area of the site, and on the basis that this plot falls under the '**residential without plant uptake'** land-use scenario.

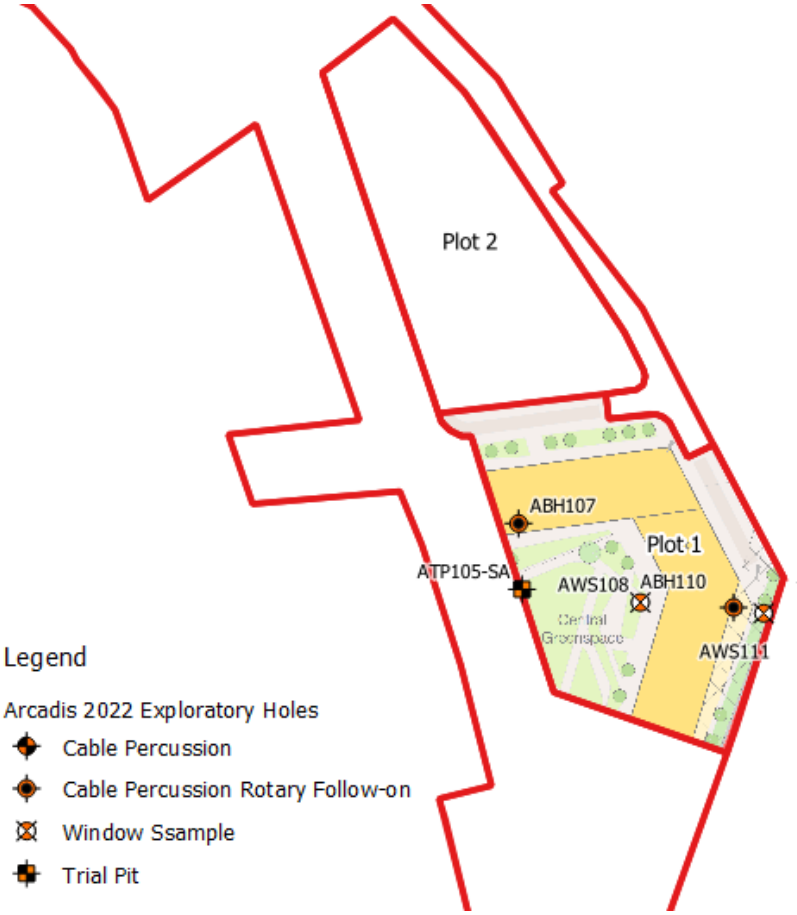


Figure 4 – Arcadis 2022 Exploratory Hole Locations over development concept blueprint plan – Development Plot 1

A total of thirteen soil samples were scheduled for chemical laboratory analysis. Exceedances of the GACs, where above the test limit of detection, are highlighted in the table below.

Table 10 – Comparison of Soil Concentrations with 'Residential without plant uptake' GAC – Development Plot 1

Receptor	Soil samples with measured contaminant concentrations in excess of the GAC	GAC (mg/kg)	No. exceeding	Exceedance concentration range (mg/kg)
Human Health (Residential without plant uptake – 1% SOM)	**Arsenic:** ABH110 0.7m	40	1	42
	Lead: ABH110 0.2m, AWS111 0.3m	310	2	464 - 2660
	Benzo(a)anthracene: ABH107 0.6m	11	1	26.3
	Benzo(b)fluoranthene: ABH107 0.6m, ABH110 0.7m, AWS111 0.3m	3.9	3	3.91 – 15.2
	Benzo(a)pyrene: ABH107 0.6m, ABH110 0.7m, AWS111 0.3m	3.2	3	3.66 – 15.2
	Dibenz(a,h)anthracene: ABH107 0.6m, ABH110 0.7m, AWS111 0.3m	0.31	3	0.48 – 2.35

Six samples were screened for asbestos containing material. No asbestos was identified in any of the samples analysed.

9.3.3 Development Plot 2

Detailed proposals for Plot 2 are not yet available, however development is anticipated to comprise low rise / high density residential housing such as back-to-back townhouses or smaller apartment blocks as illustrated in Figure 5 below. A GQRA has been undertaken using laboratory results for the exploratory holes within this area of the site, and on the basis that this plot falls under the '**residential with plant uptake'** land-use scenario.

A total of thirteen soil samples were scheduled for chemical laboratory analysis. Exceedances of the GACs, where above the test limit of detection, are highlighted in the table below.

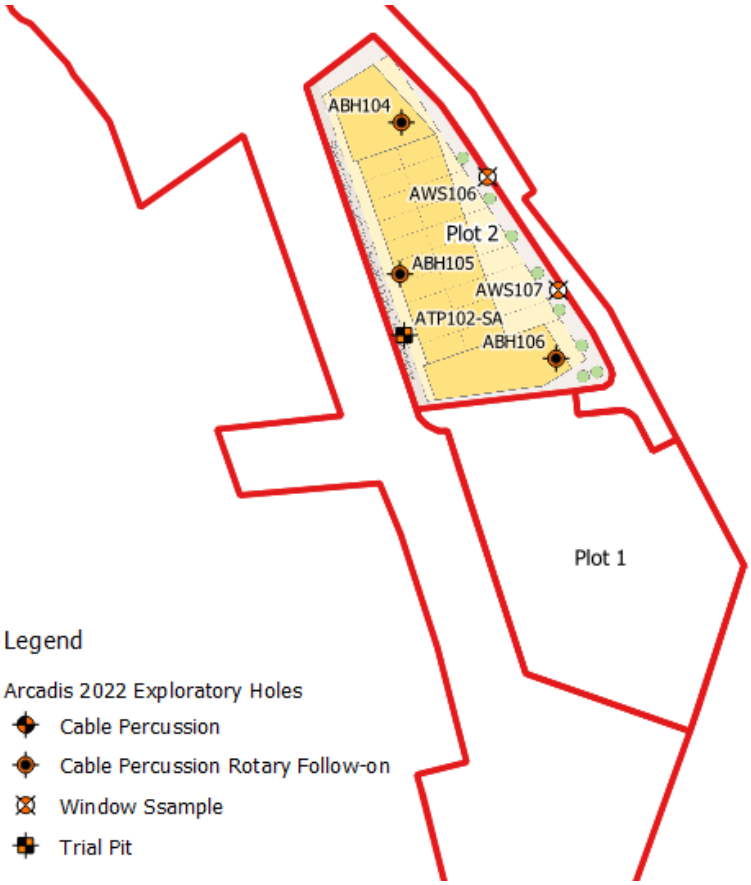


Figure 5 – Arcadis 2022 Exploratory Hole Locations over development concept blueprint plan – Development Plot 2

Table 11 – Comparison of Soil Concentrations with 'Residential with plant uptake' GAC – Development Plot 2

Receptor	Soil samples with measured contaminant concentrations in excess of the GAC	GAC (mg/kg)	No. exceeding	Exceedance concentration range (mg/kg)
Human Health (Residential with plant uptake – 1% SOM)	**Lead:** ABH105 0.8m	220	1	252
	Naphthalene: ABH104 0.5m, ATP102 1m	2.3	2	4.02 – 6.67
	Chrysene: ATP102 1m	15	1	19.4
	Benzo(a)anthracene: ABH105 0.8m, ATP102 1m, AWS107 0.8m	7.2	3	8.77 – 16.5
	Benzo(b)fluoranthene: ABH105 0.8m, ABH106 1m, ATP102 1m, AWS107 0.8m	2.6	4	5.15 – 19.5
	Benzo(a)pyrene: ABH105 0.8m, ABH106 1m, ATP102 1m, AWS107 0.8m	2.2	4	4.52 – 15.2
	Dibenz(a,h)anthracene: ABH105 0.8m, ABH106 1m, ATP102 1m, AWS107 0.8m	0.24	4	0.44 – 1.69
	>C10-C12 Aromatics: ABH104 0.5m	74	1	84
	>C12-C16 Aromatics: ATP102 1m	140	1	320

	>C16-C21 Aromatics: ATP102 1m	260	1	812

Seven samples were screened for asbestos containing material. Amosite board was identified in the Made Ground sample obtained from ABH105 at 0.8m bgl, and loose amosite fibres were identified in the Made Ground sample from ATP102 at 1m bgl. The loose fibres in this sample were quantified at <0.001%.

9.4 Tier 2 Screening Assessment – Water Resources

Water Quality Standards (WQS) are used to assess the risk to controlled waters. These comprise Drinking Water Standards (DWS) and Environmental Quality Standards for freshwater (EQS). EQS are considered protective of surface water and DWS are protective of aquifer groundwater which may be used as a potable supply.

Desk study information and the results of the intrusive investigation indicate that the site is underlain by Made Ground overlying strata of the Pennine Middle Coal Measures encountered at 0.3 to 7.8m bgl. The PMCM is classified as a Secondary A Aquifer. Based on this, concentrations of contaminants of concern (CoC) measured in soil, soil leachate and groundwater have been compared to DWS protective of the underlying aquifer.

The nearest surface water feature is the Sough Dike which is located approximately 175m south of the site, and the resting groundwater level onsite was found to be relatively deep within the PMCM at 9.54m bgl. Therefore, there is not considered to be a viable pathway to surface water features, and these have not been considered as a potential receptor.

There are no standard guideline values for TPH in groundwater in the UK. In the absence of a specific standard, 10 µg/l is considered to be a reasonable point of reference at which TPH could be of interest (former UK Drinking Water Standard).

9.4.1 Soil Leachate

Soil leachate testing is used to predict risks of migration of environmental groundwater or surface water contamination under different exposure scenarios.

Fifteen soil samples were subject to leachate analysis. The table below summarizes the exceedances of the DWS where concentrations are recorded above the laboratory method detection limit.

Table 12 – Comparison of Soil Leachate Concentrations with the DWS

Receptor	Locations with measured contaminant concentrations in excess of the GAC	GAC (µg/)	No. exceeding	Exceedance concentration range (µg/)
Water Resources - Aquifers	**Arsenic:** ABH107, ABH110, AWS109	10	3	12 - 13
	Lead: ABH101, ABH103, ABH104, ABH105, ABH107, ABH110, ABH112, ATP108, AWS109	10	11	10 - 329
	Benzo(b)fluoranthene: ABH105, ABH107, ATP108, AWS108	0.025	4	0.03 – 0.36
	Benzo(k)fluoranthene: ABH105, ATP108, AWS108	0.025	3	0.03 – 0.13

Benzo(a)pyrene: ABH105, ABH107, ATP108, AWS108	0.01	4	0.02 – 0.35
Benzo(g,h,i)perylene: ABH105, ATP108, AWS108	0.025	3	0.04 – 0.27
Indeno(1,2,3-cd)pyrene: ABH105, AWS108	0.025	2	0.12 – 0.26
TPH C5-C35 Aliphatics/Aromatics: ABH104, ABH105, AWS106, AWS108	10	4	56 – 1,116

9.4.2 Groundwater

Three groundwater samples were taken during the monitoring period. The table below summarizes the exceedances of the DWS where concentrations are recorded above the laboratory method detection limit.

Table 13 – Comparison of Groundwater Concentrations with the DWS

Receptor	Groundwater samples with measured contaminant concentrations in excess of the GAC	GAC (µg/l)	No. exceeding	Exceedance concentration range (µg/l)
Water Resources - Aquifers	**Lead:** ABH101, ABH105	10	2	28 - 46
	Nickel: ABH101, ABH112	20	2	26 - 67

9.5 Risk Evaluation – Human Health

9.5.1 Multi-storey Car Park, Active Travel Hub & Public Realm

One sample was found to contain concentrations of several PAHs which exceed the GAC for a commercial end use which represents the proposed redevelopment plans for this area of the site.

This was a shallow sample of Made Ground obtained from ABH112 at 0.15m bgl. The sample was noted to contain fragments of tarmac and gave off an asphalt/tar odour. ABH112 is located beneath the footprint of the proposed active travel hub, and this shallow material is likely to be excavated and removed as part of a site strip during enabling groundworks.

Nevertheless, it would be prudent to incorporate a thickness of uncontaminated clean cover soils within any areas of proposed landscaping. The driving exposure pathway for PAHs comprise direct exposure pathways including soil ingestion/inhalation and dermal contact. Therefore, in areas with buildings/external hardstanding or similar, no such potential pollution would exist, and hence no specific remedial measures would be required. However, in areas of soft landscaping, a 300mm thickness of clean cover soil within landscaped areas will act to break the potential contamination linkage and will also provide a suitable growing medium for any vegetation included within the final development scheme.

9.5.2 Development Plot 1

Within Plot 1, several of the CoC concentrations in the soil samples analysed exceed the GAC derived for the protection of onsite human health receptors based on a 'residential without plant uptake' end-use. Elevated contaminants within the shallow soils include metals and PAHs.

The driving exposure pathway for metals and PAHs again comprise direct exposure pathways including soil ingestion/inhalation and dermal contact. Therefore, in areas with buildings/external hardstanding or similar, no such potential pollution would exist, and hence no specific remedial measures would be required. In any areas of proposed soft landscaping, a thickness of uncontaminated clean cover soils will be required to break the potential contamination linkage.

Proposals for Plot 1 currently include an apartment block with ground floor commercial units, therefore the use of 'residential without plant uptake' GAC can be considered conservative. Private gardens are not anticipated, but rather communal peripheral landscaping. Therefore, a 300mm thickness of clean cover soils within any landscaped areas should be sufficient to break the contaminant linkage.

9.5.3 Development Plot 2

Within Plot 2, several of the CoC concentrations in the soil samples analysed exceed the GAC derived for the protection of onsite human health receptors based on a 'residential with plant uptake' end-use. Elevated contaminants within the shallow soils include metals, several PAH compounds and aromatic hydrocarbons. Asbestos was also identified in two samples of Made Ground as fragments of amosite board and amosite fibres; however, the positive fibre identification was quantified to trace levels of <0.001%.

As above, the driving exposure pathway for the majority of these contaminants (with the exception of volatile hydrocarbons) comprise direct exposure pathways including soil ingestion/inhalation and dermal contact, or in the case of asbestos, the inhalation of airborne fibres. Therefore, in areas with buildings/external hardstanding or similar, no such potential pollution would exist, and hence no specific remedial measures would be required. However, in areas of soft landscaping the potential contamination linkage will need to be broken by capping with a suitable thickness of uncontaminated cover soils. If private gardens are included within the development plans for Plot 2, this should comprise a 600mm cover system of clean soils with an intervening demarcation or no dig layer. A reduced thickness of capping soils (~300mm) may be acceptable for communal landscaped areas, if private gardens are not proposed.

ABH104 at 0.5m bgl recorded concentrations of naphthalene and the aromatic hydrocarbon fraction C10-C12 in exceedance of the applicable GACs. The sample from ATP102 at 1m bgl also recorded concentrations of naphthalene and aromatic hydrocarbon fractions C12-C16 and C16-C21 in excess of the relevant GAC. Naphthalene and light-end hydrocarbons could potentially present a risk through the inhalation of volatile vapour.

Further investigation across the plot could be carried out to provide a better understanding of the distribution and extent of lighter end hydrocarbons within site soils in this area. Vapour monitoring/sampling and risk assessment could then be undertaken to determine whether residual contamination in the shallow soils poses a significant risk to human health via inhalation pathways.

Should further investigation conclude that an unacceptable risk remains, then the contamination impacts could be delineated, and the excavated material removed from site, with sampling carried out to validate the effective removal of impacted soil.

Alternatively, allowance could be made for the inclusion of hydrocarbon resistant membranes for residential structures proposed on Plot 2. These would also meet the specification for the ground gas protection measures which may be required within this area of the site as detailed in Section 10.

Heavy end hydrocarbon fractions (C16-C21) above the applicable GAC were also recorded in the soil sample obtained from ATP102. These fractions do not present a vapour inhalation risk and the proposed hardstanding and landscape clean capping system will effectively sever the potential contamination linkage.

Two soil samples were tested as positive for asbestos and as such there is a possibility for asbestos containing material to be present. It is therefore recommended that all site enabling and construction works are undertaken according to an asbestos management plan, which would include various mitigation measures to ensure minimal risk to site operatives, members of the public and future site users.

9.6 Risk Evaluation – Water Resources

The nearest surface water feature is the Sough Dike 175m south and the resting groundwater level onsite was found to be relatively deep within the PMCM at 9.54m bgl. Therefore, there is not considered to be a viable potential pathway to surface water features.

The Pennine Middle Coal Measures beneath the site is classified as a Secondary A Aquifer and the drinking water standards have therefore been used for the assessment. However, the site is not located within a groundwater source protection zone, the nearest groundwater abstraction is 694m east, and there are no active potable water abstractions within 2km of the site. Therefore, the groundwater beneath the site is considered to be of low sensitivity.

Contaminant concentrations in exceedance of the DWS were measured in several soil leachate and groundwater samples. Within the soil leachate samples, arsenic, lead, several PAH compounds and TPH were measured at concentrations exceeding their respective DWS. Within the groundwater samples obtained, lead and nickel concentrations were recorded marginally above the DWS (within the same order of magnitude).

The majority of contaminants observed during soil leachate analysis were not recorded in the groundwater beneath the site, likely due to their limited solubility, the depth of the groundwater table within the PMCM (recorded at its shallowest at 9.45m bgl), and the site wide hardstanding that is generally present across the site. Abundant hardstanding will continue to be present across the site as per the redevelopment plans and it is considered unlikely that these contaminants will be mobilised further by leaching into the underlying aquifer at depth.

Lead and nickel concentrations above the DWS were recorded within the groundwater samples tested. These were marginal exceedances within the same order of magnitude, and the application of Drinking Water Standards to assess the risk to the groundwater is considered a very conservative approach.

Given the distance to the nearest surface watercourse, the depth to the true groundwater table (indicated to be >9.45m bgl) and the generally low contaminant concentrations recorded within the groundwater samples, the risk to controlled waters is considered to be low and unlikely to warrant further consideration.

9.7 Potable Water Supply Protection

There are currently no (fully adopted) national standards for the protection of potable water supply pipes in contaminated ground. However, the UK Water Industry Research (UKWIR) has published "Guidance for the

Selection of Water Supply Pipes to be used in Brownfield Sites" and assessment should be undertaken in line with this.

On the basis of the ground conditions encountered, specific protection measures may be required for the site; it is recommended that consultation is undertaken with the local supplier to confirm this.

9.8 Waste Characterisation and Disposal

Based on current information, it is likely that the majority of Made Ground would be classed as either Non-hazardous or Inert for offsite disposal. However, localised areas of Made Ground may produce soils which could be classifiable as Hazardous Waste based on the concentration of Total Petroleum Hydrocarbons observed in some locations and fragments of asbestos board which were identified in one location.

It should be noted, however, that the boreholes completed to date only provide localised information with respect to the bulk ground conditions. There remains the potential for other unidentified hotspots of contamination to exist which may constitute Hazardous Waste when segregated and at the point of disposal (if required).

10 Ground Gas Assessment

10.1 Methodology

Current guidance for the assessment of risk associated with the presence of hazardous ground gases (principally methane and carbon dioxide within ground gas) is provided in two key documents:

- Code of practice for the Design of Protective Measures for Methane and Carbon Dioxide Ground Gases for New Buildings. British Standard Institution (BS 8485:2015+A1:2019); and
- Assessing Risks posed by Hazardous Ground Gases to Buildings CIRIA (C665, 2007).

A semi-quantitative estimate of risk from hazardous ground gases can be provided, based upon the qualitative risk model and gas monitoring results.

Based on the measured flow rates and measured hazardous gas concentrations, individual “hazardous gas flow rates” (Qhg) (or Gas Screening Values GSVs) can be derived for each monitoring point, from which the “site characteristic hazardous gas flow rate” (Qhgs), and then the “Characteristic Situation” can be determined.

BS8485 provides guidance on the level of required gas protection based upon the characteristic situation and the type of development.

10.2 Ground Gas Conceptual Model

Proposed future development at the site includes a multi-storey car park, active travel hub, and future development plots which are anticipated to comprise residential apartment blocks, and potentially high density / low rise residential development.

For the potential low rise residential development, the sensitivity can be deemed to be “High” and would likely comprise Type A buildings according to BS8485. The residential apartment blocks would likely comprise Type B buildings, the active travel hub would likely fall into the Type C category, and the multi-storey car park would likely fall into the Type D category.

On-site potential sources of ground gas generation have been identified on the basis of the desk study information and the intrusive site investigation. These comprise general Made Ground deposits found to underlie the site. The gas generation potential of the Made Ground is considered to be Low.

On the basis of the above, the overall site risk is considered “Medium” and a programme of six monitoring visits at approximately fortnightly intervals has been initiated.

10.3 Gas Monitoring Results

To establish the ground gas regime for the site, the installations have been monitored on three occasions to date between 24th April and 27th May 2022.

The ground gas monitoring was undertaken using an infra-red gas analyser and flow pod. Concentrations of methane (CH4), carbon dioxide (CO2) and oxygen (O2) in %, Hydrogen Sulphide (H2S) and Carbon Monoxide

in ppm and ground gas flow in litres per hour (l/h) were recorded during each visit. After the monitoring was undertaken, each well was dipped to record the groundwater level in each location.

Below is a summary of the maximum ground gas concentrations (CH4 and CO2) recorded at the subject site to date, and the maximum borehole hazardous gas flow rates (Qhg) calculated for each monitoring location and each monitoring event. The full gas monitoring data obtained to date is included in SSLs Factual Report in Appendix E.

Table 14 – Summary of Preliminary Gas Monitoring Results

Monitoring Well	Max +ve Flow (l/hr)	Max CH_4 (%v/v)	Max CO_2 (%v/v)	Max CH_4 Q_{hg} (l/hr)	Max CO_2 Q_{hg} (l/hr)	Characteristic Situation
ABH101	0.1	<0.1	1.2	0.0001	0.0012	1
ABH102	0.1	<0.1	0.7	0.0001	0.0007	1
ABH103	<0.1	0.1	1.3	0.0001	0.0013	1
ABH104	0.1	<0.1	1.8	0.0001	0.0018	1
ABH105	<0.1	<0.1	1.9	0.0001	0.0019	1
ABH106	0.1	1.1	3.7	0.0011	0.0037	2
ABH107	<0.1	<0.1	3.3	0.0001	0.0033	1
ABH110	<0.1	<0.1	1.8	0.0001	0.0018	1
ABH111	<0.1	<0.1	2.1	0.0001	0.0021	1
ABH112	0.1	<0.1	5.0	0.0001	0.0050	1
AWS102	0.1	<0.1	1.2	0.0001	0.0012	1
AWS106	0.1	<0.1	9.7	0.0001	0.0097	2
AWS108	<0.1	<0.1	3.2	0.0001	0.0032	1
AWS110	<0.1	0.1	1.0	0.0001	0.0010	1

10.4 Preliminary Hazardous Ground Gas Assessment

The table below is derived from BS8485 and CIRIA C665 and presents the relationship between thresholds in the monitoring data and “Characteristic Situations”.

Table 15 – Ground Gas Characteristic Situation Thresholds

Characteristic Situation	Risk Classification	Q_{hgs} (l/hr) / GSV	Additional Factors
1	Very Low	<0.07	Typically, ≤1% CH_4 and ≤5%CO_2
2	Low	≥0.07 <0.7	Typical measured flow rate <70l/hr
3	Moderate	≥0.7 <3.5	

Characteristic Situation	Risk Classification	Q_{hgs} (l/hr) / GSV	Additional Factors
4	Moderate to High	≥3.5 <15	
5	High	≥15 <70	
6	Very High	≥70	

The following maximum results from the data summary table have been compared with the criteria outlined above:

- Maximum flow = 0.1 l/hr
- Maximum Methane = 1.1 % v/v
- Maximum Carbon Dioxide = 9.7 % v/v
- Maximum Qhg = 0.0097 l/hr

At this stage, with only a preliminary dataset obtained from three monitoring visits, a worst case Qhg value of 0.097l/hr can be calculated from the maximum flow rate of 0.1l/hr and the maximum CO_2 concentration of 9.7% v/v. This indicates that the site is likely to fall into Characteristic Situation 1 (CS1). Under CS1 ('very low' gas risk), gas protection measures would not be required for new buildings on the site.

These results indicate a very low gas risk on site and this finding is consistent with the conceptual site model i.e., the potential source of ground gas is the Made Ground deposits onsite; which generally have a low gas volume generation potential.

However, CH_4 concentrations were recorded to marginally exceed 1%v/v briefly on one occasion in ABH106 beneath Plot 2. This is likely a result of pockets of fibrous organic material which were encountered in the deep Made Ground in this location. Organic soils were only encountered in one other location during the investigation, WS104, however this borehole was not installed with a monitoring well.

CO_2 concentrations were recorded to exceed 5%v/v in one borehole only, AWS106 on all three monitoring visits, also within the vicinity of Plot 2. On this basis, consideration should be given to increasing the characterisation for Plot 2 to CS2 ('low' gas risk) where basic gas protection measures would be required for new buildings where ground gas could potentially accumulate in enclosed spaces.

This assessment is based on the preliminary dataset of three gas monitoring visits and is subject to change following the completion of the full ground gas monitoring programme.

11 Updated Conceptual Site Model & Risk Assessment

11.1 Updated Qualitative Risk Assessment

A preliminary qualitative risk assessment was produced following the Phase 1 desk-based research. The table below has been updated following the findings of the Phase 2 intrusive investigation.

Table 16 – Updated Qualitative Risk Assessment

Potential Receptor	Potential Source	Potential Pathway	Risk
Future End-Users Site staff and maintenance workers Site visitors Residents	**On-Site Sources** Made Ground, railway infrastructure and vehicle parking.	**Soil Leaching / Aqueous Migration** **Dermal Contact & Ingestion** **Particulate/Fibre Inhalation** **Vapour Inhalation**	**Moderate**
	Off-Site Point Sources Railway infrastructure, historical tanks, timber yard, garage and printing works.	**Soil Leaching / Aqueous Migration** **Vapour Inhalation**	**Low**
	Permanent Ground Gas	**Vapour Inhalation**	**Low**
Controlled Waters Groundwater in underlying Secondary A bedrock aquifer	**Made Ground** and **On-Site Sources**	**Soil Leaching / Aqueous Migration**	**Low**
Property Future structures	**Sulphate** impacted soil and groundwater	**Chemical Attack**	Moderate (to be assessed during geotechnical design)
	Ground Gas	**Structural Damage** due to explosion of combustible gas	**Low**
Property Future landscaping	**Contaminated Soil** – phytotoxic contaminants	**Vegetation Root Uptake**	**Moderate** (easily mitigated by providing clean planting medium)
Property Future water supply pipes	**Organic Contamination**	**Impacts to drinking water quality**	**Moderate**

*Based on a worst-case residential land-use scenario without any mitigation/remediation measures

11.2 Overall Environmental Risk

In general, the environmental risk for the site in the context of a worst-case residential land-use scenario is considered Low to Moderate.

Ground investigation including a broad suite of environmental soil, soil leachate and groundwater testing has been undertaken. The risk to water resources has been assessed as low. However, several soil contaminants were found to be elevated when compared to GAC protective of human health, and a clean cover system should be implemented in proposed areas of landscaping in order to mitigate the risk.

Additionally, a potential vapour risk remains in Plot 2, due to the presence of potentially volatile naphthalene and light-end hydrocarbons. Further investigation and risk assessment will be required to determine whether these concentrations present a significant risk to human health. Alternatively, the impacted soils could be delineated, excavated and removed from site, or hydrocarbon resistant membranes could be installed within the residential structures across this plot.

12 Summary and Conclusions

12.1 Background, Scope & Objectives

Arcadis LLP was commissioned to complete a geo-environmental assessment for Phase 1 of The Seam, Barnsley, to support mixed-use redevelopment comprising a new multi-storey car park, an active travel hub, public realm space and residential accommodation.

Several phases of ground investigation have historically been undertaken at the site. As part of this commission, a scope of supplementary intrusive ground investigation was carried out to better understand the soil, groundwater and ground gas conditions at the site and investigate any potentially active pollutant linkages. The supplementary works consisted of cable percussion boreholes with rotary core follow-on, dynamic windowless sampler boreholes, mechanically excavated trial pits and hand-dug pits, groundwater and ground gas monitoring and laboratory testing.

12.2 Ground Conditions

Ground conditions across the site were found to comprise Made Ground to a depth of between 0.3 and 7.8m bgl, overlying strata of the Pennine Middle Coal Measures.

The Made Ground was found to comprise variable ashy sandy gravel of brick, concrete and limestone, or clayey gravelly sand. Beneath the Made Ground, the upper PMCM was recorded as completely weathered to soft to stiff sandy gravelly clay or coarse sand. Solid bedrock strata was recorded as very weak to moderately weak thinly laminated mudstone and siltstone, and medium strong sandstone layers.

Localised hydrocarbon (generally tar) odours were recorded within the Made Ground, and coal fragments, ashy material and occasional slag and clinker was also encountered in Made Ground across the site. No evidence of NAPL was encountered within soil or groundwater beneath the site.

Groundwater was found to be resting within sandstone of the Pennine Middle Coal Measures at a depth >9.45m bgl.

12.3 Contamination Assessment

In general, the environmental risk for the site in the context of a worst-case residential land-use scenario is considered low to moderate.

The risk to water resources has been assessed as low.

However, several soil contaminants were found to be elevated when compared to GAC protective of human health, and a clean cover system should be implemented in proposed areas of landscaping in order to mitigate the risk. Where this is communal areas of soft landscaping a thickness of 300mm clean cover soils is likely to be appropriate. Any private residential garden areas will require a full 600mm cover system of clean soils with an intervening demarcation or no dig layer.

Additionally, a potential vapour risk remains in Plot 2, due to the presence of potentially volatile naphthalene and light-end hydrocarbons. Further investigation and risk assessment will be required to determine whether these concentrations present a significant risk to human health. Alternatively, the impacted soils could be

delineated, excavated and removed from site, or hydrocarbon resistant membranes could be installed within the residential structures across this plot.

Two soil samples were tested as positive for asbestos and as such there is a possibility for asbestos containing material to be present. It is therefore recommended that all site enabling and construction works are undertaken according to an asbestos management plan, which would include various mitigation measures to ensure minimal risk to site operatives, members of the public and future site users.

On the basis of the ground conditions encountered, specific protection measures to protect water pipes from organic contaminants may be required, and it is recommended that consultation is undertaken with the local supplier to confirm this.

Based on current information, it is likely that the majority of Made Ground would be classed as either Non-hazardous or Inert for offsite disposal. However, localised areas of Made Ground may produce soils which could be classifiable as Hazardous Waste based on the concentration of Total Petroleum Hydrocarbons observed in some locations and fragments of asbestos board which were identified in one location.

12.4 Ground Gas Assessment

The preliminary gas monitoring dataset indicates the majority of the site is likely to fall into Characteristic Situation 1 (CS1). This represents a very low gas risk and this finding is consistent with the conceptual site model i.e. the potential source of ground gas is the Made Ground onsite; which generally has a low gas volume generation potential. Under CS1, gas protection measures would not be required for new buildings on the site.

However, slightly elevated CH_4 and CO_2 concentrations above the CS1/CS2 thresholds were recorded in two locations within the vicinity of Plot 2 and on this basis, consideration should be given to increasing the characterisation for Plot 2 to CS2 (‘low’ gas risk) where basic gas protection measures would be required for new buildings where ground gas could potentially accumulate in enclosed spaces.

Nevertheless, this assessment is based on the preliminary dataset of three gas monitoring visits completed at the time of reporting and is subject to change following the completion of the full ground gas monitoring programme.

13References

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14Study Limitations

IMPORTANT. This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1 This report has been prepared by Arcadis LLP ('Arcadis'), with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with the Barnsley Metropolitan Borough Council (the 'Client'). Arcadis does not accept responsibility for any matters outside the agreed scope.

2 This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing. otherwise in writing. The contents of this report may not be used or relied upon by any person other than this party without the express written consent and authorisation of Arcadis.

3 Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Arcadis is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have unpublished, more stringent objectives. Further work may be required by these parties.

4 All work carried out in preparing this report has used, and is based on, Arcadis' professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice, pending changes in legislation, of which Arcadis is aware, have been considered. Following delivery of the report, Arcadis has no obligation to advise the Client or any other party of such changes or their repercussions.

5 This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6 Whilst this report and the opinions made are correct to the best of Arcadis' belief, Arcadis cannot guarantee the accuracy or completeness of any information provided by third parties. provided by third parties. Arcadis has taken reasonable steps to ensure that the information sources used for this assessment provided accurate information and has therefore assumed this to be the case.

7 This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have been received.

8 This report refers, within the limitations stated, to the condition of the site at the time of the inspection. No warranty is given as to the possibility of changes in the condition of the site since the time of the investigation.

9 The content of this report represents the professional opinion of experienced environmental consultants. Arcadis does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10 Where intrusive investigation techniques have been employed, they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

11 If below ground intrusive investigations have been conducted as part of the scope, safe location of exploratory holes has been carried out with reference to the Arcadis ground disturbances procedure. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on site.

12 Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.

13 Unless otherwise stated, an inspection of the site has not been undertaken and there may be conditions present at the site which have not been identified within the scope of this assessment.

14 Unless otherwise stated, samples from the site (soil, groundwater, building fabric or other samples) have not been obtained.

15 Arcadis has relied upon the accuracy of documents, oral information and other material and information provided by the Client and others, and Arcadis assumes no liability for the accuracy of such data, although in the event of apparent conflicts in information, Arcadis would highlight this and seek to resolve.

16 Unless otherwise stated, the scope of works has not included an environmental compliance review, health and safety compliance review, hazardous building materials assessment, interviews or contacting Local Authority, requests for information to the petroleum officer, sampling or analyses of soil, ground water, surface water, air or hazardous building materials or a chain of title review.

Appendix A

Proposed Redevelopment Plan

3.0 DEVELOPMENT BLUEPRINT

3.1 Development Blueprint

3.1.1 This section sets out the detail of the proposed Development Blueprint for The Seam - Barnsley's Digital Campus. The blueprint is based on a plot-based approach, which is intended to support the Council's key objectives while providing an appropriate level of flexibility to suit future development needs, market conditions, and phasing requirements.

The first part of the Development Blueprint covers a range of site-wide strategies:

- building uses and principles,
- building heights and massing,
- landscape and public realm,
- transport links
- pedestrian and cycle movement,
- vehicle movement and car parking,
- energy and sustainability,
- utilities,
- drainage

This is followed by a plot-by-plot guide setting out key information and parameters.

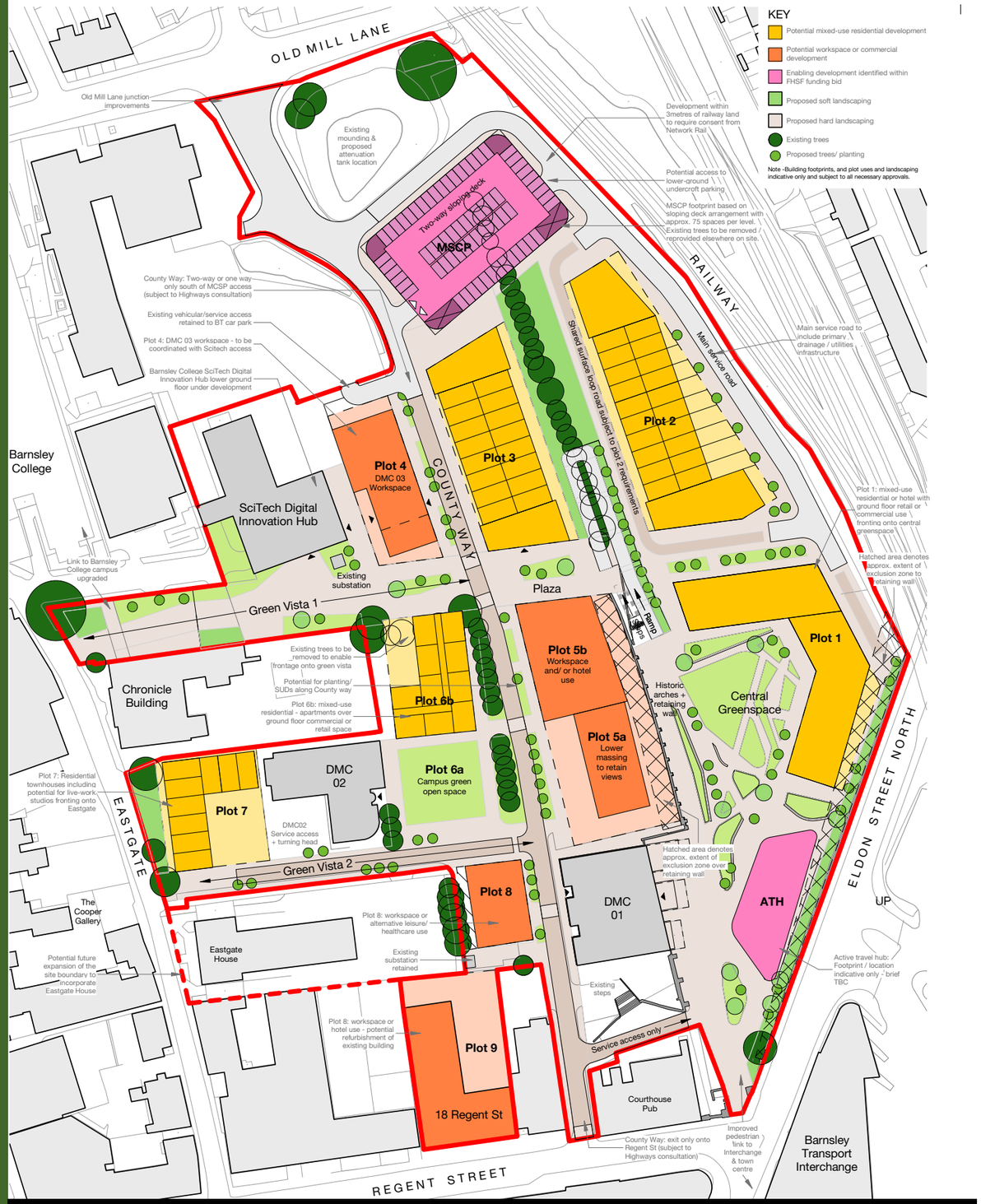


FIGURE 47: Proposed illustrative layout (building footprints indicative only)

Appendix B

Historical Ordnance Survey Plans



Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

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Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: County Series

Map date: **1850**

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Printed at: 1:10,560

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Surveyed 1851
Revised N/A
Edition 1850
Copyright N/A
Levelled N/A

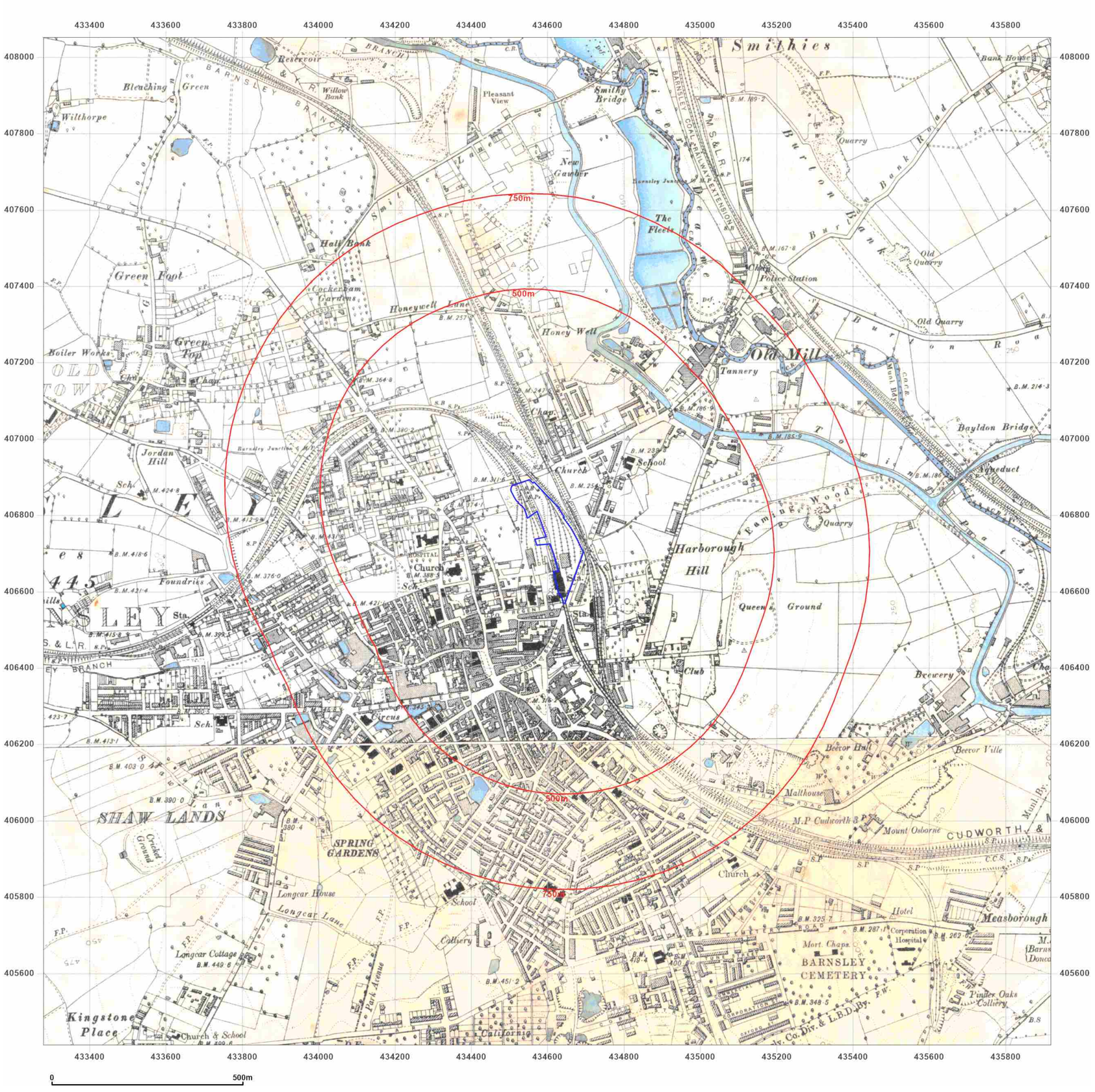
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Groundsure INSIGHTS

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COUNTY WAY, BARNSLEY, S70 2JW

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Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: County Series

Map date: **1890**

Scale: 1:10,560

Printed at: 1:10,560

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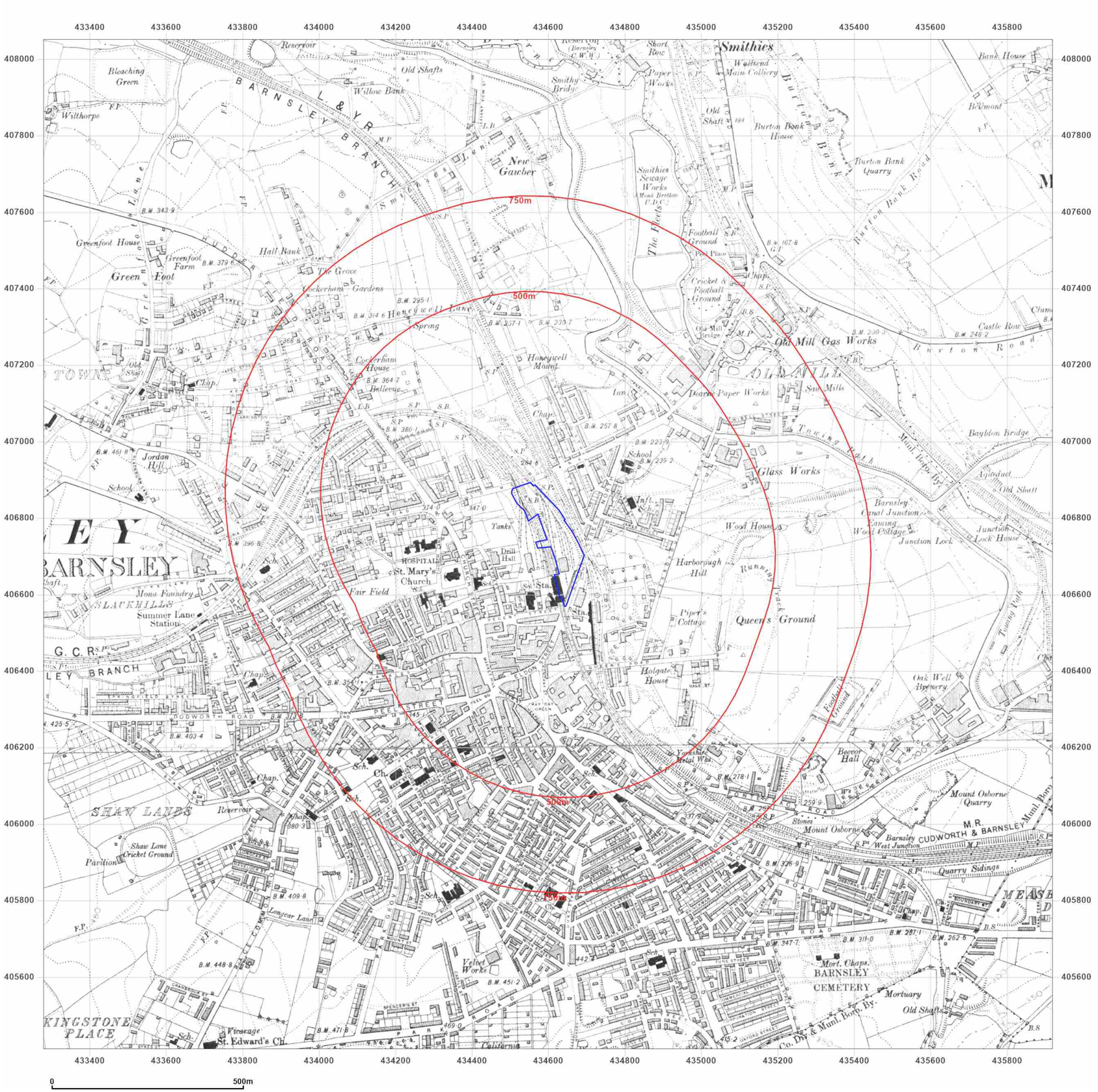
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Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: County Series

Map date: **1904**

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Printed at: 1:10,560

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Surveyed 1891
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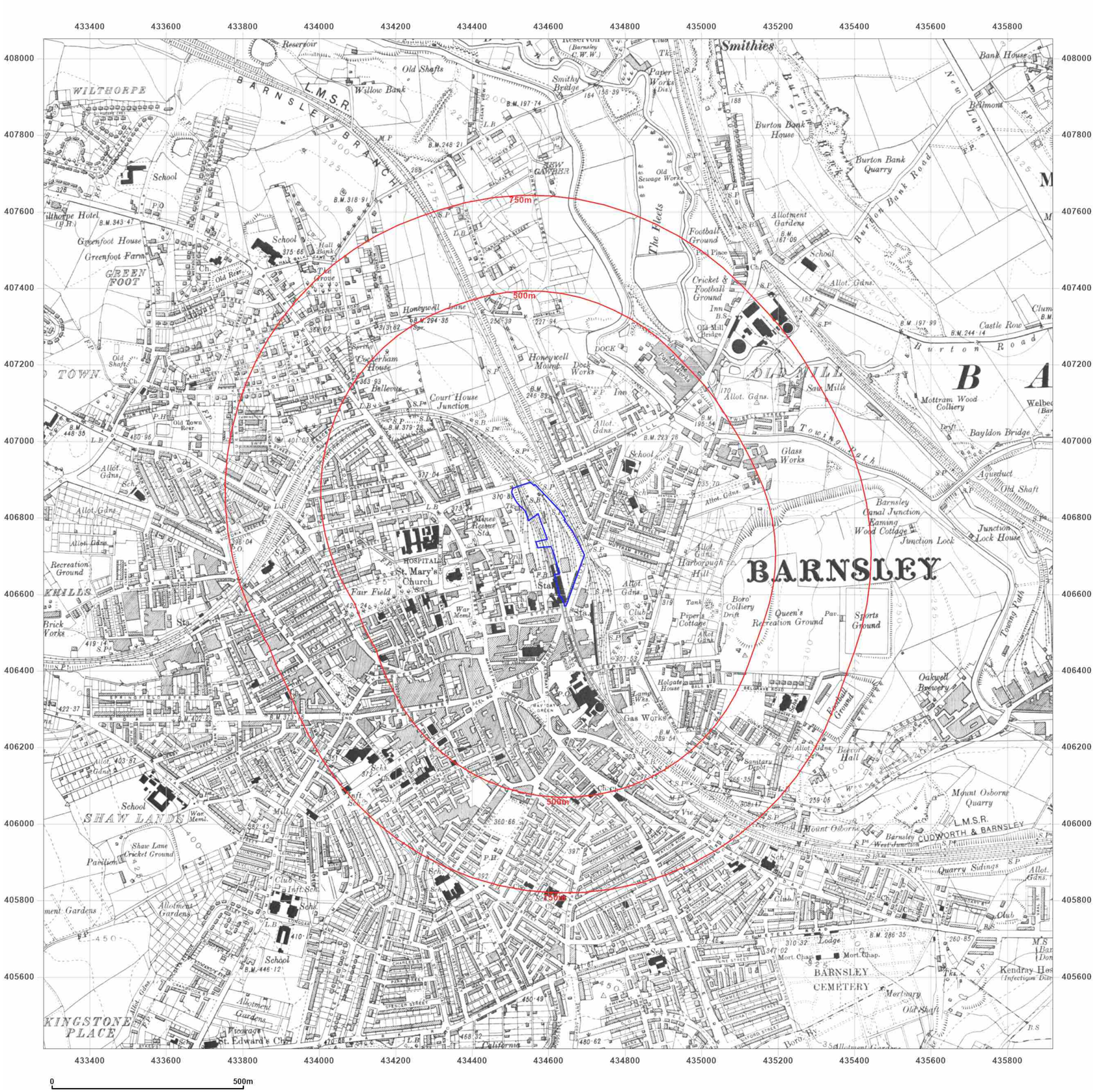
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Site Details:

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Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: County Series

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Printed at: 1:10,560

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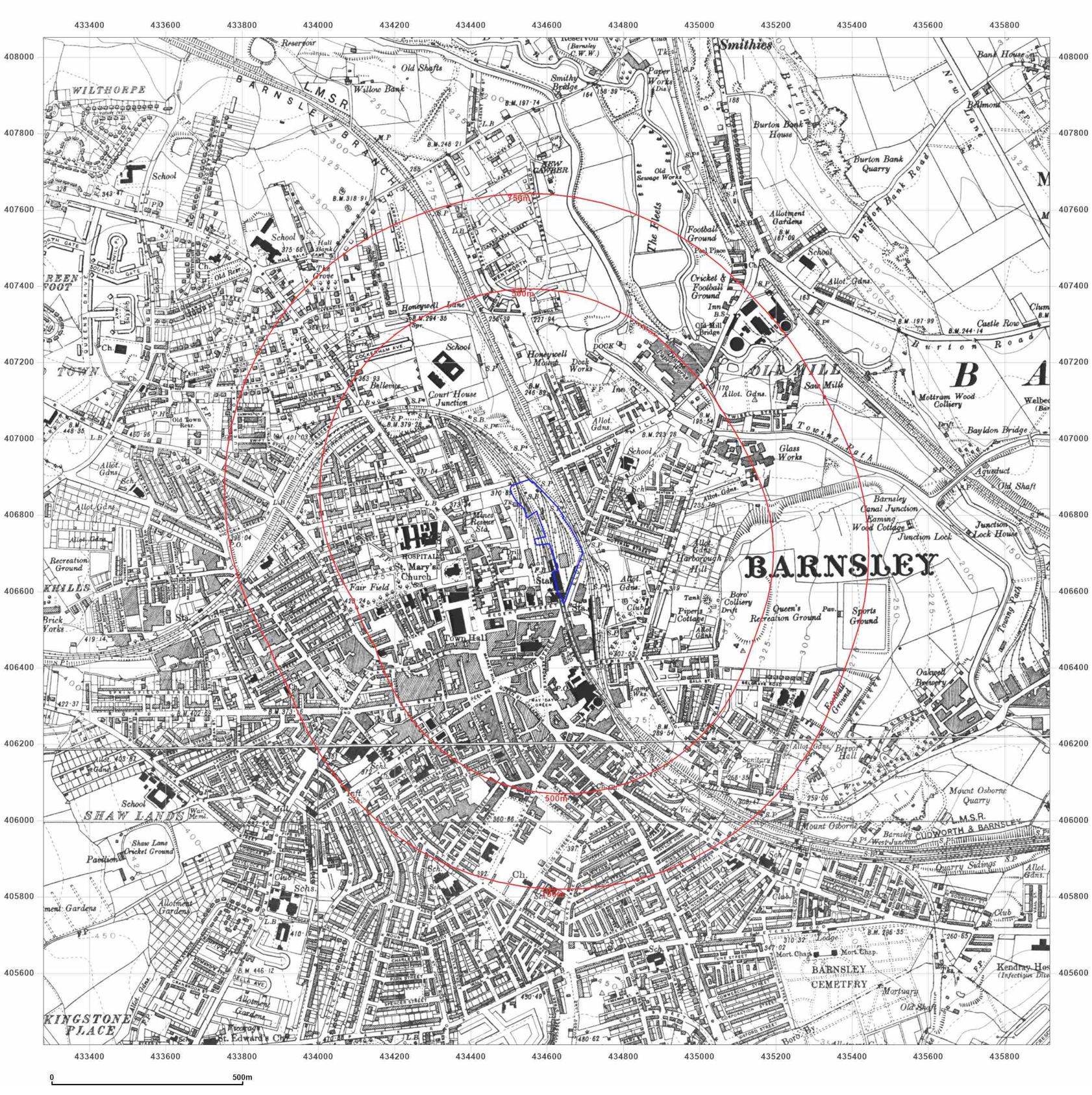
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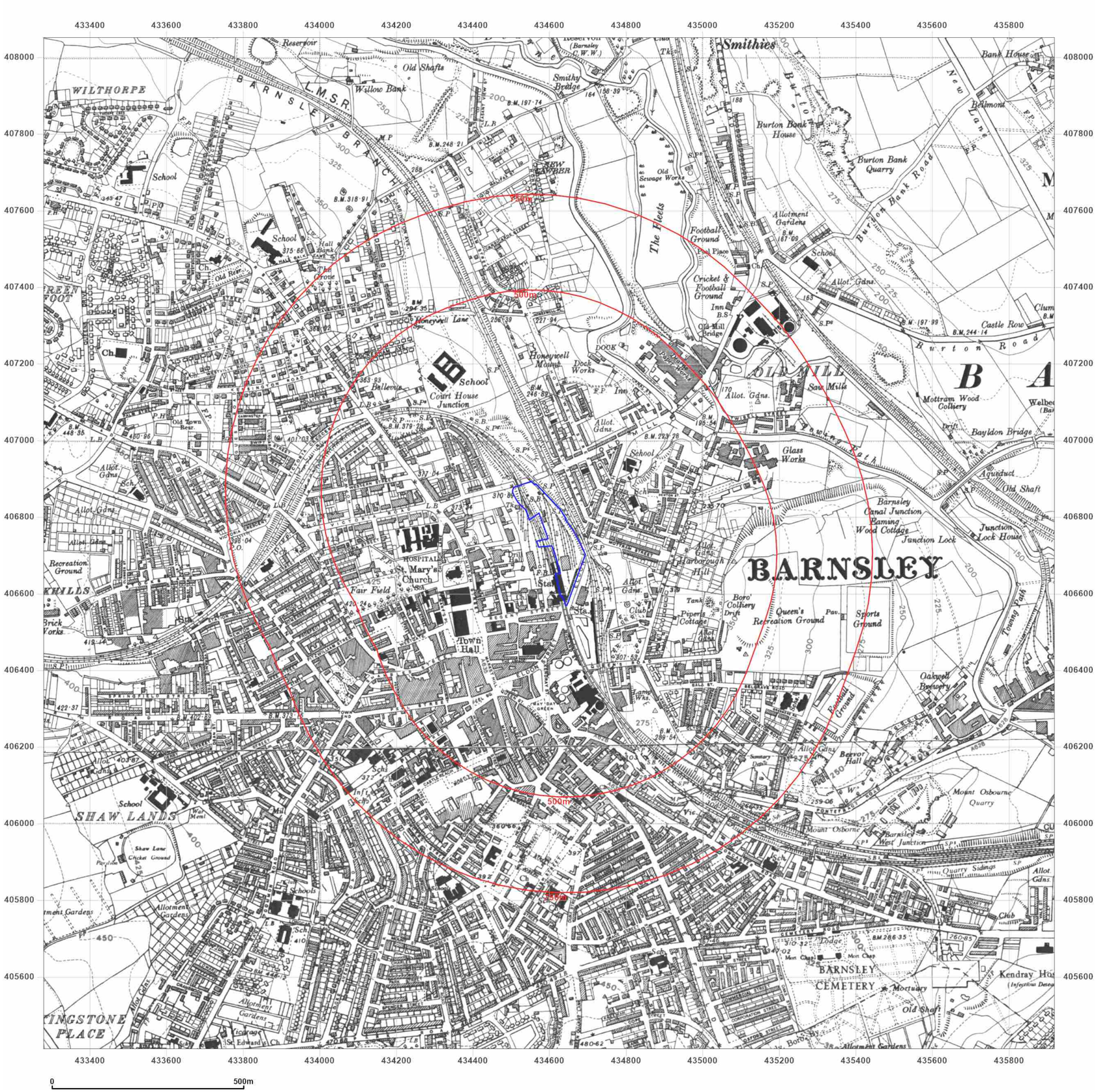
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Production date: 16 May 2022

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BARNSLEY
WILTHORPE
SHAW LANDS
KINGSTONE PLACE
KHILLS
OLD MILL
Smithies
Burton Road
Honeywell Lane
Burton Bank Road
Court House Junction
Town Hall
Barnsley Canal Junction
BARNSLEY CEMETERY
Queen's Recreation Ground
Sports Ground
Football Ground
Cricket & Football Ground
Shaw Lane Cricket Ground
Recreation Ground
Fair Field
Harborough Hill
Mount Osborne
Mount Osborne Quarry
Burton Bank Quarry
Oakwell Brewery
Mottram Wood Colliery
Glass Works
Saw Mills
Dock Works
Honeywell Mount
Old Mill Bridge
Bayldon Bridge
Aqueduct
Old Shaft
Junction Lock
Junction Lock House
Castle Row
Bank House
Belmont
Burton Bank House
Allotment Gardens
Allot. Gdns.
Old Sewage Works
The Fleets
Smithy Bridge
Willow Bank
Old Shafts
Reservoir
Paper Works (Disd.)
Tk.
Ch.
School
Hall Bank
The Grove
Old Rectory
Old Town Reer.
Ballevue
Honeywell Lane
Pavilion
Allotment Gardens
Recreation Ground
Brick Works
Sta.
Goods Sta.
Mineral Reserves Sta.
Tramway Path
Lamp Wks.
Scientific Depot
Mort. Chap.
Lodge
Kendray Hos
(Infectious Dis.)
Mortuary
Old Shaft
Oakwell Hall
Barnsley CUDWORTH & BARNSLEY
West Junction
M.S.R.
L.M.S.R.
BARNSLEY BRANCH
Quarry Sidings
Towing Path
Boro' Colliery Drift
Pipers Cottage
Flaming Wood Cottage
Harbour Hill
Allot. Gdns.
Sch.
Schs.
Club
Inn
P.H.
Pav.
Ho.
Ho.
Ho



Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1851
Revised 1948
Edition 1948
Copyright N/A
Levelled 1929

Surveyed 1851
Revised 1948
Edition 1948
Copyright N/A
Levelled 1929

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Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: Provisional

Map date: **1955-1956**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed N/A
Revised 1955
Edition N/A
Copyright 1956
Levelled N/A

Surveyed N/A
Revised 1955
Edition N/A
Copyright 1955
Levelled N/A

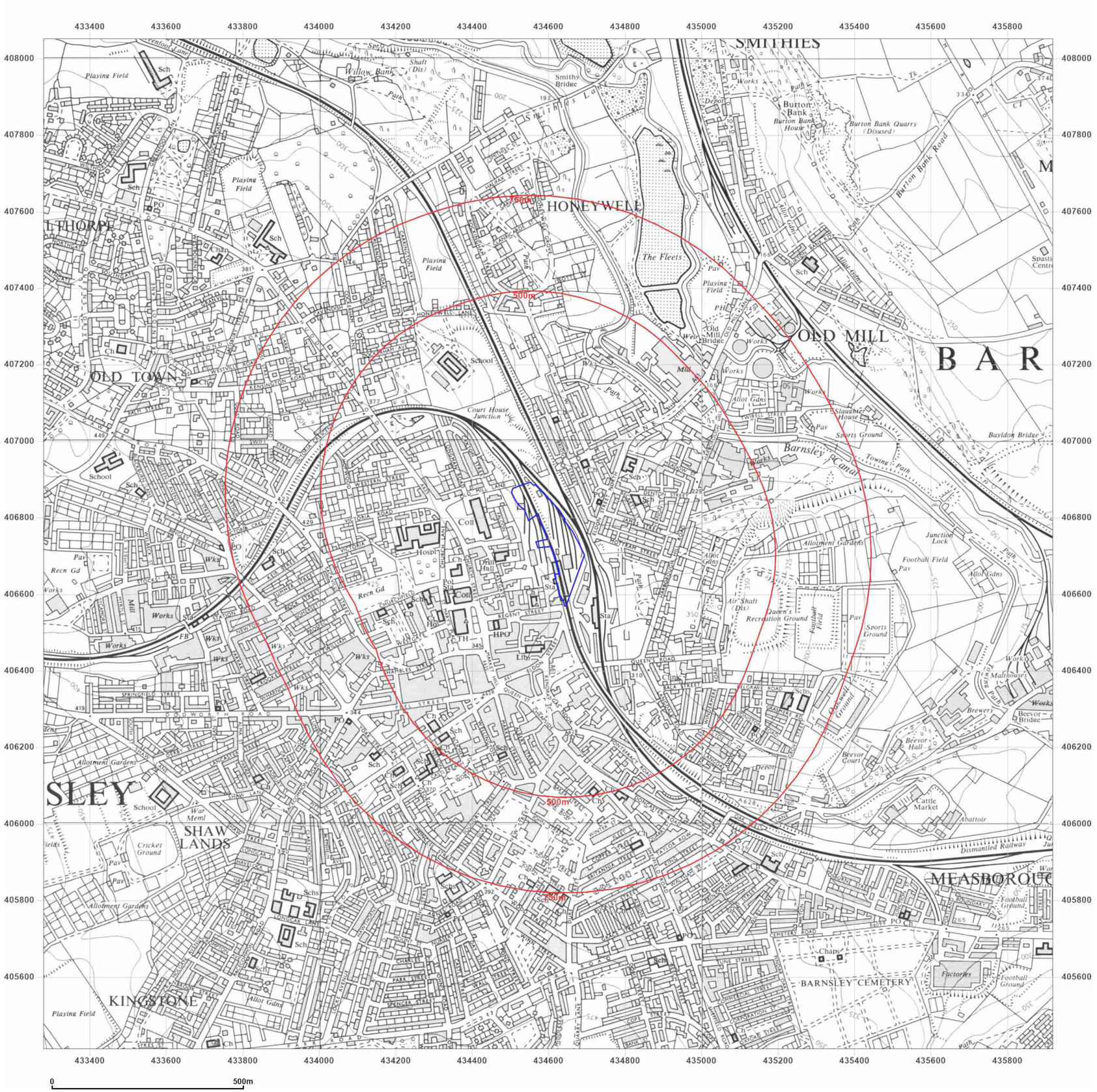
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: Provisional

Map date: **1966**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1966
Revised 1966
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1966
Revised 1966
Edition N/A
Copyright 1966
Levelled N/A

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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid

Map date: **1973-1974**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1973 Revised 1973 Edition N/A Copyright N/A Levelled N/A	Surveyed 1974 Revised 1974 Edition N/A Copyright 1975 Levelled 1978

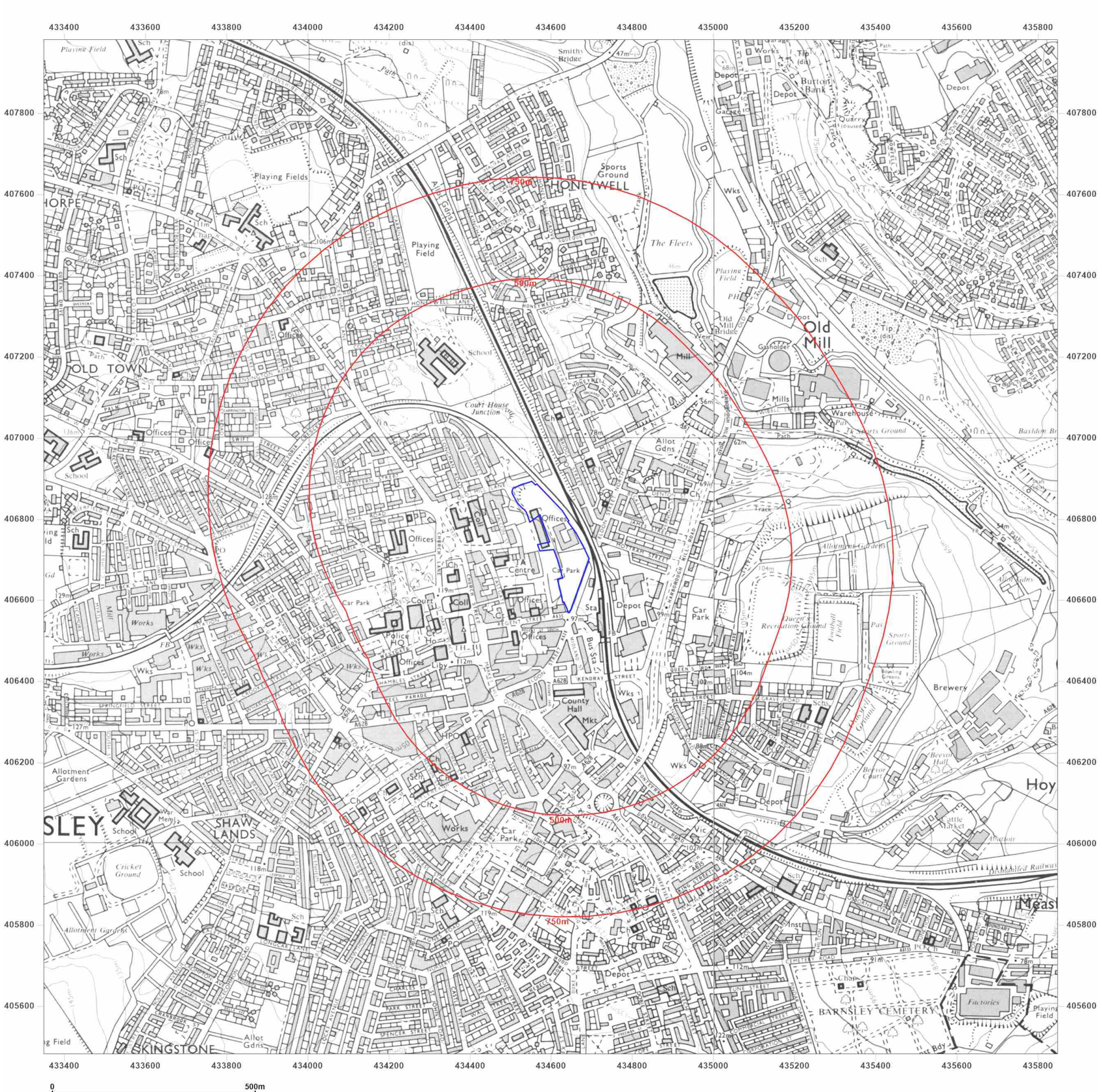
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid

Map date: **1982**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1982
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1981
Revised 1982
Edition N/A
Copyright 1983
Levelled 1978

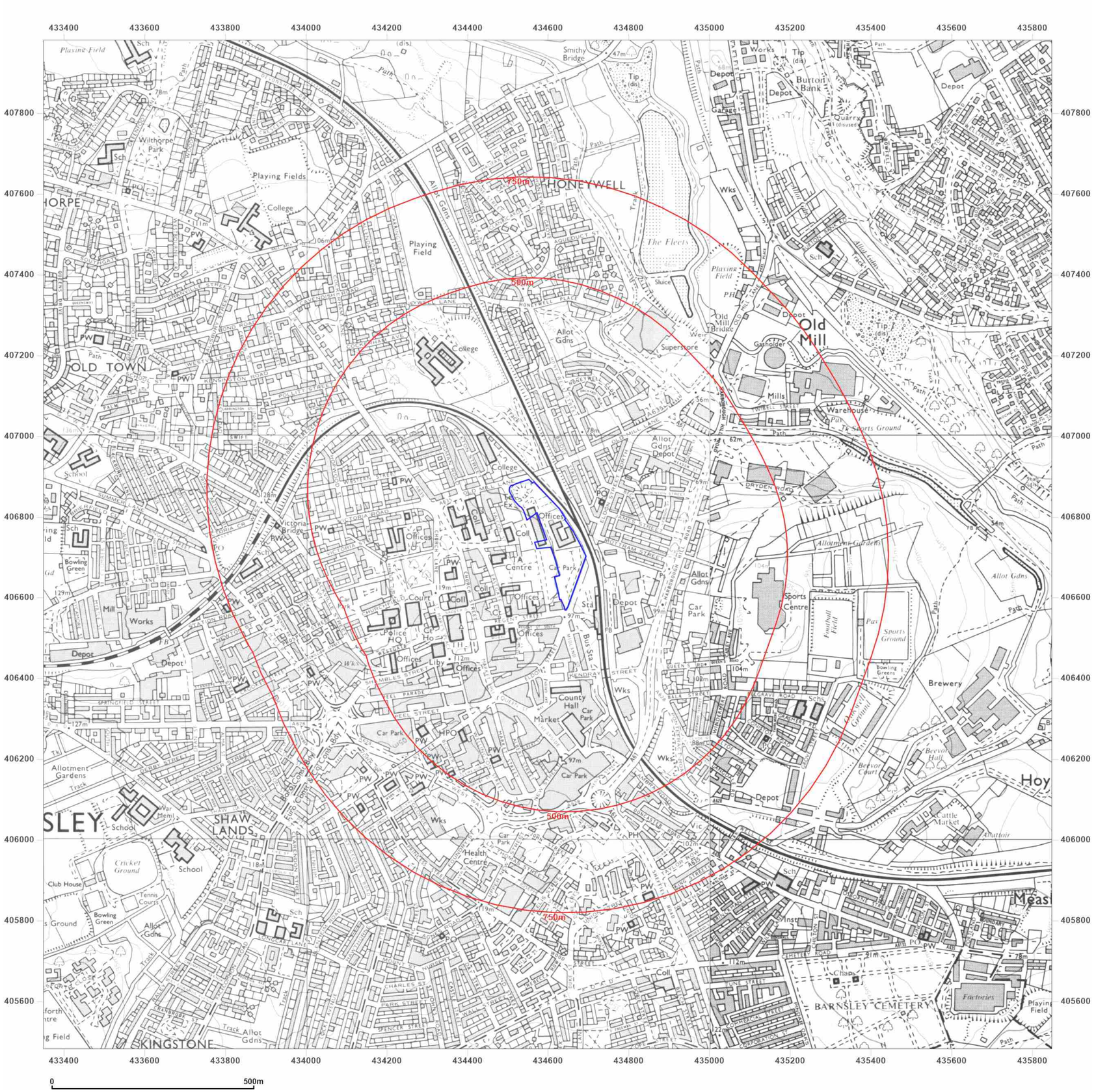
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Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid

Map date: **1992-1993**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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Surveyed 1992
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1981
Revised 1992
Edition N/A
Copyright 1993
Levelled 1978

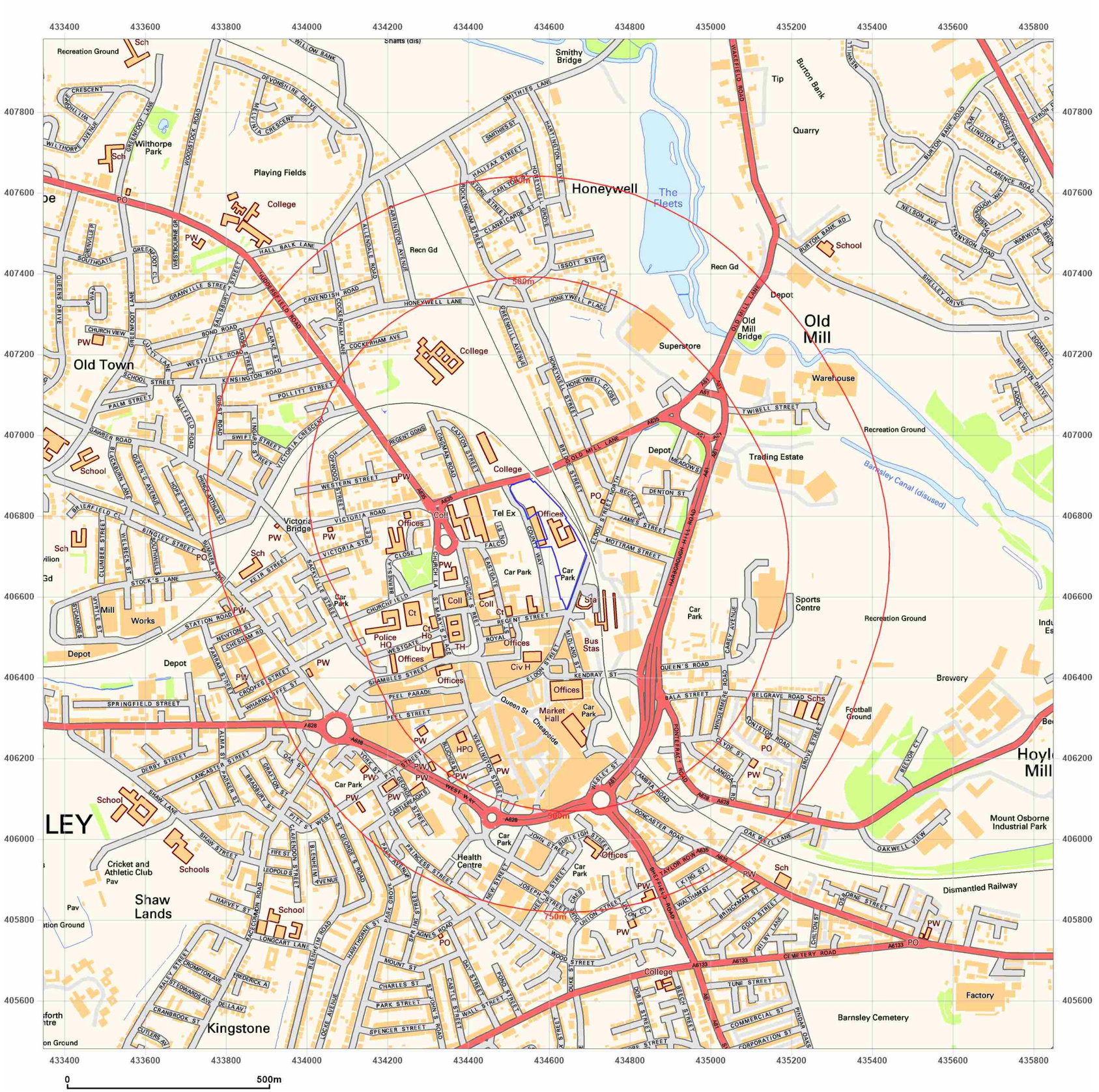
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2001

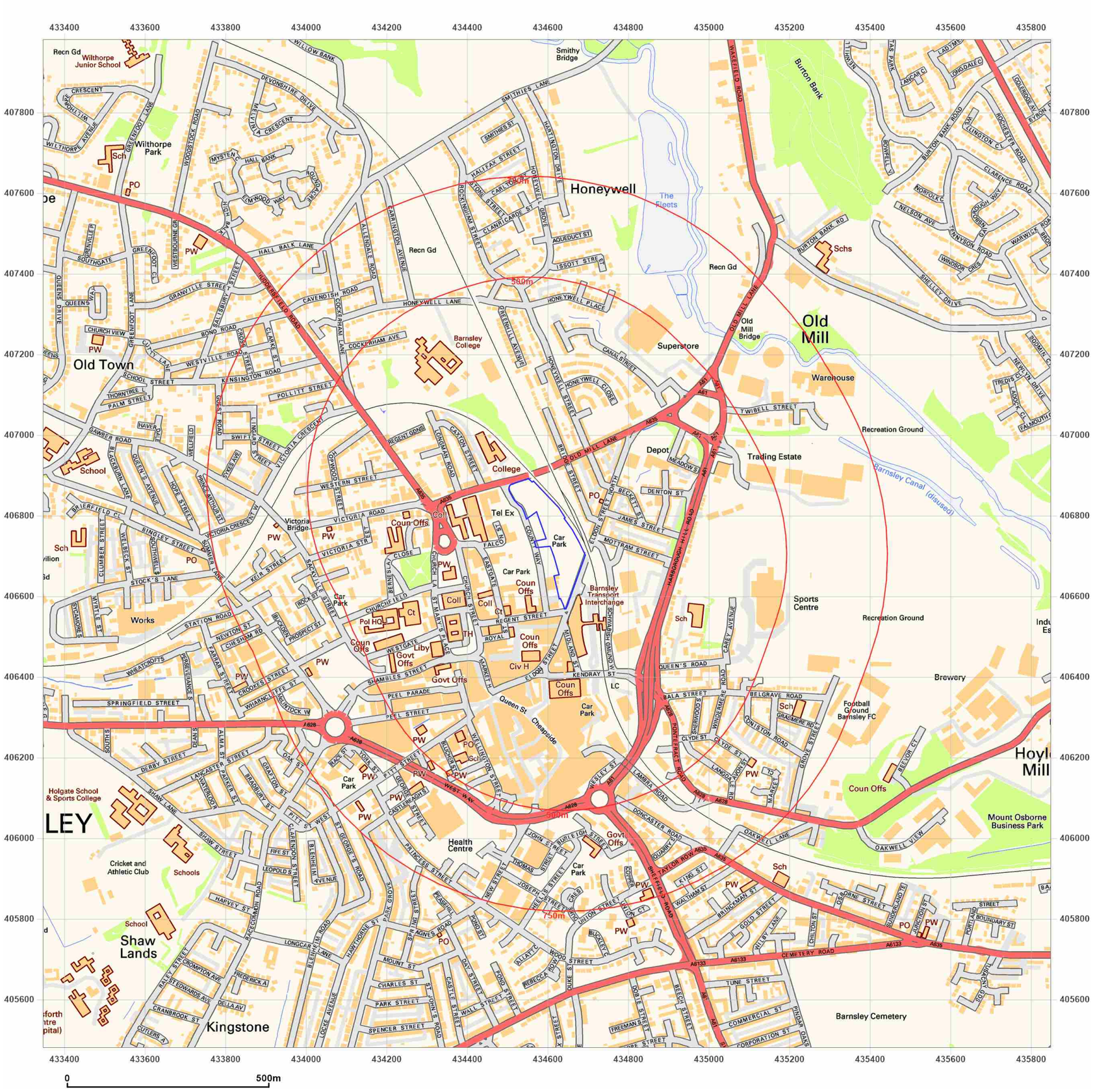
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

N
W E
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2010

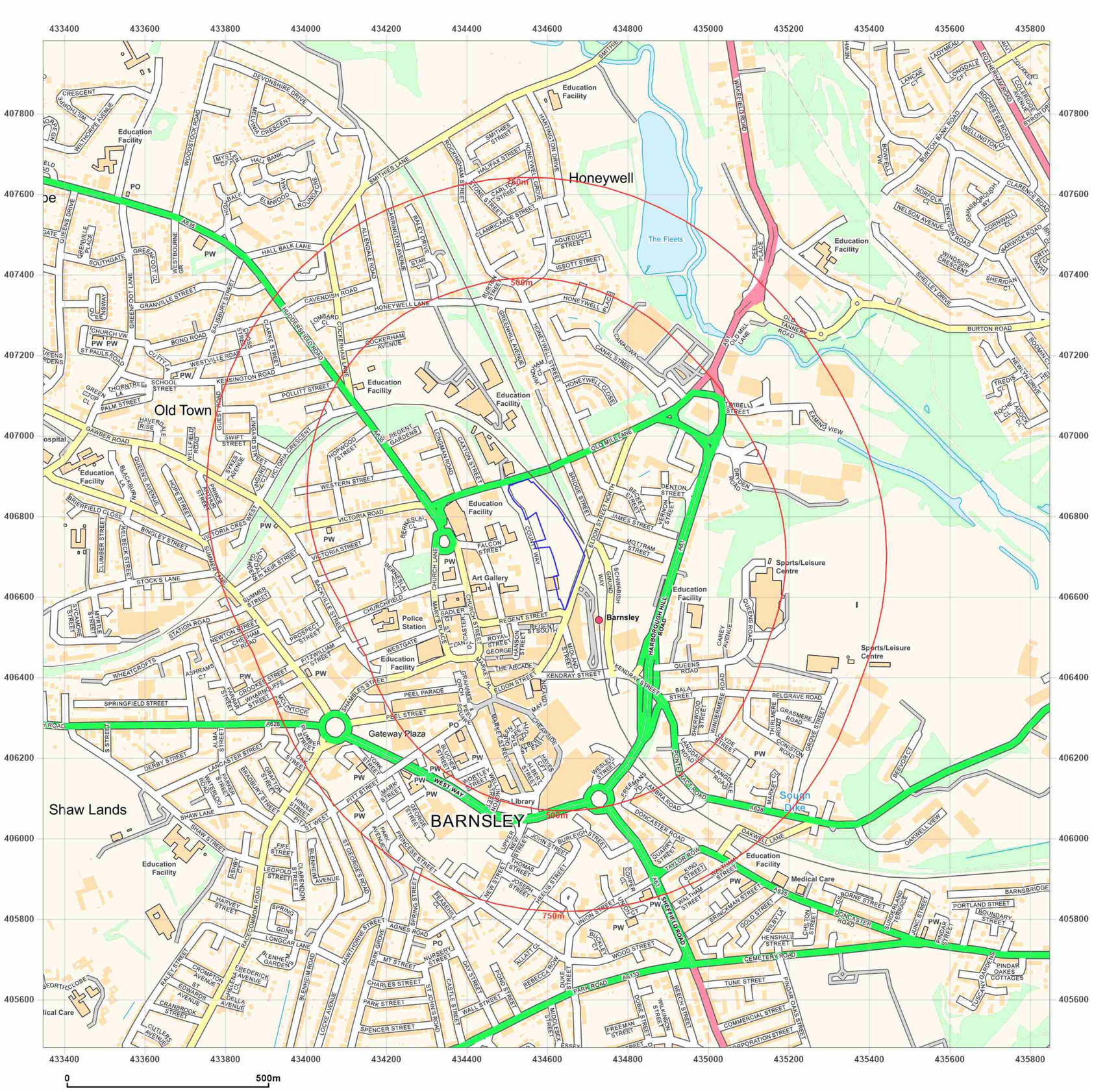
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395
Grid Ref: 434598, 406731

Map Name: National Grid
Map date: 2022
Scale: 1:10,000
Printed at: 1:10,000

N W E S

2022

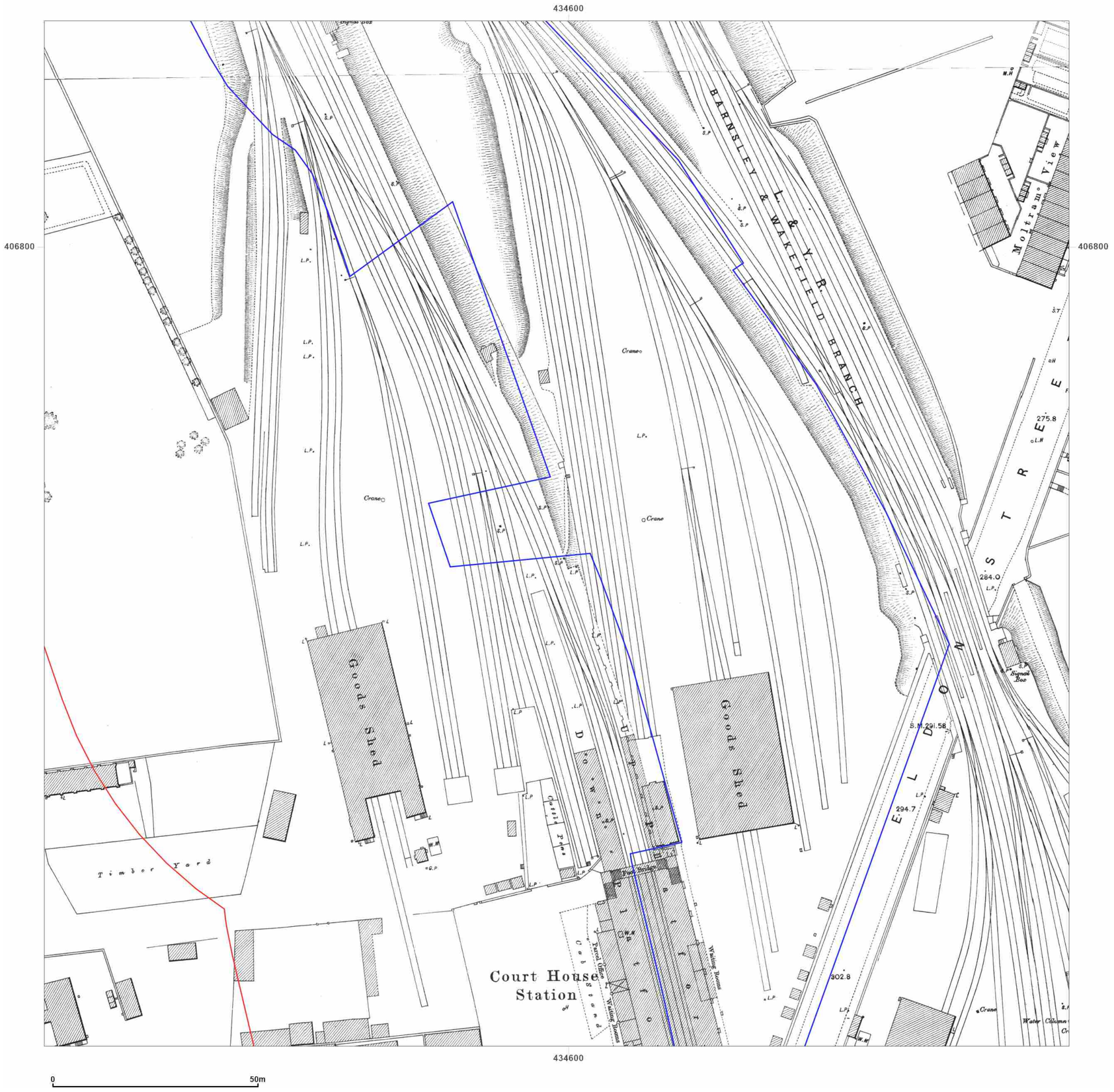
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434600
406800
406800
BARNSLEY & WAKEFIELD BRANCH
Goods Shed
Goods Shed
Timber Yard
Court House Station
Crane
Crane
Crane
Signal Box
Waiting Rooms
Waiting Rooms
Parcel Office
Cabstand
Down Platform
Up Platform
Down Platform
Up Platform
Down Platform
Up Platform



Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_2500
Grid Ref: 434597, 406730

Map Name: County Series

Map date: **1892-1893**

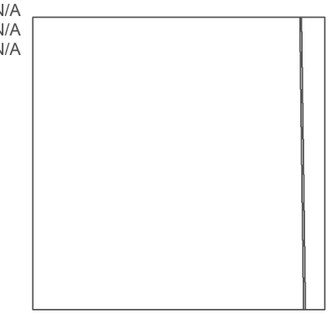
Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1892
Revised N/A
Edition 1892
Copyright N/A
Levelled N/A



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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_2500
Grid Ref: 434597, 406730

Map Name: County Series

Map date: **1906**

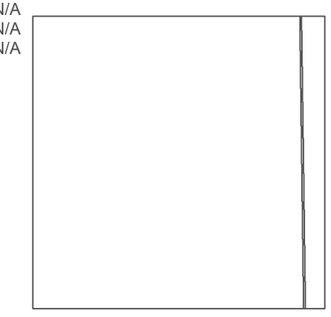
Scale: 1:2,500

Printed at: 1:2,500

N
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Surveyed 1906
Revised 1906
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1890
Revised 1904
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_2500
Grid Ref: 434597, 406730

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
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Surveyed 1960
Revised 1960
Edition 1962
Copyright 1962
Levelled 1960

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1962
Levelled 1930

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Site Details:

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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_2500
Grid Ref: 434597, 406730

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

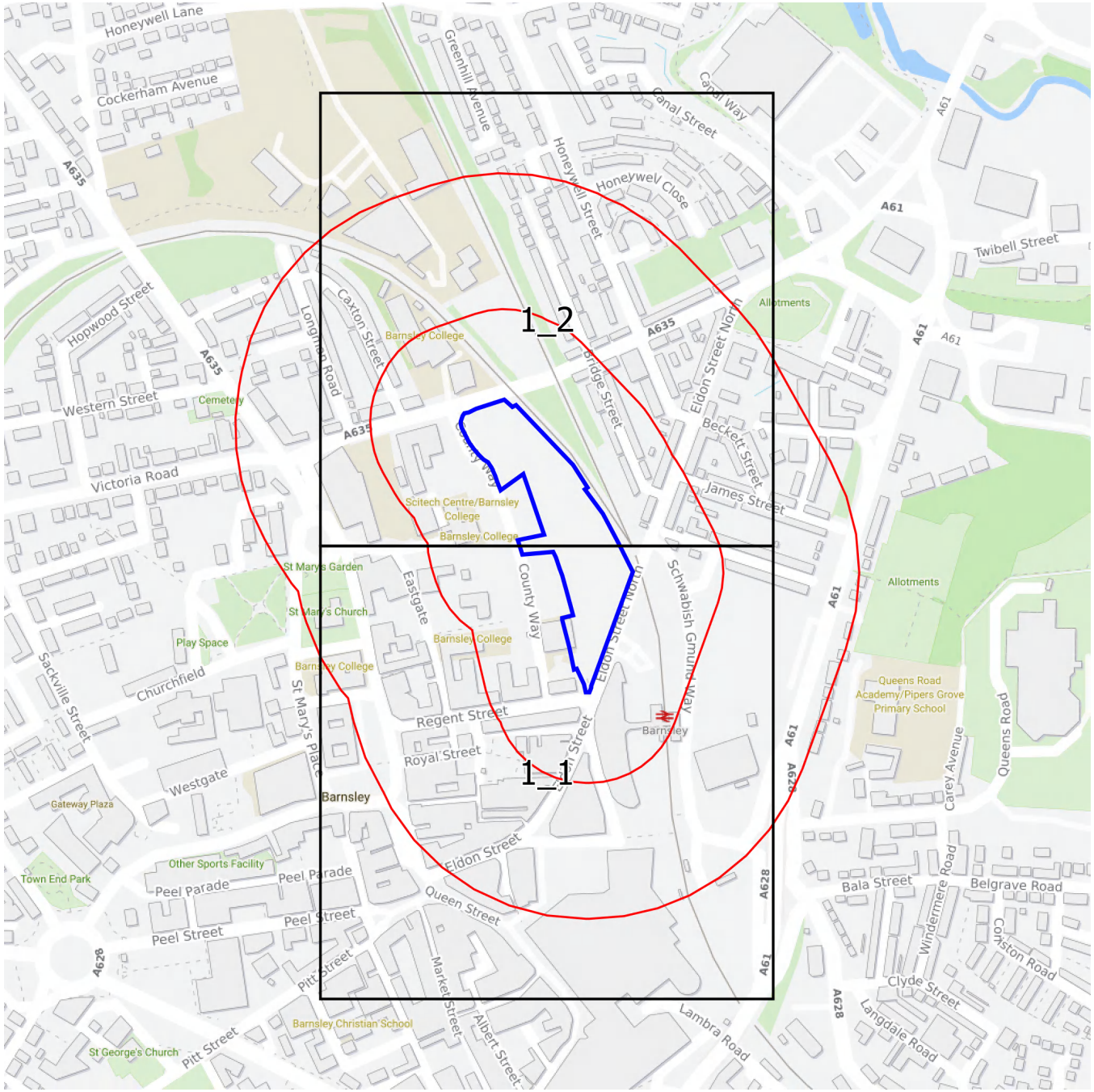
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Groundsure INSIGHTS

1:1,250 Scale Grid Index

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Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid
Map date: **1961**
Scale: 1:1,250
Printed at: 1:2,000

N
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Surveyed 1959 Revised 1959 Edition N/A Copyright 1961 Levelled 1930	Surveyed 1960 Revised 1960 Edition N/A Copyright 1961 Levelled 1930
Surveyed 1960 Revised 1960 Edition N/A Copyright 1961 Levelled 1930	Surveyed 1960 Revised 1960 Edition N/A Copyright 1961 Levelled 1930

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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1968-1972**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed 1959
Revised 1970
Edition N/A
Copyright 1970
Levelled N/A

Surveyed 1960
Revised 1971
Edition N/A
Copyright 1972
Levelled 1963

Surveyed 1967
Revised 1967
Edition N/A
Copyright 1968
Levelled 1963

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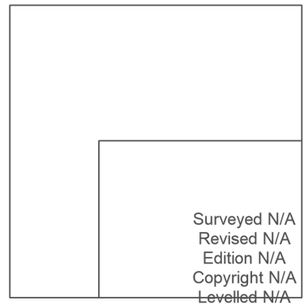
Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid
Map date: **1975**
Scale: 1:1,250
Printed at: 1:2,000

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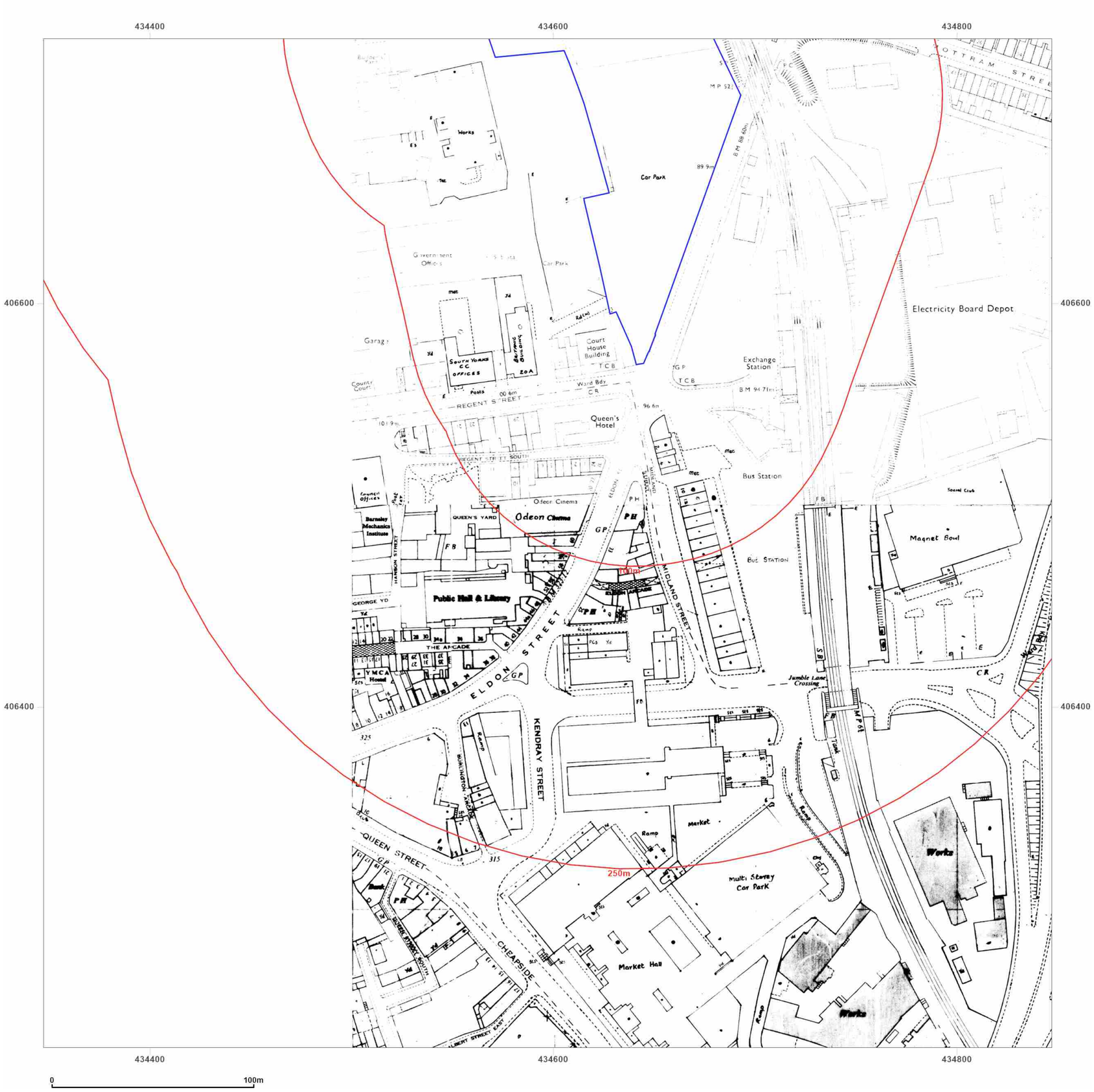
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1975-1977**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

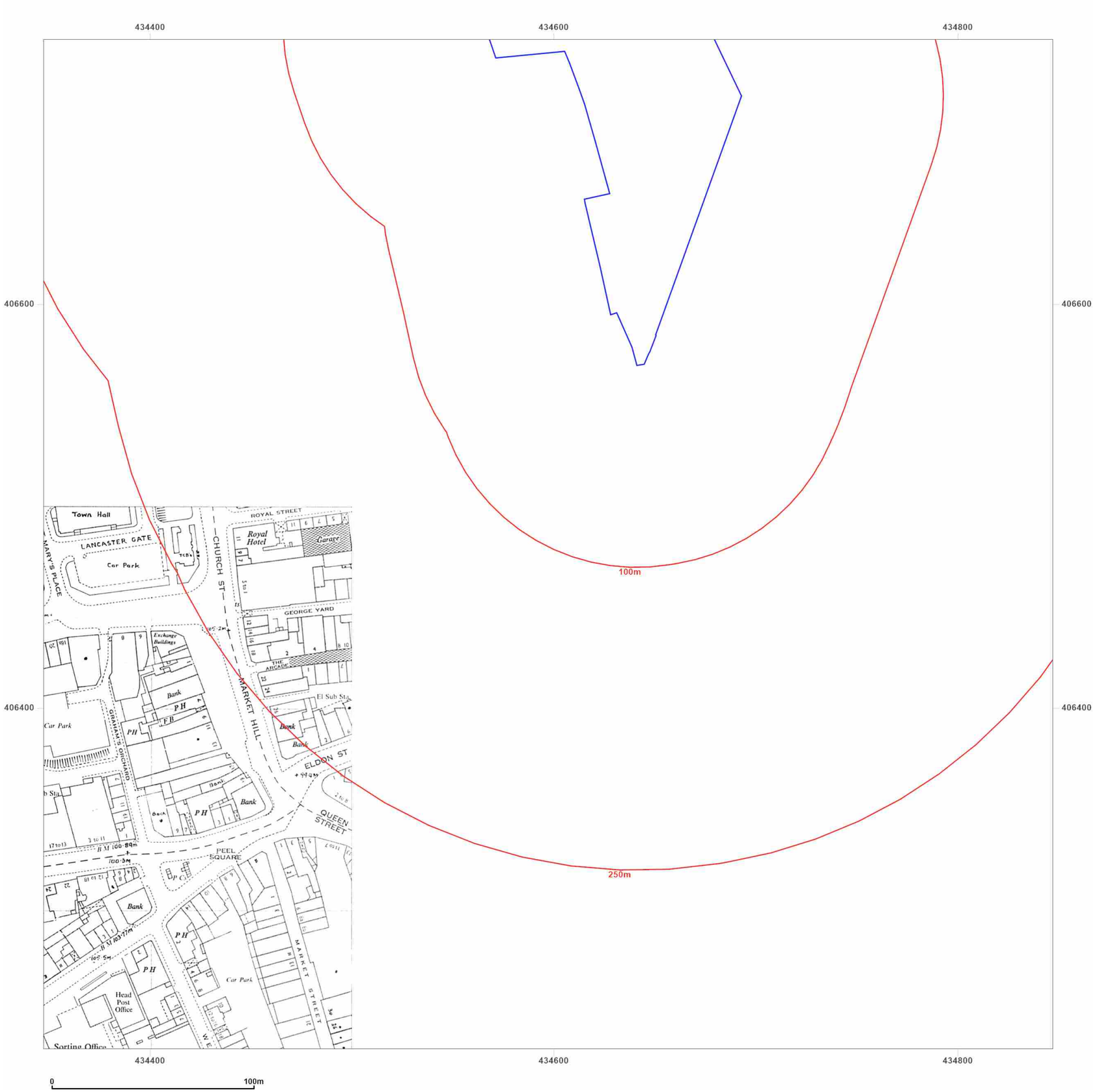
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

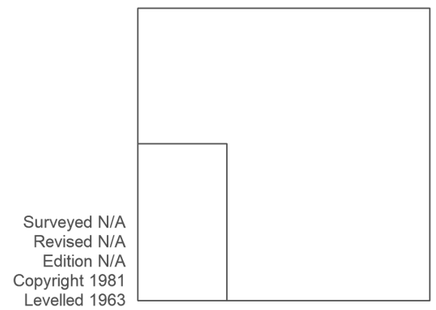
Map Name: National Grid

Map date: **1981**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1963

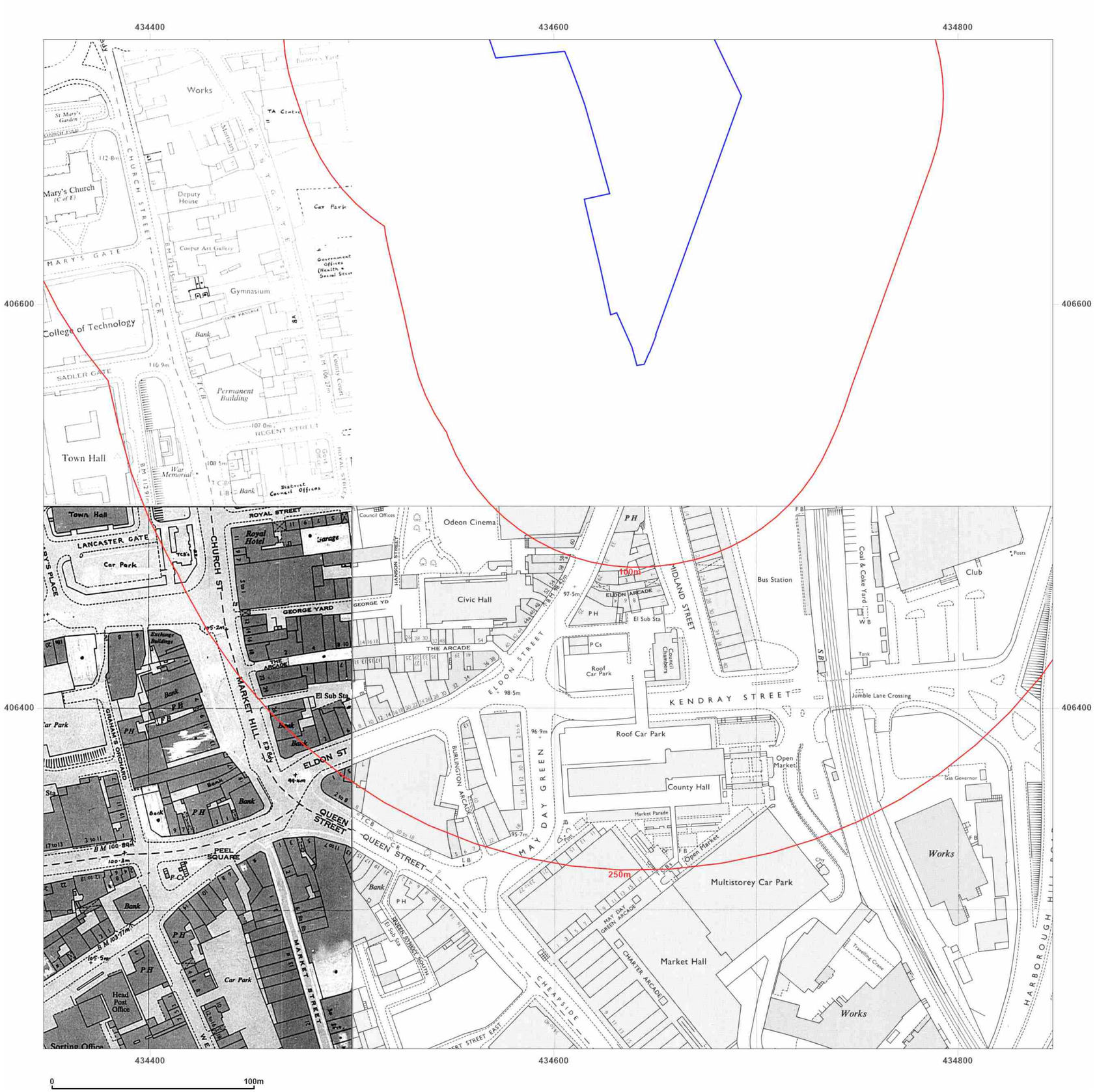
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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1977-1982**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
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Surveyed N/A
Revised N/A
Edition N/A
Copyright 1981
Levelled 1969

Surveyed 1963
Revised 1982
Edition N/A
Copyright 1982
Levelled 1963

Surveyed 1960
Revised 1976
Edition N/A
Copyright 1977
Levelled 1963

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Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1984-1987**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1963 Revised 1986 Edition N/A Copyright 1986 Levelled 1963	Surveyed 1960 Revised 1986 Edition N/A Copyright N/A Levelled 1963
Surveyed 1960 Revised 1983 Edition N/A Copyright 1984 Levelled 1963	Surveyed 1963 Revised 1987 Edition N/A Copyright 1987 ~~Levelled 1963~~

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Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1987-1991**

Scale: 1:1,250

Printed at: 1:2,000

N W E S

Surveyed 1959
Revised 1970
Edition N/A
Copyright 1970
Levelled 1963

Surveyed 1960
Revised 1986
Edition N/A
Copyright 1987
Levelled 1963

Surveyed 1960
Revised 1983
Edition N/A
Copyright 1991
Levelled 1963

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1963

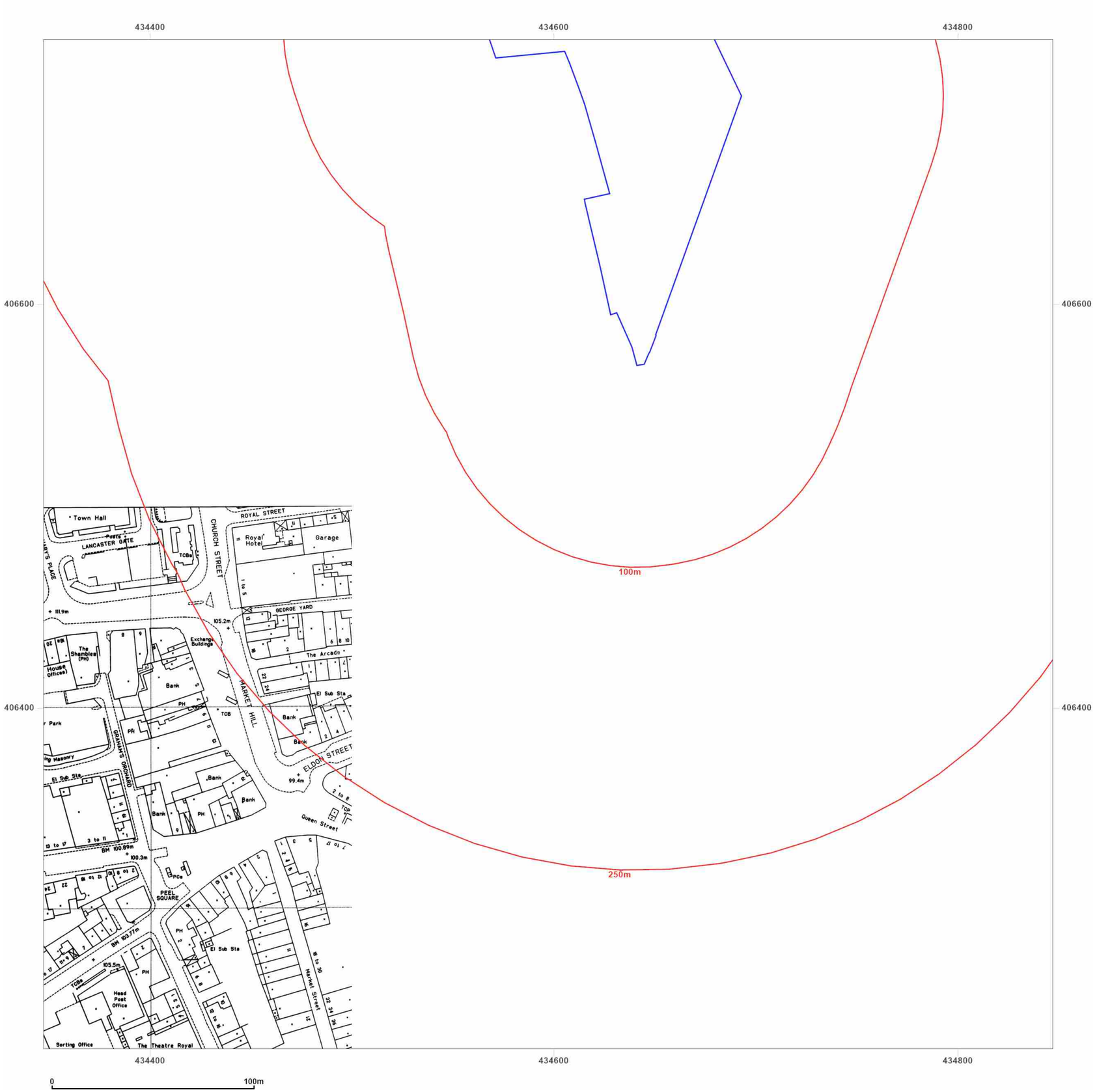
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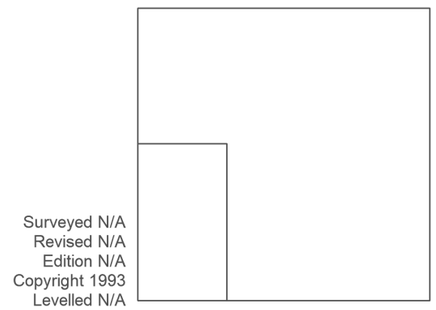
Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid
Map date: **1993**
Scale: 1:1,250
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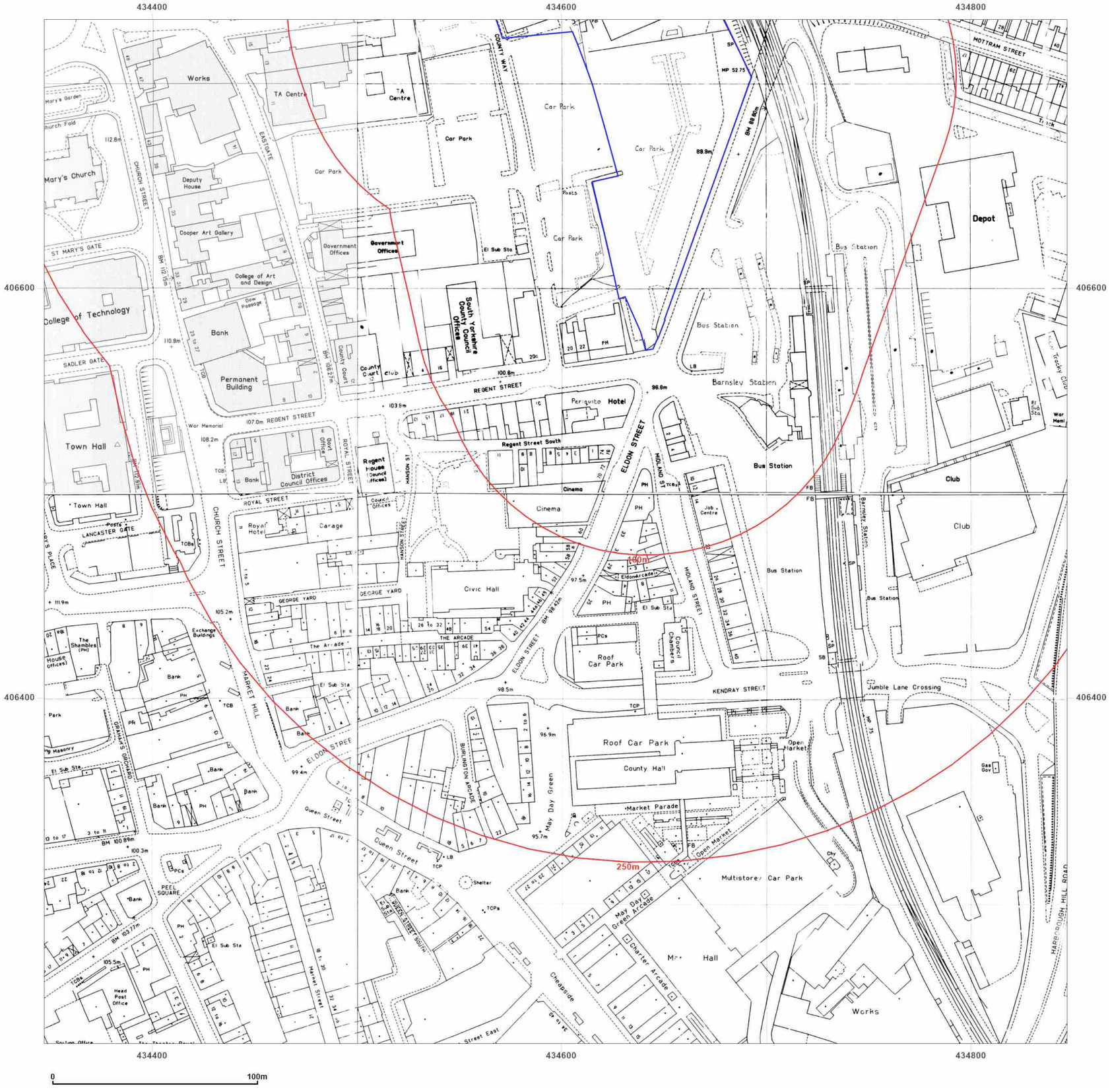
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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_1
Grid Ref: 434597, 406481

Map Name: National Grid

Map date: **1988-1993**

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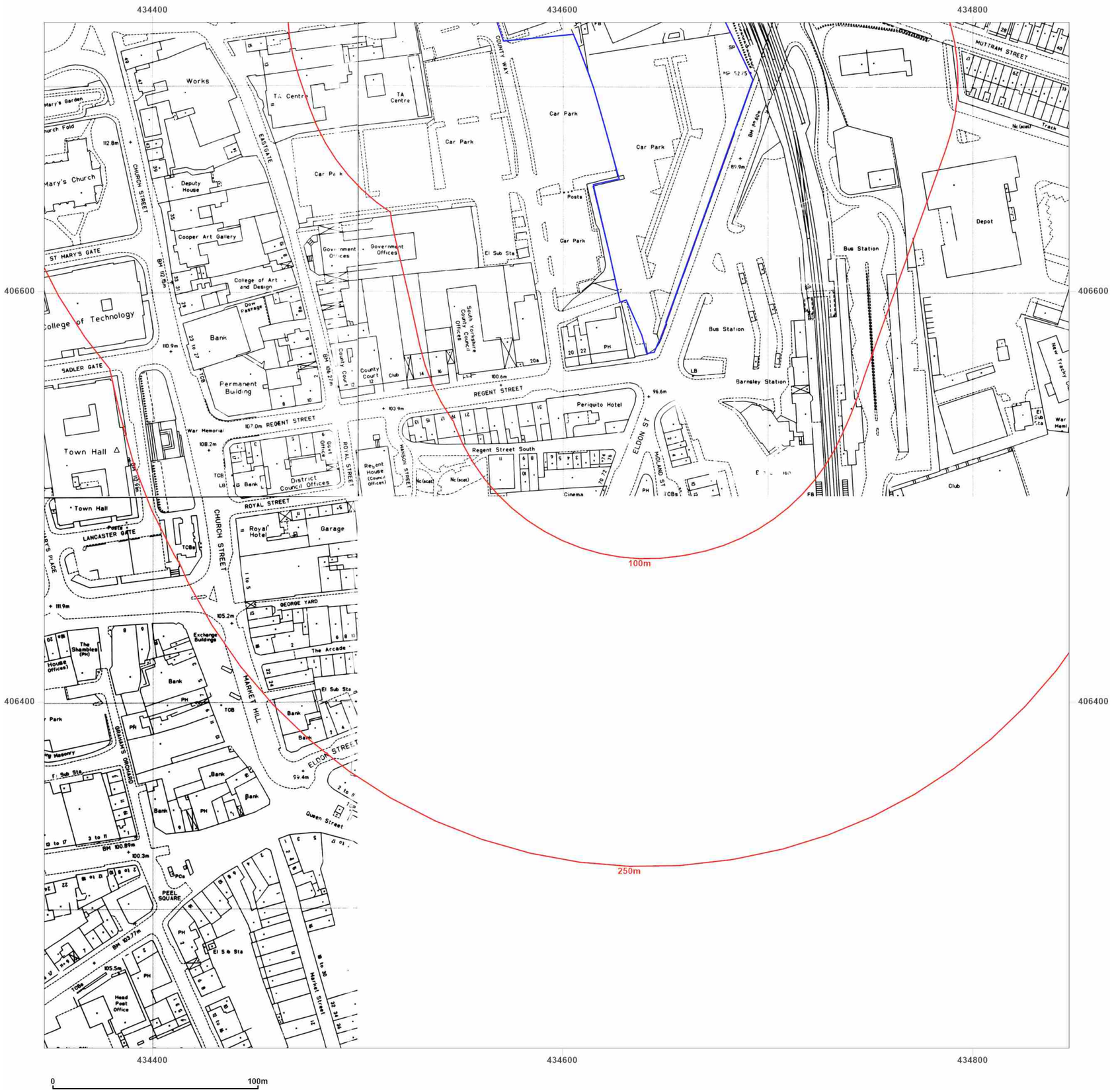
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Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

Map date: **1960-1961**

Scale: 1:1,250

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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

Map date: **1970-1975**

Scale: 1:1,250

Printed at: 1:2,000

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Site Details:

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Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

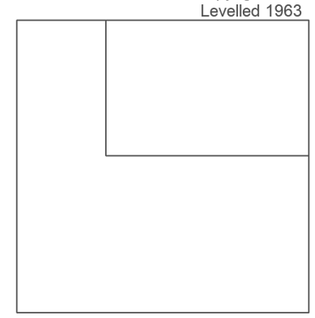
Map date: **1979**

Scale: 1:1,250

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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid
Map date: **1977-1981**
Scale: 1:1,250
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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

Map date: **1986-1991**

Scale: 1:1,250

Printed at: 1:2,000

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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

Map date: **1987-1991**

Scale: 1:1,250

Printed at: 1:2,000

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Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid
Map date: **1988-1993**
Scale: 1:1,250
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Report Ref: GS-8749395_1250_1_2
Grid Ref: 434597, 406981

Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

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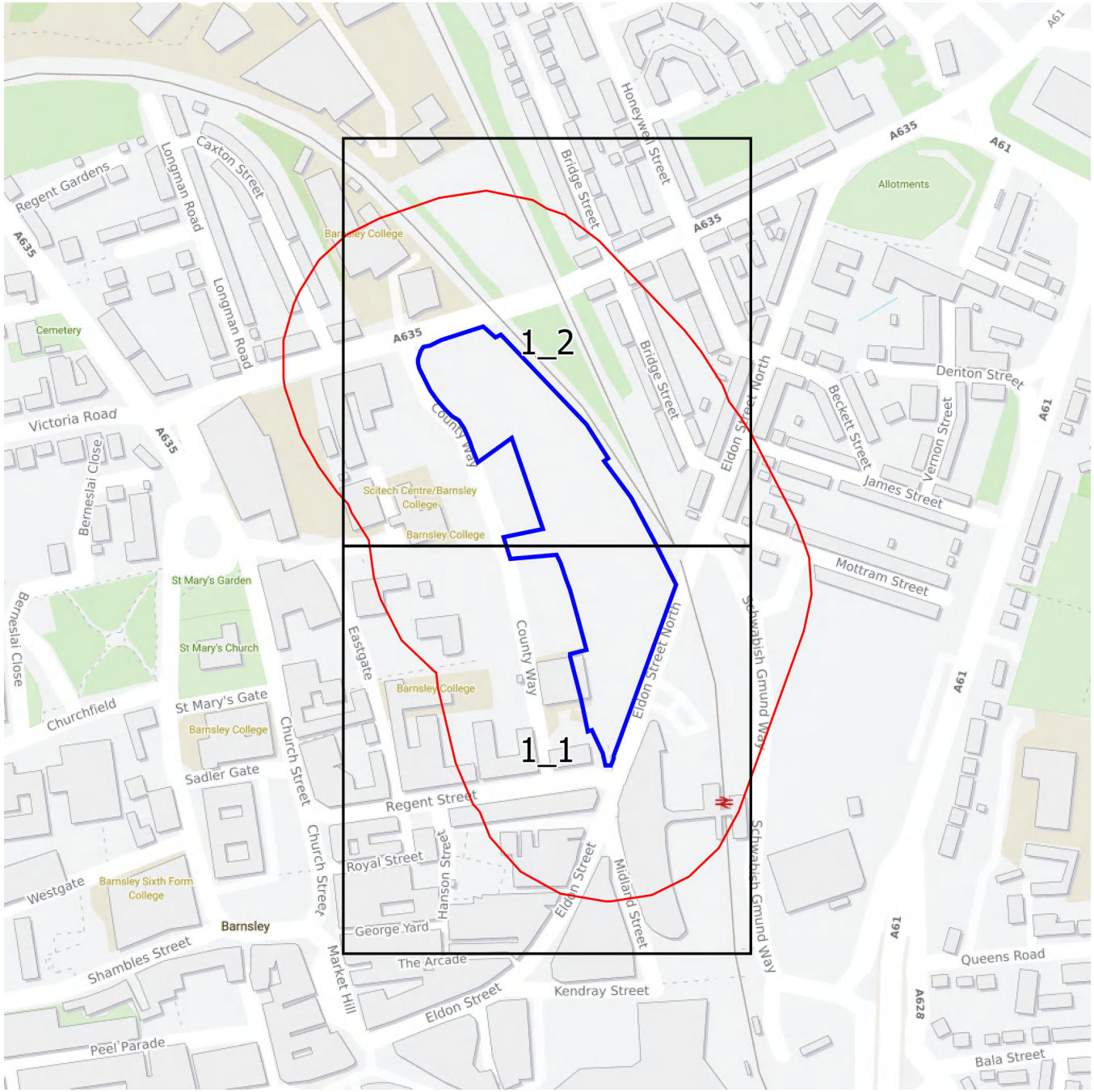
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Groundsure INSIGHTS

Landline Scale Grid Index





Groundsure INSIGHTS

Site Details:

COUNTY WAY, BARNSLEY, S70 2JW

Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_Landline_1_1
Grid Ref: 434598, 406581

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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Client Ref: 14063161_SEAM_PHASE_1
Report Ref: GS-8749395_Landline_1_2
Grid Ref: 434598, 406881

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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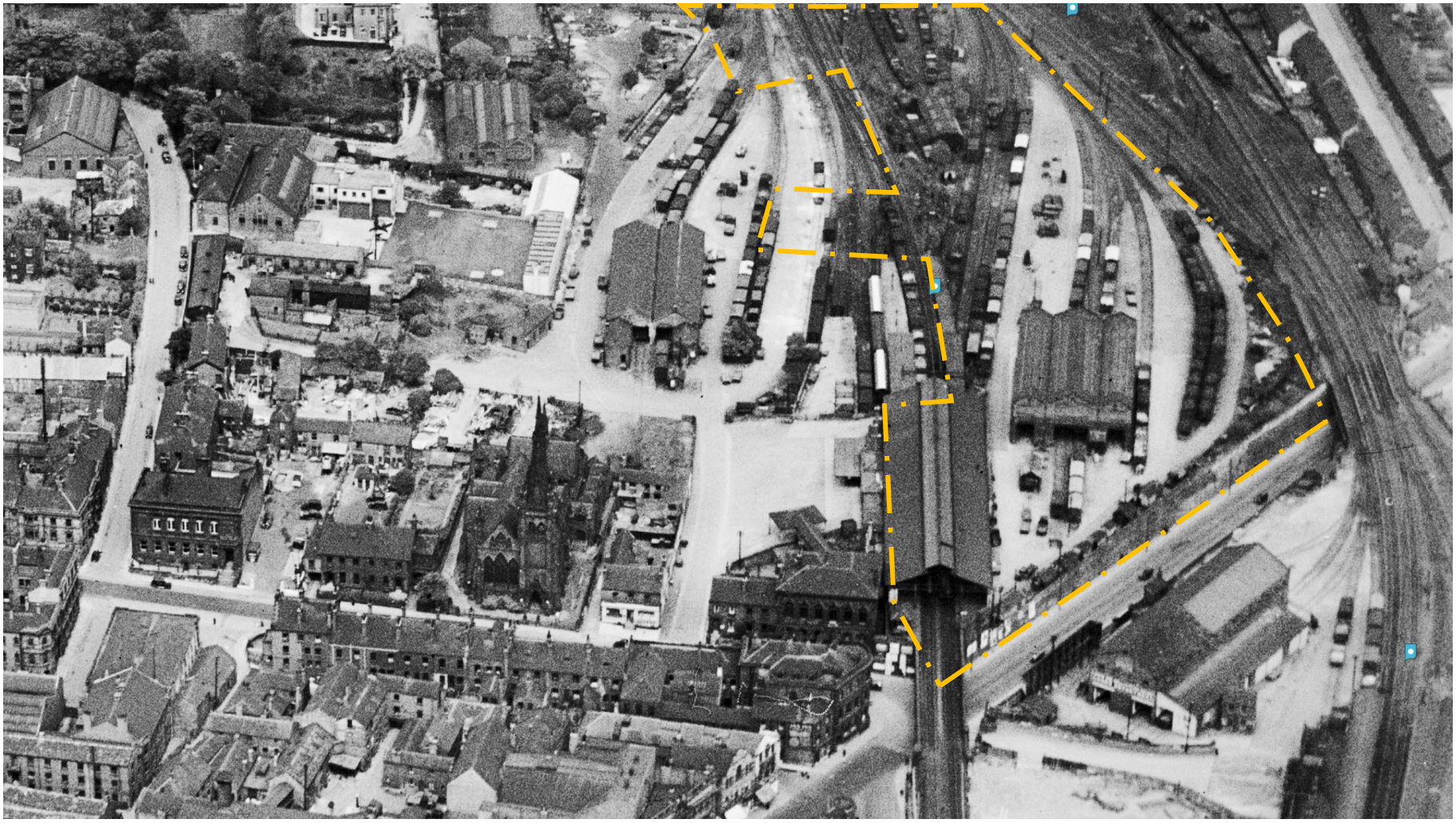
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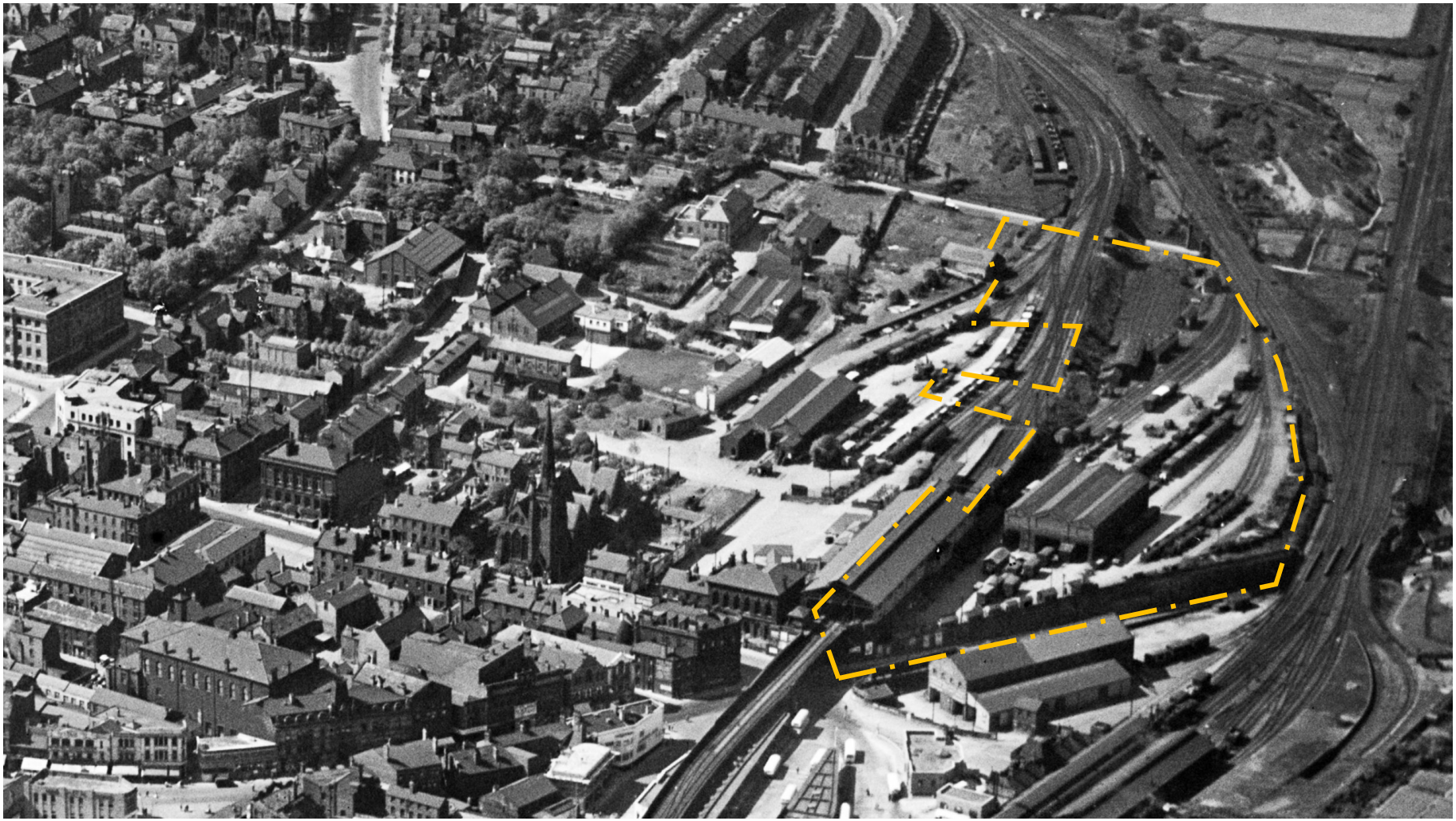
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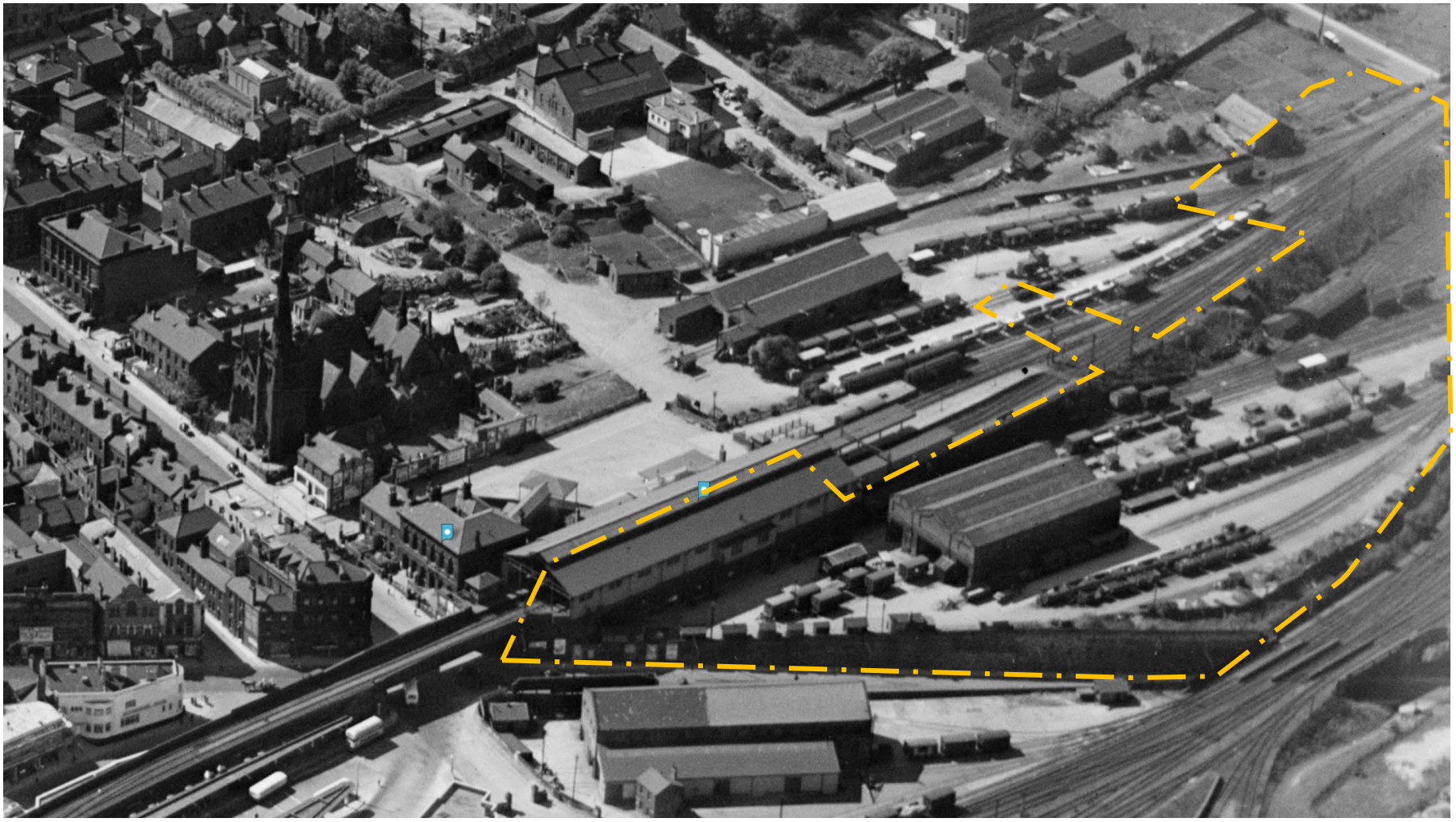
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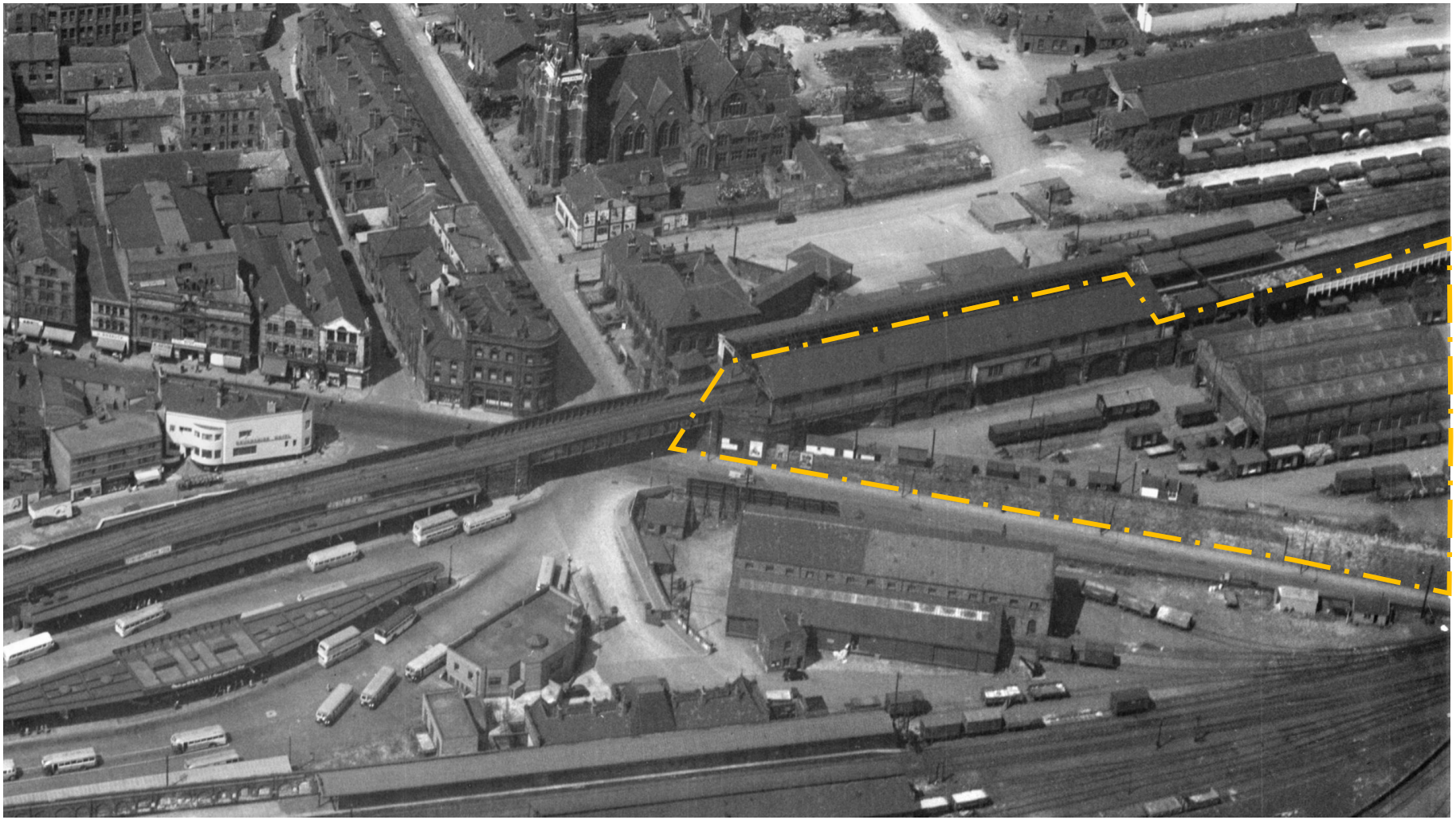
EPW057294 ENGLAND (1949). View looking north – BritainfromAbove.org.uk



EPW061494 ENGLAND (1939). View looking north-northwest – BritainfromAbove.org.uk



PW061490 ENGLAND (1939). View looking northwest – BritainfromAbove.org.uk



EAW024172 ENGLAND (1949). View looking West – BritainfromAbove.org.uk

Appendix C

Groundsure Insight Report

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

COUNTY WAY, BARNSLEY, S70 2JW

Order Details

Date: 16/05/2022

Your ref: 14063161_SEAM_PHASE_1

Our Ref: GS-8749396

Site Details

Location: 434634 406750

Area: 2.1 ha

Authority: Barnsley Metropolitan Borough Council



Summary of findings p. 2

OS MasterMap site plan p.13

Aerial image p. 8

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Contact us with any questions at:
info@groundsure.com
08444 159 000

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
14	1.1	Historical industrial land uses	32	29	56	88	-
22	1.2	Historical tanks	0	1	6	17	-
23	1.3	Historical energy features	0	4	9	40	-
25	1.4	Historical petrol stations	0	0	0	0	-
26	1.5	Historical garages	0	0	11	13	-
27	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
28	2.1	Historical industrial land uses	39	34	71	116	-
38	2.2	Historical tanks	0	1	8	27	-
39	2.3	Historical energy features	0	6	16	76	-
43	2.4	Historical petrol stations	0	0	0	0	-
43	2.5	Historical garages	0	0	16	24	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
46	3.1	Active or recent landfill	0	0	0	0	-
46	3.2	Historical landfill (BGS records)	0	0	0	0	-
47	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
47	3.4	Historical landfill (EA/NRW records)	0	0	1	1	-
47	3.5	Historical waste sites	0	0	0	5	-
48	3.6	Licensed waste sites	0	0	1	0	-
49	3.7	Waste exemptions	0	0	1	10	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
51	4.1	Recent industrial land uses	0	6	31	-	-
54	4.2	Current or recent petrol stations	0	0	0	1	-
54	4.3	Electricity cables	0	0	0	0	-
54	4.4	Gas pipelines	0	0	0	0	-
55	4.5	Sites determined as Contaminated Land	0	0	0	0	-

55	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
55	4.7	Regulated explosive sites	0	0	0	0	-
55	4.8	Hazardous substance storage/usage	0	0	0	0	-
55	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
56	**4.10**	**Licensed industrial activities (Part A(1))**	0	0	0	29	-
61	**4.11**	**Licensed pollutant release (Part A(2)/B)**	0	0	0	4	-
62	4.12	Radioactive Substance Authorisations	0	0	0	0	-
62	**4.13**	**Licensed Discharges to controlled waters**	0	0	3	5	-
64	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
64	4.15	Pollutant release to public sewer	0	0	0	0	-
64	4.16	List 1 Dangerous Substances	0	0	0	0	-
64	4.17	List 2 Dangerous Substances	0	0	0	0	-
65	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	0	2	-
65	4.19	Pollution inventory substances	0	0	0	0	-
65	4.20	Pollution inventory waste transfers	0	0	0	0	-
66	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
67	5.1	Superficial aquifer	None (within 500m)				
68	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
70	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
71	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
71	5.5	Groundwater vulnerability- local information	None (within 0m)				
72	**5.6**	**Groundwater abstractions**	0	0	0	0	5
74	**5.7**	**Surface water abstractions**	0	0	0	0	4
75	**5.8**	**Potable abstractions**	0	0	0	0	4
76	5.9	Source Protection Zones	0	0	0	0	-
77	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
78	**6.1**	**Water Network (OS MasterMap)**	0	0	2	-	-

79	6.2	Surface water features	0	0	1	-	-
79	6.3	WFD Surface water body catchments	1	-	-	-	-
79	6.4	WFD Surface water bodies	0	0	0	-	-
80	6.5	WFD Groundwater bodies	1	-	-	-	-

Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
81	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
81	7.2	Historical Flood Events	0	0	0	-	-
81	7.3	Flood Defences	0	0	0	-	-
82	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
82	7.5	Flood Storage Areas	0	0	0	-	-
83	7.6	Flood Zone 2	None (within 50m)				
83	7.7	Flood Zone 3	None (within 50m)				

Page	Section	Surface water flooding	
84	8.1	Surface water flooding	1 in 30 year, 0.1m - 0.3m (within 50m)

Page	Section	Groundwater flooding	
86	9.1	Groundwater flooding	Negligible (within 50m)

Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
87	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
88	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
88	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
88	10.4	Special Protection Areas (SPA)	0	0	0	0	0
88	10.5	National Nature Reserves (NNR)	0	0	0	0	0
89	10.6	Local Nature Reserves (LNR)	0	0	0	0	1
89	10.7	Designated Ancient Woodland	0	0	0	0	0
89	10.8	Biosphere Reserves	0	0	0	0	0
89	10.9	Forest Parks	0	0	0	0	0
90	10.10	Marine Conservation Zones	0	0	0	0	0
90	10.11	Green Belt	0	0	0	1	1
90	10.12	Proposed Ramsar sites	0	0	0	0	0

90	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
91	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
91	10.15	Nitrate Sensitive Areas	0	0	0	0	0
91	**10.16**	**Nitrate Vulnerable Zones**	1	0	0	1	2
92	**10.17**	**SSSI Impact Risk Zones**	2	-	-	-	-
93	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
94	11.1	World Heritage Sites	0	0	0	-	-
95	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
95	11.3	National Parks	0	0	0	-	-
95	**11.4**	**Listed Buildings**	0	2	23	-	-
97	**11.5**	**Conservation Areas**	1	0	1	-	-
97	11.6	Scheduled Ancient Monuments	0	0	0	-	-
97	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
98	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
99	12.2	Open Access Land	0	0	0	-	-
99	12.3	Tree Felling Licences	0	0	0	-	-
99	12.4	Environmental Stewardship Schemes	0	0	0	-	-
99	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
100	**13.1**	**Priority Habitat Inventory**	0	0	2	-	-
101	13.2	Habitat Networks	0	0	0	-	-
101	13.3	Open Mosaic Habitat	0	0	0	-	-
101	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
102	**14.1**	**10k Availability**	Identified (within 500m)				
103	**14.2**	**Artificial and made ground (10k)**	1	1	3	9	-
105	14.3	Superficial geology (10k)	0	0	0	0	-

105	14.4	Landslip (10k)	0	0	0	0	-
106	14.5	Bedrock geology (10k)	5	1	0	14	-
108	14.6	Bedrock faults and other linear features (10k)	3	0	9	15	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
110	15.1	50k Availability	Identified (within 500m)				
111	15.2	Artificial and made ground (50k)	1	0	1	1	-
112	15.3	Artificial ground permeability (50k)	1	0	-	-	-
113	15.4	Superficial geology (50k)	0	0	0	0	-
113	15.5	Superficial permeability (50k)	None (within 50m)				
113	15.6	Landslip (50k)	0	0	0	0	-
113	15.7	Landslip permeability (50k)	None (within 50m)				
114	15.8	Bedrock geology (50k)	3	0	0	4	-
115	15.9	Bedrock permeability (50k)	Identified (within 50m)				
115	15.10	Bedrock faults and other linear features (50k)	2	0	2	9	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
117	16.1	BGS Boreholes	8	7	77	-	-
Page	Section	Natural ground subsidence					
122	17.1	Shrink swell clays	Very low (within 50m)				
124	17.2	Running sands	Low (within 50m)				
126	17.3	Compressible deposits	Very low (within 50m)				
128	17.4	Collapsible deposits	Very low (within 50m)				
129	17.5	Landslides	Low (within 50m)				
131	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
133	18.1	Natural cavities	0	0	0	0	-
134	18.2	BritPits	0	0	0	2	-
134	18.3	Surface ground workings	2	4	15	-	-
135	18.4	Underground workings	0	0	0	5	3
136	18.5	Historical Mineral Planning Areas	0	0	0	0	-

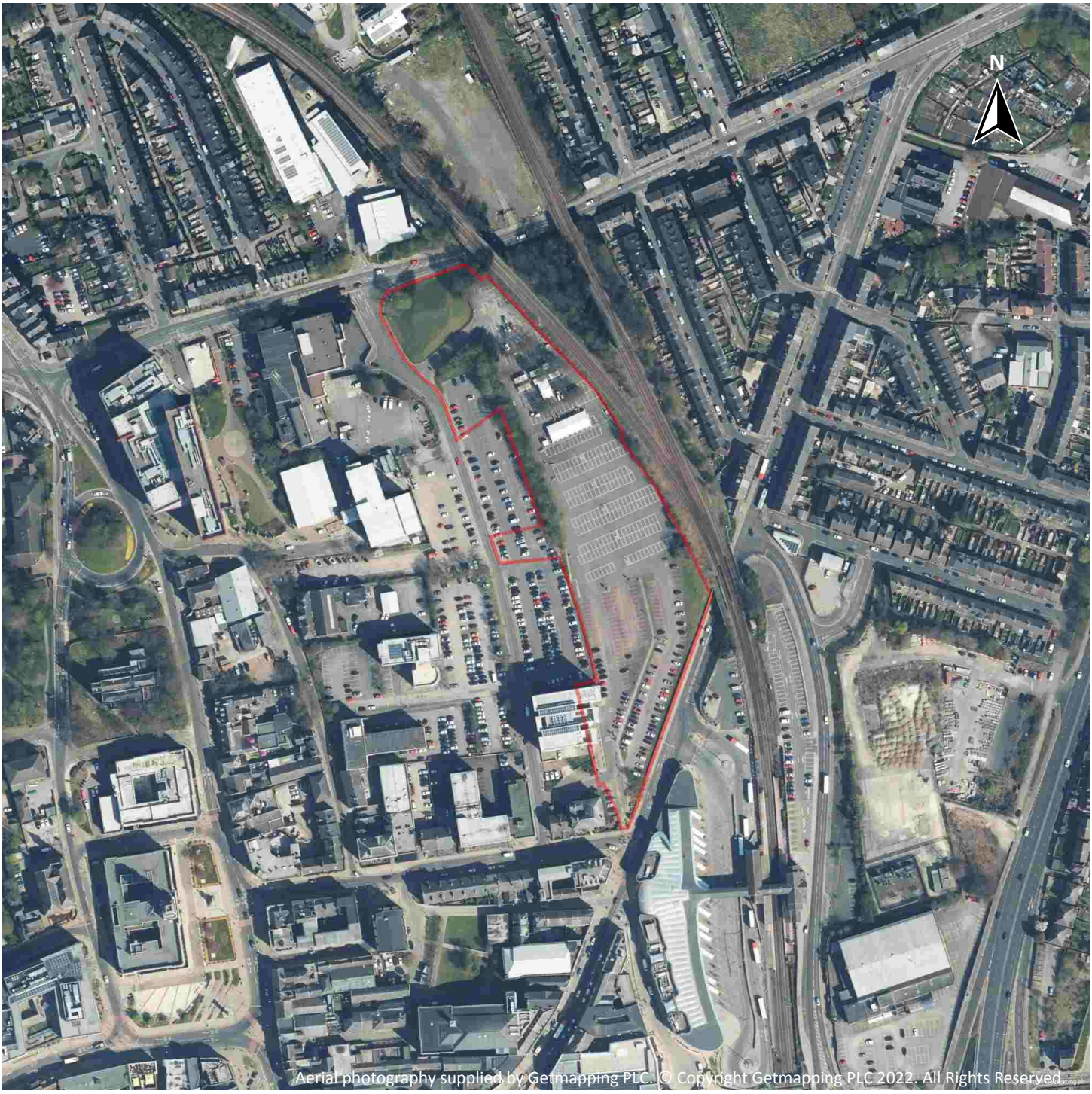
136	**18.6**	**Non-coal mining**	2	0	0	5	2
137	18.7	Mining cavities	0	0	0	0	0
137	18.8	JPB mining areas	None (within 0m)				
138	**18.9**	**Coal mining**	Identified (within 0m)				
138	18.10	Brine areas	None (within 0m)				
138	18.11	Gypsum areas	None (within 0m)				
138	18.12	Tin mining	None (within 0m)				
138	18.13	Clay mining	None (within 0m)				

Page	Section	Radon					
139	**19.1**	**Radon**	Less than 1% (within 0m)				

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
140	**20.1**	**BGS Estimated Background Soil Chemistry**	2	1	-	-	-
140	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
140	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
141	21.1	Underground railways (London)	0	0	0	-	-
141	21.2	Underground railways (Non-London)	0	0	0	-	-
142	21.3	Railway tunnels	0	0	0	-	-
142	**21.4**	**Historical railway and tunnel features**	20	17	16	-	-
144	21.5	Royal Mail tunnels	0	0	0	-	-
144	21.6	Historical railways	0	0	0	-	-
144	**21.7**	**Railways**	0	18	8	-	-
146	21.8	Crossrail 1	0	0	0	0	-
146	21.9	Crossrail 2	0	0	0	0	-
146	21.10	HS2	0	0	0	0	-

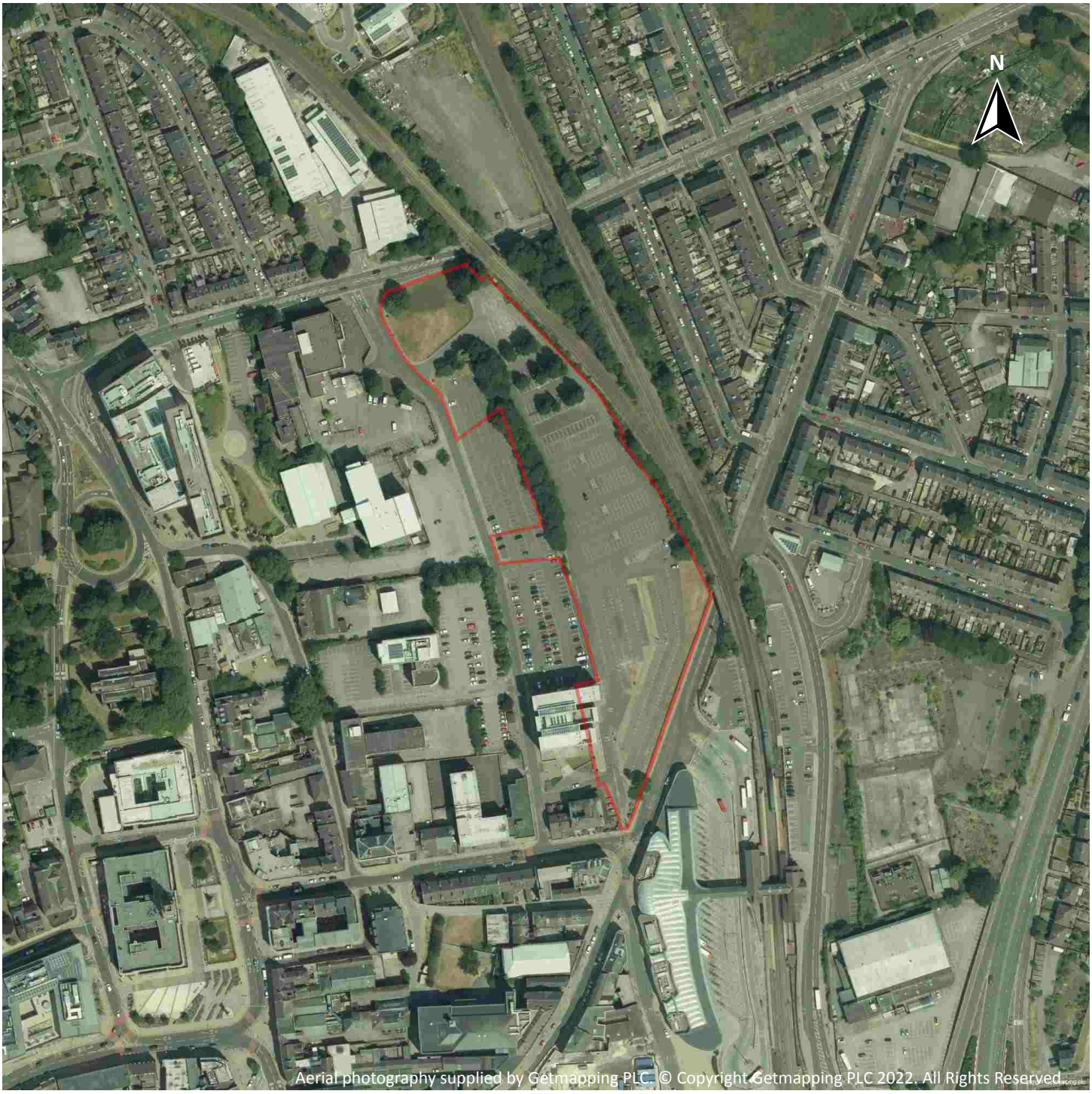
Recent aerial photograph



Capture Date: 19/04/2021

Site Area: 2.1ha

Recent site history - 2018 aerial photograph



Capture Date: 01/07/2018

Site Area: 2.1ha

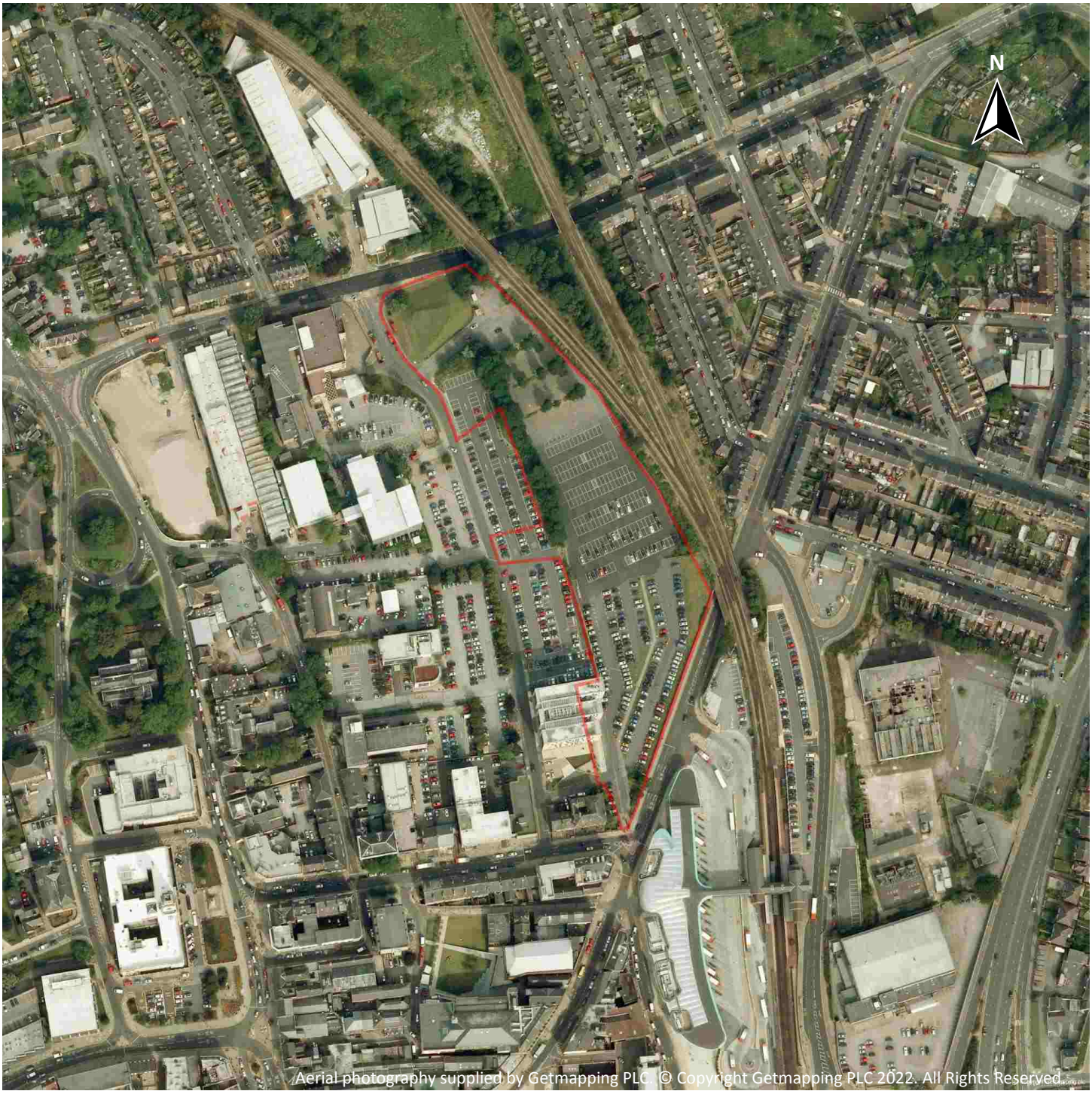
Recent site history - 2012 aerial photograph



Capture Date: 26/03/2012

Site Area: 2.1ha

Recent site history - 2009 aerial photograph



Capture Date: 11/09/2009

Site Area: 2.1ha

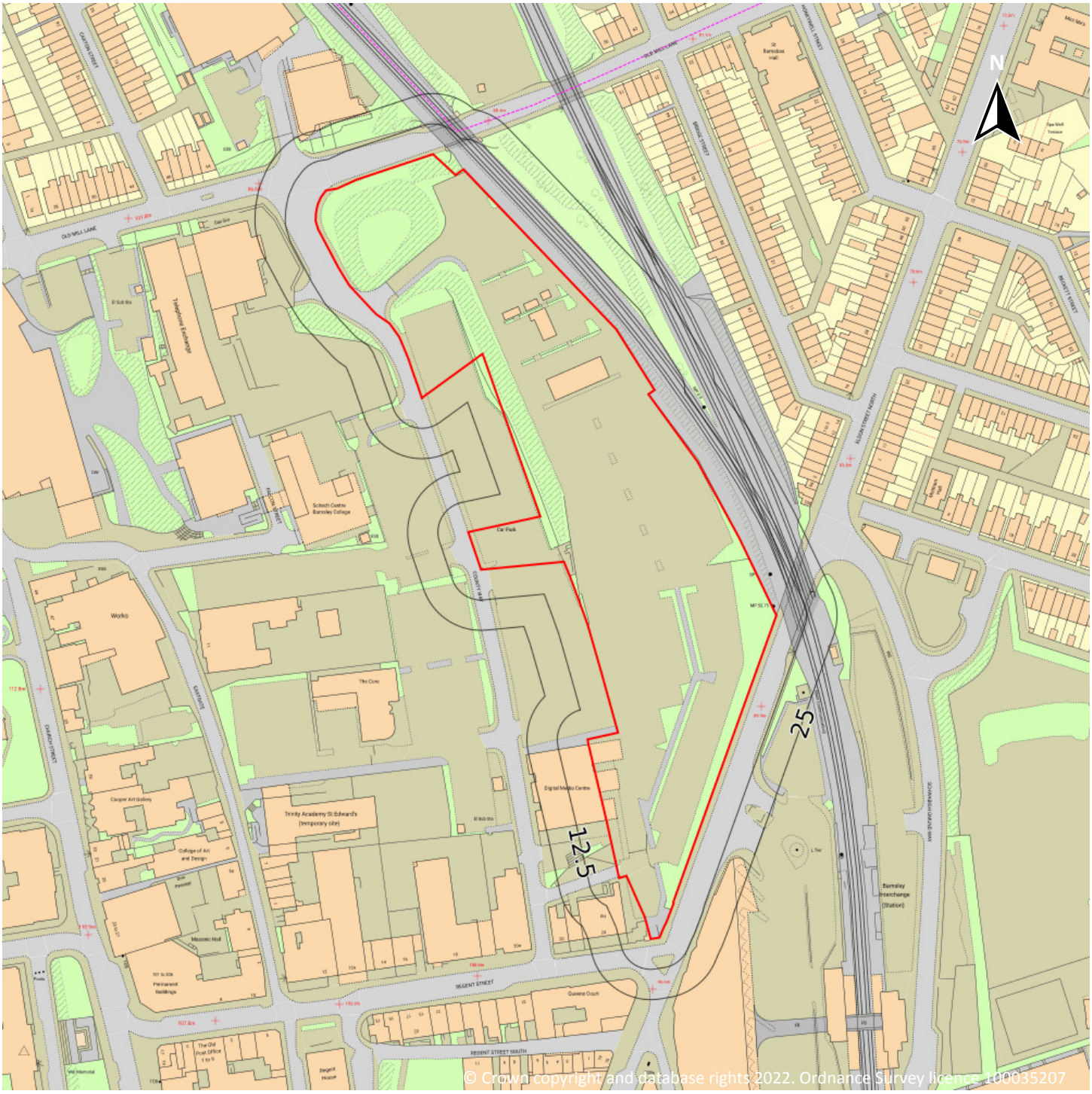
Recent site history - 1999 aerial photograph



Capture Date: 10/07/1999

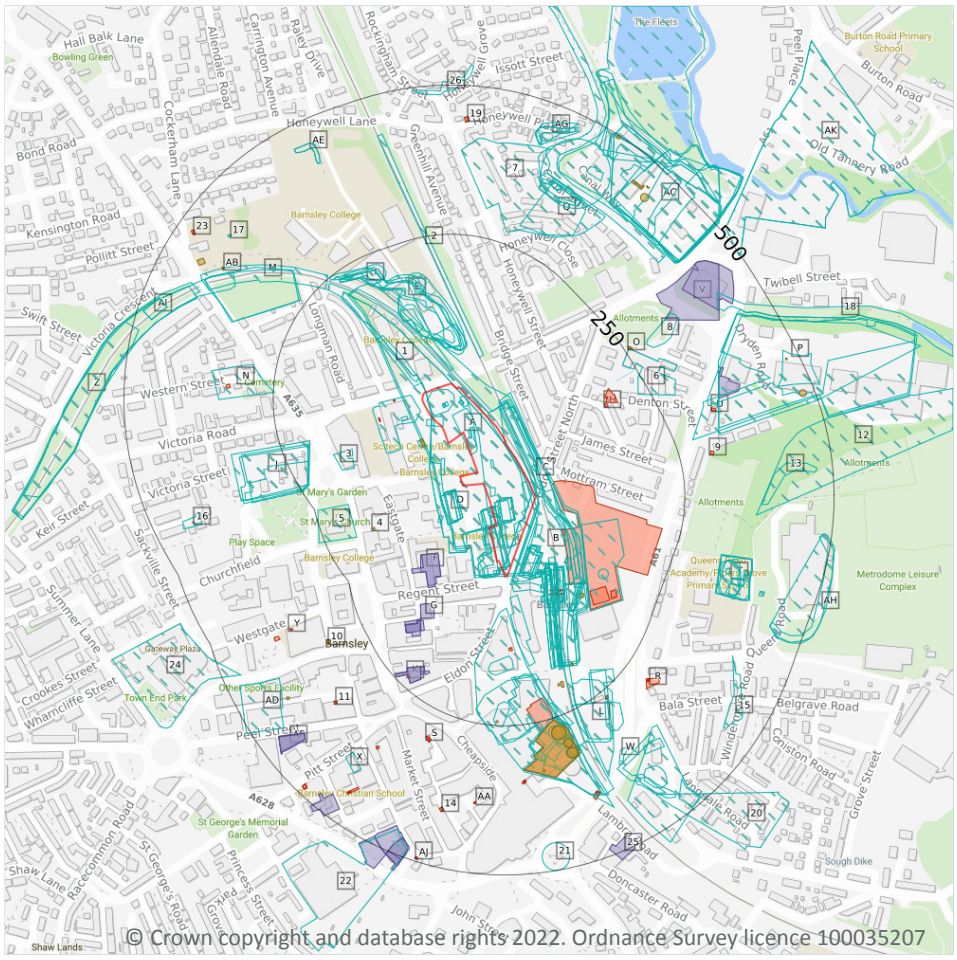
Site Area: 2.1ha

OS MasterMap site plan



Site Area: 2.1ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	205

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Cuttings**	**1890**	**1410356**

ID	Location	Land use	Dates present	Group ID
A	On site	Unspecified Heap	1993	1417630
A	On site	Railway Building	1966	1430498
A	On site	Railway Building	1904	1430500
A	On site	Railway Building	1938	1430501
A	On site	Railway Building	1966	1430503
A	On site	Unspecified Tank	1938	1435126
A	On site	Railway Buildings	1890	1442379
A	On site	Railway Station	1938 - 1948	1467685
A	On site	Railway Buildings	1938 - 1948	1468071
A	On site	Railway Station	1951	1468376
A	On site	Railway Building	1938 - 1948	1469963
A	On site	Railway Sidings	1948	1471279
A	On site	Railway Building	1948	1472736
A	On site	Railway Building	1938	1474499
A	On site	Railway Station	1904	1476529
A	On site	Railway Building	1966	1488500
A	On site	Railway Sidings	1850	1500006
A	On site	Railway Building	1890 - 1904	1503531
A	On site	Railway Building	1966	1510961
A	On site	Railway Building	1951	1511852
A	On site	Railway Sidings	1966	1513906
A	On site	Railway Building	1904	1514156
A	On site	Railway Building	1948	1515655
A	On site	Railway Building	1850	1519770
A	On site	Railway Sidings	1890 - 1904	1536553
A	On site	Railway Station	1890	1538447
A	On site	Railway Station	1966	1539294
A	On site	Railway Sidings	1938	1543396

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Railway Building**	**1890 - 1904**	**1544015**
A	**On site**	**Railway Sidings**	**1951**	**1550916**
B	**On site**	**Railway Sidings**	**1973 - 1982**	**1505771**
A	1m W	Railway Building	1904	1468697
B	2m E	Railway Sidings	1904	1488375
B	3m E	Railway Sidings	1890	1522365
B	5m E	Railway Sidings	1948	1481151
C	10m NE	Railway Sidings	1850 - 1993	1543469
A	11m SW	Telephone Exchange	1993	1435735
B	11m SE	Railway Building	1948	1430505
D	15m SW	Railway Building	1966	1479049
D	15m SW	Railway Building	1951	1541577
B	16m E	Railway Building	1904	1471494
B	16m E	Railway Building	1948	1492573
C	17m NE	Railway Building	1948	1430502
D	17m SW	Railway Building	1938	1499192
B	18m E	Railway Building	1966 - 1982	1462590
B	19m E	Railway Building	1890	1556184
B	20m E	Railway Buildings	1938	1485244
B	21m E	Railway Buildings	1951	1478117
B	21m E	Railway Buildings	1966	1541797
E	21m N	Unspecified Ground Workings	1850	1472637
D	22m SW	Railway Building	1890 - 1904	1470122
D	22m SW	Railway Building	1948	1502724
1	23m NW	Unspecified Ground Workings	1973	1414406
A	26m S	Railway Building	1938	1430499
A	34m SW	Railway Building	1890	1430497
A	35m SW	Unspecified Tank	1951	1435125

ID	Location	Land use	Dates present	Group ID
B	36m S	Railway Buildings	1966	1442383
A	37m SW	Unspecified Tanks	1904	1426408
B	42m E	Railway Building	1948	1430507
E	49m N	Unspecified Ground Workings	1938	1459083
B	52m E	Railway Station	1948	1467518
B	52m E	Railway Station	1904	1521212
B	53m S	Unspecified Commercial/Industrial	1948	1523801
B	55m E	Railway Station	1973 - 1993	1553102
B	55m E	Railway Station	1938	1517435
B	56m E	Railway Station	1951	1539075
E	56m N	Unspecified Ground Workings	1948 - 1951	1506544
E	58m N	Unspecified Quarry	1890	1428052
E	58m N	Unspecified Heap	1982	1463986
E	58m N	Unspecified Heap	1966 - 1973	1498816
B	59m E	Railway Station	1890	1486789
B	59m E	Railway Station	1966	1545661
E	61m N	Unspecified Ground Workings	1904	1472590
2	61m NE	Railway Sidings	1890	1409642
D	61m SW	Railway Building	1890	1430504
B	64m E	Railway Station	1850	1479191
B	69m E	Railway Building	1890 - 1904	1504947
B	69m E	Railway Building	1948	1512508
B	72m E	Railway Buildings	1938	1442384
B	74m E	Railway Building	1951	1472904
B	81m E	Railway Building	1904	1430508
B	87m E	Unspecified Depot	1973 - 1993	1501422
E	92m N	Unspecified Pit	1951	1537853
E	98m N	Unspecified Pit	1890	1523436

ID	Location	Land use	Dates present	Group ID
B	104m SE	Bus Station	1982	1456831
B	114m E	Railway Building	1948	1490979
B	118m E	Railway Building	1951	1502702
B	119m E	Railway Building	1966 - 1973	1514014
B	121m E	Unspecified Tank	1904	1435128
B	128m SE	Railway Sidings	1850	1536003
B	131m SE	Railway Building	1966 - 1973	1464430
B	134m S	Unspecified Tanks	1948	1426409
B	142m E	Unspecified Tank	1890	1435129
3	142m SW	Rescue Station	1938	1432834
B	151m SE	Railway Building	1904	1430506
E	159m N	Unspecified Heap	1982	1493854
B	167m S	Unspecified Commercial/Industrial	1951	1496602
B	169m S	Unspecified Commercial/Industrial	1938	1539745
B	173m S	Unspecified Commercial/Industrial	1904	1518217
B	179m S	Railway Sidings	1948 - 1951	1543613
5	193m W	Police Station	1966	1440637
I	200m N	Unspecified Heap	1904	1466771
I	200m N	Unspecified Heap	1948	1467237
J	200m W	Hospital	1966 - 1973	1550444
I	202m N	Unspecified Ground Workings	1951	1479022
J	205m W	Hospital	1951	1473612
J	207m W	Hospital	1938 - 1948	1555993
B	210m S	Unspecified Tanks	1948	1426410
L	210m SE	Lamp Works	1951	1492023
L	211m SE	Unspecified Works	1982 - 1993	1554094
L	213m SE	Lamp Works	1938 - 1948	1548749
J	217m SW	Hospital	1890 - 1904	1471630

ID	Location	Land use	Dates present	Group ID
6	231m NE	Unspecified Depot	1993	1428493
M	240m NW	Cuttings	1850	1513306
B	249m S	Unspecified Commercial/Industrial	1890	1515373
N	249m W	Colliery	1850	1412021
M	260m NW	Cuttings	1948	1513642
B	261m S	Unspecified Tank	1951	1544011
M	261m NW	Cuttings	1904	1555729
B	262m S	Unspecified Tank	1938 - 1948	1512102
B	263m S	Unspecified Tank	1890 - 1904	1487515
L	267m SE	Unspecified Heap	1904	1417621
7	270m N	Dock	1948	1508555
P	280m E	Glass Works	1904	1490294
B	286m S	Unspecified Tanks	1890	1426412
8	286m NE	Unspecified Pit	1951	1455315
B	288m S	Unspecified Works	1973	1438960
Q	288m NE	Dock Yard	1850	1414983
B	304m S	Unspecified Tank	1904	1435127
B	306m SE	Cuttings	1850	1410357
P	324m E	Unspecified Works	1966	1438941
T	326m E	Colliery	1951	1500752
T	326m E	Colliery	1948	1498533
T	326m E	Colliery	1938	1492589
P	327m NE	Glass Works	1938 - 1948	1551940
P	328m E	Glass Works	1951	1549173
T	331m E	Refuse Heap	1948 - 1951	1510251
T	334m E	Refuse Heaps	1938	1475269
T	336m E	Unspecified Heap	1966 - 1992	1501983
T	341m E	Unspecified Tank	1938 - 1948	1470838

ID	Location	Land use	Dates present	Group ID
W	348m SE	Unspecified Ground Workings	1973	1464266
Q	350m NE	Dock	1951	1503418
W	351m SE	Unspecified Works	1982	1468699
Q	351m NE	Dock Works	1948 - 1951	1461804
Q	352m NE	Dock Works	1938	1543111
T	355m E	Railway Sidings	1948 - 1951	1532888
W	356m SE	Unspecified Ground Workings	1904	1556100
T	357m E	Railway Sidings	1938	1509120
Q	359m NE	Unspecified Works	1966	1438955
Z	364m NW	Cuttings	1938	1542142
W	366m SE	Refuse Heap	1890	1438037
Q	369m NE	Dock	1938	1522786
Q	369m NE	Dock	1938	1524242
12	371m E	Unspecified Heap	1938	1553027
T	372m E	Drift	1938	1545260
T	373m E	Unspecified Drift	1948	1425689
T	373m E	Disused Air Shaft	1966	1440262
Q	379m NE	Disused Canal	1966	1471158
13	379m E	Unspecified Ground Workings	1904	1414439
X	389m SW	Hospital	1993	1443227
Q	395m NE	Paper Works	1948	1463230
AC	398m NE	Unspecified Mill	1982	1480178
AC	398m NE	Unspecified Mill	1973	1514094
W	398m SE	Unspecified Pit	1890	1455330
AC	400m NE	Unspecified Mill	1966	1514865
15	401m E	Unspecified Quarry	1890	1428048
W	402m SE	Unspecified Ground Workings	1966	1532123
AC	402m NE	Paper Works	1904	1503706

ID	Location	Land use	Dates present	Group ID
AC	404m NE	Paper Works	1938	1491347
AC	404m NE	Refuse Heap	1904	1437989
T	407m E	Unspecified Drift	1951	1425690
AC	408m NE	Tannery	1890	1456331
AC	408m NE	Paper Works	1951	1498759
Z	412m NW	Cuttings	1890 - 1904	1492705
Z	412m NW	Cuttings	1948 - 1951	1531459
AD	414m SW	Unspecified Mill	1850	1421672
16	416m SW	Unspecified Windmill	1850	1425692
17	417m NW	Unspecified Pump	1850	1456731
Q	419m NE	Dock	1938	1507412
18	420m NE	Disused Canal	1966	1469588
AE	423m NW	Unspecified Heap	1966	1417631
AE	423m NW	Unspecified Ground Workings	1973 - 1993	1506332
AG	427m N	Unspecified Ground Workings	1948	1489147
AG	427m N	Unspecified Ground Workings	1904	1540860
AG	428m N	Unspecified Ground Workings	1938	1544119
AG	434m N	Unspecified Pit	1951	1455317
AH	442m E	Unspecified Ground Workings	1948	1414438
AH	442m E	Unspecified Heap	1938	1470558
20	443m SE	Metal Works	1904	1457532
P	446m NE	Colliery	1850	1412019
W	448m SE	Unspecified Works	1993	1550369
AI	454m W	Cuttings	1973	1459919
AI	454m W	Cuttings	1966	1521410
21	454m S	Unspecified Pit	1982 - 1993	1461542
Q	458m NE	Railway Sidings	1938 - 1948	1469996
22	460m SW	Unspecified Works	1973 - 1982	1548793

ID	Location	Land use	Dates present	Group ID
Q	461m NE	Refuse Heap	1948	1437990
Q	461m NE	Refuse Heaps	1938	1508737
Q	463m NE	Railway Sidings	1951	1492803
24	469m SW	Unspecified Works	1966	1484924
26	484m N	Unspecified Ground Workings	1904	1414405
Z	489m W	Cuttings	1966 - 1993	1543788
AK	497m NE	Unspecified Commercial/Industrial	1948	1411003
AK	497m NE	Gas Works	1904	1414874

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**24**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
A	37m SW	Tanks	1906	232708
B	125m E	Unspecified Tank	1893 - 1906	235227
4	164m SW	Unspecified Tank	1893	228924
B	181m SE	Unspecified Tank	1977	228925
B	199m SE	Unspecified Tank	1960 - 1961	242580
B	199m SE	Unspecified Tank	1906	228926
B	242m S	Unspecified Tank	1906	228927
B	253m S	Gas Works	1893 - 1906	235181
O	257m NE	Unspecified Tank	1986	234119
O	258m NE	Unspecified Tank	1972 - 1987	233903

ID	Location	Land use	Dates present	Group ID
B	265m S	Gasometer	1893 - 1906	240308
B	291m S	Gasometer	1893	229689
B	307m S	Gasometer	1893 - 1906	235372
10	312m SW	Unspecified Tank	1984 - 1993	245287
AB	395m NW	Unspecified Tank	1906	228901
AD	414m SW	Unspecified Tank	1893 - 1906	237939
AB	427m NW	Unspecified Tank	1960	233580
AC	438m NE	Unspecified Tank	1960 - 1970	243662
AC	449m NE	Tanks	1970	232716
AC	450m NE	Tanks	1970	232713
AC	460m NE	Unspecified Tank	1970	228934
P	475m E	Unspecified Tank	1892	228929
P	477m NE	Unspecified Tank	1892	228931
Q	494m NE	Unspecified Tank	1989 - 1991	246699

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m **53**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
B	34m NE	Electricity Board Depot	1972	131838
A	39m W	Electricity Substation	1972 - 1987	138074
A	46m W	Gas Governor	1988	133337
A	46m W	Gas Governor	1986	133358

ID	Location	Land use	Dates present	Group ID
A	77m W	Electricity Substation	1988	131088
B	120m S	Electricity Substation	1977 - 1996	145346
B	139m E	Electricity Substation	1987	131120
B	172m E	Electricity Substation	1986	131119
H	173m NE	Electricity Substation	1986	131093
H	177m NE	Electricity Substation	1987	131092
B	212m S	Electricity Works	1906	131789
K	228m SW	Electricity Substation	1993	136995
K	228m SW	Electricity Substation	1968 - 1991	139257
B	253m S	Gas Works	1893 - 1906	144561
L	260m SE	Gas Governor	1977 - 1991	143954
L	260m SE	Gas Governor	1996	146285
B	265m S	Gasometer	1893 - 1906	141441
R	290m SE	Electricity Substation	1977	132739
B	291m S	Gasometer	1893	131546
R	293m SE	Electricity Substation	1991	132325
R	293m SE	Electricity Substation	1987	132572
R	293m SE	Electricity Substation	1996	132819
S	296m SW	Electricity Substation	1987 - 1996	143877
S	298m SW	Electricity Substation	1977	144450
9	300m E	Electricity Substation	1972 - 1987	137626
B	307m S	Gasometer	1893 - 1906	142979
N	323m W	Electricity Substation	1981 - 1988	139379
U	328m NE	Electricity Substation	1987	131091
B	330m S	Electricity Substation	1996	131118
B	342m S	Electricity Substation	1996	144426
B	343m S	Electricity Substation	1987 - 1991	141637
B	345m S	Electricity Substation	1977	139462

ID	Location	Land use	Dates present	Group ID
11	350m SW	Electricity Substation	1968 - 1993	146530
X	354m SW	Electricity Substation	1991 - 1993	142360
Y	360m W	Electricity Substation	1968	131122
AA	380m S	Electricity Substation	1996	133406
AA	381m S	Electricity Substation	1991	132324
AA	381m S	Electricity Substation	1987	133622
AA	382m S	Electricity Substation	1977	133915
Y	386m W	Electricity Substation	1981 - 1982	136833
B	390m SE	Gas Governor	1996	136640
B	390m SE	Gas Governor	1987 - 1991	137951
B	391m SE	Electricity Substation	1977	131117
14	400m S	Electricity Substation	1977 - 1996	135916
X	430m SW	Electricity Substation	1993	133360
19	438m N	Electricity Substation	1970 - 1991	135191
X	443m SW	Electricity Substation	1981 - 1991	146312
X	443m SW	Electricity Substation	1984	133916
X	443m SW	Electricity Substation	1968	132737
23	467m NW	Electricity Substation	1975 - 1991	142798
X	481m SW	Electricity Substation	1993	139775
X	483m SW	Electricity Substation	1968 - 1991	142060
AJ	492m S	Electricity Substation	1991 - 1993	140602

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	**24**

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 14**

ID	Location	Land use	Dates present	Group ID
F	93m W	Garage	1961 - 1972	45058
F	94m W	Garage	1960	43808
G	128m W	Garage	1972	41500
G	155m SW	Garage	1960	41677
G	158m SW	Garage	1993	44103
G	159m SW	Garage	1961 - 1984	44472
G	159m SW	Garage	1991	42811
G	159m SW	Garage	1981 - 1982	46238
K	202m SW	Garage	1960	43448
K	203m SW	Garage	1961	44630
K	207m SW	Garage	1960	43195
V	334m NE	Garage	1970 - 1973	45658
U	348m NE	Garage	1983 - 1989	46290
V	387m NE	Garage	1979 - 1981	45186
AF	426m SW	Garage	1960	42561
AF	426m SW	Garage	1993	42891
AF	426m SW	Garage	1961 - 1991	46484
AJ	455m SW	Garage	1960 - 1961	46914
X	464m SW	Garage	1984	41512
AJ	470m S	Garage	1968	43599

ID	Location	Land use	Dates present	Group ID
AJ	470m S	Garage	1981 - 1982	46126
25	479m SE	Garage	1960 - 1961	45819
AJ	487m SW	Garage	1984	42153
AJ	499m SW	Garage	1984	42466

This data is sourced from Ordnance Survey / Groundsure.

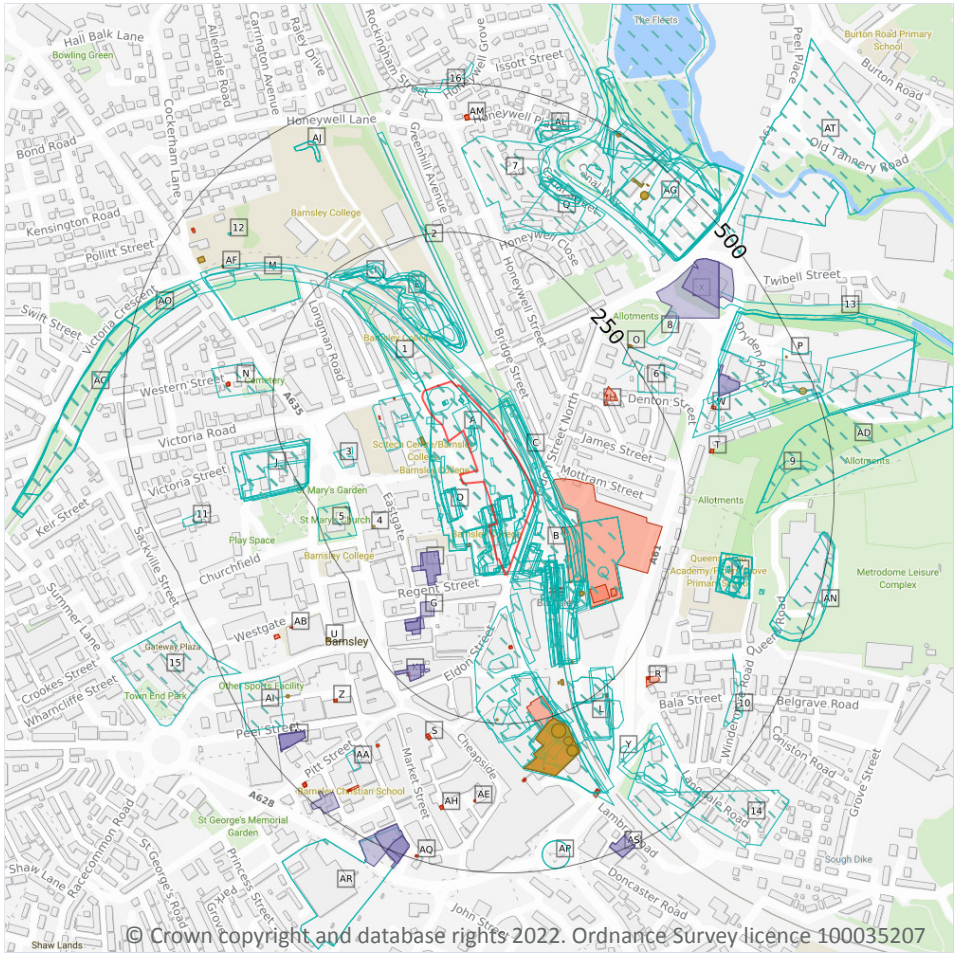
1.6 Historical military land

Records within 500m	**0**

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	260

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 28**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Cuttings**	**1890**	**1410356**
A	**On site**	**Railway Sidings**	**1850**	**1500006**
A	**On site**	**Railway Building**	**1850**	**1519770**

ID	Location	Land Use	Date	Group ID
A	On site	Unspecified Heap	1993	1417630
A	On site	Railway Sidings	1966	1513906
A	On site	Railway Station	1966	1539294
A	On site	Railway Building	1966	1488500
A	On site	Railway Building	1966	1510961
A	On site	Railway Building	1966	1430498
A	On site	Railway Building	1966	1430503
A	On site	Railway Sidings	1948	1471279
A	On site	Railway Building	1948	1472736
A	On site	Railway Building	1948	1515655
A	On site	Railway Building	1948	1469963
A	On site	Railway Buildings	1948	1468071
A	On site	Railway Station	1948	1467685
A	On site	Railway Station	1904	1476529
A	On site	Railway Sidings	1904	1536553
A	On site	Railway Building	1904	1503531
A	On site	Railway Building	1904	1544015
A	On site	Railway Building	1904	1430500
A	On site	Railway Building	1904	1514156
A	On site	Railway Sidings	1951	1550916
A	On site	Railway Building	1951	1511852
A	On site	Railway Station	1951	1468376
A	On site	Unspecified Tank	1938	1435126
A	On site	Railway Station	1938	1467685
A	On site	Railway Sidings	1938	1543396
A	On site	Railway Building	1938	1469963
A	On site	Railway Buildings	1938	1468071
A	On site	Railway Building	1938	1474499

ID	Location	Land Use	Date	Group ID
A	**On site**	**Railway Building**	**1938**	**1430501**
A	**On site**	**Railway Sidings**	**1890**	**1536553**
A	**On site**	**Railway Building**	**1890**	**1503531**
A	**On site**	**Railway Building**	**1890**	**1544015**
A	**On site**	**Railway Station**	**1890**	**1538447**
A	**On site**	**Railway Buildings**	**1890**	**1442379**
B	**On site**	**Railway Sidings**	**1973**	**1505771**
B	**On site**	**Railway Sidings**	**1982**	**1505771**
A	1m W	Railway Building	1904	1468697
B	2m E	Railway Sidings	1904	1488375
B	3m E	Railway Sidings	1890	1522365
B	5m E	Railway Sidings	1948	1481151
C	10m NE	Railway Sidings	1993	1543469
A	11m SW	Telephone Exchange	1993	1435735
B	11m SE	Railway Building	1948	1430505
D	15m SW	Railway Building	1966	1479049
D	15m SW	Railway Building	1951	1541577
B	16m E	Railway Building	1948	1492573
B	16m E	Railway Building	1904	1471494
C	17m NE	Railway Building	1948	1430502
D	17m SW	Railway Building	1938	1499192
B	18m E	Railway Building	1973	1462590
B	18m E	Railway Building	1966	1462590
B	18m E	Railway Building	1982	1462590
B	19m E	Railway Sidings	1850	1543469
B	19m E	Railway Building	1890	1556184
B	20m E	Railway Buildings	1938	1485244
B	21m E	Railway Buildings	1966	1541797

ID	Location	Land Use	Date	Group ID
B	21m E	Railway Buildings	1951	1478117
E	21m N	Unspecified Ground Workings	1850	1472637
D	22m SW	Railway Building	1948	1502724
D	22m SW	Railway Building	1904	1470122
D	22m SW	Railway Building	1890	1470122
1	23m NW	Unspecified Ground Workings	1973	1414406
A	26m S	Railway Building	1938	1430499
A	34m SW	Railway Building	1890	1430497
A	35m SW	Unspecified Tank	1951	1435125
B	36m S	Railway Buildings	1966	1442383
A	37m SW	Unspecified Tanks	1904	1426408
B	42m E	Railway Building	1948	1430507
E	49m N	Unspecified Ground Workings	1938	1459083
E	49m N	Unspecified Ground Workings	1938	1459083
B	52m E	Railway Station	1948	1467518
B	52m E	Railway Station	1904	1521212
B	53m S	Unspecified Commercial/Industrial	1948	1523801
B	55m E	Railway Station	1993	1553102
B	55m E	Railway Station	1973	1553102
B	55m E	Railway Station	1982	1553102
B	55m E	Railway Station	1938	1517435
B	56m E	Railway Station	1951	1539075
E	56m N	Unspecified Ground Workings	1951	1506544
E	58m N	Unspecified Quarry	1890	1428052
E	58m N	Unspecified Heap	1973	1498816
E	58m N	Unspecified Heap	1966	1498816
E	58m N	Unspecified Heap	1982	1463986
B	59m E	Railway Station	1890	1486789

ID	Location	Land Use	Date	Group ID
B	59m E	Railway Station	1966	1545661
E	61m N	Unspecified Ground Workings	1948	1506544
E	61m N	Unspecified Ground Workings	1904	1472590
2	61m NE	Railway Sidings	1890	1409642
D	61m SW	Railway Building	1890	1430504
B	64m E	Railway Station	1850	1479191
B	69m E	Railway Building	1948	1512508
B	69m E	Railway Building	1904	1504947
B	72m E	Railway Building	1890	1504947
B	72m E	Railway Buildings	1938	1442384
B	74m E	Railway Building	1951	1472904
B	81m E	Railway Building	1904	1430508
B	87m E	Unspecified Depot	1993	1501422
B	87m E	Unspecified Depot	1973	1501422
B	87m E	Unspecified Depot	1982	1501422
E	92m N	Unspecified Pit	1951	1537853
E	98m N	Unspecified Pit	1890	1523436
B	104m SE	Bus Station	1982	1456831
B	114m E	Railway Building	1948	1490979
B	118m E	Railway Building	1951	1502702
B	119m E	Railway Building	1973	1514014
B	119m E	Railway Building	1966	1514014
B	121m E	Unspecified Tank	1904	1435128
B	128m SE	Railway Sidings	1850	1536003
B	131m SE	Railway Building	1973	1464430
B	131m SE	Railway Building	1966	1464430
B	134m S	Unspecified Tanks	1948	1426409
B	142m E	Unspecified Tank	1890	1435129

ID	Location	Land Use	Date	Group ID
3	142m SW	Rescue Station	1938	1432834
B	151m SE	Railway Building	1904	1430506
E	159m N	Unspecified Heap	1982	1493854
B	167m S	Unspecified Commercial/Industrial	1951	1496602
B	169m S	Unspecified Commercial/Industrial	1938	1539745
B	173m S	Unspecified Commercial/Industrial	1904	1518217
B	179m S	Railway Sidings	1951	1543613
5	193m W	Police Station	1966	1440637
B	195m S	Railway Sidings	1948	1543613
I	200m N	Unspecified Heap	1948	1467237
I	200m N	Unspecified Heap	1904	1466771
J	200m W	Hospital	1973	1550444
J	200m W	Hospital	1966	1550444
I	202m N	Unspecified Ground Workings	1951	1479022
J	205m W	Hospital	1951	1473612
J	207m W	Hospital	1938	1555993
J	209m W	Hospital	1948	1555993
B	210m S	Unspecified Tanks	1948	1426410
L	210m SE	Lamp Works	1951	1492023
L	211m SE	Unspecified Works	1993	1554094
L	211m SE	Unspecified Works	1982	1554094
L	213m SE	Lamp Works	1948	1548749
J	217m SW	Hospital	1890	1471630
J	222m SW	Hospital	1904	1471630
6	231m NE	Unspecified Depot	1993	1428493
M	240m NW	Cuttings	1850	1513306
L	243m SE	Lamp Works	1938	1548749
B	249m S	Unspecified Commercial/Industrial	1890	1515373

ID	Location	Land Use	Date	Group ID
N	249m W	Colliery	1850	1412021
M	260m NW	Cuttings	1948	1513642
B	261m S	Unspecified Tank	1951	1544011
M	261m NW	Cuttings	1904	1555729
B	262m S	Unspecified Tank	1938	1512102
B	263m S	Unspecified Tank	1948	1512102
B	263m S	Unspecified Tank	1904	1487515
B	263m S	Unspecified Tank	1890	1487515
L	267m SE	Unspecified Heap	1904	1417621
7	270m N	Dock	1948	1508555
P	280m E	Glass Works	1904	1490294
B	286m S	Unspecified Tanks	1890	1426412
8	286m NE	Unspecified Pit	1951	1455315
B	288m S	Unspecified Works	1973	1438960
Q	288m NE	Dock Yard	1850	1414983
B	304m S	Unspecified Tank	1904	1435127
B	306m SE	Cuttings	1850	1410357
P	324m E	Unspecified Works	1966	1438941
V	326m E	Colliery	1951	1500752
V	326m E	Colliery	1948	1498533
V	326m E	Colliery	1938	1492589
V	326m E	Colliery	1938	1492589
P	327m NE	Glass Works	1938	1551940
P	328m E	Glass Works	1951	1549173
V	331m E	Refuse Heap	1951	1510251
V	332m E	Refuse Heap	1948	1510251
V	334m E	Refuse Heaps	1938	1475269
V	334m E	Refuse Heaps	1938	1475269

ID	Location	Land Use	Date	Group ID
V	336m E	Unspecified Heap	1992	1501983
V	336m E	Unspecified Heap	1982	1501983
V	336m E	Unspecified Heap	1974	1501983
V	336m E	Unspecified Heap	1966	1501983
V	341m E	Unspecified Tank	1948	1470838
V	344m E	Unspecified Tank	1938	1470838
Y	348m SE	Unspecified Ground Workings	1973	1464266
Q	350m NE	Dock	1951	1503418
Y	351m SE	Unspecified Works	1982	1468699
Q	351m NE	Dock Works	1948	1461804
Q	352m NE	Dock Works	1938	1543111
V	355m E	Railway Sidings	1951	1532888
Y	356m SE	Unspecified Ground Workings	1904	1556100
V	357m E	Railway Sidings	1938	1509120
V	358m E	Railway Sidings	1948	1532888
Q	359m NE	Dock Works	1951	1461804
Q	359m NE	Unspecified Works	1966	1438955
AC	364m NW	Cuttings	1938	1542142
Y	366m SE	Refuse Heap	1890	1438037
Q	369m NE	Dock	1938	1522786
Q	369m NE	Dock	1938	1524242
AD	371m E	Unspecified Heap	1938	1553027
AD	371m E	Unspecified Heap	1938	1553027
V	372m E	Drift	1938	1545260
V	372m E	Drift	1938	1545260
V	373m E	Unspecified Drift	1948	1425689
V	373m E	Disused Air Shaft	1966	1440262
Q	379m NE	Disused Canal	1966	1471158

ID	Location	Land Use	Date	Group ID
9	379m E	Unspecified Ground Workings	1904	1414439
AA	389m SW	Hospital	1993	1443227
P	390m NE	Glass Works	1948	1551940
Q	395m NE	Paper Works	1948	1463230
AG	398m NE	Unspecified Mill	1973	1514094
AG	398m NE	Unspecified Mill	1982	1480178
Y	398m SE	Unspecified Pit	1890	1455330
AG	400m NE	Unspecified Mill	1966	1514865
10	401m E	Unspecified Quarry	1890	1428048
Y	402m SE	Unspecified Ground Workings	1966	1532123
AG	402m NE	Paper Works	1904	1503706
AG	404m NE	Paper Works	1938	1491347
AG	404m NE	Refuse Heap	1904	1437989
V	407m E	Unspecified Drift	1951	1425690
AG	408m NE	Tannery	1890	1456331
AG	408m NE	Paper Works	1951	1498759
AC	412m NW	Cuttings	1948	1531459
AC	412m NW	Cuttings	1904	1492705
AC	412m NW	Cuttings	1890	1492705
AC	413m NW	Cuttings	1951	1531459
AI	414m SW	Unspecified Mill	1850	1421672
11	416m SW	Unspecified Windmill	1850	1425692
12	417m NW	Unspecified Pump	1850	1456731
Q	419m NE	Dock	1938	1507412
Q	419m NE	Dock	1938	1507412
13	420m NE	Disused Canal	1966	1469588
AJ	423m NW	Unspecified Ground Workings	1993	1506332
AJ	423m NW	Unspecified Ground Workings	1973	1506332

ID	Location	Land Use	Date	Group ID
AJ	423m NW	Unspecified Heap	1966	1417631
AJ	423m NW	Unspecified Ground Workings	1982	1506332
AL	427m N	Unspecified Ground Workings	1948	1489147
AL	427m N	Unspecified Ground Workings	1904	1540860
AL	428m N	Unspecified Ground Workings	1938	1544119
AL	428m N	Unspecified Ground Workings	1938	1544119
AL	434m N	Unspecified Pit	1951	1455317
AN	442m E	Unspecified Ground Workings	1948	1414438
AN	442m E	Unspecified Heap	1938	1470558
AN	442m E	Unspecified Heap	1938	1470558
14	443m SE	Metal Works	1904	1457532
P	446m NE	Colliery	1850	1412019
Y	448m SE	Unspecified Works	1993	1550369
AO	454m W	Cuttings	1973	1459919
AO	454m W	Cuttings	1966	1521410
AP	454m S	Unspecified Pit	1993	1461542
AP	454m S	Unspecified Pit	1982	1461542
Q	458m NE	Railway Sidings	1948	1469996
Q	459m NE	Railway Sidings	1938	1469996
AR	460m SW	Unspecified Works	1973	1548793
AR	460m SW	Unspecified Works	1982	1548793
Q	461m NE	Refuse Heap	1948	1437990
Q	461m NE	Refuse Heaps	1938	1508737
Q	461m NE	Refuse Heaps	1938	1508737
Q	463m NE	Railway Sidings	1951	1492803
15	469m SW	Unspecified Works	1966	1484924
16	484m N	Unspecified Ground Workings	1904	1414405
AC	489m W	Cuttings	1993	1543788

ID	Location	Land Use	Date	Group ID
AC	489m W	Cuttings	1973	1543788
AC	489m W	Cuttings	1966	1543788
AC	489m W	Cuttings	1982	1543788
AT	497m NE	Unspecified Commercial/Industrial	1948	1411003
AT	497m NE	Gas Works	1904	1414874

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m **36**

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 28**

ID	Location	Land Use	Date	Group ID
A	37m SW	Tanks	1906	232708
B	125m E	Unspecified Tank	1893	235227
B	125m E	Unspecified Tank	1906	235227
4	164m SW	Unspecified Tank	1893	228924
B	181m SE	Unspecified Tank	1977	228925
B	199m SE	Unspecified Tank	1960	242580
B	199m SE	Unspecified Tank	1961	242580
B	199m SE	Unspecified Tank	1906	228926
B	242m S	Unspecified Tank	1906	228927
B	253m S	Gas Works	1893	235181
B	253m S	Gas Works	1906	235181
O	257m NE	Unspecified Tank	1986	234119
O	258m NE	Unspecified Tank	1972	233903
O	258m NE	Unspecified Tank	1987	233903
B	265m S	Gasometer	1893	240308

ID	Location	Land Use	Date	Group ID
B	265m S	Gasometer	1906	240308
B	291m S	Gasometer	1893	229689
B	307m S	Gasometer	1893	235372
B	307m S	Gasometer	1906	235372
U	312m SW	Unspecified Tank	1993	245287
U	312m SW	Unspecified Tank	1984	245287
AF	395m NW	Unspecified Tank	1906	228901
AI	414m SW	Unspecified Tank	1893	237939
AI	414m SW	Unspecified Tank	1906	237939
AF	427m NW	Unspecified Tank	1960	233580
AF	427m NW	Unspecified Tank	1960	233580
AG	438m NE	Unspecified Tank	1960	243662
AG	438m NE	Unspecified Tank	1970	243662
AG	438m NE	Unspecified Tank	1960	243662
AG	449m NE	Tanks	1970	232716
AG	450m NE	Tanks	1970	232713
AG	460m NE	Unspecified Tank	1970	228934
P	475m E	Unspecified Tank	1892	228929
P	477m NE	Unspecified Tank	1892	228931
Q	494m NE	Unspecified Tank	1989	246699
Q	494m NE	Unspecified Tank	1991	246699

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**98**

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 28**

ID	Location	Land Use	Date	Group ID
B	34m NE	Electricity Board Depot	1972	131838
A	39m W	Electricity Substation	1972	138074
A	39m W	Electricity Substation	1987	138074
A	39m W	Electricity Substation	1986	138074
A	46m W	Gas Governor	1988	133337
A	46m W	Gas Governor	1986	133358
A	77m W	Electricity Substation	1988	131088
B	120m S	Electricity Substation	1987	145346
B	120m S	Electricity Substation	1991	145346
B	120m S	Electricity Substation	1977	145346
B	120m S	Electricity Substation	1996	145346
B	139m E	Electricity Substation	1987	131120
B	172m E	Electricity Substation	1986	131119
H	173m NE	Electricity Substation	1986	131093
H	177m NE	Electricity Substation	1987	131092
B	212m S	Electricity Works	1906	131789
K	228m SW	Electricity Substation	1993	136995
K	228m SW	Electricity Substation	1968	139257
K	229m SW	Electricity Substation	1984	139257
K	229m SW	Electricity Substation	1981	139257
K	229m SW	Electricity Substation	1982	139257
K	229m SW	Electricity Substation	1991	139257
B	253m S	Gas Works	1893	144561
B	253m S	Gas Works	1906	144561
L	260m SE	Gas Governor	1996	146285
L	260m SE	Gas Governor	1987	143954
L	260m SE	Gas Governor	1991	143954
L	261m SE	Gas Governor	1977	143954

ID	Location	Land Use	Date	Group ID
B	265m S	Gasometer	1893	141441
B	265m S	Gasometer	1906	141441
R	290m SE	Electricity Substation	1977	132739
B	291m S	Gasometer	1893	131546
R	293m SE	Electricity Substation	1987	132572
R	293m SE	Electricity Substation	1991	132325
R	293m SE	Electricity Substation	1996	132819
S	296m SW	Electricity Substation	1987	143877
S	296m SW	Electricity Substation	1991	143877
S	296m SW	Electricity Substation	1996	143877
S	298m SW	Electricity Substation	1977	144450
T	300m E	Electricity Substation	1986	137626
T	301m E	Electricity Substation	1972	137626
T	301m E	Electricity Substation	1987	137626
B	307m S	Gasometer	1893	142979
B	307m S	Gasometer	1906	142979
N	323m W	Electricity Substation	1981	139379
N	323m W	Electricity Substation	1986	139379
N	324m W	Electricity Substation	1988	139379
N	324m W	Electricity Substation	1987	139379
W	328m NE	Electricity Substation	1987	131091
B	330m S	Electricity Substation	1996	131118
B	342m S	Electricity Substation	1996	144426
B	343m S	Electricity Substation	1987	141637
B	343m S	Electricity Substation	1991	141637
B	345m S	Electricity Substation	1977	139462
Z	350m SW	Electricity Substation	1968	146530
Z	351m SW	Electricity Substation	1981	146530

ID	Location	Land Use	Date	Group ID
Z	351m SW	Electricity Substation	1982	146530
Z	351m SW	Electricity Substation	1991	146530
Z	351m SW	Electricity Substation	1984	146530
Z	351m SW	Electricity Substation	1993	146530
AA	354m SW	Electricity Substation	1991	142360
AA	354m SW	Electricity Substation	1993	142360
AB	360m W	Electricity Substation	1968	131122
AE	380m S	Electricity Substation	1996	133406
AE	381m S	Electricity Substation	1987	133622
AE	381m S	Electricity Substation	1991	132324
AE	382m S	Electricity Substation	1977	133915
AB	386m W	Electricity Substation	1981	136833
AB	386m W	Electricity Substation	1982	136833
B	390m SE	Gas Governor	1996	136640
B	390m SE	Gas Governor	1987	137951
B	390m SE	Gas Governor	1991	137951
B	391m SE	Electricity Substation	1977	131117
AH	400m S	Electricity Substation	1996	135916
AH	401m S	Electricity Substation	1987	135916
AH	401m S	Electricity Substation	1991	135916
AH	401m S	Electricity Substation	1977	135916
AA	430m SW	Electricity Substation	1993	133360
AM	438m N	Electricity Substation	1970	135191
AM	439m N	Electricity Substation	1979	135191
AM	439m N	Electricity Substation	1981	135191
AM	439m N	Electricity Substation	1989	135191
AM	439m N	Electricity Substation	1991	135191
AA	443m SW	Electricity Substation	1981	146312

ID	Location	Land Use	Date	Group ID
AA	443m SW	Electricity Substation	1982	146312
AA	443m SW	Electricity Substation	1991	146312
AA	443m SW	Electricity Substation	1984	133916
AA	443m SW	Electricity Substation	1968	132737
AF	467m NW	Electricity Substation	1975	142798
AF	470m NW	Electricity Substation	1991	142798
AA	481m SW	Electricity Substation	1993	139775
AA	483m SW	Electricity Substation	1984	142060
AA	483m SW	Electricity Substation	1981	142060
AA	483m SW	Electricity Substation	1982	142060
AA	483m SW	Electricity Substation	1991	142060
AA	484m SW	Electricity Substation	1968	142060
AQ	492m S	Electricity Substation	1993	140602
AQ	493m S	Electricity Substation	1991	140602

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	40

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

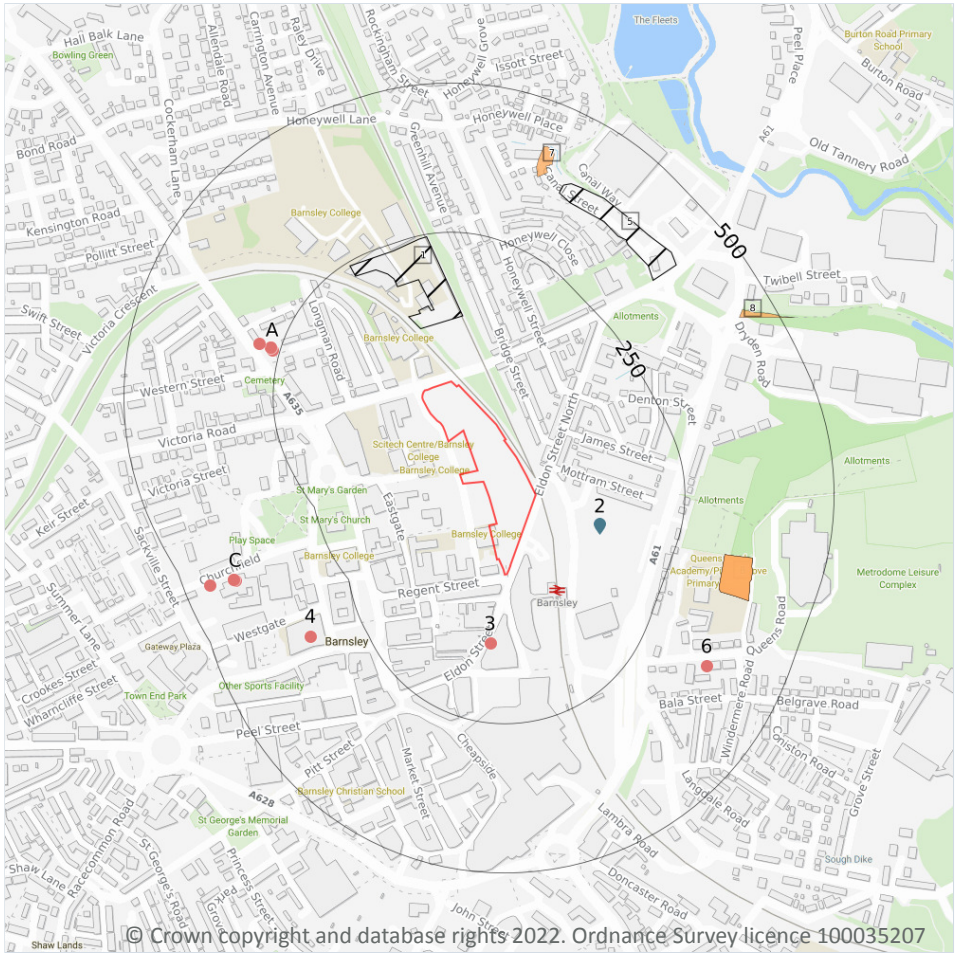
Features are displayed on the Past land use - un-grouped map on **page 28**

ID	Location	Land Use	Date	Group ID
F	93m W	Garage	1972	45058
F	93m W	Garage	1961	45058
F	94m W	Garage	1960	43808
G	128m W	Garage	1972	41500
G	155m SW	Garage	1960	41677
G	158m SW	Garage	1993	44103
G	159m SW	Garage	1968	44472
G	159m SW	Garage	1961	44472
G	159m SW	Garage	1984	44472
G	159m SW	Garage	1981	46238
G	159m SW	Garage	1982	46238
G	159m SW	Garage	1991	42811
K	202m SW	Garage	1960	43448
K	203m SW	Garage	1961	44630
K	207m SW	Garage	1961	44630
K	207m SW	Garage	1960	43195
X	334m NE	Garage	1970	45658
W	348m NE	Garage	1983	46290
W	349m NE	Garage	1989	46290
X	387m NE	Garage	1979	45186
X	387m NE	Garage	1981	45186
AK	426m SW	Garage	1993	42891
AK	426m SW	Garage	1960	42561
AK	426m SW	Garage	1981	46484
AK	426m SW	Garage	1982	46484
AK	426m SW	Garage	1991	46484
AK	427m SW	Garage	1968	46484
AK	427m SW	Garage	1961	46484

ID	Location	Land Use	Date	Group ID
AK	427m SW	Garage	1984	46484
X	430m NE	Garage	1973	45658
AQ	455m SW	Garage	1960	46914
AQ	455m SW	Garage	1961	46914
AA	464m SW	Garage	1984	41512
AQ	470m S	Garage	1968	43599
AQ	470m S	Garage	1981	46126
AQ	470m S	Garage	1982	46126
AS	479m SE	Garage	1961	45819
AS	480m SE	Garage	1960	45819
AQ	487m SW	Garage	1984	42153
AQ	499m SW	Garage	1984	42466

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



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3.1 Active or recent landfill

Records within 500m	0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m	0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m	2

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

Features are displayed on the Waste and landfill map on **page 46**

ID	Location	Details		
1	99m N	Site Address: Land off Old Mill Lane, Town Centre, Barnsley Licence Holder Address: c/o Twibell Plant Limited, Twibell Street, Barnsley	Waste Licence: Yes Site Reference: WD20 B446 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 14/11/1984 Licence Surrender: 30/03/1994	Operator: Mr M White Licence Holder: White and Peace First Recorded 30/11/1984 Last Recorded: 31/12/1989
5	356m NE	Site Address: Disused Canal, Old Mill Lane, Barnsley Licence Holder Address: -	Waste Licence: - Site Reference: 4400/(22) Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Barnsley Metropolitan Borough Council Licence Holder: Barnsley Metropolitan Borough Council First Recorded - Last Recorded: -

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m	5

Waste site records derived from Local Authority planning records and high detail historical mapping.

Features are displayed on the Waste and landfill map on **page 46**

ID	Location	Address	Further Details	Date
B	332m E	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1983
B	332m E	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1989
B	332m E	Site Address: N/A	Type of Site: Scrap Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1990
7	371m NE	Site Address: N/A	Type of Site: Scrap Metal Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1970
8	440m NE	Site Address: N/A	Type of Site: Scrap Metal Yard Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1972

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.

3.6 Licensed waste sites

Records within 500m	**1**

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

Features are displayed on the Waste and landfill map on **page 46**

ID	Location	Details		
2	118m E	Site Name: - Site Address: Harborough Hill Road, Harborough, Barnsley, South Yorkshire, S71 1BD Correspondence Address: -	Type of Site: - Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: YOR005 EPR reference: EA/EPR/JP3390ZX/S002 Operator: Yorkshire Electricity Waste Management licence No: 60598 Annual Tonnage: 0	Issue Date: 14/09/1992 Effective Date: - Modified: - Surrendered Date: May 13 1999 12:00AM Expiry Date: - Cancelled Date: - Status: Surrendered

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

Records within 500m **11**

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

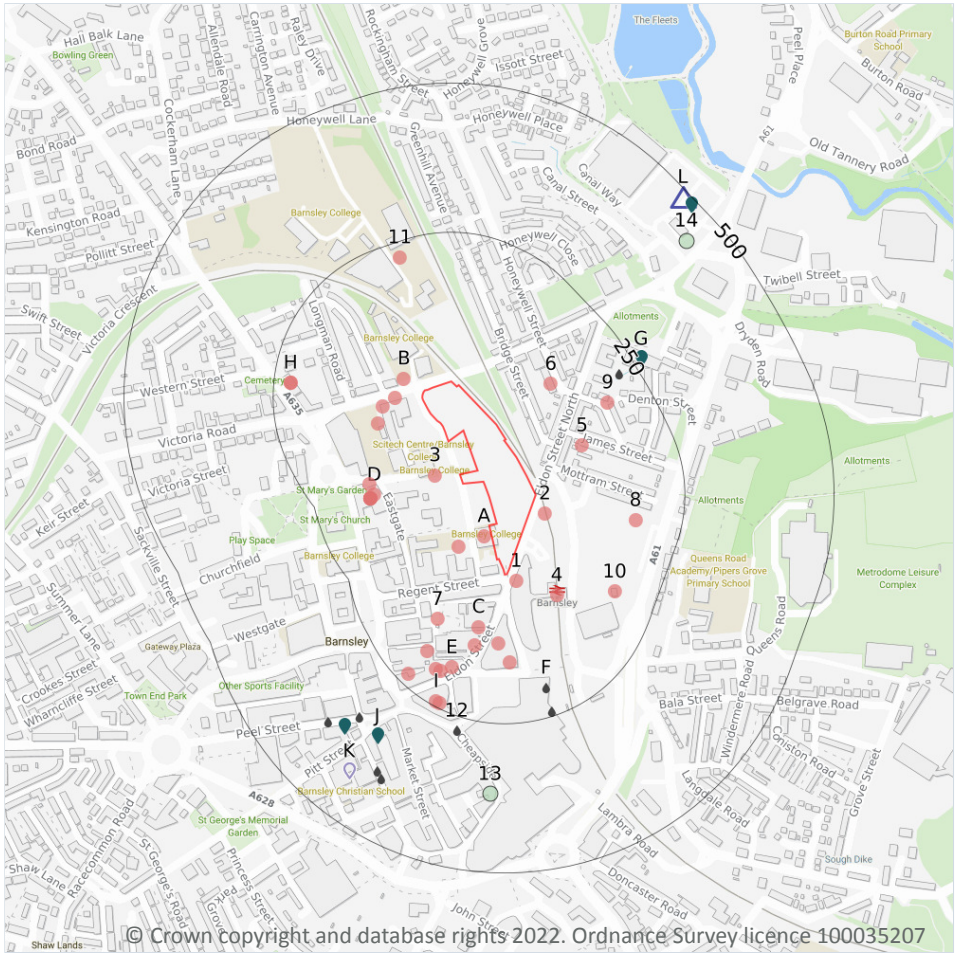
Features are displayed on the Waste and landfill map on **page 46**

ID	Location	Site	Reference	Category	Sub-Category	Description
3	119m S	25, ELDON STREET, BARNSLEY, S70 2JJ	WEX283128	Treating waste exemption	Not on a farm	Screening and blending of waste
A	263m W	Lo's Pharmacy Ltd t/a Ellison's Chemists 17 Huddersfield Road Barnsley S70 2LT	EPR/ZE5185VL/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
A	266m W	COCKERHAM HALL, 17, HUDDERSFIELD ROAD, BARNSLEY, S70 2LT	WEX072784	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	266m W	COCKERHAM HALL, 17, HUDDERSFIELD ROAD, BARNSLEY, S70 2LT	WEX024856	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
A	287m W	COCKERHAM HALL mews, 17, HUDDERSFIELD ROAD, BARNSLEY, S70 2LT	WEX184452	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
4	339m SW	Barnsley College 6th Form Centre Shambles Street S70 2JF	EPR/QF0303SM/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
6	369m SE	25 Queens Road BARNSLEY South Yorkshire S71 1AN	EPR/BE5780NY/A001	Using waste exemption	Non-Agricultural Waste Only	Use of depolluted end-of-life vehicles for vehicle parts
C	415m SW	Barnsley HQ Police Station Churchfield BARNSLEY S70 2DL	EPR/EE5644ZN/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal
C	418m SW	SUB DIVISIONAL HEADQUARTERS, CHURCHFIELD, BARNSLEY, S70 2DL	WEX271413	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	418m SW	SUB DIVISIONAL HEADQUARTERS, CHURCHFIELD, BARNSLEY, S70 2DL	WEX131360	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	459m W	Barnsley Custody Suite Churchfields Barnsley South Yorkshire S70 2DQ	EPR/ZF0803NA/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction

This data is sourced from the Environment Agency and Natural Resources Wales.

4 Current industrial land use



4.1 Recent industrial land uses

Records within 250m	37

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Company	Address	Activity	Category
A	13m W	Tyre Store	4th Floor Digital Media Centre, County Way, Barnsley, South Yorkshire, S70 2JW	Vehicle Parts and Accessories	Motoring
1	19m SE	S Y P T E Barnsley Interchange	Barnsley Transport Interchange, Midland Street, Barnsley, South Yorkshire, S70 1SE	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure

ID	Location	Company	Address	Activity	Category
2	25m E	Mast (Communication)	South Yorkshire, S71	Telecommunications Features	Infrastructure and Facilities
B	40m NW	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
3	42m W	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
B	46m W	Gas Governor Station	South Yorkshire, S70	Gas Features	Infrastructure and Facilities
A	59m W	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
B	68m W	Telephone Exchange	South Yorkshire, S70	Telecommunications Features	Infrastructure and Facilities
B	85m SW	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
4	91m SE	Barnsley Rail Station	South Yorkshire, S71	Railway Stations, Junctions and Halts	Public Transport, Stations and Infrastructure
C	98m SW	Extra Computers Ltd	60, Eldon Street, Barnsley, South Yorkshire, S70 2JL	Electrical Equipment Repair and Servicing	Repair and Servicing
5	106m NE	Autofix Garage Services	5, James Street, Barnsley, South Yorkshire, S71 1BL	Vehicle Repair, Testing and Servicing	Repair and Servicing
6	114m NE	Topp Carpets & Vinyls	8, Honeywell Street, Barnsley, South Yorkshire, S71 1PR	Construction Completion Services	Construction Services
C	117m S	Stagecoach Yorkshire	4, Eldon Arcade, Barnsley, South Yorkshire, S70 2JP	Bus and Coach Stations, Depots and Companies	Public Transport, Stations and Infrastructure
C	129m SW	Barnsley Shop Mobility	Barnsley Shop Mobility Civic Hall, Eldon Street, Barnsley, South Yorkshire, S70 2JL	Disability and Mobility Equipment	Consumer Products
7	135m SW	Electricity Sub Stations	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
D	148m W	Works	South Yorkshire, S70	Unspecified Works Or Factories	Industrial Features

ID	Location	Company	Address	Activity	Category
C	148m S	Tri Flooring	40 Upper Floor the Gllass Work, Barnsley Market, Barnsley, South Yorkshire, S70 1GW	Beds and Bedding	Consumer Products
D	151m SW	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
D	155m W	Script Media	47, Church Street, Barnsley, South Yorkshire, S70 2AS	Published Goods	Industrial Products
D	155m W	Acredula Group Ltd	47, Church Street, Barnsley, South Yorkshire, S70 2AS	Published Goods	Industrial Products
D	155m W	Pen & Sword Books Ltd	47, Church Street, Barnsley, South Yorkshire, S70 2AS	Published Goods	Industrial Products
D	155m W	Caring UK	47, Church Street, Barnsley, South Yorkshire, S70 2AS	Published Goods	Industrial Products
D	155m W	Barnsley Chronicle Ltd	47, Church Street, Barnsley, South Yorkshire, S70 2AS	Published Goods	Industrial Products
8	172m E	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
9	178m NE	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
E	179m SW	Prisco's	32, Eldon Street, Barnsley, South Yorkshire, S70 2JB	Curtains and Blinds	Consumer Products
10	179m E	Electricity Sub Station	South Yorkshire, S71	Electrical Features	Infrastructure and Facilities
E	183m SW	Hidden Hearing	16-18, The Arcade, Barnsley, South Yorkshire, S70 2QN	Disability and Mobility Equipment	Consumer Products
E	193m SW	Eggfree Cake Box	Eldon Buildings, 24-26, Eldon Street, Town Centre, Barnsley, South Yorkshire, S70 2JB	Baking and Confectionery	Foodstuffs
E	197m SW	Admiral	20-22, Eldon Street, Barnsley, South Yorkshire, S70 2JB	Hobby, Sports and Pastime Products	Consumer Products
H	222m W	Carbon Goodies	Marland House 13, Huddersfield Road, Barnsley, South Yorkshire, S70 2LW	Special Purpose Machinery and Equipment	Industrial Products
H	222m W	Part Hunter	Marland House 13, Huddersfield Road, Barnsley, South Yorkshire, S70 2LW	Seals, Tapes, Taps and Valves	Industrial Products
11	224m N	Electricity Sub Station	South Yorkshire, S75	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
E	231m SW	Electricity Sub Station	South Yorkshire, S70	Electrical Features	Infrastructure and Facilities
I	242m SW	Specsavers Hearcare	Unit 3 10-18, Queen Street, Barnsley, South Yorkshire, S70 1SJ	Disability and Mobility Equipment	Consumer Products
I	242m SW	Specsavers Hearcare	Unit 3 10-18, Queen Street, Barnsley, South Yorkshire, S70 1SJ	Disability and Mobility Equipment	Consumer Products

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	**1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Company	Address	LPG	Status
L	489m NE	ASDA	Old Mill Lane, Barnsley, South Yorkshire, S71 1LN	No	Open

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	**0**

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	**0**

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.10 Licensed industrial activities (Part A(1))

Records within 500m	**29**

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/07/2016 Status: EFFECTIVE
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: NP3934VD Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2015 Status: DETERMINATION
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: NP3934VD Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2015 Status: DETERMINATION
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: NP3934VD Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2015 Status: DETERMINATION

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: NP3934VD Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2015 Status: DETERMINATION
K	420m SW	Operator: MONCKTON COKE & CHEMICAL COMPANY LTD Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: MP3636SN Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE & CHEMICAL COMPANY LTD Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: MP3636SN Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: YP3934UX Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 11/10/2007 Effective Date: 11/10/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: AP3135GS Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2022 Status: REFUSED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: AP3135GS Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2022 Status: REFUSED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD EAEPRBK3441IAV010 Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: PP3639KE Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 22/06/2009 Effective Date: 22/07/2009 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD EAEPRBK3441IAV010 Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: PP3639KE Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 22/06/2009 Effective Date: 22/07/2009 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE & CHEMICAL COMPANY LTD Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: MP3636SN Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: AP3135GS Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2022 Status: REFUSED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: GASIFICATION, LIQUIFAC. AND REFINING Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OPERATING COKE OVENS > 250 TONNES Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: YP3934UX Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 11/10/2007 Effective Date: 11/10/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: INORGANIC CHEMICALS; BASES EG AMMONIUM HYDROXIDE Permit Number: YP3934UX Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 11/10/2007 Effective Date: 11/10/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/04/2017 Status: EFFECTIVE
K	420m SW	Operator: MONCKTON COKE & CHEMICAL COMPANY LTD Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: MP3636SN Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 16/12/2005 Effective Date: 16/12/2005 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: AP3135GS Original Permit Number: BK3441IA	EPR Reference: - Issue Date: - Effective Date: - Last date noted as effective: 01/01/2022 Status: REFUSED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: ORGANIC CHEMICALS; HYDROCARBONS EG AROMATICS Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/01/2022 Status: SUPERCEDED

ID	Location	Details	
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD EAEPRBK3441IAV010 Process: COMBUSTION; ANY FUEL =>20MW BUT 50MW (UNLESS 1.1 A(1) B) Permit Number: PP3639KE Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 22/06/2009 Effective Date: 22/07/2009 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD EAEPRBK3441IAV010 Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: PP3639KE Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 22/06/2009 Effective Date: 22/07/2009 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: OTHER MINERAL ACTIVITIES; CRUSHING ETC OF COAL ETC (UNLESS EXEMPT LOCATION) Permit Number: YP3934UX Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 11/10/2007 Effective Date: 11/10/2007 Last date noted as effective: 01/01/2022 Status: SUPERCEDED
K	420m SW	Operator: MONCKTON COKE AND CHEMICAL COMPANY LIMITED Installation Name: THE MONCKTON COKE AND CHEMICAL CO LTD Process: GASIFICATION, LIQUIFAC. AND REFINING Permit Number: HP3239EW Original Permit Number: BK3441IA	EPR Reference: - Issue Date: 17/01/2014 Effective Date: 17/01/2014 Last date noted as effective: 01/04/2017 Status: EFFECTIVE

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m	**4**

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Address	Details	
G	263m NE	Walter Fisher Ltd, Meadow St, Barnsley, S71 1DE	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
J	345m SW	Johnson Dry Cleaners, 14 Peel Square, Barnsley, S70 1YA	Process: Dry Cleaning Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
J	370m SW	Hunningley Lane MOT, Hunningley Lane, Stairfoot, Barnsley, S70 3DT	Process: Waste Oil Burner 0.4 MW Status: New Legislation Applies Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified
L	490m NE	Asda Petrol Filling Station, Old Mill Lane, Barnsley, S71 1LN	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	**0**

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m	**8**

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Address	Details	
F	201m S	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005

ID	Location	Address	Details	
G	219m NE	REGENT STREET, BARNSLEY, SOUTH YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: YWUCD2/4 Permit Version: 1 Receiving Water: TRIB OF RIVER DEARNE	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/11/1997 Effective Date: 12/11/1997 Revocation Date: -
F	242m S	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005
12	274m S	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005
J	342m SW	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005
J	385m SW	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005
K	393m SW	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005

ID	Location	Address	Details	
K	400m SW	EAST COWICK SEWAGE PUMPING STATION, DOWSONS LANE, EAST COWICK, GOOLE, DN14 9ET	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/8 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 29/05/1963 Effective Date: 29/05/1963 Revocation Date: 31/03/2005

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.17 List 2 Dangerous Substances

Records within 500m	0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m	2

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 51**

ID	Location	Details	
13	368m S	Incident Date: 01/12/2001 Incident Identification: 45948 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
14	442m NE	Incident Date: 22/11/2001 Incident Identification: 44308 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m	0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m	0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

Records within 500m	0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer

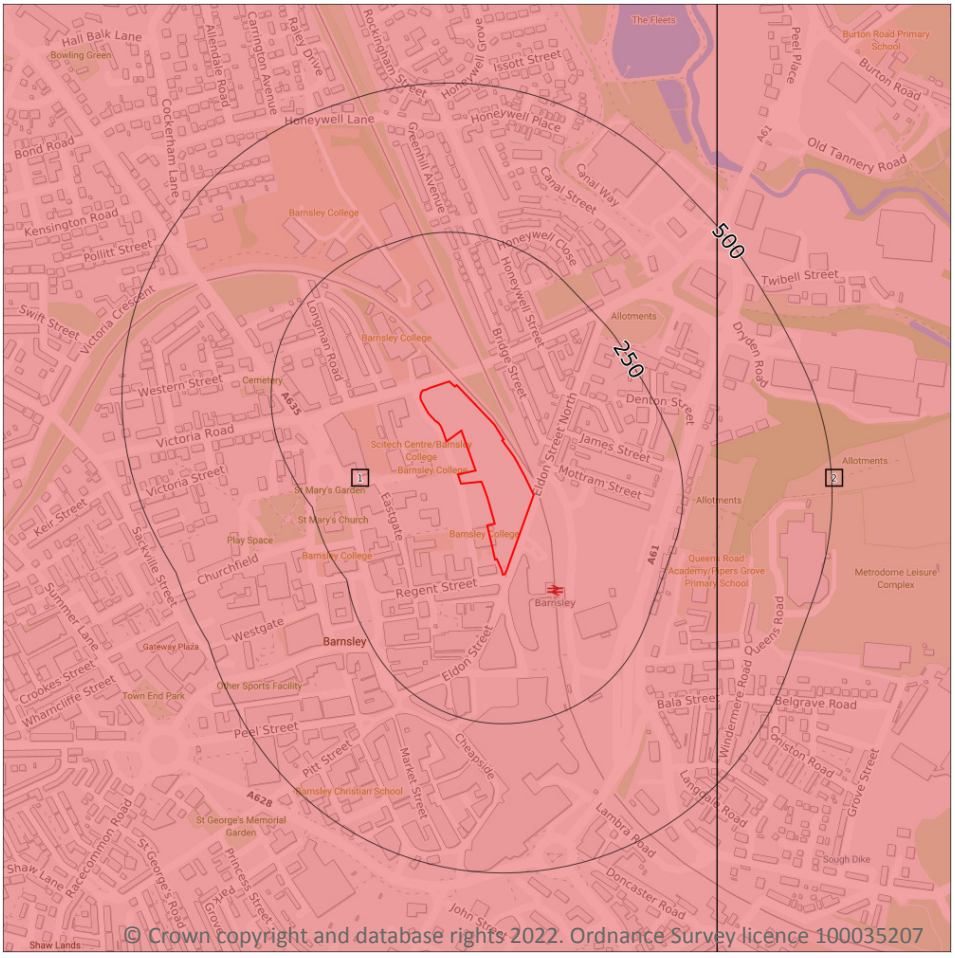
5.1 Superficial aquifer

Records within 500m	0

Aquifer status of groundwater held within superficial geology.

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Bedrock aquifer



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Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m	2

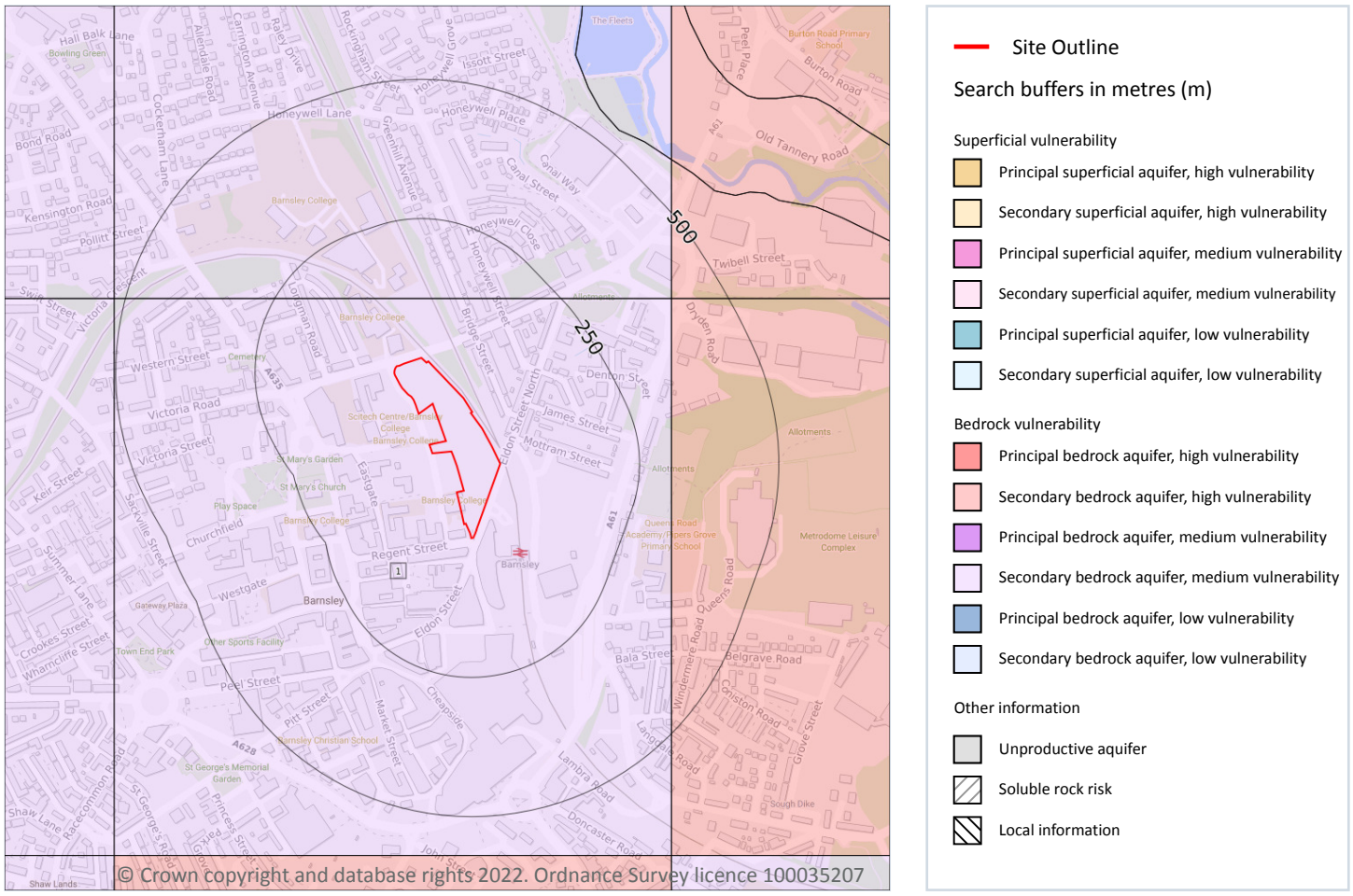
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 68**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	307m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

Groundwater vulnerability



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5.3 Groundwater vulnerability

Records within 50m	1

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 70**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.

5.4 Groundwater vulnerability- soluble rock risk

Records on site	0

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

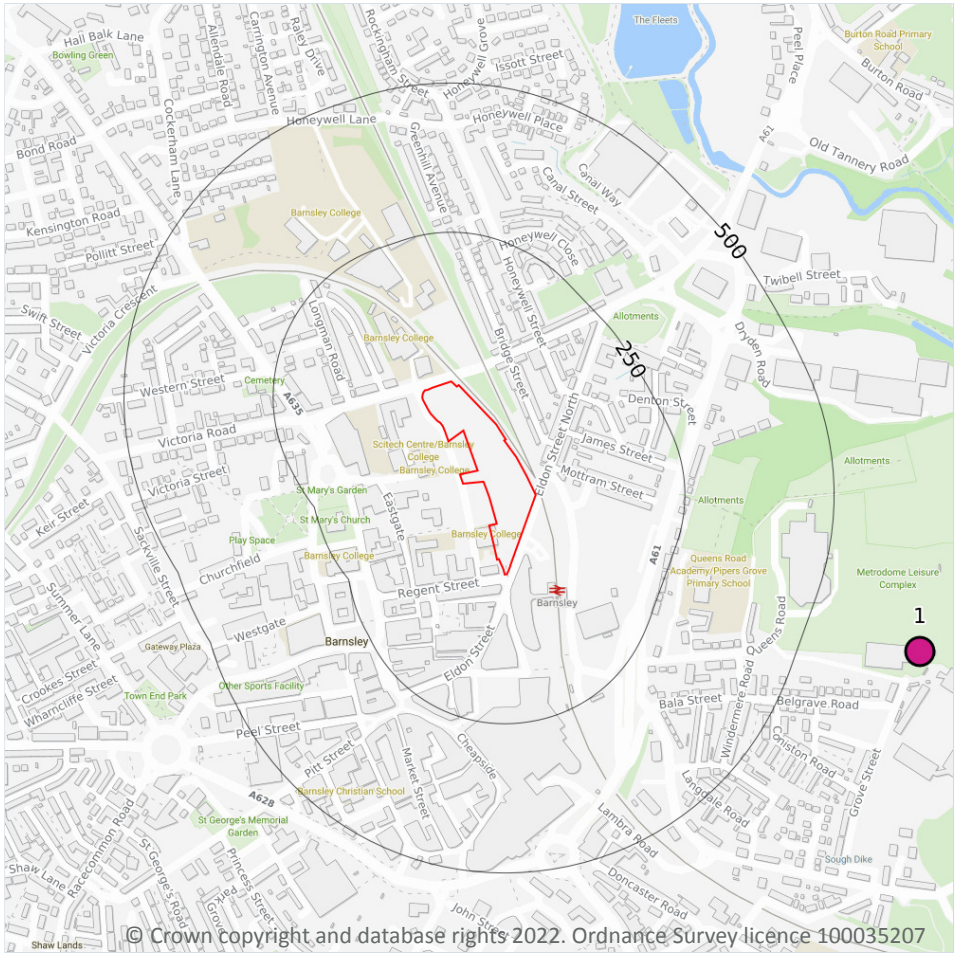
5.5 Groundwater vulnerability- local information

Records on site	0

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- Drinking water abstraction licences — Polygon features
- Drinking water abstraction licences — Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m	5

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 72**

ID	Location	Details	
1	694m E	Status: Active Licence No: NE/027/0008/014 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - OAKWELL ROAD - BARNSLEY Data Type: Point Name: Barnsley Football Club 2002 Ltd Easting: 435336 Northing: 406441	Annual Volume (m^3): 21,400 Max Daily Volume (m^3): 100 Original Application No: NPS/WR/016056 Original Start Date: 29/06/2015 Expiry Date: 31/03/2029 Issue No: 1 Version Start Date: 29/06/2015 Version End Date: -
-	1070m SW	Status: Historical Licence No: 2/27/08/133 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING-SANDSTONE/MIDDLE COAL MEASURES-SHAW LANE Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406060	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/01/2004 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 01/01/2004 Version End Date: -
-	1070m SW	Status: Historical Licence No: 2/27/08/133 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING - SANDSTONE&MIDDLE COAL MEASURES - BARNSLEY Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406060	Annual Volume (m^3): 350000 Max Daily Volume (m^3): 1400 Original Application No: - Original Start Date: 01/01/2004 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 01/01/2004 Version End Date: -
-	1100m SW	Status: Historical Licence No: 2/27/08/110 Details: Water Bottling Direct Source: GROUNDWATERS Point: WELL/SPRING - SANDSTONE/MIDDLE COAL MEASURES - SHAW LANE Data Type: Point Name: SHELDALE WATER LIMITED Easting: 433700 Northing: 406000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1994 Expiry Date: 31-Dec-03 Issue No: 100 Version Start Date: 01/12/1999 Version End Date: -

ID	Location	Details	
-	1100m SW	Status: Historical Licence No: 2/27/08/110 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING-SANDSTONE/MIDDLE COAL MEASURES-SHAW LANE Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1994 Expiry Date: 31/12/2003 Issue No: 101 Version Start Date: 08/04/2003 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m **4**

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 72**

ID	Location	Details	
-	1021m E	Status: Active Licence No: 2/27/08/141/R01 Details: Make-Up Or Top Up Water Direct Source: SURFACE WATER Point: RIVER DEARNE AT DEARNE VALLEY COUNTRY PARK Data Type: Point Name: BARNSLEY METROPOLITAN BOROUGH COUNCIL Easting: 435704 Northing: 406846	Annual Volume (m^3): 5,850 Max Daily Volume (m^3): 86.60 Original Application No: NPS/WR/021590 Original Start Date: 12/04/2017 Expiry Date: 31/03/2029 Issue No: 1 Version Start Date: 01/04/2019 Version End Date: -
-	1027m E	Status: Historical Licence No: 2/27/08/122 Details: Make-Up or Top Up Water Direct Source: SURFACE WATER Point: RIVER DEARNE Data Type: Point Name: BARNSLEY METROPOLITAN BOROUGH COUNCIL Easting: 435710 Northing: 406850	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 07/10/1998 Expiry Date: 31/10/2006 Issue No: 101 Version Start Date: 01/08/2002 Version End Date: -

ID	Location	Details	
-	1027m E	Status: Historical Licence No: 2/27/08/122 Details: Make-Up or Top Up Water Direct Source: SURFACE WATER Point: RIVER DEARNE Data Type: Point Name: BARNSLEY METROPOLITAN BOROUGH COUNCIL Easting: 435710 Northing: 406850	Annual Volume (m^3): 7800 Max Daily Volume (m^3): 86.6 Original Application No: - Original Start Date: 07/10/1998 Expiry Date: 31/10/2006 Issue No: 101 Version Start Date: 01/08/2002 Version End Date: -
-	1027m E	Status: Historical Licence No: 2/27/08/141 Details: Make-Up Or Top Up Water Direct Source: SURFACE WATER Point: RIVER DEARNE Data Type: Point Name: BARNSLEY METROPOLITAN BOROUGH COUNCIL Easting: 435710 Northing: 406850	Annual Volume (m^3): 7800 Max Daily Volume (m^3): 86.6 Original Application No: - Original Start Date: 13/03/2007 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 01/04/2008 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m	**4**

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 72**

ID	Location	Details	
-	1070m SW	Status: Historical Licence No: 2/27/08/133 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING-SANDSTONE/MIDDLE COAL MEASURES-SHAW LANE Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406060	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 01/01/2004 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 01/01/2004 Version End Date: -

ID	Location	Details	
-	1070m SW	Status: Historical Licence No: 2/27/08/133 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING - SANDSTONE&MIDDLE COAL MEASURES - BARNSLEY Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406060	Annual Volume (m^3): 350000 Max Daily Volume (m^3): 1400 Original Application No: - Original Start Date: 01/01/2004 Expiry Date: 31/03/2017 Issue No: 1 Version Start Date: 01/01/2004 Version End Date: -
-	1100m SW	Status: Historical Licence No: 2/27/08/110 Details: Water Bottling Direct Source: GROUNDWATERS Point: WELL/SPRING - SANDSTONE/MIDDLE COAL MEASURES - SHAW LANE Data Type: Point Name: SHELDALE WATER LIMITED Easting: 433700 Northing: 406000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1994 Expiry Date: 31-Dec-03 Issue No: 100 Version Start Date: 01/12/1999 Version End Date: -
-	1100m SW	Status: Historical Licence No: 2/27/08/110 Details: Water Bottling Direct Source: GROUNDWATERS Point: SPRING-SANDSTONE/MIDDLE COAL MEASURES-SHAW LANE Data Type: Point Name: SHELDALE DEVELOPMENTS LTD Easting: 433700 Northing: 406000	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1994 Expiry Date: 31/12/2003 Issue No: 101 Version Start Date: 08/04/2003 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	**0**

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

This data is sourced from the Environment Agency and Natural Resources Wales.

6 Hydrology



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Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	2

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 78**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	175m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sough Dike

ID	Location	Type of water feature	Ground level	Permanence	Name
B	211m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**1**

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 78**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 78**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River**	**Dearne from Cawthorne Dyke to Lundwood STW**	**GB104027063171**	**Dearne**	**Don and Rother**

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified	**1**

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the

water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 78**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	583m NE	River	Dearne from Cawthorne Dyke to Lundwood STW	GB104027063171	Moderate	Fail	Moderate	2019

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site	**1**

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 78**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Don & Rother Millstone grit & Coal Measures**	**GB40402G992300**	**Poor**	**Poor**	**Good**	**2019**

This data is sourced from the Environment Agency and Natural Resources Wales.

7 River and coastal flooding

7.1 Risk of flooding from rivers and the sea

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m	0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m	0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.5 Flood Storage Areas

Records within 250m	0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

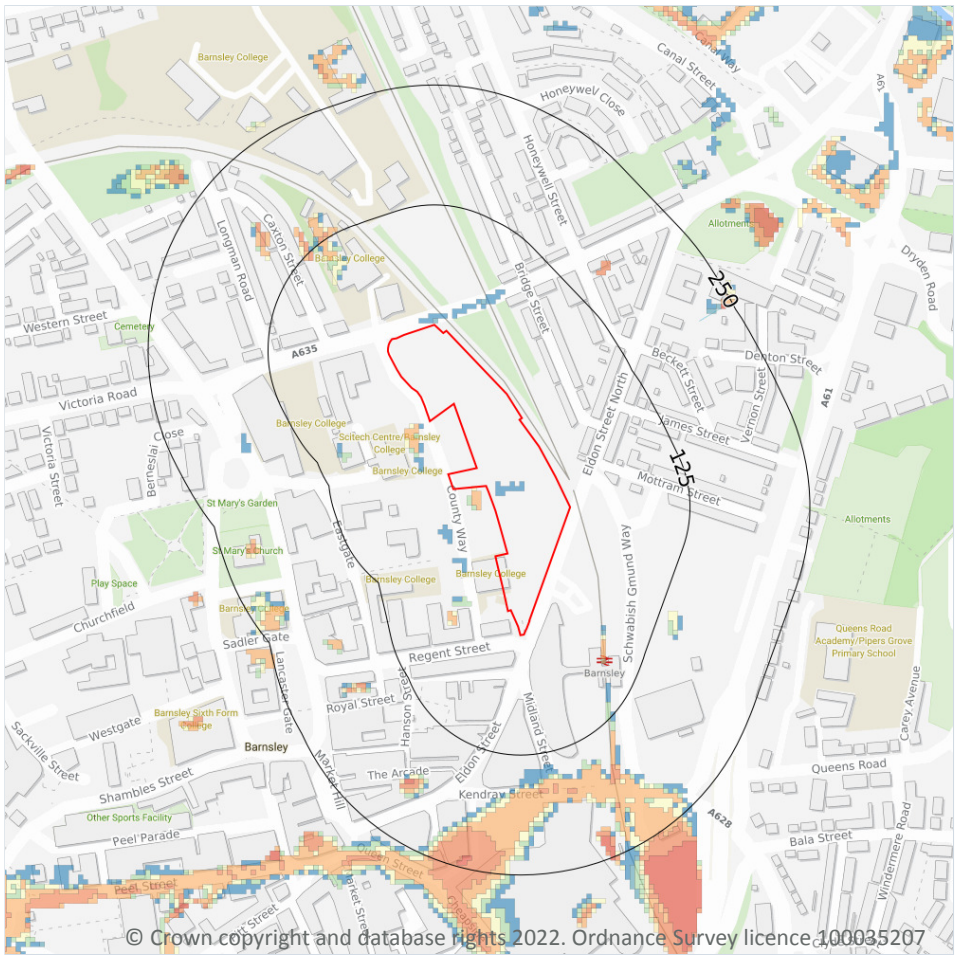
7.7 Flood Zone 3

Records within 50m	0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 100 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, 0.1m - 0.3m**

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 84**

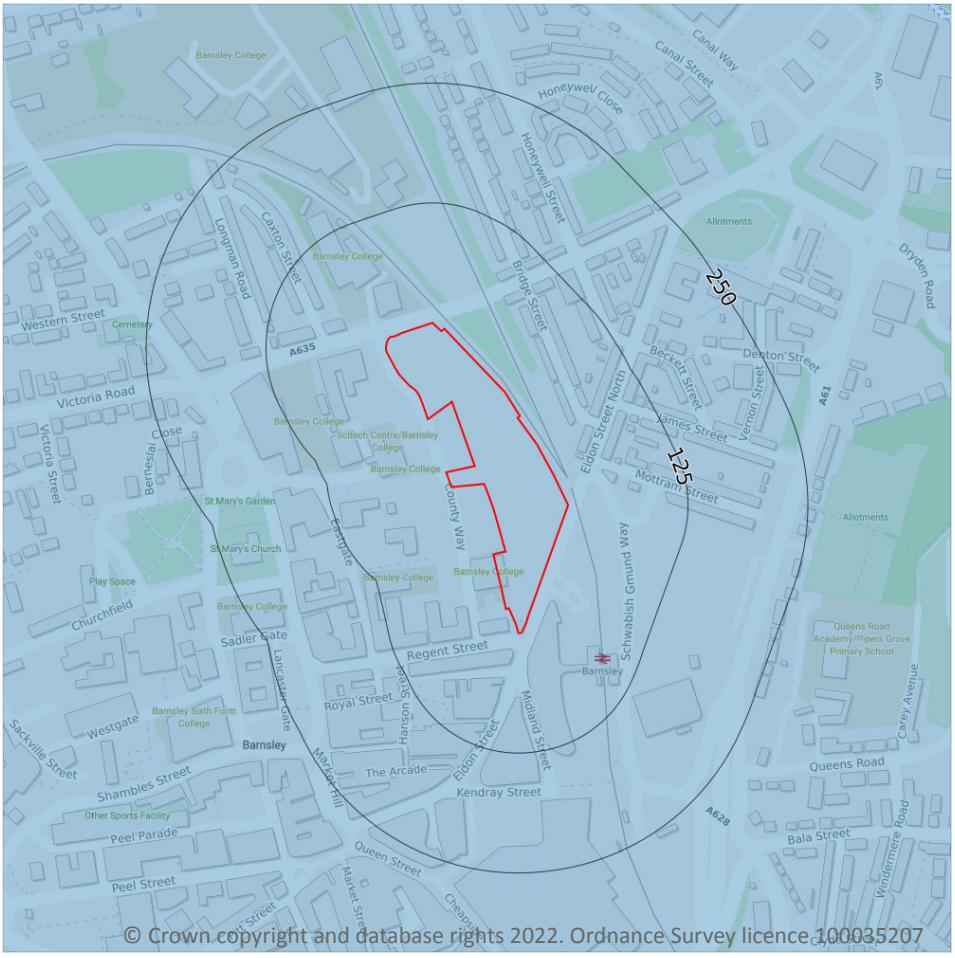
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Between 0.1m and 0.3m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Between 0.1m and 0.3m
1 in 30 year	Between 0.01m and 0.05m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

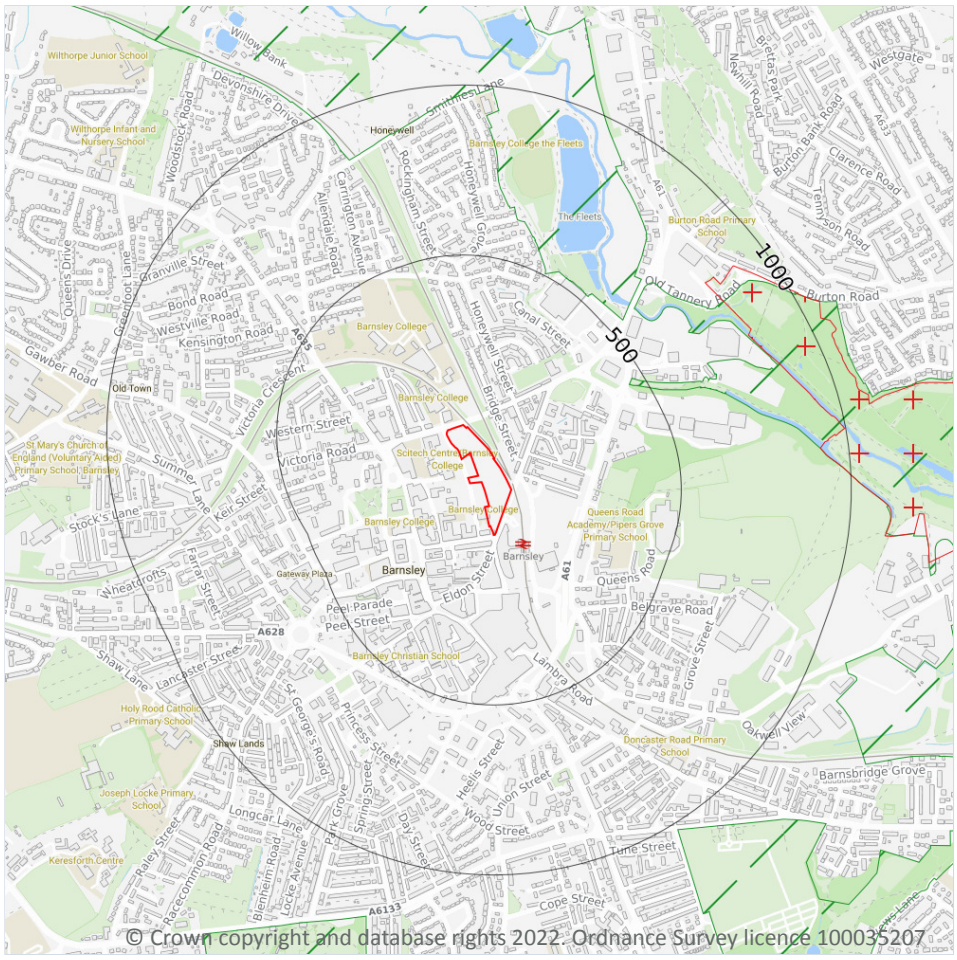
Highest risk on site	**Negligible**
Highest risk within 50m	**Negligible**

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 86**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



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Site Outline

Search buffers in metres (m)

Local Nature Reserves (LNR)

Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m	0

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m	0

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

Features are displayed on the Environmental designations map on **page 87**

ID	Location	Name	Data source
2	804m NE	Dearne Valley Park	Natural England

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m	0

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m	0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m	0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.11 Green Belt

Records within 2000m	2

Areas designated to prevent urban sprawl by keeping land permanently open.

Features are displayed on the Environmental designations map on **page 87**

ID	Location	Name	Local Authority name
1	452m NE	South and West Yorkshire	Barnsley
-	1817m S	South and West Yorkshire	Barnsley

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m	0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

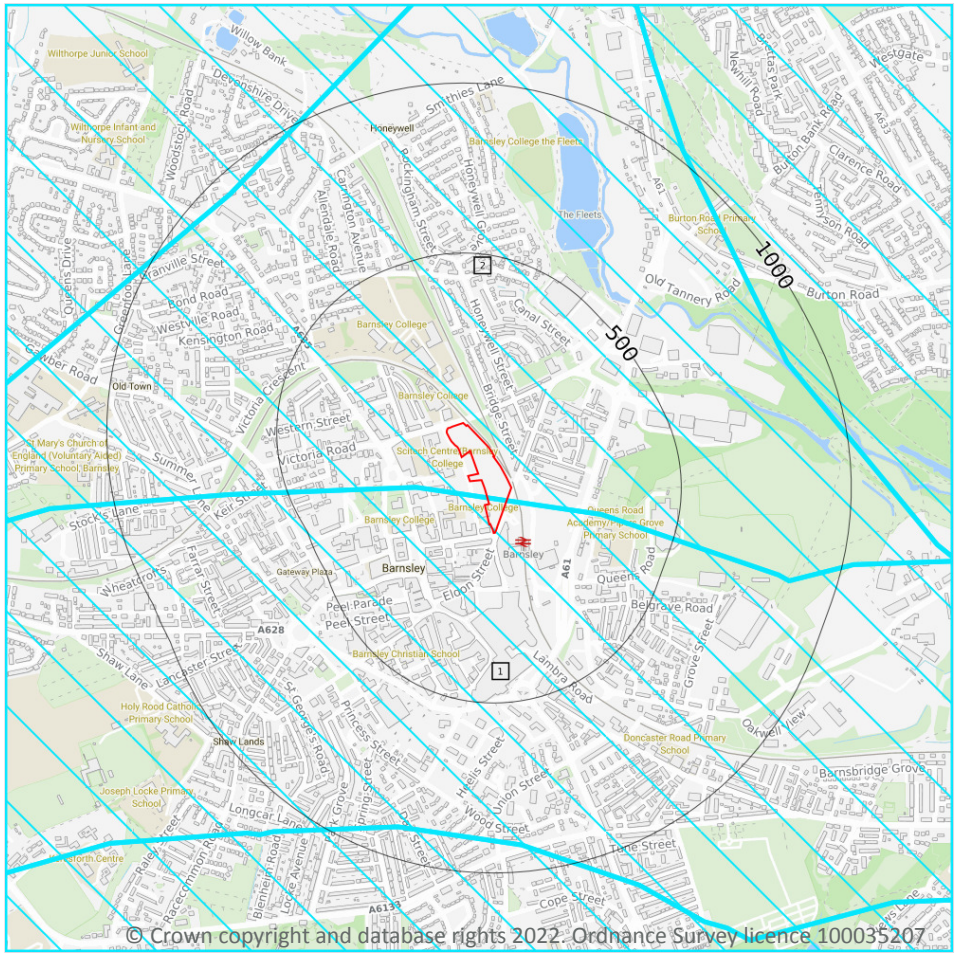
Records within 2000m	4

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	**River Dearne NVZ**	**Surface Water**	**278**	**Existing**
411m NW	River Dearne NVZ	Surface Water	278	Existing
588m SE	River Dearne NVZ	Surface Water	278	Existing
804m SW	River Dearne NVZ	Surface Water	278	Existing

This data is sourced from Natural England and Natural Resources Wales.

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

10.17 SSSI Impact Risk Zones

Records on site	2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on **page 92**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, review of minerals permissions (romp), extensions, variations to conditions etc. oil & gas exploration/extraction. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**
2	On site	**Infrastructure - Airports, helipads and other aviation proposals. Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t. Discharges - Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.**

This data is sourced from Natural England.

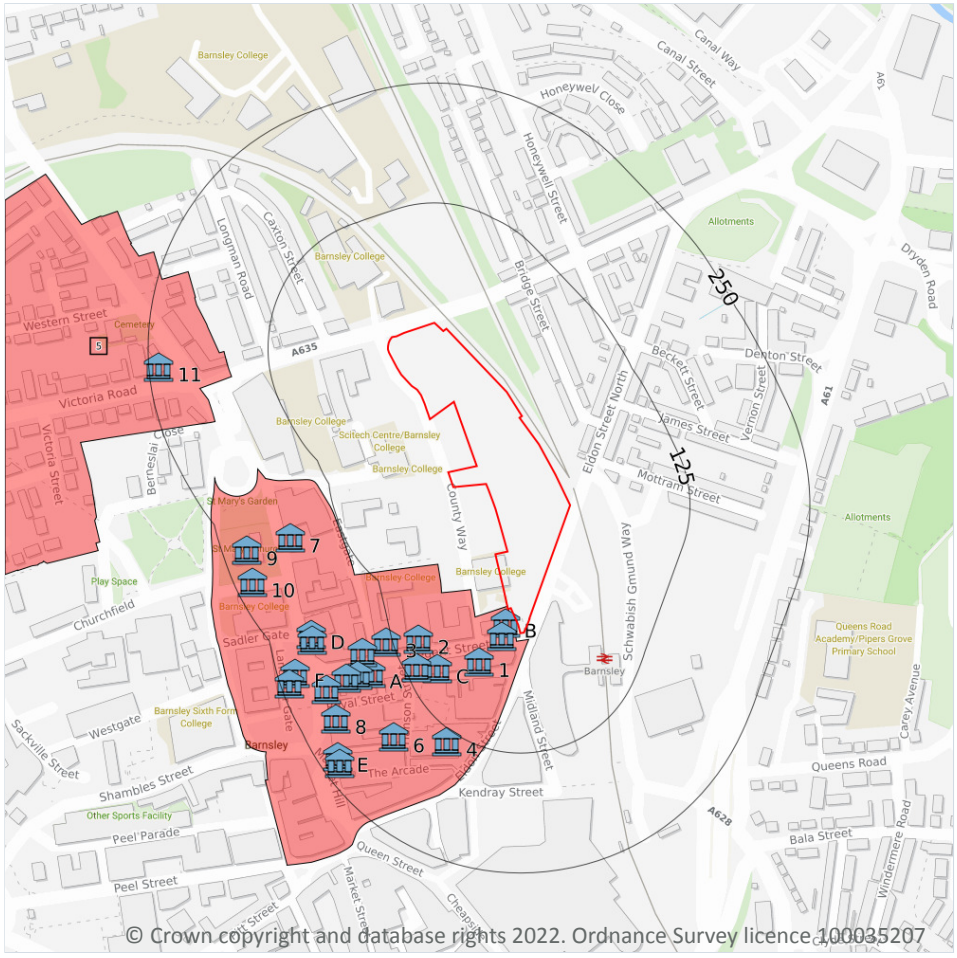
10.18 SSSI Units

Records within 2000m	0

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

This data is sourced from Natural England and Natural Resources Wales.

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

11.3 National Parks

Records within 250m	0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.

11.4 Listed Buildings

Records within 250m	25

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.

Features are displayed on the Visual and cultural designations map on **page 94**

ID	Location	Name	Grade	Reference Number	Listed date
B	12m SW	The Courthouse Station, Central, Barnsley, S70	II	1151122	27/02/1975
B	20m W	Piers, Wall and Railings To Front Area of Court House Building, Central, Barnsley, S70	II	1191951	13/01/1986
1	53m SW	Queens Court Business Centre and Attached Railings To Front, Central, Barnsley, S70	II	1286809	13/01/1986
C	94m SW	17 21 and 23, Regent Street, Central, Barnsley, S70	II	1315039	13/01/1986
2	98m W	14 and 16, Regent Street, Central, Barnsley, S70	II	1191936	13/01/1986

ID	Location	Name	Grade	Reference Number	Listed date
C	113m SW	13 and 15, Regent Street, Central, Barnsley, S70	II	1191966	13/01/1986
3	131m W	The Old Courthouse, Central, Barnsley, S70	II	1151121	27/02/1975
4	137m SW	The Civic Hall, including Nos 44a, 46, 48, 52, 54 and 56, Central, Barnsley, S70	II	1151151	13/01/1986
A	158m SW	9, Regent Street, Central, Barnsley, S70	II	1151123	13/01/1986
A	159m W	8 and 10, Regent Street (See Details For Further Address information), Central, Barnsley, S70	II	1191920	13/01/1986
A	171m SW	5 and 7, Regent Street, Central, Barnsley, S70	II	1191959	13/01/1986
6	171m SW	Warehouse Building At East End, Central, Barnsley, S70	II	1191618	13/01/1986
7	178m W	41-43 Church Street, Barnsley, South Yorkshire, Central, Barnsley, S70	II	1435194	26/10/2016
A	183m SW	The Old Post office (Between Numbers 3 and 5), Central, Barnsley, S70	II	1315038	13/01/1986
D	206m W	23, Church Street, Central, Barnsley, S70	II	1315006	13/01/1986
D	207m W	K6 Telephone Kiosk Outside Numbers 19-21 (Barnsley Building Society), Central, Barnsley, S70	II	1151131	13/11/1987
A	207m SW	K6 Telephone Kiosk Outside Number 13 (Royal Bank of Scotland), Central, Barnsley, S70	II	1151130	28/10/1987
8	212m SW	The White Bear, Central, Barnsley, S70	II	1151142	13/01/1986
9	225m W	Church of St Mary, Central, Barnsley, S70	II*	1315008	13/01/1986
E	230m SW	12 and 14, Market Hill, Central, Barnsley, S70	II	1286924	13/01/1986
F	232m W	Barnsley War Memorial, Central, Barnsley, S70	II*	1151144	13/01/1986
10	232m SW	Gatepiers and Walls To Church Yard of Church of St Mary, Central, Barnsley, S70	II	1151145	13/01/1986
E	232m SW	16, Market Hill, Central, Barnsley, S70	II	1151157	13/01/1986
11	240m W	Premises of The National Union of Miners, Central, Barnsley, S70	II	1151125	13/01/1986
F	241m W	Piers and Railings To Front of Town Hall including Steps, Central, Barnsley, S70	II	1315007	13/01/1986

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.5 Conservation Areas

Records within 250m	2

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

Features are displayed on the Visual and cultural designations map on **page 94**

ID	Location	Name	District	Date of designation
A	**On site**	**Barnsley - Regent Street/Church Street/Market Hill**	**Barnsley**	**11/1973**
5	166m W	Barnsley - Victoria Road	Barnsley	09/1974

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

11.6 Scheduled Ancient Monuments

Records within 250m	0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

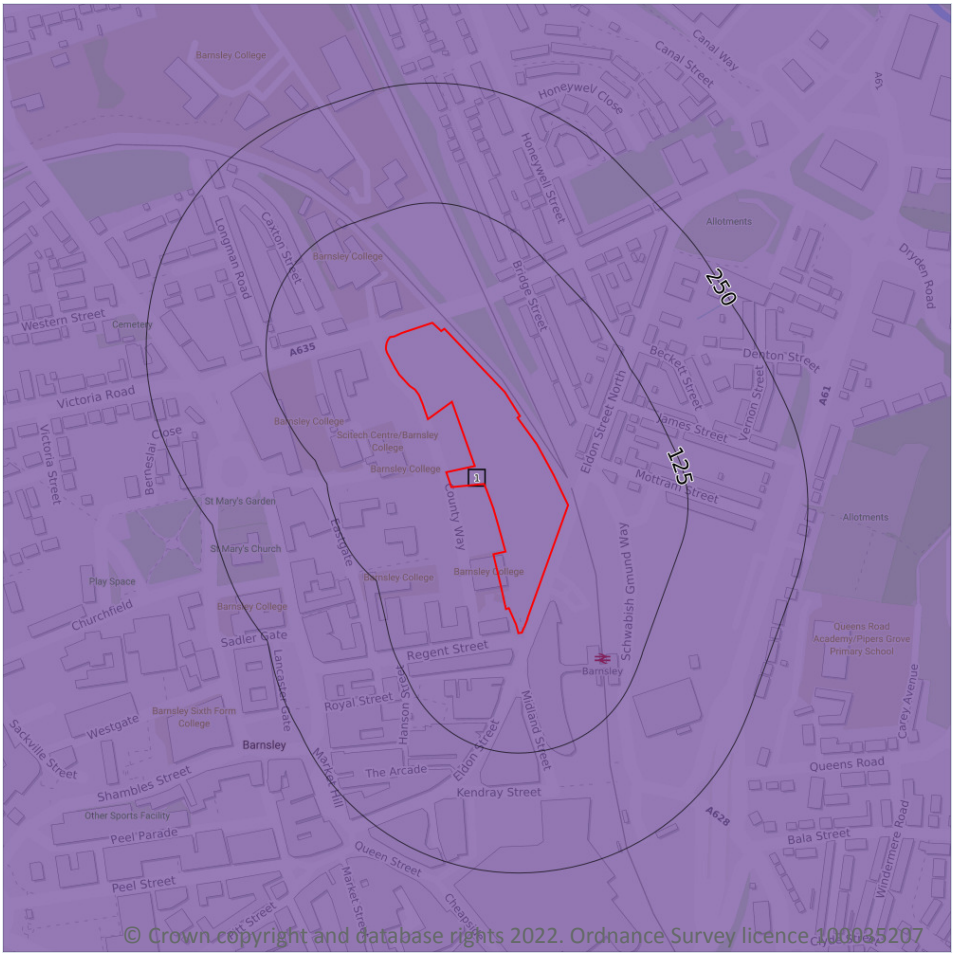
11.7 Registered Parks and Gardens

Records within 250m	0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

This data is sourced from Historic England, Cadw and Historic Environment Scotland.

12 Agricultural designations



Site Outline

Search buffers in metres (m)

- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

12.1 Agricultural Land Classification

Records within 250m	1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on **page 98**

ID	Location	Classification	Description
1	**On site**	**Urban**	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

This data is sourced from Natural England and Natural Resources Wales.

12.3 Tree Felling Licences

Records within 250m	0

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders

Habitat Networks

- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

13.1 Priority Habitat Inventory

Records within 250m	2

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on **page 100**

ID	Location	Main Habitat	Other habitats
1	242m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	246m SW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	0

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

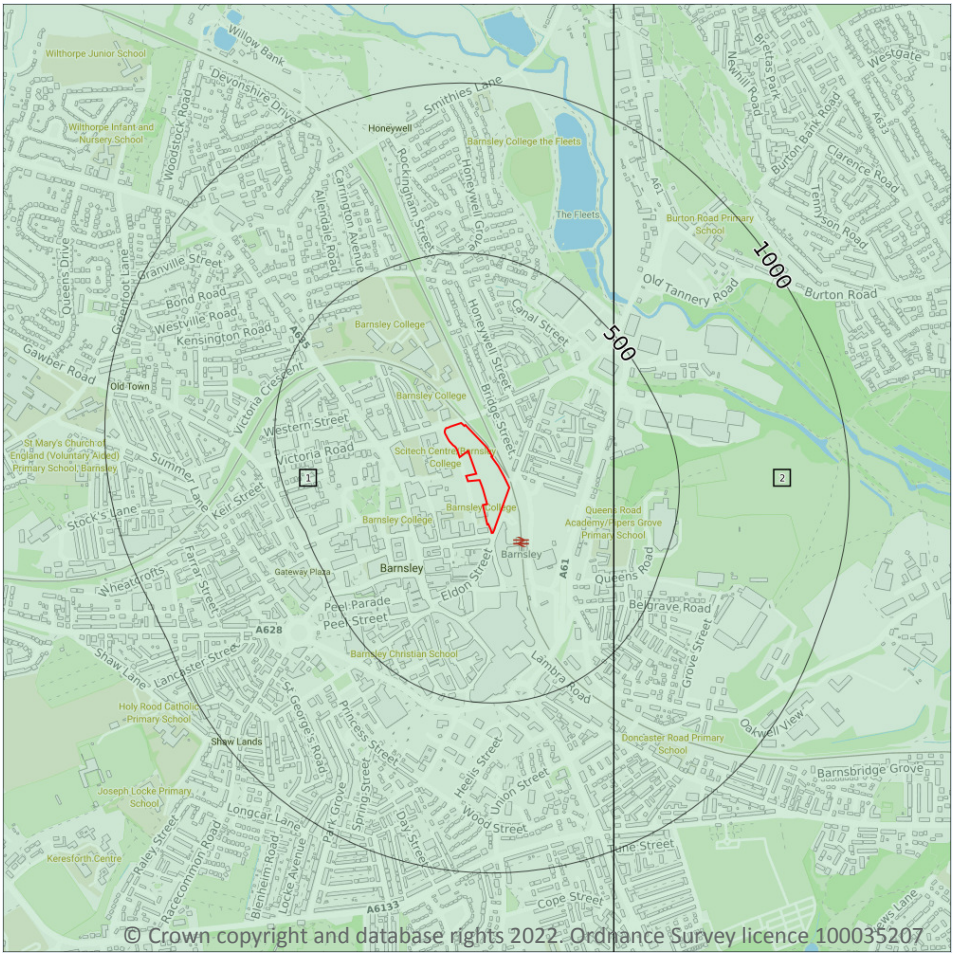
13.4 Limestone Pavement Orders

Records within 250m	0

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



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Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	2

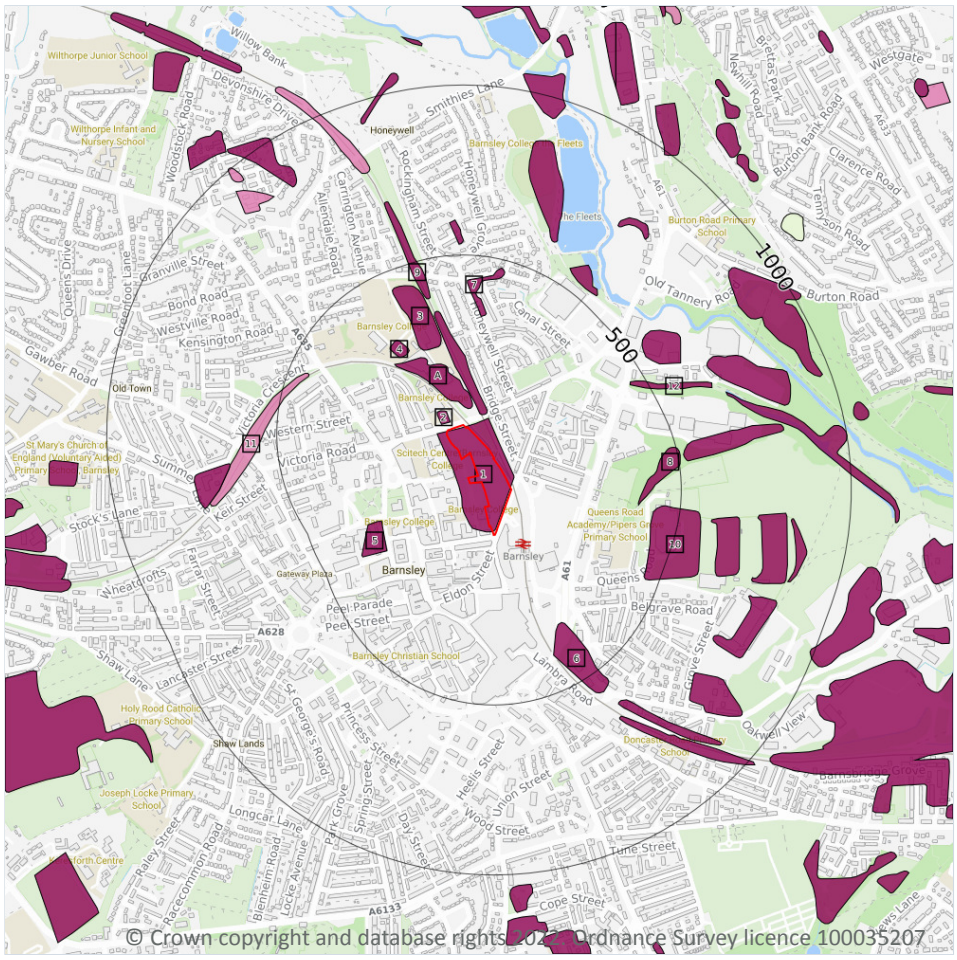
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 102**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SE30NW**
2	307m E	Full	Full	Full	No coverage	SE30NE

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Artificial and made ground



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14.2 Artificial and made ground (10k)

Records within 500m **14**

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 103**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
2	20m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	50m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
A	54m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

ID	Location	LEX Code	Description	Rock description
3	241m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
4	253m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
5	283m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	323m SE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	324m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	376m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
9	385m N	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	422m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	439m W	WGR-VOID	Worked Ground (Undivided)	Void
12	454m NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

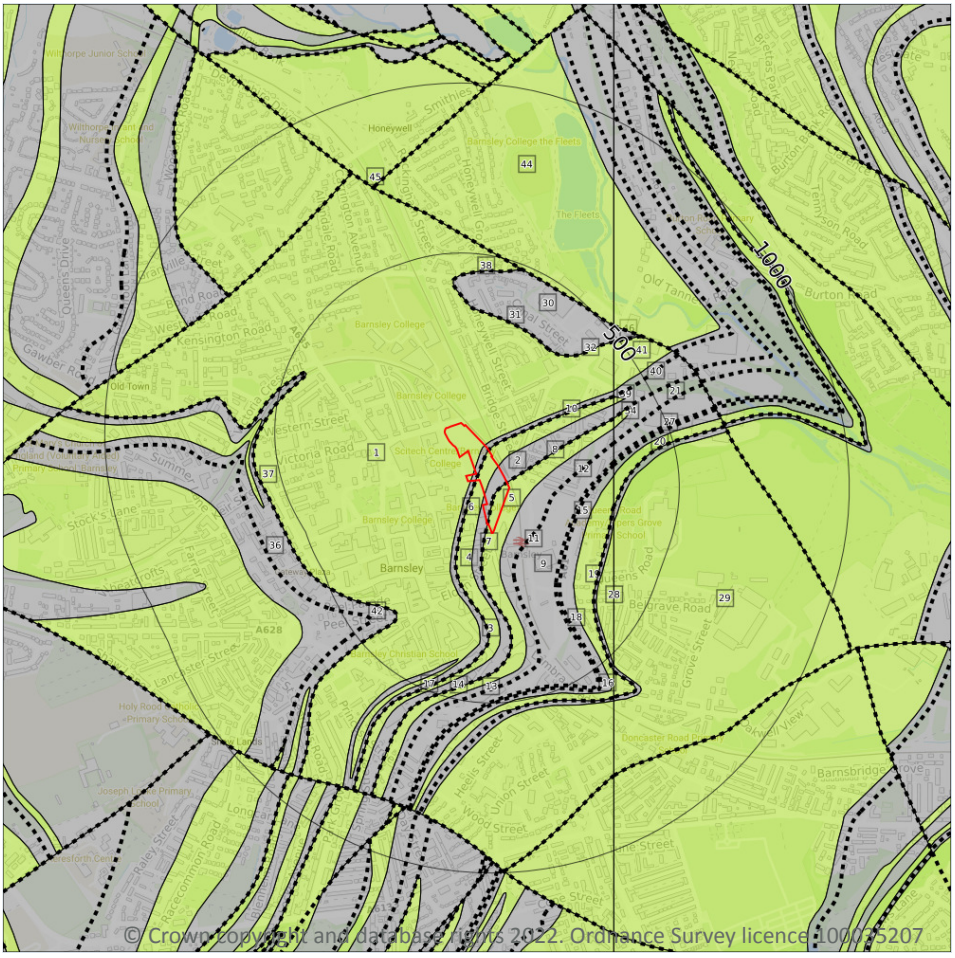
14.4 Landslip (10k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

Bedrock geology (10k)
Please see table for more details.

14.5 Bedrock geology (10k)

Records within 500m	20

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 106**

ID	Location	LEX Code	Description	Rock age
1	On site	KNR-SDST	Kent's Rock - Sandstone	Duckmantian Sub-age
2	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
3	On site	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age

ID	Location	LEX Code	Description	Rock age
4	**On site**	**PMCM-SDST**	**Pennine Middle Coal Measures Formation - Sandstone**	**Bolsovian Sub-age - Duckmantian Sub-age**
5	**On site**	**PMCM-SDST**	**Pennine Middle Coal Measures Formation - Sandstone**	**Bolsovian Sub-age - Duckmantian Sub-age**
9	41m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
19	251m E	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
20	307m E	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
21	309m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
23	310m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
24	312m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
28	324m E	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
29	324m E	WE-SDST	Woolley Edge Rock - Sandstone	Duckmantian Sub-age
30	329m NE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
34	352m NE	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
36	367m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
39	385m NE	PMCM-SDST	Pennine Middle Coal Measures Formation - Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
41	406m NE	KNR-SDST	Kent's Rock - Sandstone	Duckmantian Sub-age
44	480m NE	KNR-SDST	Kent's Rock - Sandstone	Duckmantian Sub-age
46	486m NE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**27**

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

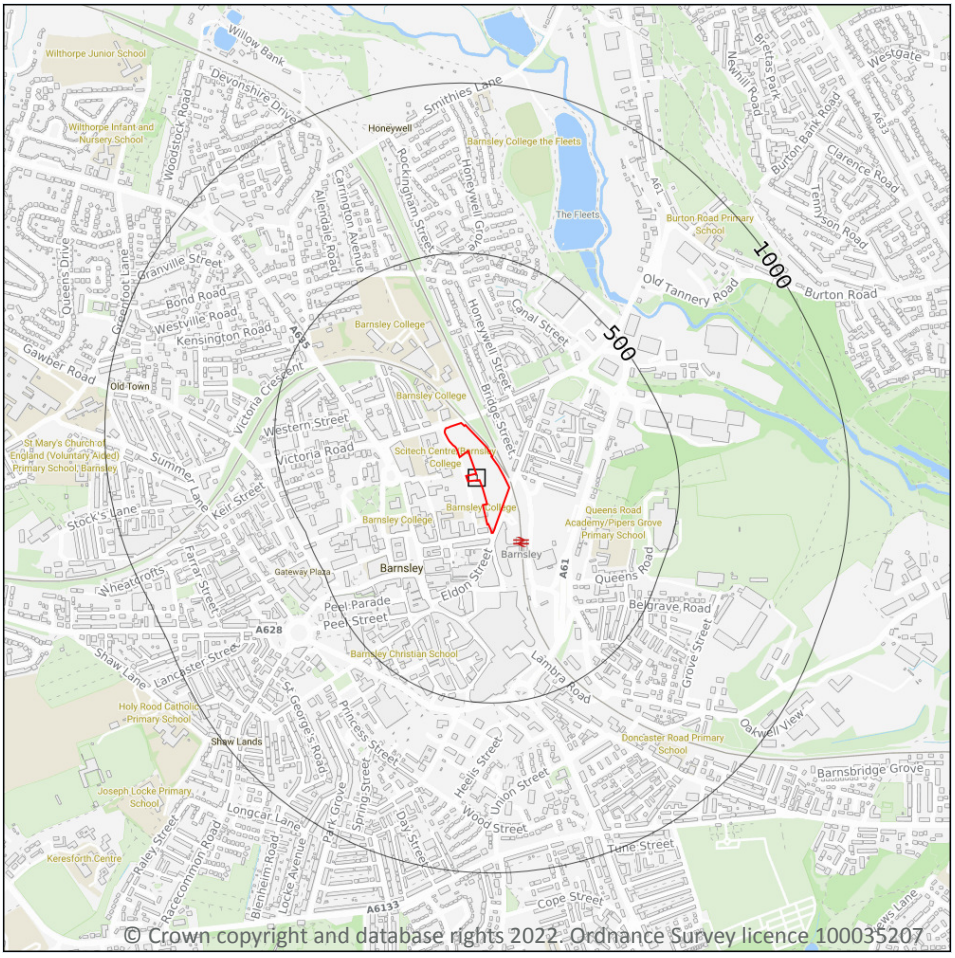
Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 106**

ID	Location	Category	Description
6	**On site**	**ROCK**	**Coal seam, observed**
7	**On site**	**ROCK**	**Coal seam, observed**
8	**On site**	**ROCK**	**Coal seam, inferred**
10	83m NE	ROCK	Coal seam, inferred
11	95m SE	ROCK	Coal seam, observed
12	126m E	ROCK	Coal seam, inferred
13	146m SE	ROCK	Coal seam, inferred
14	178m S	ROCK	Coal seam, inferred
15	206m E	ROCK	Coal seam, inferred
16	215m E	FOSSIL_HORIZON	Fossil horizon, marine band
17	215m S	ROCK	Coal seam, inferred
18	236m SE	ROCK	Coal seam, observed
22	310m E	ROCK	Coal seam, inferred
25	312m E	ROCK	Coal seam, inferred coincident with bedrock geology boundary
26	314m E	FOSSIL_HORIZON	Fossil horizon, marine band
27	316m E	ROCK	Coal seam, inferred
31	329m NE	ROCK	Coal seam, observed
32	331m NE	ROCK	Coal seam, inferred
33	334m NE	ROCK	Coal seam, inferred
35	365m NE	ROCK	Coal seam, inferred
37	367m SW	ROCK	Coal seam, inferred
38	372m N	ROCK	Coal seam, inferred
40	397m NE	ROCK	Coal seam, inferred

ID	Location	Category	Description
42	437m SW	ROCK	Coal seam, inferred
43	471m SE	ROCK	Coal seam, inferred
45	480m NE	FAULT	Normal fault, inferred
47	486m NE	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

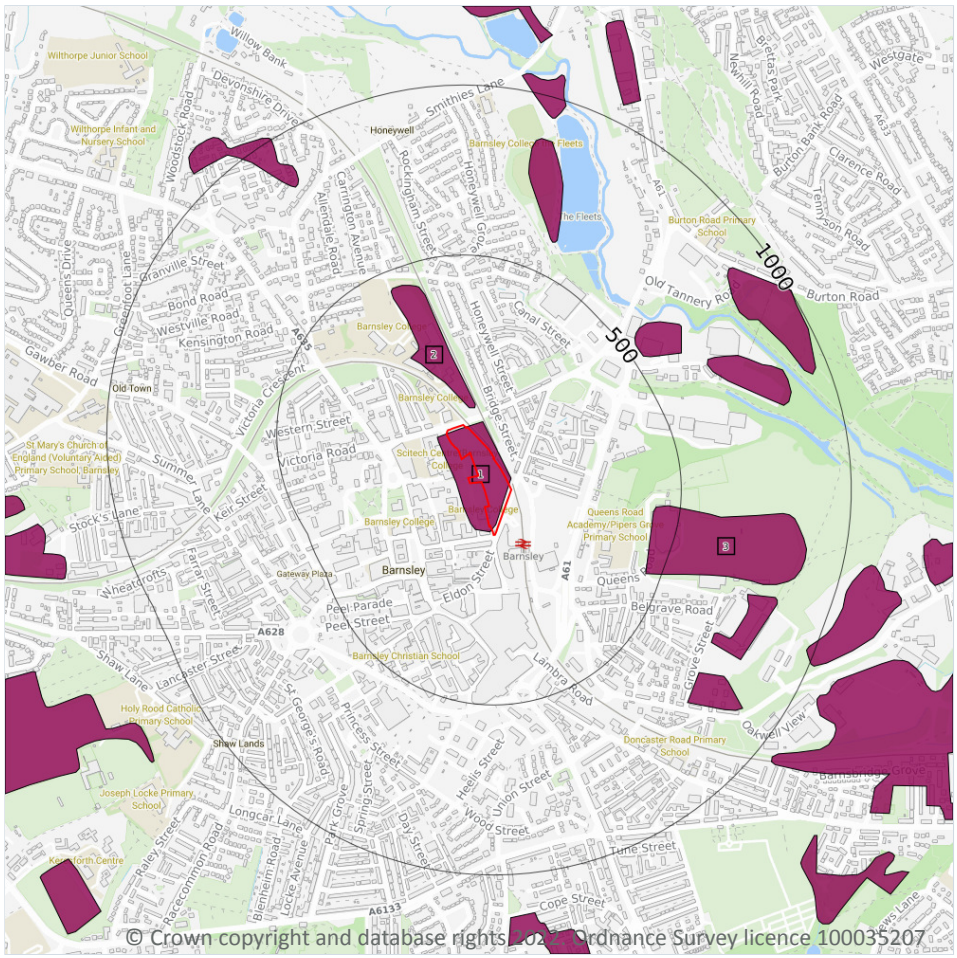
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 110**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**No coverage**	**Full**	**Full**	**Full**	**EW087_barnsley_v4**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Artificial and made ground



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	3

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 111**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**MADE GROUND (UNDIVIDED)**	**ARTIFICIAL DEPOSIT**
2	54m N	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
3	423m E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

Records within 50m	1

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Mixed**	**Very High**	**Low**

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial

15.4 Superficial geology (50k)

Records within 500m	0

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

This data is sourced from the British Geological Survey.

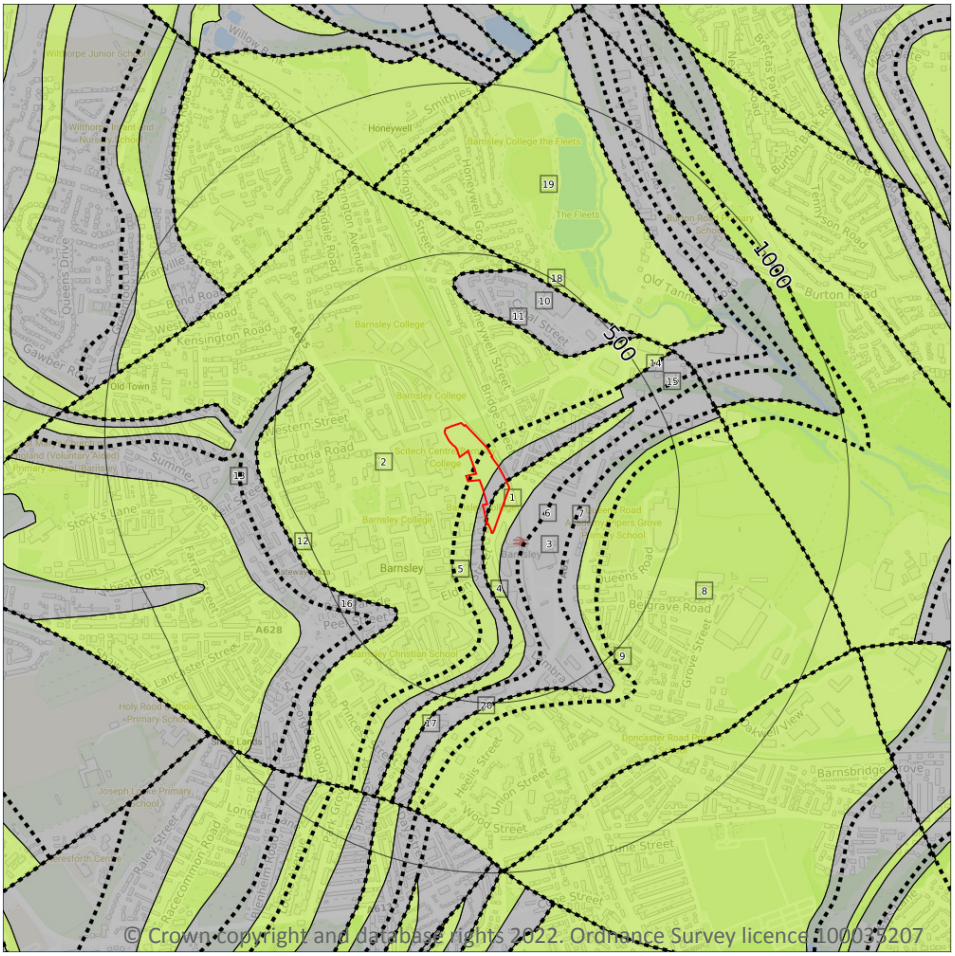
15.7 Landslip permeability (50k)

Records within 50m	0

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

Bedrock geology (50k)
Please see table for more details.

15.8 Bedrock geology (50k)

Records within 500m **7**

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 114**

ID	Location	LEX Code	Description	Rock age
1	On site	PMCM-SDST	PENNINE MIDDLE COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
2	On site	KNR-SDST	KENT'S ROCK - SANDSTONE	WESTPHALIAN
3	On site	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
8	265m E	WE-SDST	WOOLLEY EDGE ROCK - SANDSTONE	WESTPHALIAN
10	327m N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
13	362m SW	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
19	479m NE	KNR-SDST	KENT'S ROCK - SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m **4**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**High**	**Moderate**
On site	**Fracture**	**Moderate**	**Low**
40m S	Fracture	Moderate	Low

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m **13**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

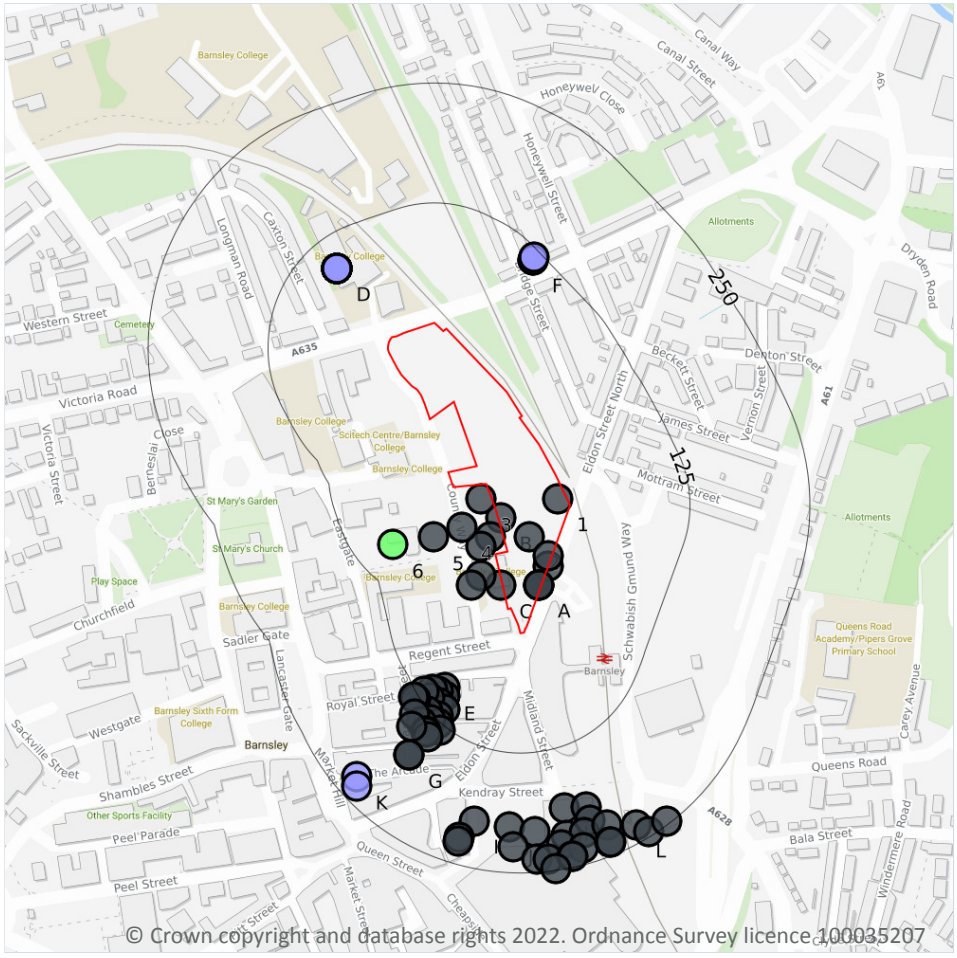
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 114**

ID	Location	Category	Description
4	**On site**	**ROCK**	**Coal seam, inferred**
5	**On site**	**ROCK**	**Coal seam, inferred**
6	96m SE	ROCK	Coal seam, inferred

ID	Location	Category	Description
7	215m E	ROCK	Coal seam, inferred
9	311m E	ROCK	Coal seam, inferred
11	327m N	ROCK	Coal seam, inferred
12	362m SW	ROCK	Coal seam, inferred
14	426m NE	ROCK	Coal seam, inferred
15	433m NE	ROCK	Coal seam, inferred
16	437m SW	ROCK	Coal seam, inferred
17	456m S	ROCK	Coal seam, inferred
18	479m NE	FAULT	Fault, inferred
20	481m S	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



16.1 BGS Boreholes

Records within 250m	92

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on **page 117**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	On site	434680 406710	COURTHOUSE DEVELOPMENT BARNSLEY BH1	-	Y	N/A
2	On site	434650 406670	COURTHOUSE DEVELOPMENT BARNSLEY BH5	-	Y	N/A
A	On site	434660 406620	COURTHOUSE DEVELOPMENT BARNSLEY BH2	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
A	**On site**	**434670 406640**	**COURTHOUSE DEVELOPMENT BARNSLEY RP6**	**-**	**Y**	**N/A**
A	**On site**	**434660 406620**	**COURTHOUSE DEVELOPMENT BARNSLEY RP7**	**-**	**Y**	**N/A**
A	**On site**	**434660 406620**	**COURTHOUSE DEVELOPMENT BARNSLEY RP8**	**-**	**Y**	**N/A**
A	**On site**	**434670 406650**	**COURTHOUSE DEVELOPMENT BARNSLEY RP5**	**-**	**Y**	**N/A**
B	**On site**	**434620 406690**	**COURTHOUSE DEVELOPMENT BARNSLEY BH3**	**-**	**Y**	**N/A**
C	2m W	434620 406620	COURTHOUSE DEVELOPMENT BARNSLEY BH4	-	Y	N/A
3	10m W	434600 406710	COUNTY WAY BARNSLEY 6	-	Y	N/A
B	13m W	434610 406670	COUNTY WAY BARNSLEY 7A	-	Y	N/A
B	17m NW	434600 406660	COUNTY WAY BARNSLEY 9	-	Y	N/A
C	20m W	434600 406630	COUNTY WAY BARNSLEY 10	-	Y	N/A
C	32m W	434590 406620	COUNTY WAY BARNSLEY 11	-	Y	N/A
4	39m W	434580 406680	COUNTY WAY BARNSLEY 8	-	Y	N/A
5	56m S	434550 406670	COUNTY WAY BARNSLEY 12	-	Y	N/A
6	87m SW	434508 406662	COURT HOUSE SITE 1	28.1	N	83902
D	92m NW	434450 406950	CAXTON STREET Q	12.0	N	83979
D	92m NW	434450 406950	CAXTON STREET H	6.0	N	83971
D	92m NW	434450 406950	CAXTON STREET N	7.0	N	83977
D	92m NW	434450 406950	CAXTON STREET G	7.0	N	83970
D	92m NW	434450 406950	CAXTON STREET J	4.0	N	83973
D	92m NW	434450 406950	CAXTON STREET P	7.0	N	83978
D	92m NW	434450 406950	CAXTON STREET B	7.0	N	83965
D	92m NW	434450 406950	CAXTON STREET I	5.0	N	83972
D	92m NW	434450 406950	CAXTON STREET E	8.0	N	83968
D	92m NW	434450 406950	CAXTON STREET F	7.0	N	83969
D	92m NW	434450 406950	CAXTON STREET V	2.0	N	83984
D	92m NW	434450 406950	CAXTON STREET C	10.0	N	83966
D	92m NW	434450 406950	CAXTON STREET D	7.0	N	83967
D	92m NW	434450 406950	CAXTON STREET K	5.0	N	83974

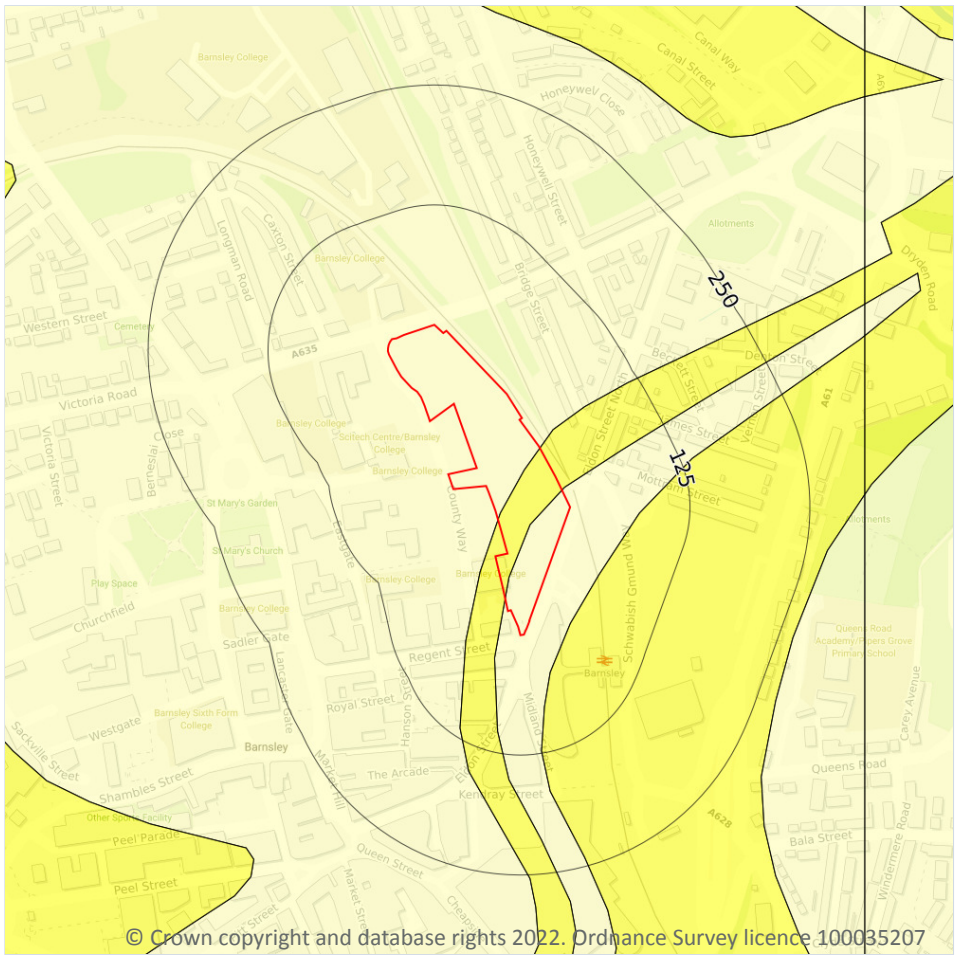
ID	Location	Grid reference	Name	Length	Confidential	Web link
D	92m NW	434450 406950	CAXTON STREET U	5.0	N	83983
D	92m NW	434450 406950	CAXTON STREET T	5.0	N	83982
D	92m NW	434450 406950	CAXTON STREET R	4.0	N	83980
D	92m NW	434450 406950	CAXTON STREET A	10.0	N	83964
D	92m NW	434450 406950	CAXTON STREET M	4.0	N	83976
D	92m NW	434450 406950	CAXTON STREET L	5.0	N	83975
D	92m NW	434450 406950	CAXTON STREET S	3.0	N	83981
E	97m SW	434562 406513	BARNSLEY CIVIC HALL IP8	-	Y	N/A
E	103m SW	434562 406504	BARNSLEY CIVIC HALL IP7	-	Y	N/A
E	105m SW	434555 406509	BARNSLEY CIVIC HALL TP5	-	Y	N/A
E	109m SW	434549 406511	BARNSLEY CIVIC HALL TP6	-	Y	N/A
E	112m SW	434556 406497	BARNSLEY CIVIC HALL TPIP6	-	Y	N/A
E	112m SW	434562 406490	BARNSLEY CIVIC HALL TPIP3	-	Y	N/A
F	115m NE	434654 406959	68 OLD MILL LANE, BARNSLEY 1	4.5	N	18907771
F	115m NE	434654 406959	68 OLD MILL LANE, BARNSLEY TP1	1.1	N	18907773
E	117m SW	434546 406502	BARNSLEY CIVIC HALL IP5	-	Y	N/A
F	118m NE	434655 406962	68 OLD MILL LANE, BARNSLEY TP2	1.7	N	18907772
E	118m SW	434540 406509	BARNSLEY CIVIC HALL IP9	-	Y	N/A
E	122m SW	434555 406483	BARNSLEY CIVIC HALL IP2	-	Y	N/A
E	127m SW	434544 406488	BARNSLEY CIVIC HALL IP4	-	Y	N/A
E	127m SW	434555 406476	BARNSLEY CIVIC HALL IP12	-	Y	N/A
E	127m SW	434555 406476	BARNSLEY CIVIC HALL BH2	-	Y	N/A
E	129m SW	434532 406501	BARNSLEY CIVIC HALL IP10	-	Y	N/A
E	129m SW	434532 406501	BARNSLEY CIVIC HALL BH4	-	Y	N/A
E	130m SW	434530 406503	BARNSLEY CIVIC HALL TP4	-	Y	N/A
E	130m SW	434547 406480	BARNSLEY CIVIC HALL TP7	-	Y	N/A
E	131m SW	434557 406469	BARNSLEY CIVIC HALL TP2	-	Y	N/A
E	139m SW	434537 406478	BARNSLEY CIVIC HALL TPIP1	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
E	139m SW	434531 406485	BARNSLEY CIVIC HALL TP3	-	Y	N/A
E	142m SW	434542 406468	BARNSLEY CIVIC HALL BH3	-	Y	N/A
E	143m SW	434542 406467	BARNSLEY CIVIC HALL IP11	-	Y	N/A
E	145m SW	434544 406462	BARNSLEY CIVIC HALL IP14	-	Y	N/A
E	149m SW	434528 406473	BARNSLEY CIVIC HALL TP1	-	Y	N/A
G	172m SW	434525 406443	BARNSLEY CIVIC HALL IP13	-	Y	N/A
G	172m SW	434525 406443	BARNSLEY CIVIC HALL BH1	-	Y	N/A
H	187m S	434687 406388	BARNSLEY MARKETS PHASE 2 WS248	-	Y	N/A
H	192m S	434709 406389	BARNSLEY MARKETS PHASE 2 BH212	-	Y	N/A
I	202m S	434593 406374	BARNSLEY MARKET WS113	-	Y	N/A
J	202m S	434629 406368	BARNSLEY MARKETS PHASE 2 WS256	-	Y	N/A
H	207m S	434713 406375	BARNSLEY MARKETS PHASE 2 WS262	-	Y	N/A
7	207m S	434656 406363	BARNSLEY MARKETS PHASE 2 BH211	-	Y	N/A
H	216m S	434689 406359	BARNSLEY MARKETS PHASE 2 WS260	-	Y	N/A
H	218m S	434707 406362	BARNSLEY MARKETS PHASE 2 WS261	-	Y	N/A
H	218m SE	434731 406370	BARNSLEY MARKETS PHASE 2 WS263	-	Y	N/A
I	222m S	434577 406357	BARNSLEY MARKETS PHASE 2 WS258A	-	Y	N/A
J	223m S	434633 406347	BARNSLEY MARKETS PHASE 2 WS236	-	Y	N/A
H	225m S	434684 406349	BARNSLEY MARKETS PHASE 2 WS237	-	Y	N/A
I	226m S	434576 406353	BARNSLEY MARKETS PHASE 2 WS258	-	Y	N/A
K	227m SW	434470 406420	YORKSHIRE BANK MARKET HILL BARNSLEY 1	3.5	N	84418
L	232m SE	434762 406370	BARNSLEY MARKETS PHASE 2 BH218	-	Y	N/A
H	233m S	434706 406346	BARNSLEY MARKETS PHASE 2 BH209	-	Y	N/A
K	234m SW	434470 406410	YORKSHIRE BANK MARKET HILL BARNSLEY 2	2.0	N	84419
H	236m S	434734 406352	BARNSLEY MARKET WS110	-	Y	N/A
H	236m SE	434735 406352	BARNSLEY MARKETS PHASE 2 BH210	-	Y	N/A
H	236m S	434658 406334	BARNSLEY MARKETS PHASE 2 BH206	-	Y	N/A
H	238m S	434670 406334	BARNSLEY MARKETS PHASE 2 WS249	-	Y	N/A

ID	Location	Grid reference	Name	Length	Confidential	Web link
H	239m S	434695 406337	BARNSLEY MARKET WS109	-	Y	N/A
H	239m S	434696 406337	BARNSLEY MARKETS PHASE 2 WS246	-	Y	N/A
L	245m SE	434775 406363	BARNSLEY MARKET WS125	-	Y	N/A
L	246m SE	434793 406374	BARNSLEY MARKETS PHASE 2 BH219	-	Y	N/A
H	249m S	434678 406324	BARNSLEY MARKETS PHASE 2 WS250	-	Y	N/A

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.1 Shrink swell clays

Records within 50m	3

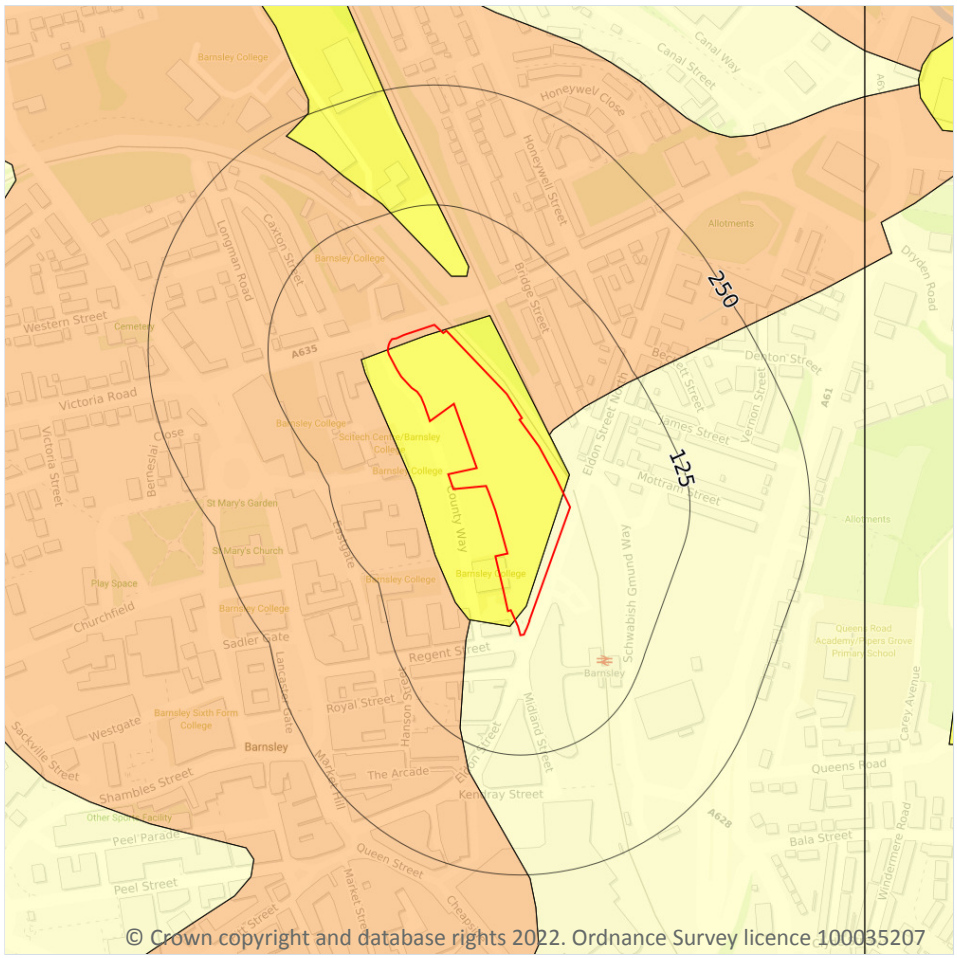
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 122**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Very low**	**Ground conditions predominantly low plasticity.**
40m E	Very low	Ground conditions predominantly low plasticity.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



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17.2 Running sands

Records within 50m	3

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

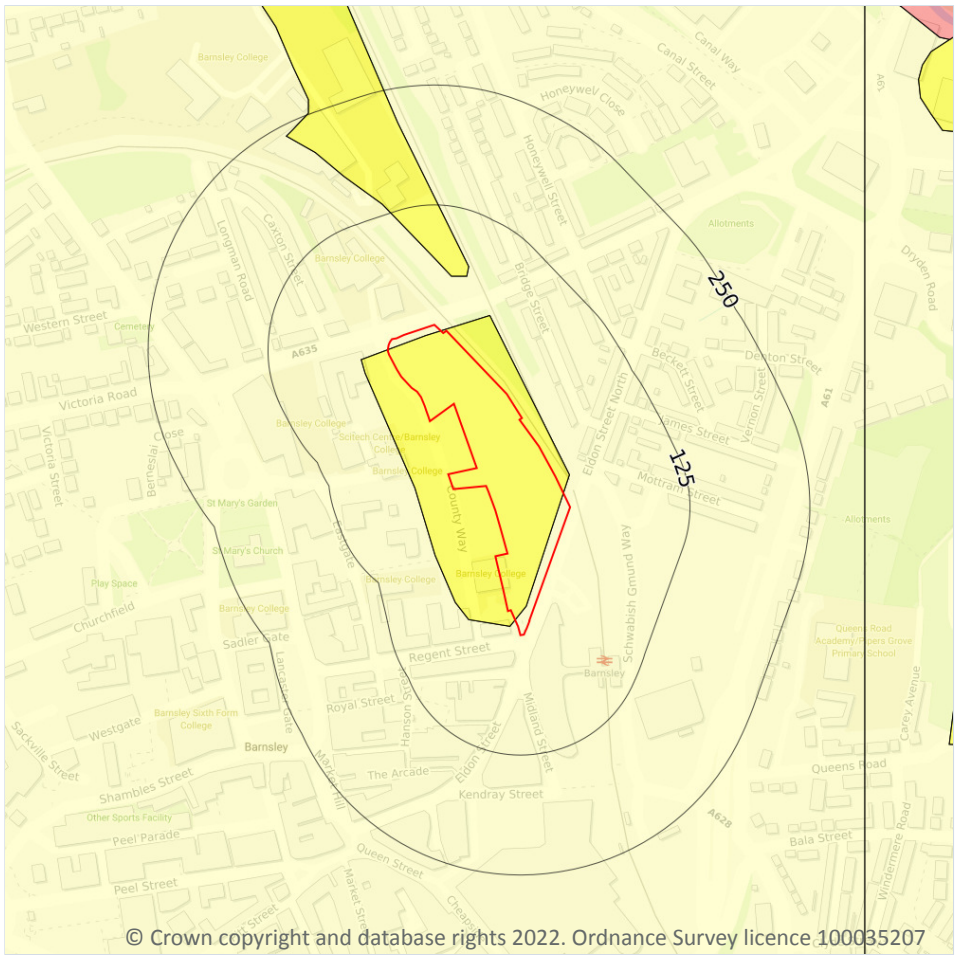
Features are displayed on the Natural ground subsidence - Running sands map on **page 124**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



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17.3 Compressible deposits

Records within 50m	2

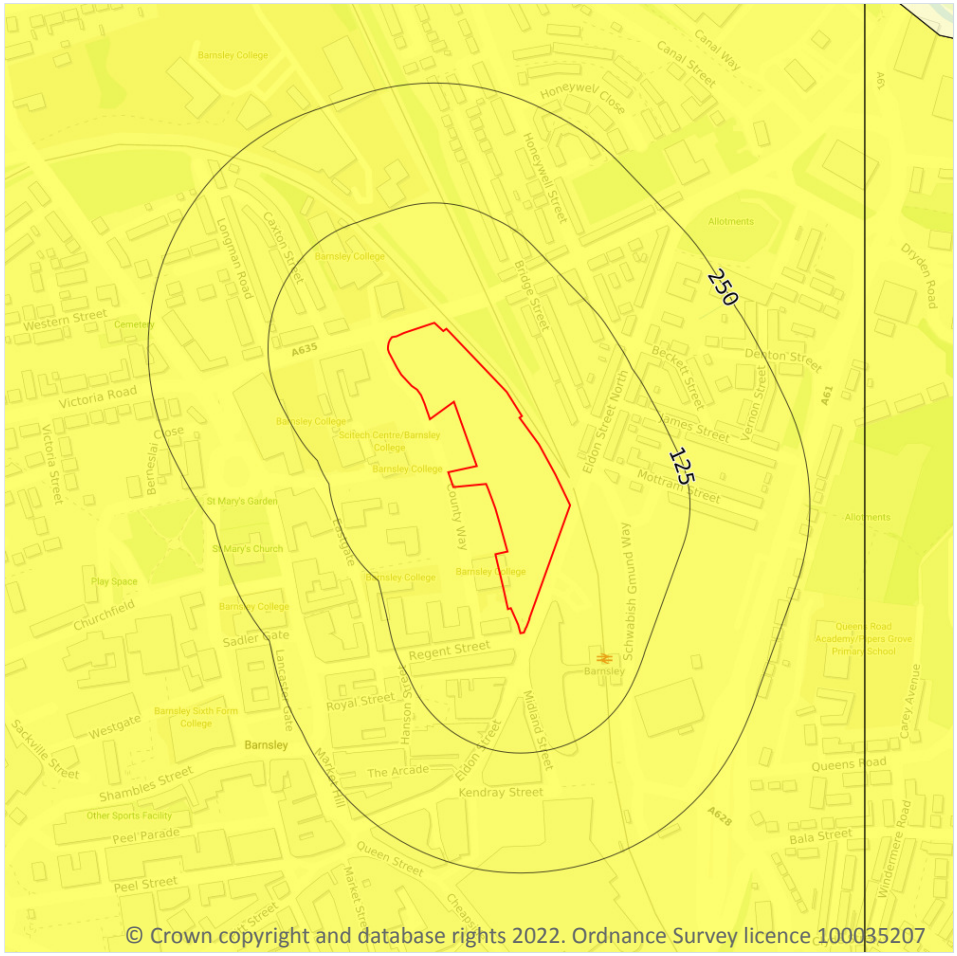
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 126**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**Very low**	**Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



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17.4 Collapsible deposits

Records within 50m	1

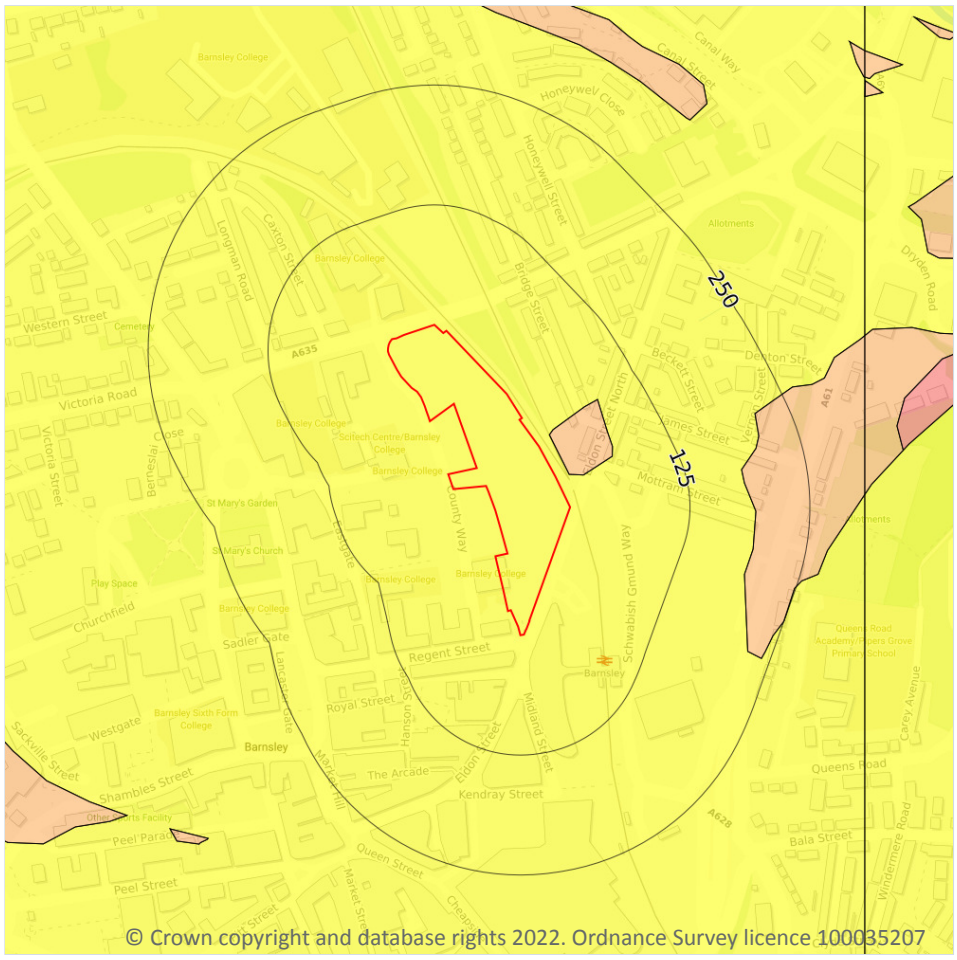
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 128**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	2

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 129**

Location	Hazard rating	Details
On site	**Very low**	**Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

Location	Hazard rating	Details
14m NE	Low	Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.6 Ground dissolution of soluble rocks

Records within 50m	1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 131**

Location	Hazard rating	Details
On site	**Negligible**	**Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.**

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- BritPits
- Surface ground workings
- Underground workings
- Historical Mineral Planning Areas
- Mining Cavities

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining, ground workings and natural cavities map on **page 133**

ID	Location	Details	Description
D	332m W	Name: Barnsley Colliery Address: BARNSLEY, South Yorkshire Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
15	397m N	Name: Honey Well Colliery Address: Gawber, BARNSLEY, South Yorkshire Commodity: Coal, Deep Status: Ceased	Type: Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots) Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.3 Surface ground workings

Records within 250m	21

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining, ground workings and natural cavities map on **page 133**

ID	Location	Land Use	Year of mapping	Mapping scale
2	**On site**	**Unspecified Heap**	**1993**	**1:10000**
3	**On site**	**Cuttings**	**1890**	**1:10560**
A	21m N	Unspecified Ground Workings	1850	1:10560
5	23m NW	Unspecified Ground Workings	1973	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
A	49m N	Unspecified Ground Workings	1938	1:10560
A	49m N	Unspecified Ground Workings	1938	1:10560
A	56m N	Unspecified Ground Workings	1951	1:10560
A	58m N	Unspecified Quarry	1890	1:10560
A	58m N	Unspecified Heap	1973	1:10000
A	58m N	Unspecified Heap	1966	1:10560
A	58m N	Unspecified Heap	1982	1:10000
A	61m N	Unspecified Ground Workings	1948	1:10560
A	61m N	Unspecified Ground Workings	1904	1:10560
A	92m N	Unspecified Pit	1951	1:10560
A	98m N	Unspecified Pit	1890	1:10560
A	159m N	Unspecified Heap	1982	1:10000
B	200m N	Unspecified Heap	1948	1:10560
B	200m N	Unspecified Heap	1904	1:10560
B	202m N	Unspecified Ground Workings	1951	1:10560
C	240m NW	Cuttings	1850	1:10560
D	249m W	Colliery	1850	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m **8**

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining, ground workings and natural cavities map on **page 133**

ID	Location	Land Use	Year of mapping	Mapping scale
F	326m E	Colliery	1951	1:10560
F	326m E	Colliery	1948	1:10560
F	373m E	Unspecified Drift	1948	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
F	373m E	Disused Air Shaft	1966	1:10560
F	407m E	Unspecified Drift	1951	1:10560
-	773m S	Colliery	1890	1:10560
29	813m NE	Colliery	1948	1:10560
-	928m NE	Colliery	1890	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m **0**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m **9**

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining, ground workings and natural cavities map on **page 133**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Iron Ore (Bedded)**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
4	**On site**	**Sheffield Area**	**Vein Mineral/Iron ore**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
10	307m E	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

ID	Location	Name	Commodity	Class	Likelihood
11	322m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
12	323m E	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
14	397m SE	Not available	Iron Ore (Bedded)	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
S	482m NE	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
19	506m S	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered
34	977m NE	Sheffield Area	Vein Mineral/Iron ore	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	**0**

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	**0**

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1

Areas which could be affected by past, current or future coal mining.

Location	Details
On site	**The site is located within a coal mining area as defined by the Coal Authority. A Consultants Coal Mining Report is recommended to further assess coal mining issues at the site. This can be ordered directly through Groundsure or your preferred search provider.**

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

This data is sourced from the Cheshire Brine Subsidence Compensation Board.

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

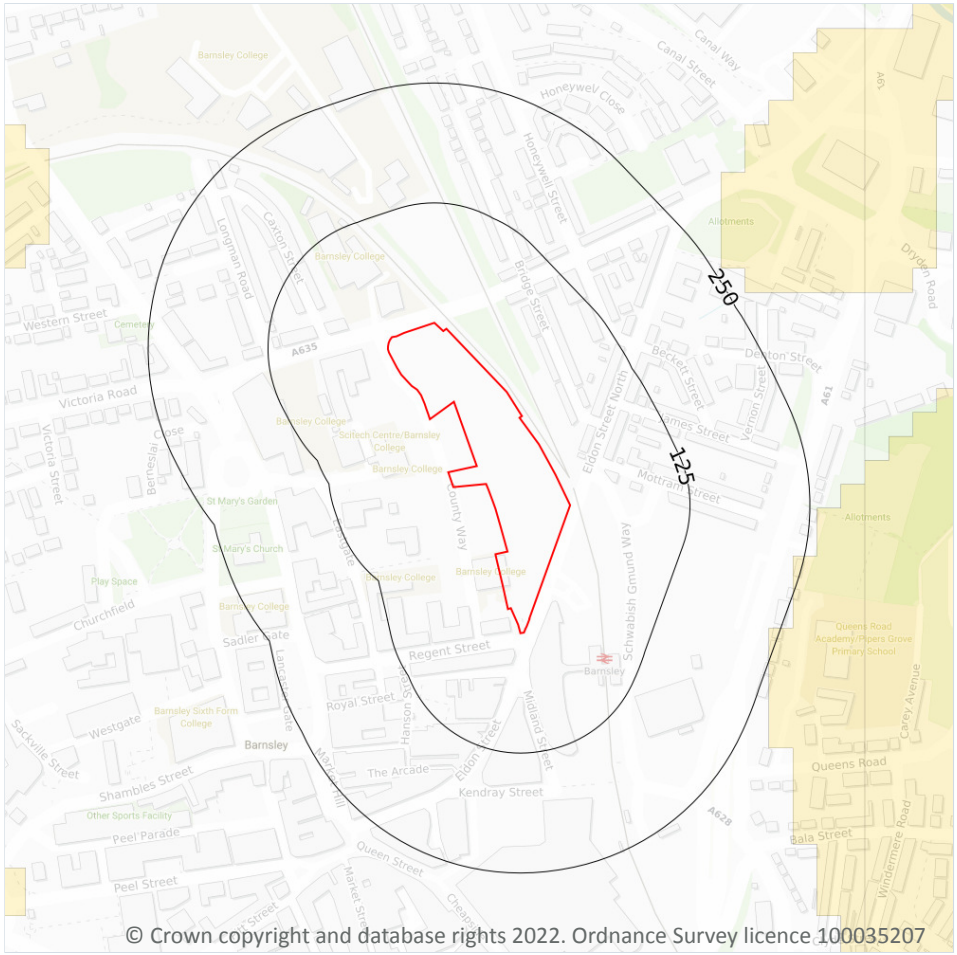
18.13 Clay mining

Records on site	0

Generalised areas that may be affected by kaolin and ball clay extraction.

This data is sourced from the Kaolin and Ball Clay Association (UK).

19 Radon



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Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

19.1 Radon

Records on site	1

Estimated percentage of dwellings exceeding the Radon Action Level. This data is the highest resolution radon dataset available for the UK and is produced to a 75m level of accuracy to allow for geological data accuracy and a 'residential property' buffer. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain. The data was derived from both geological assessments and long term measurements of radon in more than 479,000 households.

Features are displayed on the Radon map on **page 139**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Less than 1%**	**None****

This data is sourced from the British Geological Survey and Public Health England.

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m **3**

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 - 25 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**90 - 120 mg/kg**	**30 - 45 mg/kg**
3m W	15 - 25 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m **0**

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km^2).

This data is sourced from the British Geological Survey.

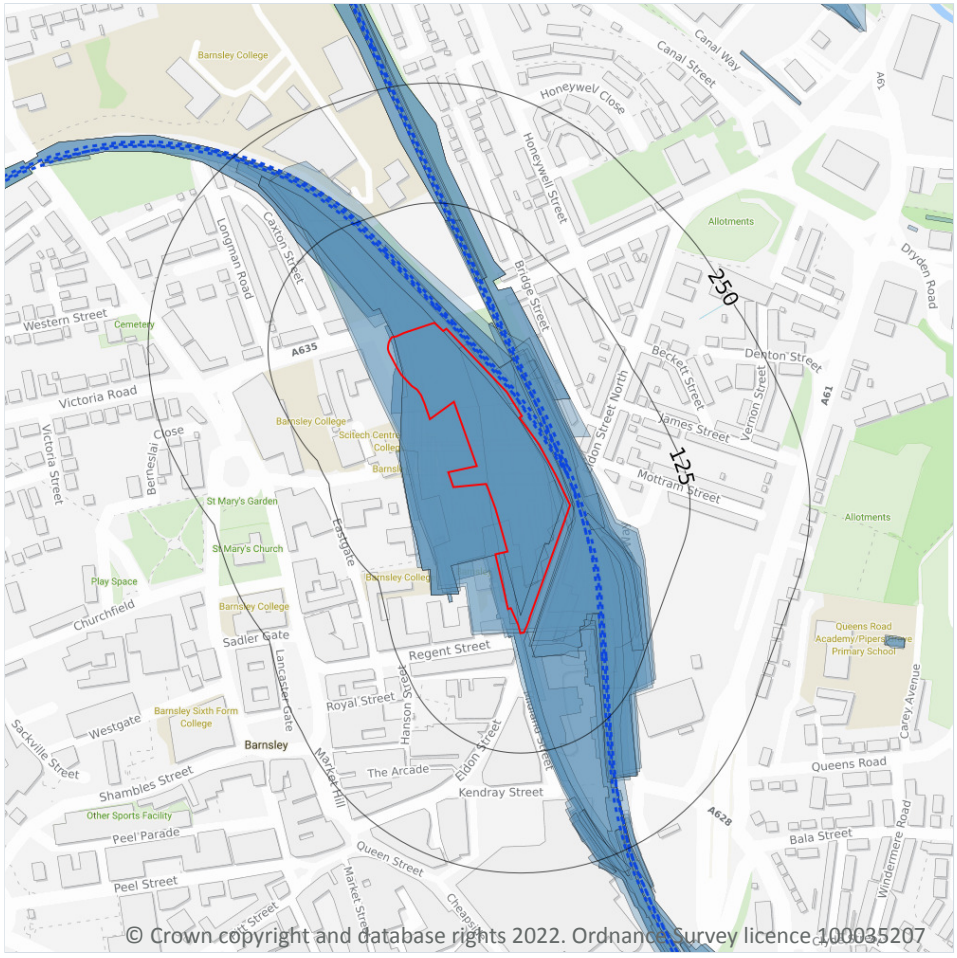
20.3 BGS Measured Urban Soil Chemistry

Records within 50m **0**

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km^2.

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects



- Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- Crossrail 1 Worksites
- Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

21.1 Underground railways (London)

Records within 250m	0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	53

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on **page 141**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1961**	**1250**
On site	**Railway Sidings**	**1906**	**2500**
On site	**Railway Sidings**	**1893**	**2500**
On site	**Railway Sidings**	**1960**	**2500**
On site	**Railway Sidings**	**1929**	**10560**
On site	**Railway**	**1932**	**-**
On site	**Railway**	**1893**	**-**
On site	**Railway**	**1906**	**-**
On site	**Railway**	**1888**	**-**
On site	**Railway**	**1904**	**-**
On site	**Railway**	**1929**	**-**
On site	**Railway Sidings**	**1948**	**10560**
On site	**Railway Sidings**	**1904**	**10560**
On site	**Railway Sidings**	**1973**	**10000**
On site	**Railway Sidings**	**1966**	**10560**
On site	**Railway Sidings**	**1982**	**10000**
On site	**Railway Sidings**	**1938**	**10560**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1850**	**10560**
On site	**Railway Sidings**	**1951**	**10560**
On site	**Railway Sidings**	**1890**	**10560**
2m NE	Railway Sidings	1972	1250
2m E	Railway Sidings	1904	10560
3m E	Railway Sidings	1987	1250
3m E	Railway Sidings	1890	10560
3m NE	Railway Sidings	1986	1250
4m E	Railway Sidings	1929	10560
5m E	Railway Sidings	1948	10560
10m NE	Railway Sidings	1993	10000
12m E	Railway Sidings	1960	2500
13m E	Railway Sidings	1960	2500
13m E	Railway Sidings	1986	1250
19m E	Railway Sidings	1850	10560
23m NE	Railway Sidings	1960	2500
31m E	Railway Sidings	1961	1250
32m NW	Railway Sidings	1961	1250
48m W	Railway Sidings	1961	1250
50m W	Railway Sidings	1906	2500
58m NE	Railway Sidings	1906	2500
58m NE	Railway Sidings	1893	2500
61m NE	Railway Sidings	1890	10560
65m NE	Railway Sidings	1960	2500
110m N	Railway Sidings	1960	2500
126m SE	Railway Sidings	1961	1250
128m N	Railway Sidings	1960	1250
128m SE	Railway Sidings	1850	10560

Location	Land Use	Year of mapping	Mapping scale
139m NW	Railway Sidings	1960	2500
179m S	Railway Sidings	1951	10560
194m S	Railway Sidings	1960	2500
195m S	Railway Sidings	1961	1250
195m S	Railway Sidings	1948	10560
203m S	Railway Sidings	1929	10560
216m SE	Railway Sidings	1961	1250
220m SE	Railway Sidings	1960	2500

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	26

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

Features are displayed on the Railway infrastructure and projects map on **page 141**

Location	Name	Type
4m NE	Penistone Line	rail

Location	Name	Type
5m NE	Not given	Multi Track
7m NE	Penistone Line	rail
8m NE	Penistone Line	rail
8m E	Hallam Line	rail
8m E	Not given	Multi Track
10m NE	Penistone Line	rail
10m NE	Hallam Line	rail
10m NE	Not given	Multi Track
12m E	Hallam Line	rail
14m NE	Hallam Line	rail
14m NE	Penistone Line	rail
14m NE	Hallam Line	rail
16m E	Hallam Line	rail
16m E	Hallam Line	rail
17m N	Penistone Line	rail
18m N	Penistone Line	rail
49m NE	Hallam Line	rail
52m NE	Hallam Line	rail
52m NE	Not given	Multi Track
54m NE	Hallam Line	rail
58m NE	Hallam Line	rail
85m E	Hallam Line	rail
86m N	Not given	Multi Track
88m E	Hallam Line	rail
93m SE	Not given	Multi Track

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

This data is sourced from HS2 ltd.

Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: https://www.groundsure.com/terms-and-conditions-jan-2020/.

Appendix D

UXO Risk Map

UNEXPLODED BOMB RISK MAP

SITE LOCATION

Map Centre: 434637,406751



LEGEND

- **High:** Areas indicated as having a bombing density of 50 bombs per 1000acre or higher.
- **Moderate:** Areas indicated as having a bombing density of 15 to 49 bombs per 1000acre.
- **Low:** Areas indicated as having 15 bombs per 1000acre or less.

miltary	**industry**	**UXO find**
transport	**dock**	**Luftwaffe targets**
utilities	**Bombing decoy**	**other**

How to use your Unexploded Bomb (UXB) risk map?

The map indicates the potential for Unexploded Bombs (UXB) to be present as a result of World War Two (WWII) bombing.

You can incorporate the map into your preliminary risk assessment* for potential Unexploded Ordnance (UXO) for a site. Using this map, you can make an informed decision as to whether more in-depth detailed risk assessment* is necessary.

What do I do if my site is in a moderate or high risk area?

Generally, we recommend that a detailed UXO desk study and risk assessment is undertaken for sites in a moderate or high UXB risk area.

Similarly, if your site is near to a designated Luftwaffe target or bombing decoy then additional detailed research is recommended.

More often than not, this further detailed research will conclude that the potential for a significant UXO hazard to be present on your site is actually low.

Never plan site work or undertake a risk assessment using these maps alone. More detail is required, particularly where there may be a source of UXO from other military operations which are not reflected on these maps.

If my site is in a low risk area, do I need to do anything?

If both the map and other research confirms that there is a low potential for UXO to be present on your site then, subject to your own comfort and risk tolerance, works can proceed with no special precautions.

A low risk really means that there is no greater probability of encountering UXO than anywhere else in the UK.

If you are unsure whether other sources of UXO may be present, you can ask for one of our **pre-desk study assessments (PDSA)**

If I have any questions, who do I contact?

tel: **+44 (0) 1993 886682**

email: **uxo@zetica.com**

web: **www.zeticauxo.com**

The information in this UXB risk map is derived from a number of sources and should be used in conjunction with the accompanying notes on our website: **(https://zeticauxo.com/downloads-and-resources/risk-maps/)**

Zetica cannot guarantee the accuracy or completeness of the information or data used and cannot accept any liability for any use of the maps. These maps can be used as part of a technical report or similar publication, subject to acknowledgment. The copyright remains with Zetica Ltd.

It is important to note that this map is not a UXO risk assessment and should not be reported as such when reproduced.

*Preliminary and detailed UXO risk assessments are advocated as good practice by industry guidance such as CIRIA C681 'Unexploded Ordnance (UXO), a guide for the construction industry'.

Appendix E

SSL 2022 Factual Report on Ground Investigation



Seam, Barnsley

Report on Ground Investigation

Project No: 765374

Client: Arcadis LLP

MAY 2022

STRUCTURAL SOILS LTD

Project No.:	765374
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Revision	Date	Description of revisions	Prepared by

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1 INTRODUCTION

This investigation was carried out by Structural Soils Ltd (SSL) for and on the instructions of Arcadis LLP (the Client and Engineer) on behalf of Barnsley Metropolitan Borough Council (BMBC). The purpose of the work was to obtain geotechnical and geoenvironmental information for Phase 1 of a proposed development known as "The Seam Barnsley town centre's digital business district".

The scope of the intrusive investigation comprised a combination of cable percussion boreholes, with rotary follow on drilling in some, machine and hand excavated trial pits, five window sample holes, concrete coring and geophysical / remote sensing surveys. The report contains a description of the site and the works carried out, the exploratory hole logs, and in-situ and laboratory testing results.

The ground investigation has been carried out in accordance with the contract specification, and the general requirements of BS 5930:2015+A1:2020, BS 10175:2011+A2:2017, BS EN 1997-2 (2007), BS EN ISO 22475-1 (2006) and other relevant standards as identified elsewhere in this report.

This report presents the factual information obtained by the ground investigation including records of all field and laboratory work carried out. All information given in this report is based on the ground conditions encountered during the site work, and on the results of the field and laboratory work performed during the investigation.

Whilst every attempt is made to record full details of the strata encountered in the exploratory holes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks. There may be conditions at the site that have not been taken into account, such as unpredictable soil strata, contaminant concentrations, and water conditions between or below exploratory holes.

This report was prepared by SSL for the sole and exclusive use of Arcadis LLP in response to particular instructions. Any other parties using the information contained in this report do so at their own risk and any duty of care to those parties is excluded. No liability will be accepted after a period of 6 years from the date of the report.

2 SITE DESCRIPTION

2.1 Location and Topography

The site is located immediately north of Barnsley City centre, and close to Barnsley railway station, (see Site Location Map in Appendix A). The British National Grid Reference of the approximate centre of the site is 434635,406739.

The site is currently occupied by a surfaced car park, which extends beyond the site and is on two levels the upper level being to the west. The site covers an area of approximately 1.9 Hectares, with a long axis aligned north south of approximately 320m and a short axis aligned east west with a width of 80 m at the widest point.

The site is bordered to the north east by a railway and to the south east by Eldon St North, from which it is separated by a large retaining wall, Eldon Street being at a lower level. A second retaining wall marks much of the western boundary of the site, this retaining wall separates the upper part of the car park from the site. At the southern end of the western boundary area are a number of buildings and an access road. At the northern end of the site is a second access road and a grassed bank. At the time of the ground investigation the northern end of the site was occupied by an NHS Covid testing centre and as such access to this area was restricted.

At the time of the investigation the car park was still operational.

2.2 Geology

Information on the geology of the site was obtained from the following sources published by the British Geological Survey (BGS):

- BGS map (sheet 78, Barnsley, scale 1:50,000, Bedrock and Superficial published 2008).
- The BGS digital geology map, which utilises the most up to date names for geological units (www.bgs.ac.uk/data).
- The BGS Lexicon of Named Rock Units, which provides typical descriptions for most geological units (www.bgs.ac.uk/lexicon).

The site is shown to be underlain by the following descending sequence of strata:

TABLE 1 : SUMMARY OF EXPECTED SITE GEOLOGY	
Geological Unit Name	**Description**
ANTHROPOGENIC GROUND	
Made Ground (undivided)	Artificial Deposit
SUPERFICIAL DEPOSITS	
None shown	
SOLID GEOLOGY	

TABLE 1 : SUMMARY OF EXPECTED SITE GEOLOGY	
Geological Unit Name	**Description**
ANTHROPOGENIC GROUND	
Pennine Middle Coal Measure formation (PMCM)	Interbedded sequence of sandstone, siltstone and mudstone with subordinate beds of coal, seat earth and ironstone. The Kents Thick sandstone is shown to underlie the northern area of the site.

3 FIELDWORK

3.1 General

The ground investigation was carried out by SSL between 14 March and 20 April 2022. The investigation was supervised by an engineer from SSL. The scope of works and positions were selected by the Client, set out by SSL and adjusted where necessary to take account of buried or overhead services, or other restrictions. The exploratory hole locations are shown on the Exploratory Hole Location Plan presented in Appendix A.

Some of the work was carried out during a night shift, 6 to 7 April 2022, this was to investigate the retaining wall on Eldon Street North. One lane of the road was closed to allow safe working. The permits for the closure issued by BMBC are included in Appendix F.

3.2 Exploratory Holes

The intrusive works and exploratory holes are listed in the following table.

TABLE 2 :SCOPE OF INTRUSIVE WORKS			
Quantity	**Exploratory Hole Type**	**Maximum depth (m)**	**Hole / Test Numbers**
12	Cable Percussion boreholes	9.34	ABH101 to ABH112
10	Boreholes extended by Rotary Coring	21.50	ABH101 to ABH107 & ABH110 to ABH112
11	Window sample holes	5.45	WS101 to WS111
6	Machine Dug Trial Pits	2.80	ATP101, ATP102 & ATP105 to ATP108
4	Soak away tests and plate load tests carried out in machine dug trial pits	(2.01)	ATP101, ATP102, ATP105 & ATP106
2	Hand excavated trial pits	1.40	ATP103 & ATP104,
2	Trial pits excavated by vacuum extraction methods	0.53	ATP109 & ATP110
3	Concrete core holes (retaining walls)	1.90	CO1 to CO3
4	Probe holes (retaining walls	0.80	DO1 to DO4

The exploratory hole logs are presented in Appendix B. These provide information including the equipment and methods used, samples taken, tests carried out, water observations and descriptions of the strata encountered. Explanation of the terms and

abbreviations used on the logs is given in the Key to Exploratory Hole Records in Appendix B, together with other explanatory information.

Prior to the commencement of any exploratory hole all positions were checked for buried services by a specialist utility surveyor using a cable avoidance tool (CAT), signal generator ('genny'), and ground penetrating radar (GPR).

Inspection pits were hand dug at borehole and window sample locations where noted on the relevant exploratory hole logs.

On completion of the works, a survey of the exploratory hole locations was undertaken using specialist Global Positioning System (GPS) equipment. The coordinates of each exploratory hole were measured relative to British National Grid, and the level relative to Ordnance Datum. These are shown on the exploratory hole logs contained in Appendix B.

The holes were logged by an engineer in general accordance with the recommendations of BS 5930:2015+A1:2020 (which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1. Detailed descriptions, together with relevant comments, are given on the logs.

3.3 Cable Percussion Boreholes

The boreholes were drilled using a cable tool percussion drilling rig equipped with 150 mm diameter casing and tools. Steel casing was inserted where necessary to offer temporary support to the holes.

Small and bulk disturbed soil samples were taken from the boreholes at regular intervals.

Standard Penetration Tests (SPT) were carried out at regular intervals (see In-Situ Testing, below).

3.4 Rotary Boreholes

Ten of the cable percussion boreholes were extended by rotary drilling using tracked rotary drilling rigs. Rotary coring techniques were used to recover 12 m of competent rock. Steel casing was inserted where necessary to offer temporary support to the holes.

Rotary coring was carried out using double tube barrels either T6 116 or PWF to produce a hole of up to 120mm diameter. A clear perspex liner was incorporated within the inner barrel to maximise the quality of core recovery where required, to produce a core of 90 mm or 87 mm diameter. Water flush was used, the flush being recirculated to minimise the volume of water used. The rotary drilling was carried out in accordance with Coal Authority Permit 24715 dated 7 March 2022; a copy of which is enclosed in Appendix F

The recovered core was placed in sequence in wooden core boxes and transported back to SSL Castleford depot for photographing and logging. The core photographs are attached to the relevant borehole log in Appendix B.

3.5 Window Sampling

The window sample exploratory holes were drilled using either a tracked rig with chain driven drop weight or a handheld hydraulic hammer to drive sample tubes. Windowless steel sample tubes containing a plastic sample liner were used. The holes reduce in diameter with depth, as reported on the logs.

Small and bulk disturbed soil samples were subsampled from the window samples at regular intervals.

Standard Penetration Tests (SPT) were carried out at selected intervals in the window sample holes using the rig's integral drop weight/hammer (see In-Situ Testing, below).

3.6 Machine Excavated Trial Pits

The machine dug trial pits were excavated using a wheeled mechanical excavator and were up to 2.80 m deep.

Small and bulk disturbed soil samples were taken from the trial pits at regular intervals.

Trial pits ATP101, ATP102, ATP105 & ATP106 were carried out to allow soakaway tests in accordance with BRE 365 and plate load tests be carried out.

Trial pits ATP107 and ATP108 were excavated at the rear of the retaining wall which fronts on to Eldon Street North and were carried out as part of the night shift work.

3.7 Vacuum and Hand Excavated Trial Pits

These trial pits were excavated to expose the foundations of the two retaining walls. ATP103 and ATP104 were excavated by hand adjacent to the upper retaining wall on the western boundary of the site. ATP109 and ATP110 were excavated vacuum excavation methods adjacent to the retaining wall on Eldon Street North and were carried out as part of the night shift work.

Small and bulk disturbed soil samples were taken from the trial pits at regular intervals.

3.8 Concrete Coring and Probing

Concrete coring equipment was carried out to drill three horizontal holes in to the masonry of the retaining walls, one hole was drilled in the retaining wall on Eldon Street North and two in to the retaining wall on the western side of the site.

The equipment was also used to drill probe holes into the masonry, two were drilled in both retaining walls. The records are presented in Appendix B, together with photographs of the recovered core.

3.9 Chemical Contamination Sampling

Samples for contamination testing were taken from the exploratory holes where indicated on the exploratory hole logs, recorded as sample types ES for soil.

All samples were placed in appropriate contamination sample containers that were supplied by the laboratory. Containers for volatiles testing of soil samples were filled to

capacity. All samples were then kept in cool boxes with ice packs and were transported to the laboratories under Chain of Custody documentation, as promptly as possible to maintain sample integrity.

3.10 Backfill, Monitoring Wells and Installations

On completion 50 mm diameter gas/groundwater monitoring wells were installed in the rotary boreholes and five of the window sample holes, the design having been decided by the Engineer. The installation details are shown on the exploratory hole logs in Appendix B. The well details are also summarised below:

TABLE 3 : SUMMARY OF MONITORING WELL INSTALLATIONS

Location	Well Diameter (mm)	Well Depth (m bgl)	Well Response Zone (m bgl)	Type of Protective Cover	Notes
ABH101	50	15.00	9.00-15.00	Flush	
ABH102	50	6.00	1.00-6.00	Flush	
ABH103	50	3.00	0.90-3.20	Flush	
ABH104	50	2.40	1.00-2.40	Flush	
ABH105	50	18.00	12.00-18.00	Flush	
ABH106	50	3.00	1.00-3.00	Flush	
ABH107	50	5.00	1.00-5.00	Flush	
ABH110	50	10.00	2.00-10.00	Flush	
ABH111	50	6.00	1.00-6.00	Flush	
ABH112	50	16.00	1.00-16.00	Flush	
AWS102	50	2.60	0.60-2.60	Flush	
AWS103	50	3.00	1.00-3.00	Flush	
AWS106	50	2.00	1.00-2.00	Flush	
AWS108	50	4.00	1.00-4.00	Flush	
AWS110	50	1.40	0.50-1.40	Flush	

3.11 In-Situ Testing

3.11.1 Standard Penetration Test (SPT)

SPTs were carried out in the boreholes and window sample holes, where noted in the preceding sections, in accordance with BS EN ISO 22476-3 using hammers which have been calibrated for efficiency. The calibration certificates are included in Appendix F. Seating drives have been recorded in increments of 75 mm in accordance with recommended UK practice.

The SPT N-values are reported on the borehole logs and window sample logs, on which the calibration number of the hammer used is recorded. The full results are presented in tabular format on the Summary of Standard Penetration Tests in Appendix C, on which the normalised N_{60} values are also reported, which are the equivalent N-value for a hammer delivering 60% of the theoretical drop energy. Plots showing N and N_{60} values versus depth and elevation are also included Appendix C.

Where full penetration was not reached during the test the number of blows and penetration achieved is recorded on the logs and summary table.

3.11.2 Plate Load Testing

In-situ Plate Load Bearing Tests were conducted in accordance with BS 1377 Part 9:1990. The test depth and plate diameter used is reported on the test results. A mechanical excavator was used as kentledge for the test. The incremental loading test method was used. The results are contained in Appendix C.

3.11.3 Soakaway Testing

The Soakaway tests were undertaken in trial pits in general accordance with recommended practice given in BRE Digest 365. Up to three fillings of the pits were undertaken, where less fillings were carried out this was due to slow infiltration rates.. The results are contained in Appendix C.

3.12 Remote Sensing Survey

A survey of the retaining on Eldon Street North was carried out by Centara a sister company of SSL. The work comprised a ground penetration radar survey of the ground behind the retaining wall. A topographical survey of the wall, together with photographs.

Due to the size of some of the documents this work is reported separately but forms Appendix F of this report.

As part of the work on the night shift an attempt was made to trace soils nails which extend back from face plates on the retaining wall using a CAT and genny. The attempt was unsuccessful as a signal could not be induced in the nails from the face plates, or were two deep to record a response.

3.13 Post Fieldwork Monitoring

Monitoring the installations for ground gas (oxygen, methane, carbon dioxide, carbon monoxide and hydrogen sulphide) and groundwater levels has been carried out on two

occasions following completion of the fieldwork. Four further visits are proposed. The results of the monitoring visits are tabulated in Appendix G with dates.

During the first visit the deeper wells were purged by removing three times the well volume of water. Water samples were obtained on the second visit.

4 LABORATORY TESTING

Samples for potential geotechnical testing were returned to one of the Company's UKAS accredited laboratories, and those for potential contamination testing were sent to a sister company Envirolab Limited, a MCERTS and UKAS accredited chemical testing laboratory. Laboratory tests were scheduled by Arcadis.

4.1 Geotechnical Laboratory Testing

Geotechnical laboratory testing was generally carried out in accordance with the relevant part of BS1377: 1990, *Methods of Test for Soils for Civil Engineering Purposes*, or, where superseded, by the relevant part of BS EN ISO 17892:2014+ *Geotechnical investigation and testing – Laboratory Testing of Soil*.

The tests completed are:

Soil

- Moisture content
- Atterberg limits
- Particle size distribution (PSD
- Water soluble sulphate and pH

Rock

- Moisture content
- Point load
- Unconfined compressive strength (UCS)

The results are reported in tabular and/or graphical form and included as Appendix D of this report.

4.2 Contamination Laboratory Testing

The contamination testing carried out is summarised below. The results are included as Appendix E of this report.

Soil Tests

- SSL HHB Human – Made Ground - Assessment suite
    - Comprises arsenic, cadmium, chromium (total), lead, mercury, selenium, copper, nickel, zinc, speciated polycyclic aromatic hydrocarbons (PAH), total petroleum hydrocarbons (TPHCWG (speciated)), soluble organic matter, soluble sulphate and pH
- Hexavalent Chromium
- TOC
- Total Phenols
- Total Cyanide

- Asbestos
- WAC testing

Leachate Testing

- pH;
- Sulphate;
- Metals – arsenic, cadmium, chromium (total), copper, mercury, lead, nickel, zinc.
- Hexavalent. Chromium
- TPH CWG
- PAH 16
- Total Cyanide

Ground Water

- pH;
- Sulphate;
- Metals – arsenic, boron, cadmium, chromium, copper, mercury, lead, nickel, zinc.
- Hexavalent Chromium;
- TPH CWG;
- PAH 16MS;
- Phenols; and
- Total Cyanide.

5 REFERENCES

5.1 BS 5930:2015+A1:2020 *Code of practice for ground investigations*

5.2 BS EN 1997-1:2004 *Eurocode 7 — Geotechnical Design Part 1 - General Rules* incorporating corrigendum Feb 2009 and Amemdment A1 2013

5.3 BS EN 1997-2:2007 Eurocode 7 — *Geotechnical design Part 2: Ground Investigation and testing*

5.4 BS 10175:2011 *Investigation of potentially contaminated sites: Code of practice*, including amendment A2 2017

5.5 British Geological Survey sheet 87, Barnsley, scale 1:50,000, Bedrock and Superficial published 2008

5.6 British Geological Survey online digital geological map, www.bgs.ac.uk/data

5.7 British Geological Survey Lexicon of Named Rock Units, www.bgs.ac.uk/lexicon

5.8 BS EN ISO 14688-1:2018 Geotechnical investigation and testing – Identification and classification of soil: Part 1: Identification and description

5.9 BS EN ISO 14688-2:2018 *Geotechnical investigation and testing – Identification and classification of soil: Part 2: Principles for a classification*

5.10 BS EN ISO 14689-1:2018 *Geotechnical investigation and testing – Identification and classification of rock: Part 1: Identification and description*

5.11 BS EN ISO 22475-1:2006 *Geotechnical Investigation and Testing – Sampling methods and groundwater measurements, Part 1 Technical principals for execution*

5.12 BS EN ISO 22476-3:2005 (updated February 2007) *Geotechnical Investigation and Testing – Field Testing Part 3: Standard Penetration Test*, including Amendment A1 (2011)

5.13 CIRIA Report R143 (1995) *The Standard Penetration Test (SPT) - Methods and Use*

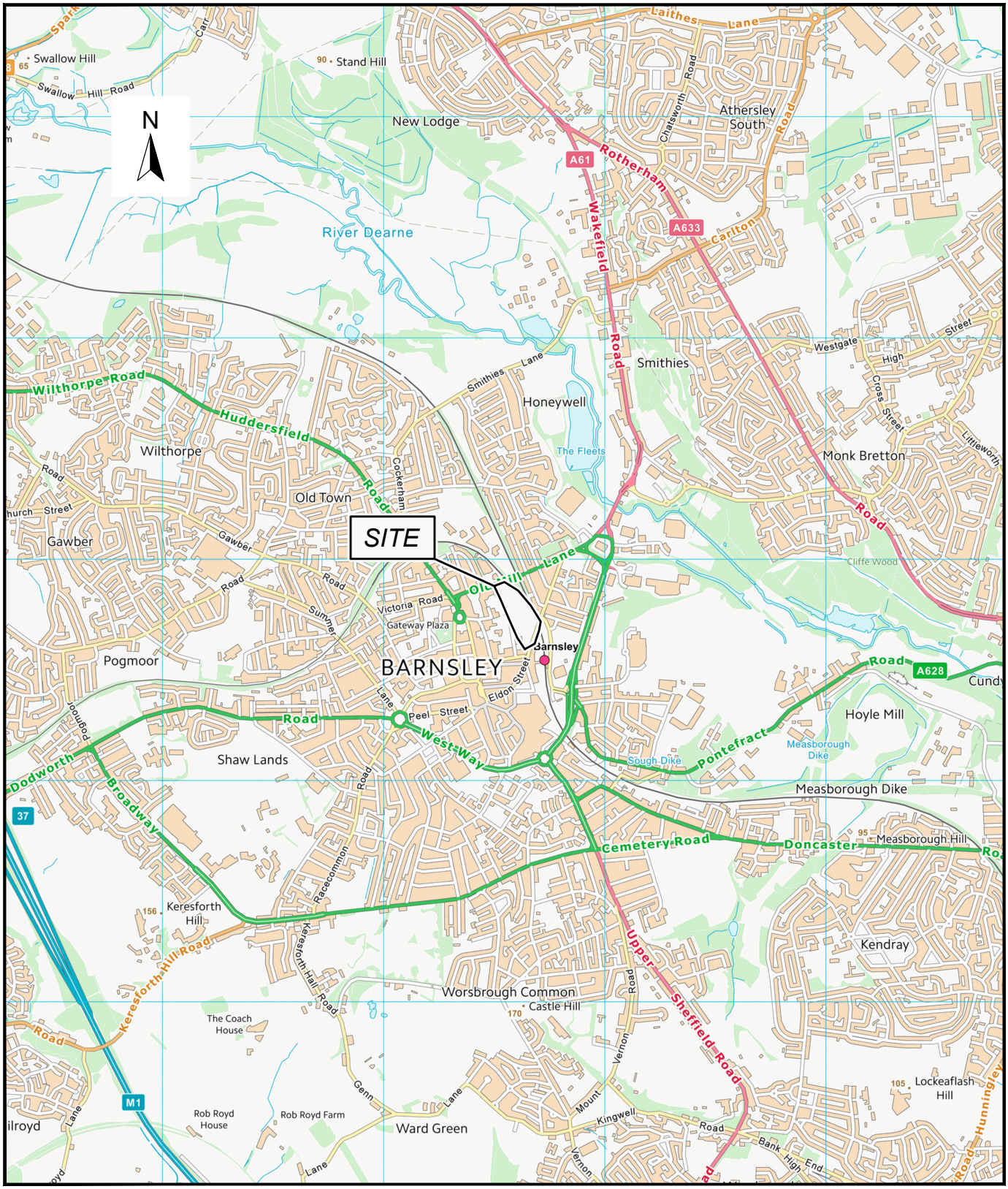
5.14 BS 1377:1990 *Method of Test for Soils for Civil Engineering Purposes*

5.15 BS EN ISO 17892:2014 *Geotechnical investigation and testing – Laboratory Testing of Soil*

APPENDIX A -
PLANS AND DRAWINGS

(i) Site Location Plan

(ii) Exploratory Hole Location Plan



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REV.	DATE	DESCRIPTION	BY	CHD.	APR.
00	12.05.2022	-	MB	EC	-

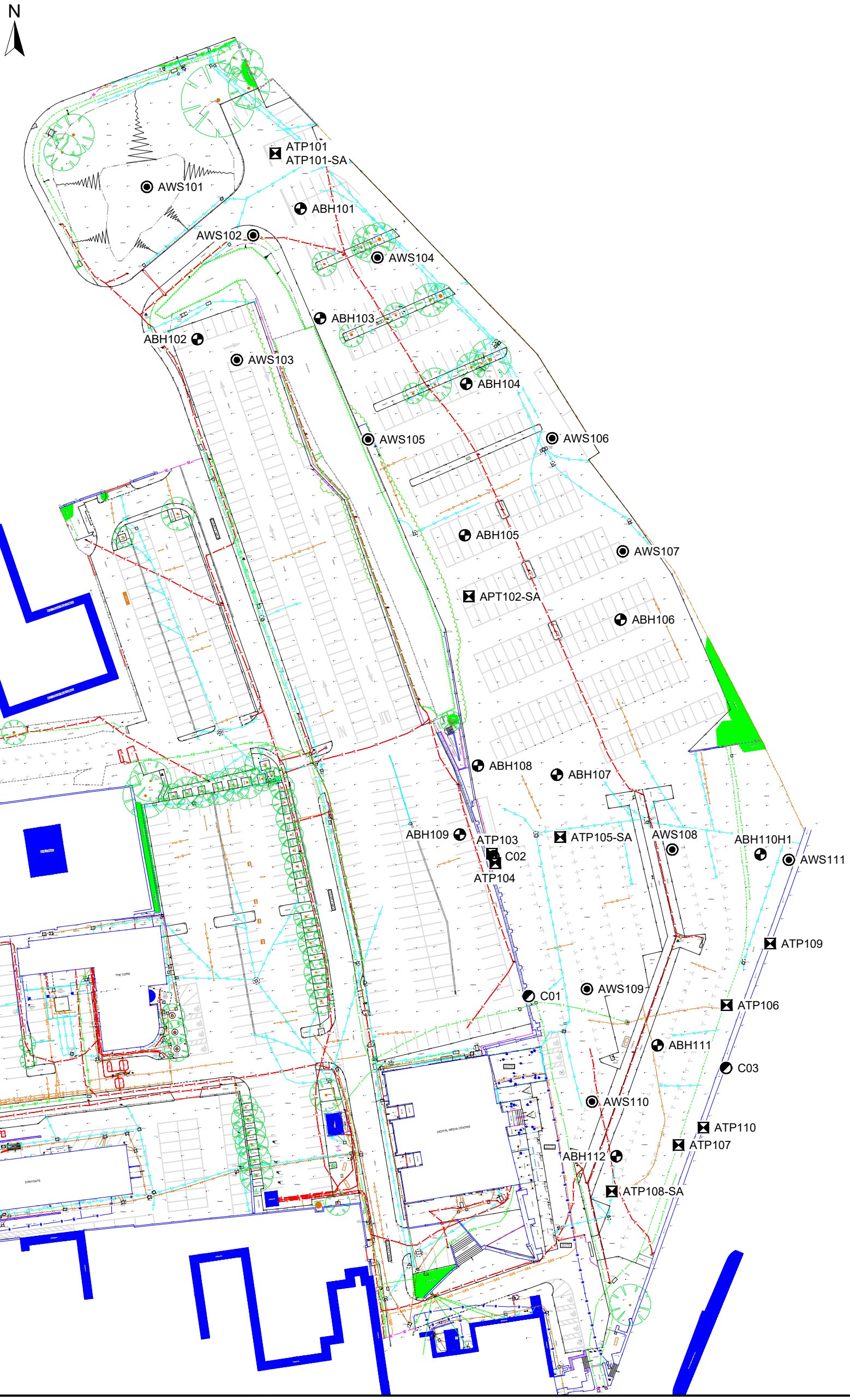
DIMENSION	SCALE	DRAWING STATUS
m	1:25,000	-

CLIENT: Arcadis Consulting (UK) Ltd

PROJECT: Seam Barnsley

TITLE: SITE LOCATION MAP

JOB NO	GRID REF	SCALE BAR	ORIGIN SIZE	FIGURE
765374	SE 346 066	0 250 500 750 1,000m	A4	1



00	12.05.2022	-	MB	EC	-
REV	DATE	DESCRIPTION	BY	CHD	APR

DIMENSION	SCALE	ORIGIN SIZE
m	1:1000	A3

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CLIENT

Arcadis Consulting (UK) Ltd

PROJECT

Seam Barnsley

TITLE

EXPLORATORY HOLE LOCATION PLAN

JOB NO	SCALE BAR	FIGURE
765374	0 10 20 30 40 50m	2

LEGEND

- Trial Pit Location
- Borehole Location
- Window Sample Location
- Core Location

APPENDIX B - EXPLORATORY HOLE RECORDS

(i) Key to Exploratory Hole Logs

(ii) Borehole Logs

(iii) Window Sample Logs

(iv) Concrete Core and Probing Records

(v) Trial Pit Logs

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF ABBREVIATIONS

SAMPLING

Sample type codes:

AMAL	=	Amalgamated sample.
B	=	Bulk disturbed sample.
D	=	Small disturbed sample.
DSPT	=	Small disturbed sample originating from SPT test.
ES	=	Soil sample for environmental testing.

IN-SITU TESTING

SPT = Standard Penetration Test using split spoon sampler. ($_{(NR)}$ indicates 'No Sample Recovery').

ROTARY DRILLING INFORMATION

W	=	Water flush returns (%)
TCR	=	Total core recovery (%)
SCR	=	Solid core recovery (%)
RQD	=	Rock quality designations (%)
If	=	Fracture spacing (mm). Where variable the minimum - mode - maximum spacing may be quoted.

In fracture column (i) denotes discontinuity is infilled (refer to Fracture Table for details).
'NI' denotes non-intact core. 'NA' denotes not applicable.

- All lengths used to determine rock core mechanical properties taken along the centre line of the core.
- Obvious induced fractures have been ignored.
- The assessment of solid core is based on lengths that show a full diameter and not necessarily a full circumference.

Where used Rotary flushing medium abbreviations:

W	=	Water

AZCL = Assessed zone of core loss.

ADDITIONAL NOTES

1. All soil and rock descriptions and legends in general accordance with BS EN ISO 14688-1:2018, 14688-2:2018, 14689:2018, and BS5930:2015+A1:2020.
2. Material types divided by a broken line (- - -) indicates an unclear boundary.
3. Fracture spacings (If) quoted in the Description of Strata for specific strata or specific fracture sets are also quoted in mm, e.g. (25/80/230) referring to (Min/Avg/Max).
4. The data on any sheet within the report showing the AGS icon is available in the AGS format.

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STRUCTURAL SOILS

Contract Reference: **765374**

KEY TO EXPLORATORY HOLE LOGS - SUMMARY OF GRAPHIC SYMBOLS

WATER COLUMN SYMBOLS



First water strike, second water strike etc.



Standing water level following first strike, standing water level following second strike etc.


Seepage.


Standing water level recorded at documented date.

MATERIAL GRAPHIC LEGENDS


CLAY


Clayey GRAVEL


Gravelly clayey SAND


Clayey gravelly SAND with COBBLES


Coal


COBBLES


Clayey SAND with COBBLES


Clayey sandy GRAVEL


Sandy clayey GRAVEL


GRAVEL


GRAVEL with COBBLES


Gravelly CLAY


Gravelly silty CLAY


MADE GROUND


Mudstone


Possible MADE GROUND


SAND


Sandstone


Sandy CLAY


Sandy CLAY with COBBLES

INSTRUMENTATION SYMBOLS


Asphalt


Backfill


Bentonite cement grout


Bentonite cement pellets


Bentonite seal


Concrete


Gravel filter


Sand filter


Plain pipe


Slotted pipe

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**1** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black Tarmac.	0.05	
0.10-0.25	1	B									MADE GROUND: White pinkish light grey brown sandy angular to subangular fine to coarse GRAVEL of sandstone, concrete and occasional tarmac. Sand is fine to coarse. (Subbase)	0.25	
0.20	101	ES	1xT+1xJ+1xV									(0.35)	
0.20	2	D									. . . 0.20-0.25m: slightly clayey. Low cobble content.	0.60	
0.25-0.60	3	B									MADE GROUND: Dark grey black sandy silty very clayey angular to subangular fine to coarse GRAVEL of sandstone, coal, red brick, concrete and occasional tarmac. Low cobble content. Sand is fine to coarse. Cobbles are angular to subangular sandstone and concrete.	(0.60)	
0.40	102	ES	1xT+1xJ+1xV									1.20	
0.40	4	D									MADE GROUND: Dark brown mottled red and black very gravelly clayey coarse SAND with low cobble content. Gravel is angular to subangular fine to coarse of sandstone, coal, red brick and rare concrete. Cobbles are subangular sandstone and red brick.		
0.60-1.20	5	B											
0.90	103	ES	1xT+1xJ+1xV										
0.90	6	D											
1.20-1.65	7	SPT	N=8										
1.20-2.00	10	D											
1.20-1.65	8	DSPT											
1.20-1.65	9	B											
1.30	104	ES	1xT+1xJ+1xV										
											Soft orangish brown dark brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium locally coarse of sandstone, mudstone and rare coal.	(1.80)	
2.00-2.45	11	SPT	N=9									3.00	
2.00-2.45	12	DSPT											
2.00-2.45	13	B											
2.00-3.00	14	D											
3.00-3.45	15	SPT	N=9								Soft dark brown mottled black gravelly very sandy silty CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to medium locally coarse of sandstone and mudstone.	(1.20)	
3.00-3.45	16	DSPT											
3.00-4.00	17	B											
3.00-4.00	18	D											
4.00-4.31	19	SPT	11,17/34,46,4 for 5mm									4.20	
4.00-4.31	20	DSPT											
4.00-4.50	21	D									Weak orangish brown weathered SANDSTONE.	(0.30)	
												4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
15/03/22	17:00	1.20	None	150	Dry
17/03/22	08:00	1.20	None	150	Dry
17/03/22	14:00	4.50	1.50	150	Dry
05/04/22	08:30	4.50	None	150	Dry
05/04/22	17:30	14.00	4.50	116	9.40
06/04/22	08:00	14.00	4.50	116	10.05
06/04/22	14:00	16.50	4.50	116	9.60

Chiselling / Slow Progress

From	To	Duration (hh:mm)
4.20	4.50	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 4.50m then extended using rotary coring techniques to 16.50m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**2** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
4.50-5.00											Medium strong thinly laminated light brown medium grain SANDSTONE with rare thin laminations of black carbonaceous sandstone. Weathering : - stained orange through core. Stained orange and black along fracture surfaces ironstained weathering concentric rings. Discontinuities : - 1) 10° to 20° fractures very closely to medium spaced open undulating/ stepped rough stained orange and black clay smear gravel fill angular fine to coarse sandstone. 2) 55° fractures widely spaced undulating rough stained orange and black. 3) 85° fractures tight undulating rough clay fill <1mm.		
4.50-4.63	22	SPT	34/50 for 50mm				NI NI NI						
4.50-4.63	23	DSPT		100	44	0							
5.00-6.50							NI 40 60						
				85	68	38					. . . 5.40 - 5.47m: ironstained. 85° fracture . . . 5.62 - 5.70m: ironstained. 85° fracture . . . 5.74 - 7.78m: ironstained. 85° fracture . . . 6.10 - 6.90m: incipient fracture		
6.50-8.00								0% return Water					
				97	74	49	NI 210 330				. . . 6.70 - 6.90m: ironstained. 85° fracture . . . 6.94 - 6.99m: ironstained. 85° fracture . . . 6.96m: 85° fracture . . . 7.35 7.51m: ironstained. 85° fracture		
8.00-9.50 (0:20)													
				99	79	51					. . . 8.29 - 8.34m: ironstained. 85° fracture . . . 8.52 - 8.98m: 85° fracture.	(8.30)	

Boring Progress and Water Observations						Chiselling / Slow Progress		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**3** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
9.50-11.00 (0:21) 9.50		C		99	79	51					. . . 9.06 - 9.10m: black moderately weak. . . . . 9.10 - 9.17m: ironstained. 85° fracture . . . 9.24 - 9.30m: 85° fracture.		
				97	73	48	NI 210 330				. . . 9.60 - 9.96m: 85° fracture. . . . 9.96 - 10.15m: ironstained. 85° fracture		
11.00-12.50 (0:18) 11.00		C		100	77	67	NI 200 360	0% return Water			. . . 10.69 - 11.03m: orange weak. . . . 10.83 - 11.80m: black sandstone laminations strong to weak. . . . 11.14 - 11.31m ironstained. 85° fracture . . . 11.31 - 12.38m: orange concentric rings.		
12.50-14.00 (0:19)				100	78	61						12.80	
											Very weak to weak thinly laminated bright black COAL. Weathering : - partly orange stained along fracture surface. Discontinuities : - 1) 0° to 5° extremely to very closely spaced very open undulating rough.	(0.43) 13.23	
											Weak thinly laminated dark grey MUDSTONE with abundant roots fossils		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**4** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
											with laminations of dull coal. Weathering : - orange staining along fracture surfaces. Discontinuities : - 1) 10° fractures very closely to closely spaced undulating rough stained orange. 2) 85° fracture undulating rough stained orange.	(0.57)	
				100	78	61					. . . 13.23 - 13.28m: extermely weak mudstone recovered as very stiff clay.	13.80	
14.00-15.50							NI 200 360				. . . 13.39 - 13.50m: 85° fracture.	14.05	
											Moderateley weak thinly laminated dark grey SILTSTONE with abundant root fossils and ironstone root preservation. Weathering : - stained orange along fracture surface. Discontinuities : - 1) 0° to 10° fracture closely spaced undulating rough stained orange. 2) 50° fracture very widely spaced undulating rough stained orange.	(0.64)	
				100	68	53		0% return Water			. . . Below 13.95m: becomes interlaminated with mudstone.	14.69	
											Weak thinly laminated dark grey MUDSTONE with abundant fossils. Weathering : - clay smear. Discontinuities : - 1) 0° to 10° fractures very closely to closely spaced undulating smooth clay smear. 2) 85° fracture undulating smooth clay smear.	(0.31)	
												15.00	
15.50-16.50							NI 90 230				. . . 14.10 - 14.33m: 85° fractures.	(1.50)	
											. . . 14.35 - 14.39m: band of stiff clay.		
											. . . 14.39 - 14.69m: interlaminated with siltstone.		
				100	84	64					Very weak thinly laminated dark grey MUDSTONE with abundant root fossils. Weathering : - Orange staining along fracture surfaces. Discontinuities : - 1) 85° fracture undulating rough orange staining.		
							150 190 230				. . . 14.95 - 15.00m: 85° fracture.	16.50	
											Medium strong thinly laminated dark grey medium grey SANDSTONE. Weathering : - stained orange along fracture surfaces penetrating in to core by <5mm. Discontinuities : - 0° to 10° extremely to very closely spaced open undulating rough. 2) 85° fracture open undulating rough stained orange penetrating the core <10mm gravel fill angular fine to coarse of sandstone.		
											. . . 15.00 - 15.50m: 85° fracture, becomes weak to moderately weak and discoloured light brown.		
											. . . 15.50 - 16.07m: 85° fracture.		
											. . . 16.12 - 16.45m: with laminae of black carbonaceous material		
											Borehole terminated at 16.50m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH101**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**5** of **7**

Additional Remarks

17/03/2022:

ABH101 Box 1 & 2 4.50-6.50m





ABH101 Box 3 & 4 6.50-9.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH101**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**6** of **7**

ABH101 Box 5 & 6 9.50-12.50m





ABH101 Box 7 & 8 12.50-15.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH101**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**95.56**	**E:434569.9 N:406855.3**	**7** of **7**

ABH101 Box 9 15.50-16.50m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH102**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**1** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black Tarmac.	0.20	
0.20-0.35	1	B									MADE GROUND: Whitish and brownish grey sandy angular to subangular fine to coarse GRAVEL of sandstone and limestone. (Sub Base)	0.35	
0.30	101	ES	1xT+1xJ+1xV									0.50	
0.30	2	D											
0.35-0.50	3	B											
0.40	102	ES	1xT+1xJ+1xV								MADE GROUND: Dark grey and black sandy silty angular to subangular fine to medium locally coarse GRAVEL of sandstone, limestone, mudstone and occasional brick and coal. Sand is coarse of ash.		
0.40	4	D											
0.50-1.20	5	B											
0.90	103	ES	1xT+1xJ+1xV										
0.90	6	D											
1.10-1.55	7	SPT	N=13								MADE GROUND: Orangish brown slightly clayey very sandy angular to subangular fine to coarse GRAVEL of orange sandstone.		
1.10-2.00	10	D											
1.10-1.55	8	D											
1.10-2.00	9	B											
2.00-2.45	11	SPT	N=5										
2.00	104	ES	1xT+1xJ+1xV										
2.00-2.45	12	D											
2.00-3.00	13	B											
2.00-3.00	14	D											
3.00-3.45	15	SPT	N=9										
3.00-3.45	16	D											
3.00-4.00	17	B											
3.00-4.00	18	D										(5.70)	
4.00-4.45	19	SPT	N=12										
4.00-4.45	20	D											
4.00-5.00	21	B											
4.00-5.00	22	D											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
30/03/22	17:00	1.10	None	150	Dry
31/03/22	08:00	1.10	None	150	Dry
31/03/22	14:00	6.70	4.30	150	Dry
19/04/22	08:30	7.00	None	150	-
19/04/22	17:00	11.00	7.00	120	-
20/04/22	08:30	11.00	7.00	120	-
20/04/22	16:00	20.00	7.00	120	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
6.20	6.70	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.10m.
3. Borehole drilled using cable percussion techniques to 6.70m then extended using rotary coring techniques to 20.00m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH102**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**2** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
5.00-5.45	23	SPT	N=18										
5.00-5.45	24	D											
5.00-6.00	25	B											
5.00-6.00	26	D											
6.00-6.45	27	SPT	N=75										
6.00-6.45	28	D										6.20	
6.20-6.90	29	D									Weak orangish brown medium grain weathered SANDSTONE.	(0.80)	
6.70-6.91	30	SPT	14,18/50 for 60mm									7.00	
6.70-6.91	31	D											
7.00-8.00				80	0	0	NI NI NI	100% return Water			Medium strong thinly to thickly laminated light brown medium grain SANDSTONE mica rich. Weathering : - stained orange through core. Stained partly black / orange along fracture surfaces. ironstained. Discontinuities : - 1) 5° to 15° fracture extremely to closely spaced very open undulating rough partly stained black and orange gravel fill angular fine to coarse of sandstone and ironstone. 2) 40° to 55° fracture very close to closely spaced very open undulating rough gravel fill subangular fine to coarse of sandstone ironstone. 3) 85° fractures tight undulating rough stained partly black along surface with clay fill <0.5mm		
8.00-9.50				100	87	24	NI 90 130	0% return Water			. . . 8.83-9.07m: ironstained		

Boring Progress and Water Observations						Chiselling / Slow Progress		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH102**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**3** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.50-11.00				100	87	24	NI 90 130	0% return Water			. . . 9.30-9.87m depth 85° fracture.	(5.27)	
				100	57	46							
11.00-12.50				100	69	38	NI 170 340				. . . 11.36-11.40m: ironstained		
											. . . 12.13-12.18m: extremely weak clay fill	12.27	
											. . . 12.15-12.27m: ironstained		
12.50-14.00											Medium strong thinly laminated light brown medium grain SANDSTONE with rare black sandstone laminations. Weathering : - Partly stained orange through core. Discontinuities : - 1) 10° t0 15° fractures very closely spaced undulating rough partly stained orange.		
12.72		C		93	84	58							

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH102**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**4** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
				93	84	58	NI 170 340				. . . 13.72-13.74m: orange concentric rings.	(3.43)	
14.00-15.50							NI NI NI				. . . 14.00-15.50m: low core recover, some evidence of scrubbing, main core loss assessed at base of run.		
				57	37	12	10 100 200	0% return Water					
15.50-17.00											. . . Below 15.45: becomes grey with some orange discolouration.	15.70	
				67	41	22	NI NI NI				AZCL. Possible COAL (no loss of resistance to drilling recorded by the driller)	(0.60)	AZCL
											Weak thinly laminated bright black COAL.	16.30 16.35	
											Weak dark grey SILTSTONE with rare plant fossils.	16.58	
							NI 60 230				Moderately weak dark grey SILTSTONE with frequent plant fossils. Weathering : - partly stained orange along fracture surfaces. Discontinuities : - 1) 0° 10° fractures very closely spaced undulating rough partly orange stained.	(0.42) 17.00	
17.00-18.50							NI NI NI				Moderately weak thinly laminated dark grey MUDSTONE with rare lant fossils. Weathering clay fill. Discontinuities: - 0° to 5° fractures very closely to closely spaced undulating smooth clay fill.	(0.90)	
				81	52	47	NI 100 140				. . . 17.00-17.90m: assessed core loss within the mudstone, some scrubbing appears to have occured. . . . 17.65-17.70m: clay fill.		
											. . . 17.85-17.90m: clay fill.	17.90	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH102**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**5** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
18.50-20.00				81	52	47	NI 100 470	0% return Water			Medium strong thinly laminated grey medium grain SANDSTONE. Weathering : - partly stained orange through core and partly stained orange and clay fill along fracture surfaces. Discontinuities : - 0° to 5° fractures closely to medium spaced undulating / planar rough partly stained orange and clay fill.	(0.90) 18.80	
				95	89	47					Medium strong thinly laminated grey SILTSTONE. Weathering : - partly stained orange through core. Stained partly black along fracture surfaces Gravel fill. Discontinuities : - 1) 0° to 5° fractures closely spaced tight to open undulating rough stained partly black clay smear. . . . 19.24-19.32m: 85° fracture. . . . 19.93-20.00m: 85° fracture.	(1.20) 20.00	
											Borehole terminated at 20.00m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH102**
Contract Ref:	Start: **30.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**6** of **8**

Additional Remarks

30/03/2022:

ABH102 Box 1 & 2 7.00-9.50m





ABH102 Box 3 & 4 9.50-12.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + D Lamb**	Logged By:	**EClarkson**	Checked By:	AGS

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Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH102**
Contract Ref:	Start: **30.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**7** of **8**

ABH102 Box 5 & 6 12.50-15.50m





ABH102 Box 7 & 8 15.50-18.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + D Lamb**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH102**
Contract Ref:	Start: **30.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **20.04.22**	**100.72**	**E:434544.9 N:406823.7**	**8** of **8**

ABH102 Box 9 18.50-20.00m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + D Lamb**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**17.03.22** End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**1** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black tarmac.	0.10	
0.10-0.55	1	B									MADE GROUND: White light grey sandy silty angular to subangular fine to coarse GRAVEL of sandstone and occasional tarmac. Sand is fine to coarse.	(0.45)	
0.30	101	ES	1xT+1xJ+1xV									0.55	
0.30	2	D											
0.55-0.90	3	B									MADE GROUND: Firm to stiff dark grey black mottled orangish brown slightly sandy slightly gravelly silty CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to medium locally coarse of sandstone, coal and occasional red brick.	(0.35)	
0.70	102	ES	1xT+1xJ+1xV									0.90	
0.70	4	D											
0.90-1.20	5	B											
1.00-2.00	10	D											
1.00-2.00	9	B											
1.10	103	ES	1xT+1xJ+1xV								MADE GROUND: Dark brown grey black sandy slightly clayey angular to subangular fine to coarse GRAVEL of sandstone, coal, mudstone and occasional red brick. Sand is fine to coarse of ash.	(2.10)	
1.10	6	D											
1.20-1.65	7	SPT	N=9										
1.20-1.65	8	DSPT											
2.00-2.45	11	SPT	N=8										
2.00-2.45	12	DSPT											
2.00-2.45	13	B											
2.00-3.00	14	D											
2.50	104	ES	1xT+1xJ+1xV									3.00	
3.00-3.45	15	SPT	N=44								Orangish brown gravelly very sandy SILT. Sand is fine to coarse. Gravel is subangular fine to medium of sandstone.	(0.30)	
3.00-3.45	16	DSPT										3.30	
3.30-3.80	17	B									Weak yellowish brown weathered SANDSTONE.	(0.50)	
3.30-3.80	18	D										3.80	
3.80-4.80							NI				Moderately weak thinly laminated light brown medium grain SANDSTONE inter bedded with slightly sandy clay and gravel bands. Weathering : - Gravel bands are angular fine to medium sandstone. Slight black staining on the fracture surfaces. Discontinuities :- 1) 5° to 12° fractures very open very closely to closely spaced	(1.20)	
3.80-4.03	19	SPT	21,22/46,4 for 5mm				NI						
3.80-4.03	20	DSPT		90	27	0	NI 60 110	100% return Water					

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
17/03/22	17:00	3.45	1.20	150	Dry
18/03/22	08:00	3.45	1.20	150	Dry
18/03/22	11:00	4.03	1.20	150	Dry
29/03/22	09:00	3.80	None	150	-
29/03/22	17:00	5.80	4.00	116	-
30/03/22	08:00	5.80	5.50	116	4.60
30/03/22	17:00	12.20	7.00	116	3.20
01/04/22	08:15	12.20	7.50	116	10.65

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.30	3.80	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit had dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 4.25m then extended using rotary coring techniques to 16.00m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + S Windsor**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**17.03.22** End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**2** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
				90	27	0					undulating rough clay and gravel fill 10m to 90mm thick.		
4.80-5.80											. . . 4.83-4.88m: gravel fill.	5.00	
				100	60	10	NI 60 110	100% return Water			Medium strong thinly laminated light brown stained orange medium grain SANDSTONE. Weathering : - stained black on fracture surfaces clay fill < 10mm. Discontinuities : - 1) 5° to 10° fracture very closely to closely spaced undulating rough stained black clay fill <1mm. 2) 50° fracture very widely spaced undulating rough stained black.		
5.80-6.80 (0:20)											. . . 5.75-5.80m: stained orange through core.	(2.50)	
				40	40	10		40% return Water			. . . 6.37-6.45m: concentric rings.		
6.80-7.70 (0:20)							10 90 250				. . . 7.00-7.02m: moderately weak dark brown. . . . 7.02-7.04m: dark brown / light brown clay.		
				159	122	78					. . . 7.40-7.50m: 55° fracture.	7.50	
7.70-9.20 (0:20)							NI 30 30	0% return Water			Weak thinly to thickly laminated brown stained dark orange brown medium grain SANDSTONE. Weathering : - stained dark orange brown through core. Gravel and clay fill. Discontinuities : - 1) 5° to 15° fractures very closely spaced very open undulating rough < 40mm clay fill gravel and sand fill < 200m.	(0.51)	
8.03		C									. . . 7.70-7.90m: gravel and sand fill. . . . 7.97-8.01m: stiff sandy clay fill.	8.01	
				100	69	55	10 150 250				Medium strong thinly to thickly laminated light brown stained orange medium grain SANDSTONE. Weathering :- Concentric rings of orange staining. Discontinuities : - 1)13° to 28° fractures very closely to closely spaced undulating rough stained black on fracture surface. 2) 40° fracture medium spaced undulating rough stained		

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
01/04/22	17:00	16.00	None	116	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + S Windsor**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**17.03.22** End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**3** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.20-10.70 (0:20)				100	69	55					black on the fracture surface. 3) 85° fracture moderately open widely spaced undulating rough stained black on fracture surface clay fill <2mm. . . . 8.01-8.07m: concentric rings of orange staining. . . . 8.60-9.20m: 85° fracture. . . . 8.96-9.20m: concentric rings of orange staining. . . . 9.39-9.80m: interlaminated with black carbonacous mudstone. . . . 9.70-9.74m: orange stained concentric rings. Gravel is subangular fine of sandstone. . . . 9.80-10.20m: 85° fracture. . . . 10.23-10.27m: concentric rings of orange staining. . . . 10.30-10.50m: 18° to 20° fracture with dull coal and mica rich surfaces. . . . 10.50-10.70m: 85° fracture.	(4.73)	
				100	61	43	10 150 250						
10.70-12.20 (0:20)				100	83	65	280 300 300	0% return Water			. . . 10.70-10.77m: concentric rings of orange staining. . . . 10.77-11.84m: partly orange staining concentric rings. . . . 11.66-11.84m: extremely to very closely spaced thin laminations of dull coal with some orange staining. . . . 11.80-12.20m: partly orange staining concentric rings. . . . 11.88-11.94m: 85° fracture.		
12.20-13.70 (0:25)				87	75	66	50 110 260				. . . 12.50-12.70m: partly orange staining concentric rings.	12.74	
											Weak thinly laminated black dull and bright COAL. Weathering :- stained orange along fracture surfaces. Discontinuities : - 1) 0° to 6° fractures closely spaced undulating rough. 2) 70° fracture tight undulating rough.	(0.42) 13.16	
											Extremely weak thinly laminated MUDSTONE to very stiff CLAY with abundant root fossils.	13.25	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + S Windsor**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**17.03.22** End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**4** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
13.70-15.20 (0:35)				87	75	66					Moderately weak thinly laminated grey mottled black SILTSTONE with abundant root fossils and occasional iron stones. Weathering : - Orange staining and clay smear along fracture surfaces. Discontinuities : - 1) 15° to 40° fracture widely spaced open undulating rough stained orange and clay smear along the surface.	(1.35)	
				100	64	46	50 110 260	0% return Water			. . . 14.30-14.44m: iron stones.	14.60	
											Extremely weak thickly laminated grey/dark grey SILTSTONE to very stiff silty CLAY with abundant root fossils. Weathering : - slightly stained orange through core.	14.75 (0.45)	
15.20-16.00 (0:15)				100	82	60	30 50 60				Moderately weak thinly laminated cross bedded bioturbation grey SILTSTONE inter bedded with fine grain SANDSTONE. Abundant root fossils. Weathering : - Sub-vertical incipient fractures stained orange. Discontinuities : - 1) 0° to 6° fracture very closely spaced undulating rough clay smear.	15.20 (0.80)	
											Medium strong thinly laminated cross bedded grey medium grain SANDSTONE. Weathering ;- Concentric orange rings. Orange staining along fracture surfaces. Discontinuities : - 1) 0°to 5° fractures very closely to medium spaced undulating rough stained orange. 2) 75° fracture undulating rough stained orange <1mm. . . . 15.55 - 15.90m 75° fracture.	16.00	
											Borehole terminated at 16.00m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + S Windsor**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH103**
Contract Ref:	Start: **17.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**5** of **7**

ABH103 Box 1 & 2 3.80-5.80m

Additional Remarks

17/03/2022:





ABH103 Box 3 & 4 5.80-7.70m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + S Windsor**	Logged By:	**EClarkson**	Checked By:	AGS

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH103**
Contract Ref:	Start: **17.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**6** of **7**

ABH103 Box 5 & 6 7.70-10.70m





ABH103 Box 8 & 7 10.70-13.70m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + S Windsor**	Logged By:	**EClarkson**	Checked By:	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH103**
Contract Ref:	Start: **17.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **30.03.22**	**95.48**	**E:434574.6 N:406828.7**	**7** of **7**

ABH103 Box 9 & 10 13.70-16.00m



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Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + S Windsor**	Logged By:	**EClarkson**	Checked By:	AGS

STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**1** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black tarmac.	0.10	
0.10-0.40	1	B									MADE GROUND: White light grey mottled locally black sandy angular to subangular fine to coarse GRAVEL of sandstone, concrete and occasional tarmac with occasional roots and rootlets. Sand is fine to coarse. (Sub base)	(0.30)	
0.30	101	ES										0.40	
0.30	2	D											
0.40-0.60	3	B										0.60	
0.50	102	ES									MADE GROUND: Soft dark grey black slightly sandy gravelly silty CLAY with rare rootlets and fragments of wood. Sand is fine to coarse. Gravel is subangular to subrounded fine to coarse sandstone, concrete, red brick and coal. Strong asphalt and hydrocarbon smell.		
0.50	4	D										0.85	
0.60-0.85	5	B											
0.70	103	ES										1.00	
0.70	6	D											
0.85-1.00	7	B											
0.90	104	ES									MADE GROUND: Dark grey black gravelly silty angular to subangular fine to coarse GRAVEL of sandstone, coal, red brick and occasional concrete. Sand is fine to coarse.		
0.90	8	D											
1.00-1.10	10	D											
1.00-1.20	9	B											
1.10	105	ES											
1.20-1.65	11	SPT	N=9										
1.20-1.65	12	DSPT											
1.20-1.65	13	B											
1.20-2.00	14	D									MADE GROUND: Yellowish brown mottled dark grey black gravelly slightly clayey coarse SAND. Low cobble content. Gravel is angular to subangular fine to coarse of sandstone and rare coal and red brick. Cobbles are angular of sandstone.	(1.40)	
2.00-2.45	15	SPT	N=16										
2.00-2.45	16	DSPT											
2.00-3.00	17	B											
2.00-3.00	18	D											
											MADE GROUND: Soft dark grey black slightly sandy gravelly silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of sandstone and occasional red brick and coal.	2.40	
2.50	106	ES									Firm friable grey slightly gravelly silty CLAY. Gravel is angular to subangular fine to medium of sandstone and siltstone/mudstone.		
3.00-3.45	19	SPT	N=17										
3.00-3.45	20	DSPT											
3.00-4.00	21	B											
3.00-4.00	22	D										(2.80)	
4.00-4.45	23	SPT	N=17										
4.00-4.45	24	DSPT											
4.00-5.00	25	B											
4.00-5.00	26	D											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
15/03/22	17:00	7.55	1.50	150	Dry
06/04/22	15:00	7.55	None	150	
06/04/22	17:30	8.00	7.40	116	5.94
07/04/22	07:15	8.00	7.40	116	7.85
07/04/22	17:30	19.50	7.40	116	13.30
08/04/22	07:15	19.50	7.40	116	12.46

Chiselling / Slow Progress

From	To	Duration (hh:mm)
6.30	7.10	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT ad Genny prior to excavation.
2. Inspection pit hand dug to 1.20m
3. Borehole drilled using cable percussion techniques to 7.10m then extended using rotary coring techniques to 19.00m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**2** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
5.00-5.45	27	SPT	N=14										
5.00-5.45	28	DSPT											
5.00-6.00	29	B											
5.00-6.00	30	D											
												5.20	
											Firm brown and orangish brown mottled grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium of sandstone and mudstone.	(0.80)	
												6.00	
6.00-6.45	31	SPT	N=50								Orangish and yellowish brown slightly gravelly slightly clayey coarse SAND. Gravel is angular to subangular weathered of sandstone.	(0.30)	
6.00-6.45	32	DSPT										6.30	
6.30-7.00	33	B									Weak orangish brown weathered SANDSTONE.		
6.30-7.00	34	D											
												(1.10)	
7.10-7.25	35	SPT	29/50 for 70mm										
7.10-7.25	36	DSPT										7.40	
7.40-8.00 (0:07)				100	60	20	NI 20 80	0% return Water			Very weak to weak thinly laminated light brown medium grain SANDSTONE. Weathering : - stained orange through core. Ironstone and gravel fill. Discontinuities : - 1) 0 - 5° fractures extremely to very closely spaced undulating rough.	(0.34)	
												7.74	
8.00-9.50 (0:20)				100	89	73	60 130 190				Moderately weak to medium strong thinly laminated light grey medium grain SANDSTONE. Weathering : - orange concentric rings stained black and orange ironstained. Discontinuities : - 1) 0° to 10° fractures very closely to medium spaced undulating rough stained orange. 2) 15° to 20° fracture widely spaced undulating rough ironstained. 3)30° to 35° fractures medium spaced undulating rough stained black. 4) 85° fractures extremely to closely spaced tight undulating rough stained black and orange with sand.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**3** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
9.50-11.00 (0:15)				100	89	73	NI 150 230	0% return Water			. . . 9.36 - 9.41m: weak ironstone. . . . 9.60 -9.77m: 10° fracture clay laminations and sandstone. . . . 9.80 -10.46m: ironstained orange concentric rings very weak to weak.		
				100	67	34					. . . 10.47 - 10.85m: 85° fractures . . . 10.80 - 10.90m: ironstained orange angular fine to coarse gravel of sandstone.		
11.00-12.50 (0:15)				100	65	65	NI 280 340				. . . 11.43 - 11.63m: orange ironstained. . . . 11.44 - 11.97m: 85° fractures	(6.76)	
12.50-14.00 (0:16)				100	84	68	NI 60 170				. . . 12.72 - 12.78m: ironstained angular fine to coarse gravel. . . . 13.24 - 13.40m: weak orange sandstone.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**4** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
				100	84	68							
14.00-14.50 (0:07)				100	72	20					. . . 14.05 - 14.10m: weak orange sandstone. . . . 14.15 -14.24m: black carbonaceous clay/mudstone interlaminated with light brown sandstone stained orange.	14.50	
14.50-15.50 (0:11) 14.50		C		100	81	63	NI 200 440	0% return Water			Medium strong thinly laminated to thinly bedded grey medium grain SANDSTONE. Weathering : - partly orange stained through core. Discontinuities : - 1) 0° to 5° fractures very closely to medium space undulating rough.	(2.21)	
15.50-17.00 (0:19)				95	69	65	NI NI NI					16.71	
											Weak thinly laminated bright black COAL. Discontinuities : - 1) 0° to 5° fractures very closely spaced undulating.	(0.29) 17.00	
17.00-18.00 (0:18)				100	73	53	NI 50 460				Weak thinly laminated dark grey MUDSTONE with abundant root fossils . Weathering : - Stained orange along fracture surfaces. Discontinuities : - 0° to 5° fractures very closely spaced undulating rough partly stained orange. . . . 17.18 - 17.86m: 85° fracture.	17.23 (0.63)	
											Medium strong thinly laminated grey SILTSTONE. with occasional root fossils Weathering : - stained orange along fracture surfaces. Discontinuities : - 1) 5° fractures closely undulating rough. 2) 85°	17.86	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**15.03.22** End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**5** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
18.00-19.50 (0:22)				100	56	47	NI 50 460 NI NI NI 40 60 210	0% return Water			fracture undulating rough stained orange.	(0.43)	
											Weak to moderately weak thinly laminated dark grey MUDSTONE with occasional root fossils .	18.29	
											Medium strong thinly laminated grey SILTSTONE. Weathering : - orange staining along fracture surfaces. Discontinuities : - 1) 85° fracture undulating rough stained orange.	18.40 (0.40) 18.80	
											Moderately weak thinly laminated dark grey MUDSTONE. Weathering : - clean.		
											Medium strong thinly laminated light grey medium grain SANDSTONE with occasional black carbonaceous sandstone laminations. Weathering : - stained orange along fracture surfaces. Discontinuities : - 1) 0° to 5° fractures very closely to closely spaced undulating rough partly stained orange. 2) 85° undulating /stepped rough stained orange penetrating <10mm into core. . . . 18.80 - 19.44m: 85° fracture.	(0.70) 19.50	
											Borehole terminated at 19.50m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Comacchio GEO 300**	**A Moore + C Roberts**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH104**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**6** of **8**

ABH104 Box 1 & 2 7.40-9.50m

Additional Remarks

15/03/2022:





ABH104 Box 3 & 4 9.50-12.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH104**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**7** of **8**

ABH104 Box 5 & 6 12.50-14.50m





ABH104 Box 7 & 8 14.50-17.00m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	AGS

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH104**
Contract Ref:	Start: **15.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **08.04.22**	**95.34**	**E:434610.1 N:406812.8**	**8** of **8**

ABH104 Box 9 & 10 17.00-19.50m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Comacchio GEO 300**	Drilled By:	**A Moore + C Roberts**	Logged By:	**EClarkson**	Checked By:	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**24.03.22** End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**1** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black Tarmac.	0.15	
0.15-0.40	1	B									MADE GROUND: Brown grey black sandy silty angular to subangular fine to coarse GRAVEL of sandstone, igneous lithologies and coal. Sand is fine to coarse of ash.(Subbase)	0.40	
0.30	101	ES											
0.30-0.00	2	D											
0.40-1.00	3	B									MADE GROUND: Dark grey black very sandy slightly clayey angular to subrounded fine, locally medium to coarse GRAVEL of sandstone, brick, mudstone and coal. Sand is fine to coarse. Strong tar / asphalt smell.	(1.00)	
0.80	102	ES											
0.80	4	D											
1.00-1.20	5	B											
1.10	6	D										1.40	
1.40	103	ES									MADE GROUND: Firm dark brown and grey slightly sandy gravelly CLAY. Sand is fine. Gravel is angular to subangular fine to medium locally coarse of sandstone and mudstone.		
1.50-1.95	7	SPT	N=18										
1.50	103	ES											
1.50-1.95	8	DSPT											
1.50-1.95	9	B											
2.50-2.95	10	SPT	N=19										
2.50-2.95	11	DSPT											
2.50-2.95	12	B										(3.10)	
3.50-3.95	13	SPT	N=11										
3.50-3.95	14	DSPT											
3.50-3.95	15	B										4.50	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
24/03/22	13:06	6.73	1.50	150	Dry
11/04/22	09:00	6.80	6.80	150	1.60
11/04/22	17:00	16.10	6.80	116	14.20
12/04/22	08:00	16.10	6.80	116	15.20
12/04/22	17:00	18.80	6.80	116	16.80

Chiselling / Slow Progress

From	To	Duration (hh:mm)
5.90	6.30	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 6.75m then extended using rotary coring techniques to 18.80m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Comacchio GEO 300**	**R Foster + S Windsor**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH105**

Contract Ref:	Start: **24.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**2** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
4.50-4.95	16	SPT	N=12								Firm orangish brown mottled grey and black slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subrounded fine to medium of sandstone and mudstone.	(1.00)	
4.50-4.95	17	DSPT											
4.50-4.95	18	B										5.50	
5.50-5.90	19	B									Weak orangish brown weathered coarse grain SANDSTONE.		
5.90-6.20	20	SPT	25/25,25,50 for 75mm										
5.90-6.20	21	DSPT										(1.30)	
5.90-6.30	22	B											
6.30-6.75	23	SPT	N=100										
6.30-6.75	24	DSPT										6.80	
6.80-7.80				100	73	40		100% return Water			Medium strong thinly laminated light brown medium grain SANDSTONE. Weathering : - stained orange through core. ironstained differential weathering clay and gravel fill. Discontinuities : - 1) 5° to 15° fractures very closely to medium spaced undulating rough stained orange clay fill gravel fill. 2) 68° fracture very widely spaced undulating rough stained orange penetrating into the core <5mm. 3) 85° fracture undulating rough stained orange.		
7.80-9.10				100	85	70	NI 200 270				. . . 7.20 - 7.40m: ironstained concretions rings. . . . 7.92 - 7.94m: clay band . . . 7.92 - 8.40m: moderately weak orange staining lamination of black carbonaceous sandstone. . . . 7.96 - 8.00m: gravel fill angular flat fine - coarse of sandstone. . . . 8.37 - 8.40m: clay band. . . . 8.60 - 8.84m: incipient vertical fractures orange staining penetrating <10mm black staining along fracture surface.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	5. Monitoring well installed on completion as shown. 6. SPT hammer AR1862-2021 (E_r = 95.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Comacchio GEO 300**	**R Foster + S Windsor**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**24.03.22** End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**3** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
9.10-10.40				100	85	70							
				100	95	66	NI 200 270				. . . 9.40 - 9.78m: orange concentric rings. . . . 9.83 - 9.84m: weak laminations of black sandstone. . . . 9.98 - 10.18m: ironstained. . . . 10.08 - 10.12m: 85° fractures		
10.40-11.90				100	52	52	NI 200 250	0% return Water			. . . 10.32 - 10.47m: ironstained. . . . 10.39 - 10.43m: 85° fractures . . . 10.40 - 12.40m: 85° fractures . . . 10.43 - 10.60m: incipient vertical fracture. . . . 10.60 - 12.50m: 85° fractures	(7.13)	
11.90-13.40				100	100	96	20 120 400						
13.40-14.90				100	100	59							

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Comacchio GEO 300**	**R Foster + S Windsor**	**EClarkson**	AGS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**24.03.22** End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**4** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
											. . . 13.50 - 13.66m: 85° fractures.	13.93	
				100	100	59	20 120 400 20 150 180				Moderately weak thinly interlaminated grey and black medium grain SANDSTONE. Interlaminations of black carbonaceous sandstone more frequent with depth. Weathering : - stained orange partly through core, clay and gravel fill. Discontinuities : - 1) 0 - 10° fractures extremely to closely spaced tight undulating rough. . . . 14.31 - 14.37m: clay.	(0.44) 14.37	
14.90-16.10 14.90		C		100	100	97	20 130 330	0% return Water			Medium strong thinly laminated to thinly bedded light brown medium grain SANDSTONE. Weathering : - stained orange through core concentric rings clay smear clay fill orange staining along fracture surfaces. Discontinuities : - 1) 0 -5° closely spaced tight undulating rough clay fill <1mm orange staining. 2) 85° fracture tight to open undulating rough clay smear clay fill gravel fill angular fine to coarse sandstone. . . . 14.37 - 14.75m: 85° fracture. . . . 15.67 - 15.81m: incipient 85° fracture. . . . 15.81 - 16.40m: 85° fracture.	(2.03) 16.40	
16.10-17.40				90	68	18	NI 130 230				Medium strong thinly laminated to thinly bedded grey medium grain SANDSTONE. Weathering : - orange staining through core concentric rings. Discontinuities : - 1) 0° to 10° fractures very closely to closely spaced tight undulating rough grey clay smear gravel fill angular fine to coarse.	(0.45) 16.85	
											Weak thinly laminated bright black COAL. Weathering : - Partly stained orange along fracture surfaces. Discontinuities : 1) 0° to 5° fractures very closely to closely spaced undulating rough.	(0.40) 17.25	
17.40-18.80				84	63	39					Very weak thinly laminated grey MUDSTONE with abundant root fossils . Recovered as very stiff clay.	17.35	
											Medium strong thinly laminated grey medium grain SILTSTONE with abundant	(1.02)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Comacchio GEO 300**	**R Foster + S Windsor**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**24.03.22** End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**5** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
				84	63	39	NI 130 230	0% return Water			roots fossils. . Weathering : - Partly orange staining along fractured surfaces. Discontinuities : - 0° to 5° fractures closely spaced tight undulating rough.	18.37	
											Weak to moderately weak thinly laminated dark grey MUDSTONE with abundant root fossils . Weathering : - ironstained clay fill. Discontinuities : - 0° to 5° 20° fractures very closely to closely spaced undulating rough ironstained.	(0.33)	
											. . . 18.60 - 18.70m: dark grey clay.	18.70	
											Medium strong thinly laminated grey medium grain SANDSTONE with abundant root fossils	18.80	
											Borehole terminated at 18.80m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Comacchio GEO 300**	**R Foster + S Windsor**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH105**
Contract Ref:	Start: **24.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**6** of **8**

Additional Remarks

24/03/2022:

ABH105 Box 1 & 2 6.80-9.10m





ABH105 Box 3 & 4 9.10-11.90m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Comacchio GEO 300**	Drilled By:	**R Foster + S Windsor**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH105**
Contract Ref:	Start: **24.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**7** of **8**

ABH105 Box 5 & 6 11.90-14.90m





ABH105 Box 7 & 8 14.90-17.40m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Comacchio GEO 300**	Drilled By:	**R Foster + S Windsor**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH105**
Contract Ref:	Start: **24.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**95.95**	**E:434609.7 N:406776.1**	**8** of **8**

ABH105 Box 9 17.40-18.80m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Comacchio GEO 300**	Drilled By:	**R Foster + S Windsor**	Logged By:	**EClarkson**	Checked By:	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**13.04.12** End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**1** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black Tarmac.	0.10	
0.10-0.40	1	B									MADE GROUND: Brown grey black very sandy silty angular to subangular fine to coarse GRAVEL of sandstone, concrete, coal, red brick and occasional tarmac. Low cobble content. Sand is fine to coarse. Cobbles are angular of sandstone.	(0.30)	
0.30	101	ES										0.40	
0.30	2	D											
0.40-0.80	3	B										(0.40)	
0.60	102	ES											
0.60	4	D									MADE GROUND: Grey slightly clayey very sandy angular to subrounded fine to coarse GRAVEL of sandstone, brick Medium cobble content. Sand is fine to coarse. Cobbles are angular to subangular of sandstone and brick.	0.80	
0.80-1.10	5	B										(0.70)	
1.00	103	ES											
1.00	6	D											
1.10-1.20	7	B											
1.20	8	D									MADE GROUND: Black, white and brown mottled slightly clayey sandy silty angular to subrounded fine to coarse GRAVEL of sandstone and coal with rare wood. Sand is fine to coarse of ash.	1.50	
1.50-1.95	9	SPT	N=14										
1.50-1.95	10	DSPT											
1.50-1.95	11	B									MADE GROUND: Firm orangish brown mottled grey and black sandy gravelly silty CLAY with localised pockets of fibrous organic material. Low cobble content. Gravel is angular to subangular fine to coarse of sandstone, mudstone and occasional coal. Cobbles are angular of sandstone.		
2.00	104	ES	1xT+1xJ+1xV										
2.50-2.95	12	SPT	N=8										
2.50-2.95	13	DSPT											
2.50-2.95	14	B											
3.50-3.95	15	SPT	N=11										
3.50-3.95	16	DSPT											
3.50-3.95	17	B										(6.00)	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
24/03/22	17:28	7.95	3.00	150	Dry
25/03/22	08:17	7.95	3.00	150	Dry
25/03/22	09:45	9.34	3.00	150	Dry
13/04/22	08:30	9.34	None	150	-
13/04/22	17:00	17.00	9.50	120	-
14/04/22	08:30	17.00	9.50	120	15.70
14/04/22		21.50	9.50	120	17.40

Chiselling / Slow Progress

From	To	Duration (hh:mm)
9.00	9.20	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 9.34m then extended using rotary coring techniques to 21.50m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**13.04.12** End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**2** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
4.50-4.95	18	SPT	N=14										
4.50-4.95	19	DSPT											
4.50-4.95	20	B											
5.50	21	D											
6.00-6.45	22	SPT	N=17										
6.00-6.45	23	DSPT											
6.00-6.45	24	B											
7.00	25	D											
												7.50	
7.50-7.95	26	SPT	N=17								Firm to stiff orangish brown mottled grey and black sandy gravelly silty CLAY with low cobble content. Gravel is angular to subangular fine to coarse of sandstone. Cobbles are angular sandstone.	(1.00)	
7.50-7.95	27	DSPT											
7.50-7.95	28	B											
												8.50	
8.50-9.00	29	B									Very weak highly weathered SANDSTONE, recovered as light brown locally mottled bluish grey sandy gravelly CLAY with a low cobble content. Sand is medium to coarse. Gravel is subangular to subrounded fine to coarse of	(1.00)	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer AR1862-2021 (E_r = 95.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**13.04.12** End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**3** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.00-9.14	30	SPT	25/36,14 for 15mm								sandstone and occasional mudstone. Cobbles are subangular of moderately strong sandstone.		
9.00-9.14	31	DSPT									. . . 9.00-9.20m: recovered as light brown clayey sandy GRAVEL. Cobbles and gravel more abundant and less bluish grey mudstone.		
9.00-9.20	32	B											
9.20-9.31	33	SPT	25/100 for 60mm									9.50	
9.20-9.31	34	DSPT											
9.50-11.00				40	14	0	30 40 70	100% return Water			Medium strong thinly laminated light brown stained orange medium grain SANDSTONE. Weathering : - stained orange through core and concentric rings. Discontinuities : - 1) 0° -10° fractures very closely to medium spaced tight to open undulating rough stained orange black sand fill <10mm and clean. 2) 22° fractures medium spaced undulating rough stained orange. 3) 40° to 45° fractures medium spaced undulating rough stained orange. 4) 85° fracture undulating rough stained black sand fill.		
11.00-12.50				95	69	16	NI 80 110	0% return Water					
12.50-14.00				100	59	13					. . . 12.70-12.76m: highly weathered orange concentric rings.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**13.04.12** End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**4** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
				100	59	13	NI 80 110				. . . 13.74-13.76m: black carbonaceous laminations of sandstone. . . . 13.76-13.89m: orange concentric rings.		
14.00-15.50 14.00		C										(9.42)	
				100	55	47					. . . 14.64-14.99m: black carbonaceous laminations of sandstone		
											. . . 15.25-15.50m: 85° fracture.		
15.50-17.00 15.50		C						0% return Water			. . . 15.60-15.80m: highly weathered orange concentric rings.		
				95	60	57	NI 160 300						
											. . . 16.70-17.00m: incipient 85° fracture.		
17.00-18.50											. . . 17.14-17.22m: highly weathered orange concentric rings.		
				97	75	43							

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**13.04.12** End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**5** of **7**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
18.50-20.00				97	75	43	NI 160 300	0% return Water					
				97	61	33					Medium strong thinly laminated grey medium grain SANDSTONE with rare laminations of black carbonaceous sandstone. Weathered : - partly stained orange along fracture surfaces. Discontinuities : - 1) 0° to 6° fractures very closely spaced undulating / stepped rough, some brown sandy clay smear. Fracture occur mostly along black carbonaceous sandstone lamination.	18.92 (0.59) 19.51	
20.00-21.50							NI 90 170				Medium strong thinly laminated cross bedded grey and black orange staining though core medium grain SANDSTONE inter laminated with black weak MUDSTONE. Weathering : - Differences weathering. Orange staining through core. Discontinuities : - 0° to 10° fractures very closely to closely spaced undulating / stepped rough clean. . . . 19.58-19.78m: thinly laminated black carbonaceous mudstone and sandstone. . . . 19.70-20.00m: non intact. . . . 20.19-20.27m: thinly laminated black carbonaceous mudstone and sandstone. . . . 20.50-20.66m: non intact.	(1.15) 20.66	
				95	75	53	40 120 260				Medium strong thinly laminated grey medium grain SANDSTONE. Weathering : - Partly stained orange though core and concentric rings rare vugs. Discontinuities : - 1) 0° 5° fractures very closely to closely spaced undulating rough clean to orange stained. . . . 21.07-21.09m: vugs.	(0.84) 21.50	
											Borehole terminated at 21.50m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH106**
Contract Ref:	Start: **13.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**6** of **7**

Additional Remarks

24/03/2022:

25/03/2022:

ABH106 Box 1 & 2 9.50-12.50m





ABH106 Box 3 & 4 12.50-15.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Beretta T44**	Drilled By:	**R Foster + D Lamb**	Logged By:	**FRenvoize**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH106**
Contract Ref:	Start: **13.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **25.03.22**	**96.24**	**E:434647.4 N:406755.7**	**7** of **7**

ABH106 Box 5 & 6 15.50-18.50m





ABH106 Box 7 & 8 18.50-21.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Beretta T44**	Drilled By:	**R Foster + D Lamb**	Logged By:	**FRenvoize**	Checked By:	AGS

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**1** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
											MADE GROUND: Tarmac.	0.15	
0.15-0.30	1	B									MADE GROUND: Brown grey black very sandy silty angular to subrounded fine to coarse GRAVEL of sandstone, limestone, tarmac and coal. Sand is coarse of ash. (Sub base)	0.30	
0.20	101	ES	1xT+1xJ+1xV									(0.60)	
0.20	2	D									MADE GROUND: Dark grey black sandy silty angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick and coal. Medium cobble content. Sand is coarse of ash. Cobbles are subangular of sandstone and brick.	0.90	
0.30-0.90	3	B										(0.30)	
0.60	102	ES	1xT+1xJ+1xV								MADE GROUND: Soft dark brown grey sandy very gravelly CLAY. Medium cobble content. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone, mudstone, brick and occasional coal. Cobbles are subangular of sandstone and brick.	1.20	
0.60	4	D										(0.30)	
0.90-1.20	5	B										1.50	
1.10	103	ES	1xT+1xJ+1xV								. . . 1.00-1.10m: layer of red brick.		
1.10	6	D									MADE GROUND: Concrete.		
1.60-2.05	7	SPT	N=4								MADE GROUND: Soft to firm dark brown and dark grey slightly sandy gravelly CLAY with occasional rootlets. Sand is fine. Gravel is angular to subrounded fine to coarse of sandstone, mudstone, coal and rare brick.	(1.10)	
1.60-2.05	10	D										2.60	
1.60-2.05	8	D											
1.60-2.05	9	B											
2.20-2.65	11	SPT	N=7										
2.20-2.65	12	D											
2.60	104	ES	1xT+1xJ+1xV								POSSIBLE MADE GROUND: Soft to firm dark brown grey mottled black slightly sandy slightly gravelly silty CLAY. Sand is fine. Gravel is angular to subangular fine to coarse of sandstone and mudstone.		
2.60-3.00	13	B											
2.60-3.00	14	D											
3.00-3.45	15	SPT	N=8										
3.00-3.45	16	D											
3.00-4.00	17	B											
3.00-4.00	18	D										(2.40)	
4.00-4.45	19	SPT	N=12										
4.00-4.45	20	D											
4.00-5.00	21	B											
4.00-5.00	22	D											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
29/03/22	17:00	7.25	3.00	150	Dry
12/04/22	14:00	7.00	None	150	6.20
12/04/22	17:00	7.00	7.00	150	-
13/04/22	08:00	7.00	7.00	150	6.10
13/04/22	17:00	13.00	9.00	101	2.00
14/04/22	08:00	13.00	9.00	101	-
14/04/22	15:00	20.00	9.00	101	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
6.40	6.80	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 6.92m then extended using rotary coring techniques to 20.00m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**2** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
												5.00	
5.00-5.45	23	SPT	N=16								Firm to stiff orangish brown locally mottled greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subangular fine to medium locally coarse of sandstone.	(1.40)	
5.00-5.45	24	D											
5.00-6.00	25	B											
5.00-6.00	26	D											
6.00-6.36	27	SPT	11,14/14,16,50 for 55mm									6.40	
6.00-6.36	28	D											
6.40-6.80	29	D									Weak orangish brown weathered SANDSTONE.	(0.60)	
6.80-6.92	30	SPT	30/50 for 40mm									7.00	
7.00-8.50				40	40	40	NI 60 90	40% return Water			Moderately weak locally weak thinly laminated grey discoloured brown medium grain SANDSTONE. Weathering : - slightly orange staining. Discontinuities : - 1) 0° to 10° fracture very closely spaced undulating rough clean to clay fill. . . . 7.00-8..50m: recovered core coated in clay, suggesting some scrubbing to account for poor core recovery. . . . 7.45-7.60m: Extremely weak thinly laminated brown discoloured SILTSTONE / clayey SILT clay.		
8.50-9.50				41	17	0	NI 20 80	0% return Water			. . . 8.50-9.50m: diameter of core significantly reduced in places, evidence of scrubbing . . . 8.80-8.90m: clay fill.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	5. Monitoring well installed on completion as shown. 6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.
									All dimensions in metres. Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**3** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.50-10.50				41	17	0	NI 20 80	0% return Water			. . . 9.50-10.50m: recovered core reduced in diameter at start of run suggesting some scrubbing to account for poor core recovery.	(5.00)	
				60	25	13	NI 80 130						
10.50-12.00				73	61	53	NI 150 280				. . . 10.74-10.84m: band of black carbonaceous sandstone.	12.00	
12.00-13.00				100	63	46	NI NI NI 10 130 450	40% return Water			Moderately weak to medium strong thinly laminated light brown/grey orange staining medium grain SANDSTONE mica rich. Weathering : - stained orange through core with faint concentric rings and clay fill. Discontinuities : - 1) 0° to 10° fracturing very closely to closely spaced undulating rough stained orange and black clay fill. 2) 75° fracture undulating rough stained orange and black. 3) 35° fracture very widely spaced undulating rough light brown clay fill. . . . 12.63-12.66m: clay fill.		
13.00-14.50				100	69	45		0% return Water					

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH107**

Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**4** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
13.45		C											
												(3.32)	
							10 130 450				. . . 13.80-13.95m: 75° fracture.		
				100	69	45							
14.50-16.00							NI 60 80						
											. . . 14.73-14.75: band of fine grain sandstone.		
							20 100 230						
				100	53	16					. . . Below 15.15m: with rare lamiations of carboncauos sansdstone	15.32	
							NI 50 60	0% return Water			Weak to moderately weak thinly laminated grey and black fine to medium grain SANDSTONE inter laminated with black dull carbonaceous sandstone. Weathering : - slight orange discoloration. Discontinuities : - 1) 0° to 10° very closely spaced undulating rough. 2) 85° fracture open undulating rough.	(0.68)	
												16.00	
16.00-17.50											. . . 15.36 -15.40m: gravel is angular fine to coarse of inter lamination sandstone and coal. . . . 15.40-15.44m: 85° fracture. . . . Below 15.60m becomes very weak to weak.		
											Medium strong thinly laminated light brown stained orange medium grain SANDSTONE with occasional thin laminations of black carbonaceous sandstone. Weathering :- stained orange through core. Discontinuities : - 1) 0° to 10° fractures very closely to closely spaced undulating rough clean. 2) 85° fracture tight undulating rough stained black with clay smear.		
				56	36	25	NI 90 140				. . . 16.00-16.66m: 85° fracture, only half diameter of core recovered, possible area of core loss.		
												(3.00)	
17.50-19.00													
				53	20	0	NI 20 90						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**5** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
				53	20	0	NI 20 90	0% return Water			. . . 18.06-18.15m: weak interlaminated grey sandstone and black dull carbonacsous sandstone. . . . 18.15-18.20m: orange staining concentric rings.	19.00	
19.00-20.00				80	56	0	50 80 100				Weak thinly laminated grey inter laminated MUDSTONE and SILTSTONE with occasional plant fossils. Weathering : - slight orange staining clay fill. Discontinuities : 1) 0° to 10° very closely to closely spaced tight to open undulating rough clean to clay fill.	(1.00) 20.00	
											Borehole terminated at 20.00m depth.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH107**
Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**6** of **8**

Additional Remarks

29/03/2022:

ABH107 Box 1 & 2 7.00-9.50m





ABH107 Box 3 & 4 9.50-12.00m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH107**
Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**7** of **8**

ABH107 Box 5 & 6 12.00-14.50m





ABH107 Box 7 & 8 14.50-17.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH107**
Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **14.04.22**	**96.69**	**E:434632.0 N:406718.1**	**8** of **8**

ABH107 Box 9 & 10 17.50-20.00m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH108**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **30.03.22**	**96.50**	**E:434612.9 N:406720.3**	**1** of **2**

Depth (m)	Samples & Testing: No	Type	Results	Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
						MADE GROUND: Black Tarmac.	0.10	
0.10-0.20	1	B				MADE GROUND: Light grey mottled black sandy angular to subangular fine to coarse GRAVEL of sandstone, limestone and rare tarmac. Sand is coarse. (Sub base)	0.20	
0.15	101	ES	1xT+1xJ+1xV				(0.50)	
0.15	2	D						
0.20-0.70	3	B				MADE GROUND: Dark brown dark grey black slightly clayey very sandy angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick, coal and occasional tarmac and limestone. Low cobble content. Sand is fine to coarse. Cobbles are angular to subangular of sandstone and brick.	0.70	
0.50	102	ES	1xT+1xJ+1xV					
0.50	4	D						
0.70-1.20	5	B				MADE GROUND: Whitish grey very sandy angular to subangular fine to coarse GRAVEL of limestone and occasional sandstone and coal. Sand is coarse.	(0.60)	
1.00	103	ES	1xT+1xJ+1xV					
1.00	6	D						
1.20-1.65	7	SPT	N=6				1.30	
1.20-2.00	8	B				MADE GROUND: Soft dark grey black slightly sandy silty very gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone, coal, mudstone and occasional limestone.	(0.90)	
1.20-2.00	9	D						
2.00-2.45	10	SPT	N=11					
2.00	104	ES	1xT+1xJ+1xV				2.20	
2.00-2.45	11	D				Soft to firm light and dark grey sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to medium locally coarse of mudstone, siltstone and sandstone.		
2.00-3.00	12	B						
2.00-3.00	13	D					(1.50)	
3.00-3.45	14	SPT	N=12					
3.00-3.45	15	D						
							3.70	
3.70-4.00	16	B				Firm to stiff brown sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone.		
3.70-4.00	4	D						
4.00-4.45	18	SPT	N=22					
4.00-4.45	19	D						
4.00-5.00	20	B						
4.00-5.00	21	D						

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
30/03/22	17:00	5.96	2.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)
5.50	5.80	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable precussion techniques to 5.96m.
4. Borehole backfilled with arising and bentonite and reinstated with cold lay.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion	**Dando 3000**	**A Moore**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH108**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **30.03.22**	**96.50**	**E:434612.9 N:406720.3**	**2** of **2**

Depth (m)	Samples & Testing No	Type	Results	Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
							(1.70)	
5.00-5.45	22	SPT	N=55					
5.00-5.45	23	D						
							5.40	
5.40-5.80	24	D				Weak orangish brown weathered SANDSTONE.	(0.56)	
5.80-5.96	25	SPT	29/47,3 for 5mm					
5.80-5.96	26	D				Borehole terminated at 5.96m depth.	5.96	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

5. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion	**Dando 3000**	**A Moore**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH109**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **01.04.22**	**101.41**	**E:434608.5 N:406703.6**	**1** of **3**

Depth (m)	Samples & Testing: No	Type	Results	Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
						MADE GROUND: Black Tarmac.	0.15	
0.15-0.30	1	B				MADE GROUND: Dark grey black sandy angular to subrounded medium to coarse locally fine GRAVEL of sandstone, asphalt, limestone, brick and coal and occasional igneous lithologies. Sand is coarse of ash.	0.30	
0.20	101	ES	1xT+1xJ+1xV				(0.30)	
0.20	2	D						
0.30-0.60	3	B						
0.50	102	ES	1xT+1xJ+1xV			MADE GROUND: Dark brown grey black sandy silty angular to subangular fine to coarse GRAVEL of sandstone, mudstone, coal and asphalt. Sand is fine to coarse.	0.60	
0.50	4	D						
0.60-1.20	5	B				MADE GROUND: Orangish brown clayey very sandy angular to subangular fine to coarse GRAVEL of sandstone. Sand is fine to coarse. Medium cobble content. Cobbles are subangular of sandstone.		
1.00	103	ES	1xT+1xJ+1xV			. . . 0.60-1.00m: slightly clayey.		
1.00	6	D						
1.20-1.65	7	SPT	N=28					
1.20-2.00	10	D						
1.20-1.65	8	D						
1.20-2.00	9	B						
2.00-2.45	11	SPT	N=8					
2.00	104	ES	1xT+1xJ+1xV					
2.00-2.45	12	D						
2.00-3.00	13	B						
2.00-3.00	14	D						
2.30-5.45	26	D					(4.70)	
3.00-3.45	15	SPT	N=10					
3.00-3.45	16	D						
3.00-4.00	17	B						
3.00-4.00	18	D						
4.00-4.45	19	SPT	N=8					
4.00-4.45	20	D						
4.00-5.00	21	B						
4.00-5.00	22	D						

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
31/03/22	17:00	1.65	None	150	Dry
01/04/22	08:00	1.65	None	150	Dry
01/04/22	17:00	9.20	3.00	150	Dry

Chiselling / Slow Progress

From	To	Duration (hh:mm)
7.80	9.00	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable pecussion techniques to 9.20m.
4. Borehole backfilled with arising and bentonite and reinstated with cold lay.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion	**Dando 3000**	**A Moore**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH109**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **01.04.22**	**101.41**	**E:434608.5 N:406703.6**	**2** of **3**

Depth (m)	Samples & Testing No	Type	Results	Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
5.00-5.45	23	SPT	N=18					
5.00-5.45	24	D					5.30	
5.30-6.00	25	B				MADE GROUND: Soft to firm orangish brown and brown gravelly very sandy CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone and mudstone.	(0.70)	
							6.00	
6.00-6.45	27	SPT	N=12			MADE GROUND: Soft brown and grey sandy gravelly silty CLAY. Sand is fine to medium. Gravel is angular to subangular fine to coarse of sandstone, mudstone and rare brick.		
6.00-6.45	28	D						
6.00-7.00	29	B						
6.00-7.00	30	D					(1.30)	
							7.30	
7.30-7.80	33	B				POSSIBLE MADE GROUND: Soft brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is angular to subangular fine locally medium of sandstone, occasional mudstone and rare coal and brick.		
7.30-7.80	34	D						
7.50-7.95	31	SPT	N=26				(0.50)	
7.50-7.95	32	D						
							7.80	
7.80-9.00	35	D				Orangish brown sandy clayey angular to subangular fine to coarse GRAVEL of weathered sandstone.		
							(1.20)	
							9.00	

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

5. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion	**Dando 3000**	**A Moore**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH109**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **01.04.22**	**101.41**	**E:434608.5 N:406703.6**	**3** of **3**

Depth (m)	Samples & Testing: No	Type	Results	Backfill	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.00-9.20	36	SPT	14,29/47,3 for 3mm			Weak orangish brown weathered SANDSTONE.	9.20	
9.00-9.20	37	D				Borehole terminated at 9.20m depth.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion	**Dando 3000**	**A Moore**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**1** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
0.00-0.30	1	B									MADE GROUND: Grass over dark brown very gravelly silty fine to coarse SAND with rootlets. Gravel is angular to subangular fine to coarse of mudstone, sandstone, glass, nails and metal springs. (Topsoil)	(0.30)	
0.20	101	ES										0.30	
0.20	2	D										0.50	
0.50-0.80	3	B									MADE GROUND: Concrete.		
0.70	102	ES									MADE GROUND: Dark grey black sandy angular to subangular fine to medium locally coarse GRAVEL of mudstone, coal, sandstone and occasional red brick. Low cobble content. Sand is coarse of ash. Cobbles are angular to subangular of sandstone.	(0.80)	
0.70	4	D											
0.80-1.00	5	B											
0.90	103	ES											
0.90	6	D											
1.00-1.20	7	B											
1.20-1.65	8	SPT	N=5								. . . 0.80-1.00m: very clayey. . . . 1.00-1.20m: clayey.	1.30	
1.20-2.00	10	B									MADE GROUND: Soft brown mottled orangish brown slightly gravelly sandy silty CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone and mudstone.		
1.20-2.00	11	D											
1.20-1.65	9	D											
2.00-2.45	12	SPT	N=8										
2.00-2.45	13	D											
2.00-3.00	14	B											
2.00-3.00	15	D										(2.90)	
3.00-3.45	16	SPT	N=7										
3.00	104	ES											
3.00-3.45	17	D											
3.00-4.00	18	B											
3.00-4.00	19	D											
4.00-4.45	20	SPT	N=7										
4.00-4.45	21	D											
4.00-5.00	22	B										4.20	
4.00-5.00	23	D									Firm dark brown mottled orangish brown slightly gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is angular		

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
28/03/22	17:00	7.00	1.30	150	Dry
11/04/22	08:30	7.00	None	150	-
11/04/22	17:00	13.50	12.00	101	-
12/04/22	08:00	13.50	12.00	101	Dry
12/04/22	12:00	19.00	12.00	101	6.70

Chiselling / Slow Progress

From	To	Duration (hh:mm)
6.20	7.00	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 7.00m then extended using rotary coring techniques to 19.00m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**2** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
											to subrounded fine to medium of sandstone, mudstone and coal.	(0.90)	
5.00-5.45	24	SPT	N=25									5.10	
5.00-5.45	25	D									Very weak black COAL.	(0.40)	
5.10-5.50	25	D										5.50	
5.50-6.00	28	D									Firm to stiff brown and orangish brown mottled slightly sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine locally medium of sandstone and mudstone.	(0.70)	
6.00-6.45	29	SPT	N=69									6.20	
6.00-6.45	30	D											
6.20-7.00	31	B									Very weak grey weathered MUDSTONE.	(0.80)	
6.20-6.20	32	D										7.00	
7.00-8.00											Firm brown mottled orange and light grey, slightly gravelly CLAY. Gravel is angular medium of sandstone, ironstone and purple slag (presumed cavings from made ground whilst drilling in casing).	(0.85)	
7.00-7.00	33	SPT	NP	70	2	0	NI NI NI	25% return Water			. . . 7.00-7.80m: start of core rum contains gravelly clay, presumably reworking of mudstone and cuttings from casing being drilled in.	7.85	
											Weak light brown medium grained SANDSTONE. Weathering: - stained orange.	8.00	
8.00-9.00				100	65	15	30 50 60 / NI 30 140	0% return Water			Very weak to moderately weak thinly laminated light brown grey MUDSTONE. Weathering : - orange staining along fracture surfaces. Discontinuities : - 1)0°to 5° fracture extremely to very closely spaced open undulating rough stained orange gravel fill angular fine to medium of mudstone. 2) 20° fractures closely spaced undulating rough stained orange. 3) 65° fractures very closely to closely spaced undulating rough stained	(2.00)	

Boring Progress and Water Observations						Chiselling / Slow Progress		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**3** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.00-10.50				80	34	0		25% return Water			orange. . . . 8.60-9.00m: extremely weak, recovered as very stiff clay. . . . 9.28-9.37m: Ironstone.	10.00	
											Weak to moderately weak thinly laminated light brown SILTSTONE. Weathering :- stained orange along fracture surfaces and ironstained. Discontinuities : - 0°to 5° fractures very closely spaced open undulating rough. 2) 85° fracture moderately open undulating rough orange staining and ironstained. . . . 10.09-10.17m: 85° fracture.	(0.50) 10.50	
10.50-12.00				100	25	0	NI 30 70	0% return Water			Moderately weak thinly laminated light brown and grey interbedded SILTSTONE / MUDSTONE. Weathering :- black and slight orange staining along fracture surfaces. Discontinuities : - 1) 0° to 20° very closely spaced undulating rough stained black and slightly orange. 2) 30° fractures very closely spaced undulating stepped rough stained black. 3) 65° to 85° fractures closely spaced undulating rough stained black . . . 10.73-10.84m: 65°, 85° fracture. . . . 10.89-10.98m: 65°, 85° fracture. . . . 11.14-11.16m: 65°, 85° fracture. . . . 11.24-11.32m: ironstone . . . 11.39-11.51m: 65°, 85° fracture. . . . 11.58-11.78m: 65°, 85° fracture. . . . 11.82-11.85m: 65°, 85° fracture. . . . 12.08-12.16m: band of dark brown clay . . . 12.55-12.60m: cross bedding.	(2.20) 12.70	
12.00-13.50													
12.66		C		100	60	34	NI 80 420	75% return Water			Medium strong thinly laminated light brown medium grain SANDSTONE. Weathering: - ironstained on fracture surfaces, orange staining through core. Discontinuities : - 0° to 5° closely to medium spaced undulating rough stained orange and ironstained. 2) 85° fracture tight undulating rough stained black. . . . 12.90-13.21m: 85° fracture.	(0.45) 13.15 13.42 13.50	

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**4** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
13.50-15.00				100	47	4	NI NI NI	75% return Water			Weak to moderately weak thinly laminated dark grey MUDSTONE. Weathering :- stained orange along fracture surfaces. Discontinuities : - 1) 0° to 5° closely spaced undulating rough stained orange. 2) 85° fracture tight undulating rough stained black clay fill <1mm.	(0.80)	
											Medium strong thinly laminated light brown SILTSTONE.	14.30	
											Firm light brown mottled light grey slightly gravelly CLAY . Gravel is medium angular of red shale and coke.		
15.00-16.50				60	40	25	NI 180 380 NI NI NI	25% return Water			Medium strong thinly laminated light brown medium grain SANDSTONE. Weathering : - partly stained orange through core black spots and clay smear along fracture surface. Discontinuities :- 1) 0° to 5° fractures closely to medium spaced undulating rough black spots and clay smear. 2) 85° fracture undulating rough stained black. . . . 15.00-15:05m: 85° fracture. . . . 15.30-16.00m: 85° fracture, possible zone of core loss.	(1.70)	
												16.00	
16.50-18.00				100	51	23	NI NI NI 80 90 340 NI 80 100	0% return Water			Moderately weak thinly laminated dark grey MUDSTONE. Weathering :- stained orange black dark red clay and gravel fill along fracture surfaces. Discontinuities :- 1) 0° to 5° fractures very closely spaced undulating rough stained orange. 2) 55° fractures very widely spaced undulating rough stained orange and dark red. 3) 80° fracture closely spaced undulating rough stained orange.	(0.70)	
												16.70	
											Moderately weak thinly laminated light brown medium grain SANDSTONE mica rich with occasional laminations of black carbonaceous sandstone. Weathering :- partly stained black along fracture surfaces. Discontinuities : - 0°to 5° fractures medium to very closely spaced undulating rough slightly stained orange.	(0.67)	
												17.37	
											Weak to moderately weak thinly laminated light brown and black fine and medium grain SANDSTONE interlaminated with black carbonaceous siltstone. Weathering :- partly stained orange through core. Discontinuities : - 1) 0° to 5° fractures very closely to closely	(0.47)	
												17.84	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress

From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**5** of **8**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
18.00-19.00				76	14	0	NI 80 100	0% return Water			spaced very open undulating rough stained partly orange. 2) 85° fracture undulating rough. . . . 17.37-1753m: coal laminations . . . 17.55-17.64m: 85° fracture.	(0.96)	
											Extremely weak to very weak light brown light grey MUDSTONE. Recovered as very stiff to stiff clay with subangular fine to coarse gravel of mudstone.	18.80	
											Weak thinly laminated dark grey MUDSTONE. Weathering : - stained orange along fracture surface. Discontinuities : - 1) 0° to 5° fractures closely spaced undulating rough stained orange. 2) 20° fractures widely spaced undulating rough stained orange.	19.00	
											Borehole terminated at 19.00m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + M Goring**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH110**
Contract Ref:	Start: **28.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**6** of **8**

Additional Remarks

28/03/2022:

ABH110 Box 1 & 2 7.00-9.00m





ABH110 Box 3 & 4 9.00-12.00m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH110**
Contract Ref:	Start: **28.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
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ABH110 Box 5 & 6 12.00-15.00m





ABH110 Box 7 & 8 15.00-18.00m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH110**
Contract Ref:	Start: **28.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**96.96**	**E:434681.4 N:406698.8**	**8** of **8**

ABH110 Box 9 18.00-19.00m



Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + M Goring**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH111**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**25.03.22** End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**1** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black tarmac	0.15	
0.15-0.30	1	B									MADE GROUND: Light brown slightly clayey slightly sandy fine to coarse angular to subangular GRAVEL of limestone. Sub Base	0.20	
0.20	101	ES										0.30	
0.20	2	D										0.55	
0.55-0.70	3	B									MADE GROUND: Black to light brown loose slightly clayey gravelly fine to coarse SAND of ash like material with a medium cobble content. Gravel is angular to subrounded fine to coarse of limestone sandstone and brick, metal spikes and wire. Cobbles are angular of brick.	0.70	
0.60	102	ES											
0.60	4	D											
0.80-1.20	5	B											
1.00	103	ES									MADE GROUND:. Sandstone paving bricks	(0.90)	
1.00	6	D									MADE GROUND: Black slightly gravelly slightly silty fine coarse SAND of ash.		
1.50-1.95	7	SPT	N=21								MADE GROUND: Light yellowish brown and brown locally mottled blueish grey gravelly slightly clayey fine to coarse SAND with a low cobble content. gravel is angular to subrounded fine to coarse of sandstone and mudstone. Cobbles are angular to subangular of sandstone. Blueish grey is from nodules of clay/extremely weathered mudstone.	1.60	
1.50-1.95	8	DSPT											
1.50-1.95	9	B										(0.70)	
2.30-2.50	10	B									Stiff grey and blueish grey locally mottled black gravelly CLAY. Gravel is angular fine to coarse of mudstone and black bright coal. (Extremely weak weathered mudstone).	2.30	
2.50-2.89	11	SPT	N=50								Black and dark blueish grey very clayey angular fine to medium GRAVEL of coal. (Weathered coal)	(0.70)	
2.50-2.88	12	DSPT											
2.50-3.00	13	B										3.00	
3.00-3.50	14	B									Stiff blueish grey and grey locally mottled black and orangish brown, slightly sandy very gravelly CLAY. Sand is fine to medium, Gravel is angular to subangular fine to coarse of mudstone and coal lithorelics. (Extremely weak weathered mudstone.) . . . 3.00-3.50m: orangish brown mottling is weathered mudstone. Black mottling is coal. . . . 3.50-4.30m: coal no longer present. More blueish grey in colour.	(1.50)	
3.50-3.83	15	SPT	6,9/18,22,10 for 30mm										
3.50-3.83	16	DSPT											
3.50-4.00	17	B											
4.20-4.30	18	SPT	25/100 for 60mm									4.50	
4.20-4.30	19	DSPT											

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
25/03/22	13:10	4.30	1.50	150	Dry
11/04/22	12:00	4.30	None	150	Dry
11/04/22	17:00	7.50	4.50	120	-
12/04/22	08:00	7.50	4.50	120	6.40
12/04/22	15:00	16.50	4.50	120	-

Chiselling / Slow Progress

From	To	Duration (hh:mm)
3.50	4.20	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Borehole drilled using cable percussion techniques to 4.30m then extended using rotary coring techniques to 16.50m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH111**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**25.03.22** End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**2** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
4.50-6.00				20	1	1	NI NI NI	100% return Water			Stiff grey gravelly slightly sandy CLAY. Sand is fine to coarse. Gravel is subangular fine to coarse of mudstone. Extremely weak mudstone. Very poor core recovery	(2.00)	
												6.50	
6.00-7.50				80	23	0	NI NI NI NI 70 120 NI 60 120				Moderately weak thinly laminated grey MUDSTONE with laminations of black carbonaceous mudstone and rare plant fossils. Weathering :- slightly stained orange through core. Clay bands <10 to 20mm. Discontinuities :- 1) 0° - 10° fractures very closely spaced open undulating rough/smooth clay and gravel fill of mudstone.	(0.45)	
												6.95	
7.50-9.00				100	60	39	50 120 160				Medium strong thinly laminated grey MUDSTONE. Weathering :- stained orange and clay smear on fracture surfaces. Discontinuities : - 1) 0° to 10° fracture very closely spaced undulating rough. 2) 25° fracture medium spaced undulating rough stained orange and black on surface. 3) 85° fracture undulating rough stained orange and black on surface. . . . 7.60-8.19m: 85° fracture. . . . 8.62-8.65m: orange staining along laminations and possibly bioturbations.	(2.55)	

Boring Progress and Water Observations						Chiselling / Slow Progress		
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)

General Remarks

5. Monitoring well installed on completion as shown.
6. SPT hammer AR1862-2021 (E_r = 95.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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STRUCTURAL SOILS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH111**

Contract Ref:	Start: **25.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**3** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instrumentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.00-10.50							NI 30 80					9.50	
				93	67	23	50 90 130				Medium strong thinly laminated cross bedding grey fine grain SANDSTONE inter laminated with occasional mudstone. Weathering : - Partly stained orange through core. Discontinuities : - 1) 0° to 10° fractures very closely spaced undulating rough clay smear, stained orange on surface penetrating to <10mm. 3) 80° fracture undulating rough clean. . . . 10.22-10.29m: clay and angular fine to coarse gravel fill of sandstone.	(1.95)	
10.50-12.00							NI 50 50						
				97	82	50	30 60 160	100% return Water				11.45	
12.00-13.50 12.00		C									Medium strong thinly laminated cross bedded light brown stained orange medium grain SANDSTONE with rare thin laminations of black carbonaceous mudstone. Weathering : - stained orange through core black and orange staining on fracture surface. Discontinuities : - 1) 0° to 10° fractures very closely to medium spaced stepped / undulating rough stained orange on surface and clay smear. 2) 18° fracture very closely spaced stepped / undulating rough stained dark orange and black on surface. 3) 85° fractures open undulating rough stained orange brown black on surface. . . . 11.88-11.97m: 80° fracture.		
				96	78	72	10 190 420						

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	AGS

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH111**

Contract Ref:	Start: **25.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**4** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
13.50-15.00				97	70	44	10 190 420	100% return Water			. . . 14.24-14.41m: 85° fracture with gravel and sand fill. . . . 14.80-15.09m: 85° fracture black staining.	(5.05)	
15.00-16.50				83	53	27	NI 80 200				. . . 15.18-15.80m: 85° fracture open with gravel and sand fill. . . . 15.92-16.00m: orange stained concentric rings.	16.50	
											Borehole terminated at 16.50m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 2500 + Beretta T44**	**R Foster + D Lamb**	**FRenvoize**	

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BOREHOLE LOG

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Seam Barnsley		**Arcadis LLP**		**ABH111**
Contract Ref:	Start: **25.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**5** of **6**

Additional Remarks

25/03/2022:

ABH111 Box 1 & 2 4.50-7.50m





ABH111 Box 3 & 4 7.50-10.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Beretta T44**	Drilled By:	**R Foster + D Lamb**	Logged By:	**FRenvoize**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH111**
Contract Ref:	Start: **25.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**97.21**	**E:434656.4 N:406652.4**	**6** of **6**

ABH111 Box 5 & 6 10.50-13.50m





ABH111 Box 7 & 8 13.50-16.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 2500 + Beretta T44**	Drilled By:	**R Foster + D Lamb**	Logged By:	**FRenvoize**	Checked By:	AGS

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH112**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**07.04.12** End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**1** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
											MADE GROUND: Black tarmac	0.10	
0.10-0.20	1	B									MADE GROUND: Dark grey black sandy silty angular to subangular medium to coarse GRAVEL of tarmac, concrete, igneous lithologies. Sand is coarse of ash. Strong asphalt and tar smell.	0.20	
0.15	101	ES	1xT+1xJ+1xV										
0.15	2	D										0.35	
0.35-0.80	3	B											
0.50	102	ES	1xT+1xJ+1xV								MADE GROUND: Sandstone cobbles (possible old footpath)	(0.45)	
0.50	4	D											
											MADE GROUND: Dark grey black very sandy silty angular to subangular fine locally medium to coarse GRAVEL of sandstone, coal and occasional igneous lithologies. Sand is fine to coarse of ash. Slight asphalt and tar smell.	0.80	
0.80-1.10	5	B											
0.90	103	ES	1xT+1xJ+1xV									1.00	
0.90	6	D											
1.10-1.20	7	B											
1.20-1.65	8	SPT	N=31								MADE GROUND: Yellowish brown slightly clayey gravelly coarse SAND. Medium cobble content. Gravel is angular to subangular fine to coarse of sandstone and occasional coal and mudstone. Cobbles are angular sandstone.		
1.20-2.00	10	B											
1.20	11	D											
1.20-1.65	9	DSPT									. . . 0.95-1.00m: very clayey.	(1.30)	
											Grey slightly sandy slightly clayey silty GRAVEL of weathered mudstone. Sand is fine.		
2.00-2.45	12	SPT	N=64										
2.00-2.45	13	DSPT											
2.00-3.00	14	B											
2.00	15	D										2.30	
											Firm black gravelly CLAY. Gravel is angular to subangular fine locally medium of coal and occasional mudstone.		
												(1.30)	
3.00-3.20	16	SPT	13,16/50 for 50mm								. . . 3.00-3.30m: coal.		
3.00-3.20	17	DSPT											
3.00-3.60	18	B											
3.00-3.60	19	D											
												3.60	
3.60-4.00	20	B									Extremely weak grey weathered MUDSTONE.		
3.60-4.00	21	D											
4.00-4.21	22	SPT	20,26/50 for 60mm										
4.00-4.21	23	DSPT											
4.30-4.33	23	SPT	25/25 for 10mm									(1.50)	

Boring Progress and Water Observations

Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth
18/03/22	17:00	4.00	1.20	150	Dry
28/03/22	08:00	4.00	1.20	150	3.00
28/03/22	11:00	4.30	1.20	150	Dry
07/04/22	11:00	4.30	None	150	-
07/04/22	17:00	7.50	4.50	120	-
08/04/22	08:00	7.50	4.50	120	-
08/04/22	16:00	16.50	4.50	120	-
11/04/22	08:30	16.50	4.50	120	13.60

Chiselling / Slow Progress

From	To	Duration (hh:mm)
1.10	2.00	00:30
2.50	3.00	00:30
3.60	4.00	00:30
4.00	4.30	01:00

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Borehole drilled using cable percussion techniques to 4.30m then extended using rotary coring techniques to 16.50m.
4. Recirculated water flush used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH112**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**07.04.12** End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**2** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
4.30-4.33 4.50-6.00	24	D					NI NI NI					5.10	
				53	32	17					Weak to moderately weak thinly to thickly laminated dark grey MUDSTONE with a rare black micro fossils and rare siltstone bands. Weathering : - differential weathering partly stained orange along fracture surface. Discontinuities :- 1) 0 ° to 10° fractures extremely to closely spaced undulating rough partly stained orange clean to clay fill. 2) 20° fractures medium to widely spaced undulating rough clean. 3) 42° to 45° fractures medium to widely spaced undulating rough partly stained orange clean. 4) 85° fractures widely space undulating rough partly orange. . . . 5.88 - 5.90m: 85° fracture. . . . 6.28 -6.34m: NI		
6.00-7.50							NI 90 200						
				93	63	29		100% return Water			. . . 6.86 - 8.50m: extremely fractured with clay and gravel fill. . . . 6.90 - 7.07m: NI.		
7.50-9.00							NI 60 100					(5.70)	
				95	59	7					. . . 8.35 - 8.45m: 85° fracture.		
							40 70 120						

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	5. Monitoring well installed on completion as shown. 6. SPT hammer SIS-175-3000 (E_r = 55.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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STRUCTURAL SOILS

BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH112**

Contract Ref:	Start: **07.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**3** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thickness)	Material Graphic Legend
9.00-10.50				93	34	7	NI 80 100 NI NI NI	100% return Water			. . . 9.33 - 9.36m: ironstone. . . . 9.36 - 9.59m: 85° fracture. . . . 9.93 - 10.10m: 85° fracture.	10.80	
10.50-12.00				95	63	21	NI 90 100				Moderately weak thinly laminated dark grey brownish grey interlaminated SILTSTONE and MUDSTONE. Weathering : - stained orange along fracture surfaces. Discontinuities : - 1) 0° to 10° fractures extremely to closely spaced open undulating/ planar rough clay smear. 2)85° fractures undulating rough stained orange to clean. . . . 11.36 - 11.47m: 85° fracture. . . . 11.62 - 11.71m: 85° fracture.	(2.75)	
12.00-13.50				97	67	7	NI 70 130				. . . 13.01 - 13.15m: NI. . . . 13.27 - 13.45m: 85° fracture.		

Boring Progress and Water Observations						Chiselling / Slow Progress			General Remarks
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth	From	To	Duration (hh:mm)	

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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BOREHOLE LOG

Contract:	Client:	Borehole:
Seam Barnsley	**Arcadis LLP**	**ABH112**

Contract Ref:	Start: **07.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**4** of **6**

Depth (m)	Samples & Testing: No	Type	Results	Mechanical Log: TCR (%)	SCR (%)	RQD (%)	If (mm)	Flush Returns & Details	Backfill & Instru-mentation	Water	Description of Strata	Depth (Thick ness)	Material Graphic Legend
13.50-15.00 13.57		C		100	85	85	NI 200 500	100% return Water			Medium strong occasionally thinly laminated and very thinly bedded light brown medium grain SANDSTONE. Weathering : - stained orange through core. Discontinuities : - 1) 0° to 10° fractures closely to medium spaced open undulating rough clay smear. 3) 85° fractures very closely spaced tight undulating rough. . . . 14.80 - 15.84m: 85° fracture.	13.55 (2.95)	
15.00-16.50				80	55	37	NI 130 270 NI NI NI				. . . 15.48 - 15.56m: concentric rings. . . . 16.06 - 16.20m: ironstone. . . . 16.11 - 16.16m: 85° fracture.	16.50	
											Borehole terminated at 16.50m depth.		

Boring Progress and Water Observations					
Date	Time	Borehole Depth	Casing Depth	Borehole Diameter (mm)	Water Depth

Chiselling / Slow Progress		
From	To	Duration (hh:mm)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Cable Percussion + Rotary Cored	**Dando 3000 + Beretta T44**	**A Moore + D Lamb**	**EClarkson**	

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH112**
Contract Ref:	Start: **07.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**5** of **6**

Additional Remarks

18/03/2022:

ABH112 Box 1 & 2 4.50-7.50m





ABH112 Box 3 & 4 7.50-10.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + D Lamb**	Logged By:	**EClarkson**	Checked By:	AGS

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BOREHOLE LOG

Contract:		Client:		Borehole:
Seam Barnsley		**Arcadis LLP**		**ABH112**
Contract Ref:	Start: **07.04.12**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **18.03.22**	**97.28**	**E:434646.4 N:406625.6**	**6** of **6**

ABH112 Box 5 & 6 10.50-13.50m





ABH112 Box 7 & 8 13.50-16.50m

Method Used:	**Cable Percussion + Rotary Cored**	Plant Used:	**Dando 3000 + Beretta T44**	Drilled By:	**A Moore + D Lamb**	Logged By:	**EClarkson**	Checked By:	AGS

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**31.03.22** End: **31.03.22**	**100.67**	**E:434532.6 N:406860.6**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.60	1	B				MADE GROUND: Grass over dark brown grey clayey gravelly fine to coarse SAND. Gravel is angular to subangular fine to medium locally coarse of sandstone, mudstone, coal and occasional brick.	(0.60)	
	0.40	101	ES	1xT+1xJ+1xV					
	0.40	2	D					0.60	
	0.60-1.20	3	B				MADE GROUND: Brown and dark brown grey sandy slightly clayey angular to subangular fine to coarse GRAVEL of mudstone and sandstone and occasional coal. Low cobble content. Sand is coarse of ash. Cobbles are subangular sandstone.	(0.65)	
	1.00	102	ES	1xT+1xJ+1xV					
	1.00	4	D					1.25	
1.20 - 2.00 (65mm dia) 100% rec	1.20-1.80	5	B				MADE GROUND: Orangish brown sandy slightly clayey angular to subangular medium to coarse locally fine GRAVEL of sandstone. Low cobble content. Sand is fine to coarse. Cobbles are subangular sandstone.	(1.75)	
	1.80-2.00	6	D						
2.00 - 3.00 (55mm dia) 65% rec	2.65-3.00	103	ES	1xT+1xJ+1xV					
								3.00	
							Borehole terminated at 3.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Hand held window sample.
4. Window sample terminated at 3.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Hand held window sampling	**Hand held window sampler**	**Tom Saxton**	**EClarkson**	

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS102**

Contract Ref:	Start: **31.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**96.33**	**E:434558.4 N:406848.8**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.30	1	B				MADE GROUND: Grass over soft light brown slighty gravel clayey fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse of sandstone and concrete. Cobbles are angular of concrete. Topsoil.	(0.30)	
	0.20	101	ES					0.30	
	0.20	2	D						
	0.30-0.80	3	B				MADE GROUND: Black to dark brown sandy clayey angular to subangular fine to coarse GRAVEL of sandstone brick coal and slate with a low cobble content. Sand is fine to coarse. Cobbles are angular of brick and sandstone.	(0.50)	
	0.60	102	ES					0.80	
	0.60	4	D						
	0.80-1.20	5	B				MADE GROUND: Yellowish brown slightly sandy slightly gravelly angular COBBLES and BOULDERS of sandstone. Gravel is angular fine to coarse of sandstone. Sand is medium to fine.		
	1.00	6	D						
	1.20-1.65	7	DSPT						
	1.20-1.65	8	SPT	N=11					
1.20 - 2.00 (98mm dia) 30% rec	1.50-2.50	9	B					(1.70)	
	2.00-2.45	10	DSPT						
	2.00-2.45	11	SPT	N=9					
2.00 - 3.00 (85mm dia) 80% rec	2.50	103	ES					2.50	
	2.60-3.00	12	B				MADE GROUND:Soft dark brown becoming light brown slightly gravelly sandy CLAY. Sand is medium. Gravel is angular to subrounded fine to coarse of sandstone coal flecks .	(0.50)	
	3.00-3.45	13	DSPT					3.00	
	3.00-3.45	14	SPT	N=17			MADE GROUND: Yellowish brown sandstone COBBLES. Slight clayey sandy slightly gravelly. Same as 0.8 to 2.5	(0.40)	
	3.00-3.40	15	B					3.40	
3.00 - 4.00 (75mm dia) 100% rec	3.40-3.75	16	B				POSSIBLE MADE GROUND: Orangish brown mottled brown gravelly clayey SAND/sandy CLAY. Sand is medium. Gravel is sub angular to subrounded fine to coarse of sandstone.	(0.35)	
	3.75-4.00	17	B				Very weak yellowish brown medium grained SANDSTONE	3.75	
	4.00-4.18	18	DSPT					(0.43)	
	4.00-4.18	19	SPT	25/28,22 for 40mm				4.18	
							Borehole terminated at 4.18m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Window sample terminated at 4.18m.
4. Monitoring well installed as shown.
5. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS103**

Contract Ref:	Start: **31.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**100.87**	**E:434554.4 N:406818.6**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt	0.15	
	0.15-0.50	1	B				MADE GROUND: Yellowish brown slightly clayey very sandy angular to sub angular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	0.40	
	0.30	101	ES						
	0.30	2	D						
	0.40-0.60	3	B				MADE GROUND: Black to dark brown locally mottled orange very gravelly slightly clayey fine to coarse SAND of ash with a low cobble content. Gravel is angular to subrounded fine to coarse of sandstone mudstone coal and brick. Cobbles are angular of sandstone.	0.60	
	0.50	102	ES						
	0.50	4	D						
	0.60-1.00	5	B					(0.40)	
	0.80	103	ES				MADE GROUND: Light brown slightly gravelly slightly clayey medium to coarse SAND with a low cobble content.	1.00	
	0.80	6	D						
	1.00-1.45	7	DSPT						
	1.00-1.45	8	SPT	N=23					
	1.00-2.00	9	B				Could dig the pit any deeper than 1.00m. Potential sandstone potential large cobble/boulder.	(0.35)	
1.00 - 2.00 (98mm dia) 90% rec								1.35	
							Soft Brown slightly gravelly very sandy CLAY. Sand is medium to coarse. Gravel is angular to subangular fine to coarse of sandstone.	1.60	
	1.60	104	ES				Light yellowish brown slightly clayey gravelly medium to coarse SAND with a low cobble content. Gravel is angular to subangular fine to coarse of sandstone. Cobbles are angular of sandstone.	(0.40)	
							Soft Brown slightly gravelly very sandy CLAY with a low cobble content. Sand is medium to coarse gravel is angular to subangular fine to coarse of sandstone and rare coal. Cobbles are angular of sandstone.	2.00	
	2.00-2.45	10	DSPT						
	2.00-2.45	11	SPT	N=16					
	2.00-3.00	12	B				Light yellowish brown slightly clayey gravelly medium to coarse SAND with a medium cobble content. Gravel is angular to subangular fine to coarse of sandstone. Cobbles are angular of sandstone.		
2.00 - 3.00 (85mm dia) 85% rec							. . . 2.30-2.40m: Brown slightly gravelly sandy CLAY.		
							. . . 2.65-2.70m: Brown slightly gravelly sandy CLAY.	(1.60)	
	3.00-3.45	13	DSPT						
	3.00-3.45	14	SPT	N=11					
	3.00-4.00	15	B						
3.00 - 4.00 (75mm dia) 85% rec								3.60	
							Soft brown slightly gravelly very sandy CLAY with a low cobble content. Sand is medium to coarse gravel is angular to subangular fine to coarse of sandstone and rare coal. Cobbles are angular of sandstone.		
	4.00-4.45	16	DSPT						
	4.00-4.45	17	SPT	N=11					
	4.00-5.00	18	B					(1.24)	
4.00 - 5.00 (65mm dia) 50% rec									

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.00m.
3. Window sample terminated at 4.84m.
4. Monitoring well installed as shown.
5. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**100.87**	**E:434554.4 N:406818.6**	**2** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (65mm dia) 50% rec								4.84	
	5.00-5.45	19	DSPT				Yellowish brown COBBLES of sandstone	(0.61)	
	5.00-5.45	20	SPT	N=7				5.45	
							Borehole terminated at 5.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Inspection pit + Tracked window	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS104**

Contract Ref:	Start: **31.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**95.23**	**E:434588.5 N:406843.5**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.50	1	B				MADE GROUND: Black Tarmac.	0.10	
	0.30	101	ES	1xT+1xJ+1xV			MADE GROUND: Whitish grey sandy angular to subangular fine to coarse GRAVEL of sandstone, limestone and occasional tarmac with roots and rootlets. Low cobble content. Sand is coarse. Cobbles are subangular sandstone and limestone.	(0.40)	
	0.30	2	D					0.50	
	0.50-1.00	3	B				MADE GROUND: Dark grey black very sandy slightly clayey angular to subangular fine to medium locally coarse GRAVEL of sandstone, mudstone, coal, brick and occasional concrete. Medium cobble content. Sand is coarse of ash. Cobbles are of sandstone and brick.		
	0.80	102	ES	1xT+1xJ+1xV					
	0.80	4	D						
	1.00-1.45	5	SPT	N=24			. . . 1.00-1.20m: Cobbles of red brick.		
	1.00-1.45	6	DSPT						
	1.10	103	ES	1xT+1xJ+1xV					
1.00 - 2.00 (98mm dia) 90% rec	1.30-1.80	7	B					(1.70)	
	1.80-2.00	8	D						
	2.00-2.45	9	SPT	N=3					
	2.00-2.45	10	DSPT					2.20	
	2.20-2.65	104	ES	1xT+1xJ+1xV			MADE GROUND: Dark brown grey black slightly sandy slightly gravelly organic CLAY with occasional plant fibers. Sand is fine. Gravel is angular to subangular fine to medium of coal and carbonaceous mudstone and occasional sandstone.	(0.45)	
2.00 - 3.00 (85mm dia) 70% rec								2.65	
	2.65-3.00	105	ES	1xT+1xJ+1xV			MADE GROUND: Soft to firm bluish grey mottled dark grey black slightly sandy gravelly CLAY with medium cobble content. Sand is fine to medium. Gravel is angular to subangular fine to coarse of sandstone, brick, coal and mudstone. Cobbles are subangular sandstone and brick.		
	3.00-3.45	11	SPT	N=12				(0.90)	
	3.00-3.45	12	DSPT						
	3.10-3.55	13	D						
3.00 - 4.00 (85mm dia) 80% rec								3.55	
	3.55-4.00	14	D				Soft to firm brown slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is fine angular to subangular sandstone.		
	4.00-4.45	15	SPT	N=21				(0.75)	
	4.00-4.45	16	DSPT						
4.00 - 5.00 (75mm dia) 70% rec								4.30	
	4.30-5.00	17	B				Weak yellowish brown weathered SANDSTONE.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.00m.
3. Window sample terminated at 5.23m.
4. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**EClarkson**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS104**

Contract Ref:	Start: **31.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**95.23**	**E:434588.5 N:406843.5**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (75mm dia) 70% rec	5.00-5.23	18	SPT	22,5/25,25 for 60mm				(0.93)	
	5.00-5.23	19	DSPT					5.23	
							Borehole terminated at 5.23m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**EClarkson**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**31.03.22** End: **31.03.22**	**95.62**	**E:434586.3 N:406799.3**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt	0.15	
	0.15-0.55	1	B				MADE GROUND: Whitish grey slightly clayey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	(0.40)	
	0.40	101	ES					0.55	
	0.40	2	D						
	0.55-1.20	3	B				MADE GROUND: Black to dark grey slightly sandy very clayey angular to subrounded fine to coarse GRAVEL of sandstone mudstone brick and clinker like material, with a medium cobble content. Sand is fine to coarse. Cobbles are angular to subrounded of sandstone.		
	1.00	102	ES						
	1.00	4	D						
1.20 - 2.00 (98mm dia) 100% rec	1.20-1.65	5	DSPT				. . . 1.20-2.80m: Sandstone cobbles no longer present		
	1.20-1.65	6	SPT	N=15				(2.25)	
	1.20-2.00	7	B						
2.00 - 3.00 (85mm dia) 80% rec	2.00-2.45	8	DSPT						
	2.00-2.45	9	SPT	N=3					
	2.00-2.80	10	D						
	2.00	103	ES						
	2.80	104	ES					2.80	
							MADE GROUND: Dark brown becoming light brown slightly gravelly slightly sandy CLAY. Gravel is angular to subangular predominantly fine to medium with some coarse of sandstone and coal. Sand is medium to coarse. Occasional roots	(0.60)	
	3.00-3.45	11	DSPT				. . . 3.20-3.40m: Lighter brown		
	3.00-3.45	12	SPT	N=8				3.40	
	3.00-3.40	13	D						
3.00 - 4.00 (75mm dia) 82% rec	3.40-4.00	14	B				POSSIBLE MADE GROUND: Soft becoming stiff Light and dark brown locally mottled orangish brown slightly sandy gravelly CLAY. Sand is fine to coarse gravel is angular to subrounded fine to coarse of sandstone and coal. Rare sandstone cobble	(1.15)	
	4.00-4.45	15	DSPT						
	4.00-4.45	16	SPT	N=20					
4.00 - 5.00 (65mm dia) 90% rec	4.00-4.55	17	B						

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Window sample terminated at 5.21m.
4. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS105**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**31.03.22** End: **31.03.22**	**95.62**	**E:434586.3 N:406799.3**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (65mm dia) 90% rec	4.55-5.00	18	B				Extremely weak thinly interlaminated dark brown and black fine SANDSTONE/SILTSTONE and COAL.	4.55 (0.66)	
	5.00-5.21	19	DSPT						
	5.00-5.21	20	SPT	12,11/50 for 60mm				5.21	
							Borehole terminated at 5.21m depth.		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS106**

Contract Ref:	Start: **31.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **31.03.22**	**95.60**	**E:434630.8 N:406799.6**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Black Tarmac.	0.15	
	0.15-0.30	1	B				MADE GROUND: Light grey mottled black very sandy angular to subangular fine to coarse GRAVEL of sandstone, limestone and occasional tarmac. (Grade B2)	0.30	
	0.20	101	ES	1xT+1xJ+1xV				(0.30)	
	0.20	2	D						
	0.30-0.60	3	B						
	0.50	102	ES	1xT+1xJ+1xV			MADE GROUND: Soft to firm brown grey mottled black sandy silty CLAY. Low cobble content. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone, brick, coal and mudstone. Cobbles are angular sandstone and brick.	0.60	
	0.50	4	D						
	0.60-1.20	5	B					(0.65)	
	1.00	103	ES	1xT+1xJ+1xV			MADE GROUND: Dark grey black sandy silty angular to subangular fine to coarse GRAVEL of sandstone, brick, coal, mudstone and occasional wood. Medium cobble content. Sand is coarse of ash. Cobbles are angular to subangular sandstone and brick.	1.25	
	1.00	6	D						
	1.20-1.65	7	SPT	N=28					
	1.20-1.65	8	DSPT						
	1.40-1.65	104	ES	1xT+1xJ+1xV			MADE GROUND: Firm sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subangular fine to coarse of sandstone, coal and rare mudstone.	(0.40)	
1.20 - 2.00 (98mm dia) 100% rec								1.65	
	1.65-1.80	105	ES	1xT+1xJ+1xV			Firm grey mottled black and locally orangish brown sandy silty very gravelly CLAY. Low cobble content. Sand is fine to medium. Gravel is angular to subangular fine to coarse of sandstone and mudstone with occasional coal.		
	1.80-1.90	9	D						
	1.90-1.99	10	DSPT						
	2.00-2.45	11	SPT	N=11			. . . 1.90-1.99m: Gravel of coal.		
	2.00-2.45	12	DSPT						
	2.00-4.00	13	B						
2.00 - 3.00 (85mm dia) 100% rec									
							. . . 2.91-2.95m: Gravel of coal.		
	3.00-3.45	14	SPT	N=10					
	3.00-3.45	15	DSPT						
3.00 - 4.00 (85mm dia) 80% rec								(3.80)	
	4.00-4.45	16	SPT	N=9					
	4.00-4.45	17	DSPT						
4.00 - 5.00 (79mm dia) 80% rec	4.20-4.60	106	ES	1xT+1xJ+1xV					

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. No groundwater encountered.
4. Window sample terminated at 5.45m.
5. Monitoring well installed as shown.
6. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**EClarkson**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**31.03.22**	**95.60**	**E:434630.8 N:406799.6**	**2** of **2**
	End: **31.03.22**			

Progress	Samples / Tests				Water	Backfill & Instru-mentation	Description of Strata	Depth (Thick ness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (79mm dia) 80% rec	4.60-5.00	18	D						
	5.00-5.45	19	SPT	N=11					
	5.00-5.45	20	DSPT					5.45	
							Borehole terminated at 5.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**EClarkson**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **30.03.22**	**95.93**	**E:434648.0 N:406772.2**	**1** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt	0.15	
	0.15-0.50	1	B				MADE GROUND: Yellowish brown sandy slightly silty angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	(0.35)	
	0.30	2	D					0.50	
	0.50-1.00	3	B				MADE GROUND: Black and light grey locally mottled yellowish brown slightly sandy clayey angular to subangular fine to coarse GRAVEL of sandstone igneous lithologies brick and metal slag and coal. Sand is fine to coarse.		
	0.80	101	ES						
	0.80	4	D					(1.25)	
	1.20-1.65	5	DSPT						
	1.20-1.65	6	SPT	N=12					
	1.20-1.75	7	B						
1.20 - 2.00 (98mm dia) 90% rec	1.50	102	ES				. . . 1.65-1.75m: Abundant black coal	1.75	
	1.75-2.00	8	B				MADE GROUND: Light yellowish brown slightly clayey slightly sandy subangular COBBLES of sandstone.	2.00	
	2.00-2.45	9	DSPT				MADE GROUND: Soft greenish grey to grey locally mottled black and orangish brown. Slightly sandy very gravelly CLAY. Sand is fine to coarse gravel is angular to subrounded fine to coarse of mudstone, sandstone and coal. Rare brick fragments		
	2.00-2.45	10	SPT	N=15					
	2.00-3.00	11	B						
	2.20	103	ES						
2.00 - 3.00 (85mm dia) 90% rec							. . . 2.25-2.40m: Abundant black coal . . . 2.40-2.67m: Clayey GRAVEL of mudstone		
							. . . 2.90-3.00m: Abundant black coal		
	3.00-3.45	12	DSPT						
	3.00-3.45	13	SPT	N=7					
	3.00-4.00	14	B						
3.00 - 4.00 (75mm dia) 85% rec	3.50	104	ES					(3.45)	
	4.00-4.45	15	D						
	4.00-4.45	16	SPT	N=7					
4.00 - 5.00 (65mm dia) 75% rec	4.00-5.00	17	B						

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m.
3. Window sample terminated at 5.45m.
4. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **30.03.22**	**95.93**	**E:434648.0 N:406772.2**	**2** of **2**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (65mm dia) 75% rec	5.00-5.45 5.00-5.45	18 19	DSPT SPT	N=10				5.45	
							Borehole terminated at 5.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS108**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **29.03.22**	**96.93**	**E:434660.0 N:406699.9**	**1** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.25	1	B				MADE GROUND: Asphalt	0.10	
	0.25-0.55	2	B				MADE GROUND: Yellowish brown sandy slightly silty angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	0.25	
	0.40	101	ES				MADE GROUND: Black to light grey very gravelly slightly silty fine to coarse SAND with a high cobble content. Gravel is angular to subangular fine to coarse of sandstone bricks clinker igneous lithologies. Sand is of ash. Cobbles are angular of brick	(0.55)	
	0.40	3	D						
	0.55-0.80	4	B					0.80	
	0.80-1.20	5	B				. . . 0.45-0.55m: Predominantly brick and sandstone cobbles/boulders . . . 0.55-0.80m: Black in colour slightly silty gravelly SAND. same as above but with less gravel.	(0.40)	
	1.00	102	ES				MADE GROUND: Yellowish brown slightly silty gravelly fine to coarse SAND with a high cobble content content. Gravel is angular to subangular fine to coarse of sandstone and rare brick. Cobbles are angular of sandstone.	1.20	
	1.00	6	D						
	1.20-1.65	7	DSPT						
	1.20-1.65	8	SPT	N=2					
	1.20-2.00	9	B						
1.20 - 2.00 (98mm dia) 100% rec	1.50	103	ES				MADE GROUND: Soft locally firm thinly bedded multi coloured including dark and light greenish grey, black, light orange and light grey mottled slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is angular to subrounded fine to medium of mudstone coal and brick fragments.	(0.80)	
	2.00-2.45	10	DSPT					2.00	
	2.00-2.45	11	SPT	N=3			. . . 1.20-1.30m: Greenish grey gravelly CLAY. . . . 1.30-1.40m: Dark grey and black slightly sandy slightly gravelly clay. With abundant shiny black coal gravel.		
	2.00-2.50	12	B					(0.70)	
2.00 - 3.00 (85mm dia) 80% rec	2.50	104	ES				. . . 1.40-1.50m: Orange and grey mottled slightly gravelly CLAY. . . . 1.50-1.60m: Black clayey GRAVEL of shiny black coal.		
	2.70-3.00	13	D				. . . 1.60-1.70m: Orange and grey mottled slightly sandy gravelly CLAY.	2.70	
							. . . 1.70-1.77m: Dark grey slightly sandy gravelly CLAY. gravel is mudstone coal and brick fragments	(0.30)	
							. . . 1.80-1.90m: Greenish grey gravelly CLAY. gravel is mudstone.	3.00	
	3.00-3.45	14	SPT	N=7			. . . 1.93-1.97m: Black shiny coal		
	3.00-3.45	15	DSPT						
	3.00-3.50	16	B				MADE GROUND: soft greenish grey/ grey slightly sandy gravelly CLAY. sand is fine to medium gravel is angular to subangular fine to medium of mudstone rare brick fragments and coal flecks	(0.50)	
3.00 - 4.00 (85mm dia) 90% rec	3.50	105	ES				. . . 2.63-2.70m: Black in colour due to coal.	3.50	
	3.70-4.00	17	B				MADE GROUND: Firm blueish grey and dark grey locally mottled orange laminated very gravelly CLAY. gravel is angular of very week mudstone.	(0.66)	
	4.00-4.45	18	DSPT				MADE GROUND: Soft to firm slightly sandy very gravelly CLAY. Sand is fine to coarse. Gravel is subangular to subrounded fine to medium of mudstone sandstone coal and brick.		
	4.00-4.45	19	SPT	N=11				4.16	
4.00 - 5.00 (75mm dia) 90% rec	4.00-5.00	20	B				MADE GROUND: Grey brown and brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine of coal and mudstone		

Drilling Progress and Water Observations

Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Window sample terminated at 5.45m.
4. Monitoring well installed as shown.
5. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS108**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **29.03.22**	**96.93**	**E:434660.0 N:406699.9**	**2** of **2**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
4.00 - 5.00 (75mm dia) 90% rec							. . . 3.60-3.68m: Black and dark purple slightly clayey sandy angular to subangular fine to coarse GRAVEL of ash clinker like material and coal. Sand is fine to coarse.	(0.84)	
							POSSIBLE MADE GROUND: Soft becoming firm to stiff orange and light grey mottled locally dark brown to black slightly sandy gravelly CLAY. Sand is fine. Gravel is angular fine to medium of mudstone lithorelics. Coal flecks.	5.00	
	5.00-5.45	21	DSPT						
	5.00-5.45	22	SPT	N=30					
							. . . 4.20-4.40m: Soft Dark orange and grey mottling . . . 4.40-4.60m: Dark brown to black in colour gravelly of coal and abundant coal flecks . . . 4.60-5.00m: Firm to stiff no coal present light in colour	(0.45)	
							Extremely weak light grey MUDSTONE/clay with mudstone lithorelics.	5.45	
							Borehole terminated at 5.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	AGS

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS109**

Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **29.03.22**	**97.16**	**E:434639.3 N:406666.1**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.00-0.20	1	B				MADE GROUND: Asphalt	0.10	
	0.15	101	ES				MADE GROUND: Yellowish brown sandy slightly silty angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.	0.20	
	0.15	2	D						
	0.20-0.40	3	B					0.40	
	0.30	102	ES				MADE GROUND: Brownish grey sandy slightly silty angular to subangular fine to coarse GRAVEL of sandstone and brick with a high cobble content. Sand is fine to coarse. Cobbles are angular of sandstone and brick. Occasional metal fragments.	0.65	
	0.30	4	D					0.70	
	0.70-1.20	5	B				MADE GROUND: Sandstone road pavement	(0.30)	
							MADE GROUND: Black and grey slightly silty sandy angular to subrounded fine to coarse GRAVEL of sandstone and brick. Sand is fine to coarse of ash like material.	1.00	
	1.00	103	ES						
	1.00	6	D						
	1.00-1.20	7	D						
	1.20-1.65	8	DSPT					(0.50)	
	1.20-1.65	9	SPT	N=5			MADE GROUND: Yellowish brown gravelly slightly silty fine to coarse SAND with a high cobble content. Gravel is angular to subangular fine to coarse of sandstone and brick. Cobbles are angular of sandstone . . . 0.90-1.00m: Red bricks		
	1.20-1.50	10	D						
	1.20	104	ES					1.50	
1.20 - 2.00 (101mm dia) 100% rec	1.50-2.00	11	B						
	1.80	105	ES				MADE GROUND: Soft dark blueish and brownish grey slightly sandy slighty gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of mudstone brick fragments and occasional coal. Metal slag.	(0.50)	
	2.00-2.45	12	DSPT					2.00	
	2.00-2.45	13	SPT	N=8			MADE GROUND. Soft light greyish brown slightly sandy slightly gravelly CLAY. Sand is fine to medium. Gravel is subangular fine to medium of coal and mudstone.		
	2.00-2.82	14	B						
	2.20	106	ES				POSSIBLE MADE GROUND: Soft light orange and light blueish grey mottled slightly sandy slightly gravelly CLAY. Sand is fine. Gravel is subangular to subrounded fine to medium of mudstone and coal flecks.	(0.82)	
2.00 - 3.00 (85mm dia) 100% rec								2.82	
	2.82-3.00	15	D				Extremely weak light greyish brown fine SANDSTONE/SILTSTONE.		
	3.00-3.40	16	DSPT						
	3.00-3.45	17	SPT	N=51*				(0.63)	
								3.45	
							Borehole terminated at 3.45m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Window sample terminated at 3.45m.
4. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	

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WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **29.03.22**	**97.26**	**E:434640.5 N:406638.8**	**1** of **1**

Progress	Samples / Tests				Water	Backfill & Instrumentation	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
							MADE GROUND: Asphalt	0.10	
	0.17-0.23	1	B				MADE GROUND: Yellowish brown sandy slightly clayey angular to sub angular GRAVEL of limestone. Sand is fine to coarse.	0.17	
	0.20	101	ES					0.23	
	0.20	2	D				MADE GROUND: Dark grey sandy angular to subrounded fine to coarse GRAVEL of limestone and ash like material sandstone. Sand is fine to coarse of ash.	0.45	
	0.45-0.70	3	B					0.70	
	0.60	102	ES				MADE GROUND: Sandstone paving slabs		
	0.60	4	D						
	0.70-1.20	5	B				MADE GROUND: Black to dark brown gravelly slightly clayey fine to coarse SAND of ash with a low cobble content. Gravel is angular to subrounded fine to coarse of sandstone brick and clinker. Cobbles are angular of sandstone.	(0.65)	
	1.00	103	ES						
	1.00	6	D						
1.20 - 1.40 (75mm dia) ~~100% rec~~	1.20-1.65	7	DSPT				MADE GROUND: Yellowish brown gravelly slightly silty fine to coarse SAND with a high cobble content. Gravel is angular to subangular fine to coarse of sandstone. Cobbles are angular of sandstone	1.35	
	1.20-1.44	8	SPT	5,19/40,10 for 10mm				1.44	
	1.20-1.35	9	D						
	1.35-1.40	10	D				Black sandy slight clayey angular to subangular fine to medium GRAVEL of coal. Sand is fine to medium of coal.		

79mm diameter barrel refused at 1.40m before the SPT refused.
Ran a 69mm from 1.40m did not advance the hole. Refused.
Borehole terminated at 1.44m depth.

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Window sample terminated at 1.44m.
4. Monitoring well installed as shown.
5. SPT hammer DART384-2021 (E_r = 76.00%) used.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Tracked window sampling	**Archway Competitor**	**Tom Saxton**	**FRenvoize**	

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STRUCTURAL SOILS

WINDOW SAMPLE LOG

Contract:	Client:	Window Sample:
Seam Barnsley	**Arcadis LLP**	**AWS111**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**30.03.22** End: **30.03.22**	**95.81**	**E:434688.2 N:406697.4**	**1** of **1**

Progress	Samples / Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Window Run	Depth	No	Type	Results					
	0.10-0.50	1	B				MADE GROUND: Grass over dark soft brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse gravel is angular to rounded fine to coarse of sandstone mudstone coal and brick fragments.	(0.50)	
	0.30	101	ES						
	0.30	2	D					0.50	
	0.50-1.20	3	B				MADE GROUND: Black and dark grey slight silty sandy angular to subangular fine to coarse GRAVEL of brick ballast clinker ash metal slag slates and sandstone. Low cobbles content of angular brick and sandstone. Sand is medium to coarse of ash.		
	1.00	102	ES						
	1.00	4	D						
	1.20-2.00	5	D					(1.70)	
1.20 - 2.00 (75mm dia) 80% rec	1.50	103	ES						
	2.00-2.20	6	D					2.20	
2.20 - 3.00 (55mm dia) 60% rec	2.50	104	ES				MADE GROUND: Soft multi coloured including light and dark brown, black, grey brown and yellow brown and orange slightly sandy gravelly CLAY. Sand is fine to coarse gravel is angular to subrounded fine to coarse of sandstone brick and coal.	(0.80)	
								3.00	
							Borehole terminated at 3.00m depth.		

Drilling Progress and Water Observations					
Date	Time	Borehole Depth (m)	Casing Depth (m)	Borehole Diameter (mm)	Water Depth (m)

General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.20m depth.
3. Window sample terminated at 3.00m.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Drilled By:	Logged By:	Checked By:
Hand held window sampling	**Hand held window sampler**	**Tom Saxton**	**FRenvoize**	AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log WINDOW SAMPLE LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS
HORIZONTAL CORED HOLES

Contract:	Client:	Exploratory position:
Seam Barnsley	**Arcadis LLP**	**C01**

Contract Ref:	Date:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22**	**97.15**	**E:434625.2 N:406664.4**	**1** of **2**

Depth	Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
0.00-0.52			MASONRY: Medium strong greyish orangish brown medium to coarse SANDSTONE.	(0.52) 0.52	
0.52-0.65			MASONRY: Weak dark grey MORTAR, poorly bonded, 30-40% aggregate of angular to rounded fine sandstone and cement. 20-30% small and large voids.	(0.13) 0.65	
0.65-1.10			MASONRY: Weak to medium strong orangish brown and yellowish brown medium to coarse SANDSTONE.	(0.45) 1.10	

General Remarks

1. Drilled in arch of retaining wall at 90 degree (horizontal) using concrete coring equipment.
2. Concrete core terminated at 1.10m depth. 1.04m recovery.
3. Driller records sandstone rubble behind wall.
4. Backfilled with rapid setting concrete on completion.

All dimensions in metres | Scale: **1:7**

Method Used:	Plant Used:	Logged By:	Checked By:
Concrete core	**Unknown**	**EClarkson**	

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STRUCTURAL SOILS
HORIZONTAL CORED HOLES

Contract:		Client:		Exploratory position:
Seam Barnsley		**Arcadis LLP**		**C01**
Contract Ref:	Date:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22**	**97.15**	**E:434625.2 N:406664.4**	**2** of **2**



Method Used:	Plant Used:	Logged By:	Checked By:
Concrete core	**Unknown**	**EClarkson**	

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STRUCTURAL SOILS
HORIZONTAL CORED HOLES

Contract:	Client:	Exploratory position:
Seam Barnsley	**Arcadis LLP**	**C02**

Contract Ref:	Date:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22**	**96.87**	**E:434616.6 N:406698.2**	**1** of **2**

Depth	Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
0.00-0.54			MASONRY: Medium strong yellowish brown medium to coarse SANDSTONE.	(0.54) 0.54	
0.54-0.82			MASONRY: Weak dark grey MORTAR well bonded. 50-60% aggregate of angular to rounded fine sandstone brick and cement. 20% voids.	(0.28) 0.82	
0.82-1.90			MASONRY: Medium strong yellowish brown medium to coarse SANDSTONE.	(1.08) 1.90	

General Remarks

1. Drilled in buttress of retaining wall at 90 degree (horizontal) using concrete coring equipment.
2. Concrete core terminated at 1.90m depth. 1.31m recovery.
3. Driller records sandstone rubble behind wall.
4. Backfilled with rapid setting concrete on completion.

All dimensions in metres | Scale: **1:12**

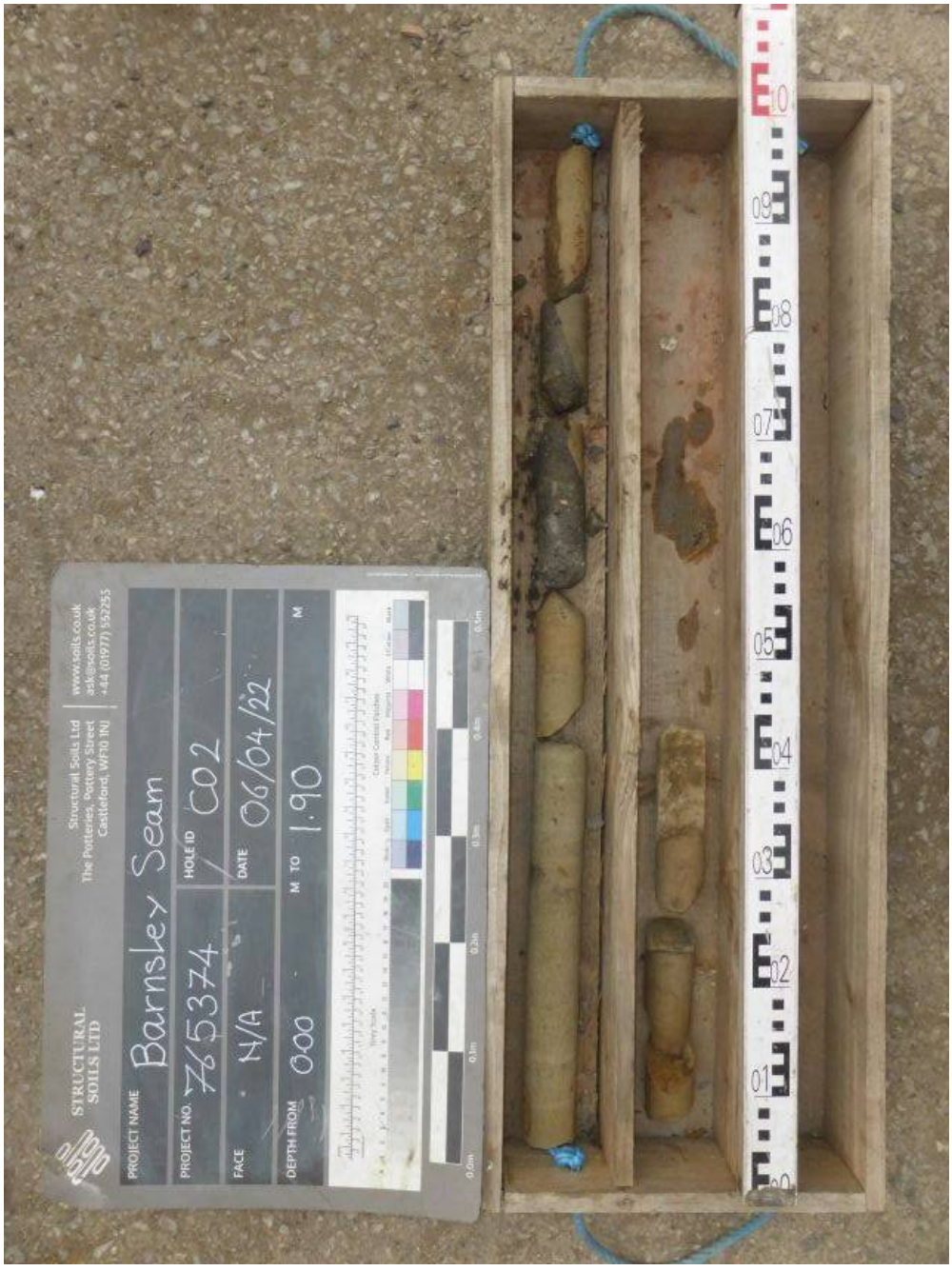
Method Used:	Plant Used:	Logged By:	Checked By:
Concrete core	**Unknown**	**EClarkson**	

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STRUCTURAL SOILS
HORIZONTAL CORED HOLES

Contract:		Client:		Exploratory position:
Seam Barnsley		**Arcadis LLP**		**C02**
Contract Ref:	Date:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22**	**96.87**	**E:434616.6 N:406698.2**	**2** of **2**



Method Used:	Plant Used:	Logged By:	Checked By:
Concrete core	**Unknown**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log GENERAL LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS

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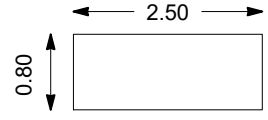
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP101**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **29.03.22**	**95.70**	**E:434563.7 N:406868.7**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.05-0.40	1	B				MADE GROUND: Tarmac.	0.05	
						MADE GROUND: Light brown grey sandy angular to subrounded fine to coarse GRAVEL of sandstone, limestone and occasional tarmac and igneous lithologies. Sand is coarse. (Sub base)	(0.35)	
0.30	101	ES	1xT+1xJ+1xV				0.40	
0.30	2	D				MADE GROUND: Very stiff orangish brown mottled grey slightly sandy slightly gravelly CLAY. Medium cobble content. Sand is fine. Gravel is angular to rounded fine to coarse of sandstone, mudstone and occasional coal. Cobbles are subangular sandstone.		
0.40-1.20	3	B					(0.80)	
1.00	102	ES	1xT+1xJ+1xV					
1.00	4	D					1.20	
1.20-1.80	5	B				MADE GROUND: Dark brown grey mottled black slightly clayey sandy angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick, coal and occasional wood and textiles. Medium cobble content. Sand is coarse of ash. Cobbles are angular to subangular sandstone.	(0.60)	
1.50	103	ES	1xT+1xJ+1xV					
1.50	6	D					1.80	
1.80-2.00	7	B				MADE GROUND: Dark grey black sandy clayey angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick, coal and occasional wood, textiles and pottery with pockets of very stiff clay. Medium cobble content. Sand is coarse of ash. Cobbles are angular to subangular sandstone.		
1.90	104	ES	1xT+1xJ+1xV				2.00	
1.90	8	D						
						Trial pit terminated at 2.00m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at scheduled depth of 2.00m.
4. Soakway and plate load tests.
5. Trial pit backfilled with arisings in reverse order upon completion ready to be reienstated.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

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STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP101**
Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **29.03.22**	**95.70**	**E:434563.7 N:406868.7**	**2** of **3**

Additional Remarks

29/03/2022:





Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 20/05/22 - 15:48 | JM2 |

STRUCTURAL SOILS

DRAFT

TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP101**
Contract Ref:	Start: **29.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **29.03.22**	**95.70**	**E:434563.7 N:406868.7**	**3** of **3**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP101-SA**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**29.03.22** End: **29.03.22**	**95.70**	**E:434563.7 N:406868.7**	**1** of **1**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Tarmac.	0.05	
						MADE GROUND: Light brown grey sandy angular to subrounded fine to coarse GRAVEL of sandstone, limestone and occasional tarmac and igneous lithologies. Sand is coarse. (Sub base)	(0.35) 0.40	
						MADE GROUND: Very stiff orangish brown mottled grey slightly sandy slightly gravelly CLAY. Medium cobble content. Sand is fine. Gravel is angular to rounded fine to coarse of sandstone, mudstone and occasional coal. Cobbles are subangular sandstone.	(0.80) 1.20	
						MADE GROUND: Dark brown grey mottled black slightly clayey sandy angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick, coal and occasional wood and textiles. Medium cobble content. Sand is coarse of ash. Cobbles are angular to subangular sandstone.	(0.60) 1.80	
						MADE GROUND: Dark grey black sandy clayey angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick, coal and occasional wood, textiles and pottery with pockets of very stiff clay. Medium cobble content. Sand is coarse of ash. Cobbles are angular to subangular sandstone.	2.00	
						Trial pit terminated at 2.00m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit terminated at scheduled depth of 2.00m.
4. Soakway and plate load tests.
5. Trial pit backfilled with arisings in reverse order upon completion ready to be reienstated.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

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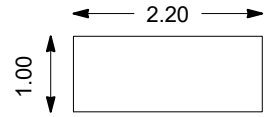
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP102-SA**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**17.03.22** End: **17.03.22**	**96.09**	**E:434610.7 N:406761.3**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.10	1	B				MADE GROUND: Black tarmac	0.10	
0.00-0.10	101	ES				MADE GROUND: Light grey and light brown slightly clayey very sandy silty angular to subangular fine to coarse GRAVEL of sandstone, coal and tarmac. Sand is fine to coarse. (Subbase)	0.25	
0.00-0.10	2	D				MADE GROUND: Dark grey black sandy slightly clayey angular to subangular fine to coarse GRAVEL of sandstone, coal, concrete and occasional igneous lithologies. Medium cobble content. Sand is fine to coarse of ash. Cobbles are angular sandstone and asphalt. Strong asphalt and tar smell.	(1.15)	
0.10-0.25	3	B						
0.20	102	ES	1xT+1xJ+1xV					
0.20	4	D						
0.25-1.40	5	B						
1.00	103	ES	1xT+1xJ+1xV					
1.00	6	D						
1.40-2.00	7	B				Firm grey mottled brown slightly sandy gravelly silty CLAY. Medium cobble content. Sand is fine. Gravel is angular fine to coarse weathered mudstone. Cobbles are angular weathered mudstone.	1.40 (0.60)	
1.60	104	ES	1xT+1xJ+1xV					
1.60	8	D						
						Trial pit terminated at 2.00m depth.	2.00	

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion.
4. Trial pit terminated at 2.00m depth
5. Plate load and soak away tests.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP102-SA**
Contract Ref:	Start: **17.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **17.03.22**	**96.09**	**E:434610.7 N:406761.3**	**2** of **2**

Additional Remarks

17/03/2022:





Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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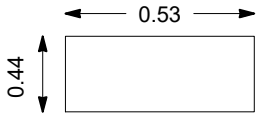
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP103**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**12.04.22** End: **12.04.22**	**96.87**	**E:434616.3 N:406698.9**	**1** of **4**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.20	1	B				MADE GROUND: White and dark brown sandy angular to subangular fine to coarse GRAVEL of limestone, sandstone, tarmac and occasional glass. Sand is fine to coarse.	0.20	
0.20-0.80	2	B				MADE GROUND: Dark brown black sandy silty angular to subangular fine to medium, locally coarse GRAVEL of sandstone, coal, mudstone, brick and occasional tarmac and concrete.	(0.60)	
0.40	101	ES	1xT+1xJ+1xV					
0.40	3	D					0.80	
0.75	4	D						
0.80-1.23	5	B				MADE GROUND: Soft dark brown slightly sandy very gravelly CLAY. Medium cobble content. Sand is fine. Gravel is angular to subrounded fine to coarse of sandstone, mudstone, slag, brick and occasional concrete and pottery. Cobbles are subangular sandstone and slag.	(0.43)	
1.00	102	ES	1xT+1xJ+1xV					
1.00	6	D					1.23	
1.23-1.30	7	B				MADE GROUND: Soft to firm dark brown locally mottled orangish brown sandy gravelly CLAY. Low cobble content. Sand is fine. Gravel is angular to subangular fine to medium, locally coarse of sandstone, mudstone, coal and rare slag and brick. Cobbles are subangular sandstone.	1.30	
1.25	103	ES	1xT+1xJ+1xV					
1.25	8	D						
						Trial pit terminated at 1.30m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. No groundwater encountered.
3. Trial pit hand dug down the side of buttress due to hitting pipe in first attempt. Pipe exposed in second pit at the side, dug with caution.
4. Trial pit backfilled with arisings in reverse order upon completion.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

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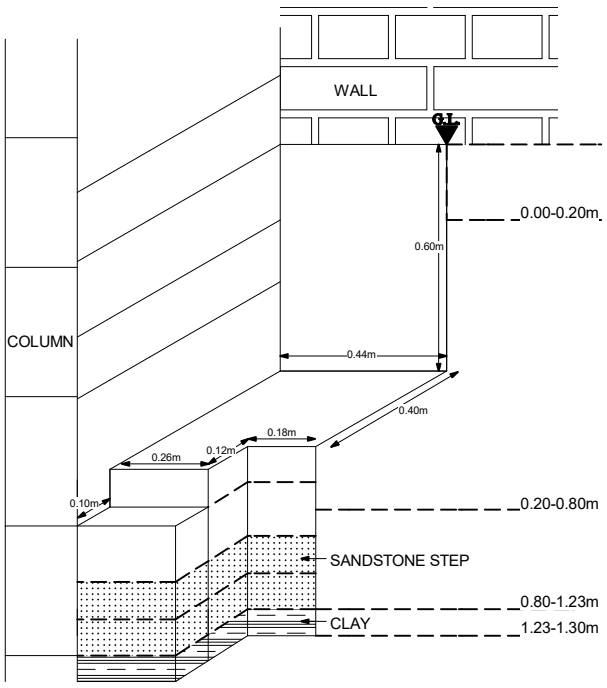
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP103**
Contract Ref:	Start: **12.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**96.87**	**E:434616.3 N:406698.9**	**2** of **4**

Additional Remarks

12/04/2022:



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP103**
Contract Ref:	Start: **12.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**96.87**	**E:434616.3 N:406698.9**	**3** of **4**





Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP103**
Contract Ref:	Start: **12.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **12.04.22**	**96.87**	**E:434616.3 N:406698.9**	**4** of **4**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Tracked excavator**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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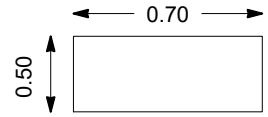
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP104**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**28.03.22** End: **28.03.22**	**96.89**	**E:434617.1 N:406696.6**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Very coarse ASPHALT.	0.10	
0.10-0.30	1	B				MADE GROUND: Yellowish brown slightly clayey sandy angular to subangular fine to coarse GRAVEL limestone and sandstone, Sand is fine to coarse. Type 1 sub base.	0.30	
0.20	2	D						
0.30-0.70	3	B				MADE GROUND: Black to dark brown Slightly clayey very sandy fine to coarse angular to subrounded GRAVEL of sandstone brick metal ash like material medium cobble and boulder content. Also contained a glass milk bottle and a towel. Sand is fine to coarse of ash like material. Cobbles and boulders are angular to subrounded of sandstone and brick and slate.	(0.40)	
0.50	101	ES						
0.50	4	D					0.70	
0.70-1.20	5	B				MADE GROUND: Grey brown slightly clayey sandy angular to subrounded fine to coarse GRAVEL of sandstone and slate with a medium cobble content. Sand is fine to coarse with frequent ash material. Frequent clay nodules. Cobbles are subangular of sandstone	(0.50)	
1.00	102	ES						
1.00	6	D					1.20	
1.20-1.40	7	B				. . . 0.75m: Top depth of footing. extends out 0.25m from the face of the wall.	1.40	
1.30	103	ES						
1.30	8	D				MADE GROUND: Brown and grey brown slightly sandy slightly gravelly CLAY. sand is fine to coarse gravel is angular to subangular fine to coarse predominantly fine to medium of sandstone. Occasional metal and brick fragments.		
						. . . 1.25m: Bottom depth of footing.		
						Trial pit terminated at 1.40m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 1.40m depth.
3. Trial pit remained dry and stable during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Inspection pit + Hand dug	**Hand tools**	**FRenvoize**	

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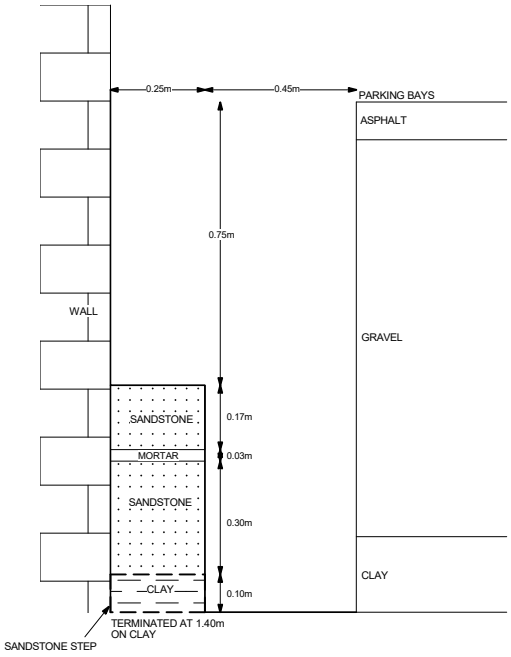
TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP104**
Contract Ref:	Start: **28.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **28.03.22**	**96.89**	**E:434617.1 N:406696.6**	**2** of **3**

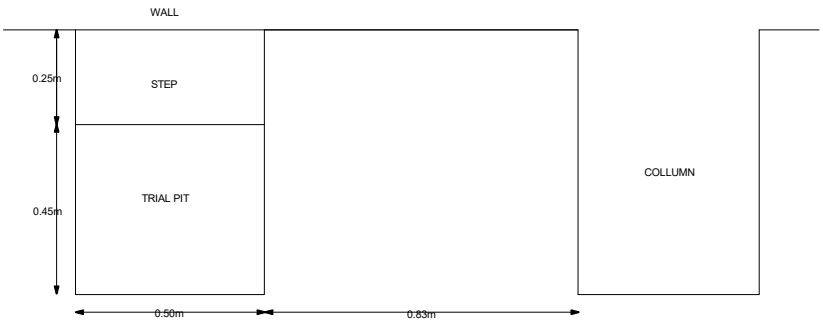
Additional Remarks

28/03/2022:

Section



Plan



Method Used:	**Inspection pit + Hand dug**	Plant Used:	**Hand tools**	Logged By:	**FRenvoize**	Checked By:	AGS

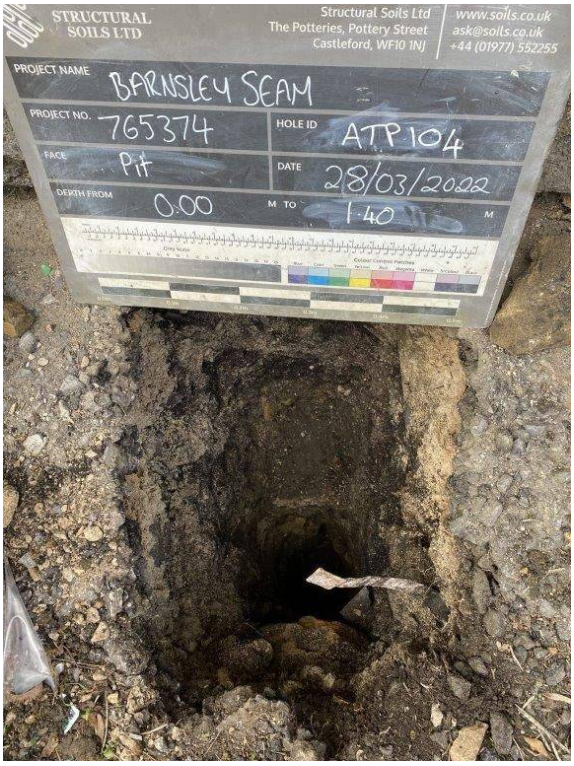
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP104**
Contract Ref:	Start: **28.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **28.03.22**	**96.89**	**E:434617.1 N:406696.6**	**3** of **3**





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Method Used:	**Inspection pit + Hand dug**	Plant Used:	**Hand tools**	Logged By:	**FRenvoize**	Checked By:	AGS

STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP105-SA**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**16.03.22** End: **16.03.22**	**96.93**	**E:434632.8 N:406702.9**	**1** of **2**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.10	1	B				MADE GROUND: Black tarmac.	0.10	
0.00-0.10	101	ES				MADE GROUND: Dark brown grey black sandy silty ashy angular to subangular fine to coarse GRAVEL of sandstone, coal, occasional tarmac and rare pottery. Sand is fine to coarse.	(0.70)	
0.00-0.10	2	D				. . . 0.10-0.15m: White grey gravel (subbase)		
0.10-0.80	3	B						
0.50	102	ES	1xT+1xJ+1xV					
0.50	4	D					0.80	
0.80-1.20	5	B				MADE GROUND: Yellowish brown and dark grey slightly clayey silty very sandy angular to subangular fine to coarse GRAVEL of sandstone and coal. High cobble content. Sand is fine to coarse. Cobbles are angular to subangular sandstone.	(0.40)	
1.00	103	ES	1xT+1xJ+1xV					
1.00	6	D					1.20	
1.20-2.10	7	B				POSSIBLE MADE GROUND: Firm locally stiff grey / dark grey mottled orangish brown slightly sandy gravelly CLAY. Sand is fine. Gravel is angular to subangular weathered mudstone and occasional sandstone and rare coal.	(0.90)	
1.70	104	ES	1xT+1xJ+1xV					
1.70	8	D					2.10	
						Trial pit terminated at 2.10m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion.
4. Trial pit terminated at 2.10m depth.

Plate load and soak away tests.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

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STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP105-SA**
Contract Ref:	Start: **16.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **16.03.22**	**96.93**	**E:434632.8 N:406702.9**	**2** of **2**

Additional Remarks

16/03/2022:





Method Used:	**Machine dug**	Plant Used:	**Caterpillar 428D backhoe loader**	Logged By:	**EClarkson**	Checked By:	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS

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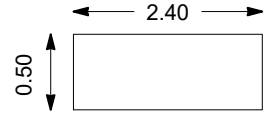
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP106**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22** End: **06.04.22**	**97.16**	**E:434673.1 N:406662.2**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.30	1	B				MADE GROUND: Grass over dark brown gravelly clayey fine to coarse SAND with roots and rootlets. Gravel is angular to subangular fine to coarse of sandstone, mudstone, brick, pottery, plastic and glass. (TOPSOIL)	(0.30)	
0.20	101	ES	1xT+1xJ+1xV				0.30	
0.20	2	D						
0.30-1.10	3	B				MADE GROUND: Soft dark brown black gravelly very sandy CLAY with high cobble content. Sand is coarse of ash. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and brick. Cobbles are subangular sandstone and brick. . . . 0.30-0.45m: Layer of sandstone blocks.	(0.80)	
0.80	102	ES	1xT+1xJ+1xV					
0.80	4	D					1.10	
1.10-1.70	5	B				MADE GROUND: Soft dark grey and black sandy gravelly CLAY. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of sandstone, mudstone and brick.	(0.60)	
1.50	103	ES	1xT+1xJ+1xV					
1.50	6	D					1.70	
1.70-2.70	7	B				Firm grey sandy very gravelly CLAY. Medium cobble content. Sand is fine to coarse. Gravel is angular to subangular sandstone and mudstone. Cobbles are subangular sandstone.	(1.00)	
2.20	104	ES	1xT+1xJ+1xV					
2.20	8	D					2.70	
						Trial pit terminated at 2.70m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit was unstable below 2.00m depth.
3. Trial pit remained dry during excavation.
4. Trial pit backfilled with arisings in reverse order upon completion.
5. Drainage pipe found in first attempt at 1.20m. Backfilled and reattempted next to it, closer to the parking bay.
6. Trial pit termnated at 2.70m depth due to being unstable and walls collapsing. Trial pit collapsed before photos could be taken. Photos available to 1.20 depth from first trial pit attempt.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**EClarkson**	

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STRUCTURAL SOILS

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP106**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**97.16**	**E:434673.1 N:406662.2**	**2** of **3**

Additional Remarks

06/04/2022:





Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP106**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**97.16**	**E:434673.1 N:406662.2**	**3** of **3**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Unknown**	**EClarkson**	

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TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP107**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**07.04.22** End: **07.04.22**	**97.34**	**E:434661.5 N:406628.3**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.35	1	B				MADE GROUND: Grass over dark brown gravelly clayey fine to coarse SAND with roots and rootlets. Gravel is angular to subangular fine to coarse of sandstone, mudstone, brick, glass and rare pottery. (TOPSOIL)	(0.30)	
							0.30	
0.30	101	ES	1xT+1xJ+1xV			MADE GROUND: Dark grey black slightly clayey sandy angular to subrounded fine to coarse GRAVEL of sandstone, mudstone, brick and occasional metal. Medium cobble content. Sand is coarse of ash. Cobbles are subangular sandstone.	(0.40)	
0.30	2	D						
0.35-0.70	3	B						
0.50	102	ES	1xT+1xJ+1xV					
0.50	4	D						
						. . . 0.30-0.40m: Layer of sandstone blocks.	0.70	
0.70-1.30	5	B				MADE GROUND: Dark brown grey slightly clayey sandy angular to subangular fine to coarse GRAVEL of sandstone, mudstone and rare brick. High cobble content. Medium boulder content. Sand is fine to coarse. Cobbles and boulders are angular of sandstone.	(0.60)	
1.00	103	ES	1xT+1xJ+1xV					
1.00	6	D						
							1.30	
1.30-2.80	7	B				Brownish grey sandy very clayey angular to subangular fine to coarse GRAVEL of weathered sandstone and mudstone. Medium cobble content. Sand is fine to coarse. Cobbles are subangular sandstone.	(1.50)	
2.00	104	ES	1xT+1xJ+1xV					
2.00	8	D						
							2.80	

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion.
4. Trial pit terminated at 2.80m depth due to very hard strata.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Inspection pit + Machine dug	**Unknown**	**EClarkson**	

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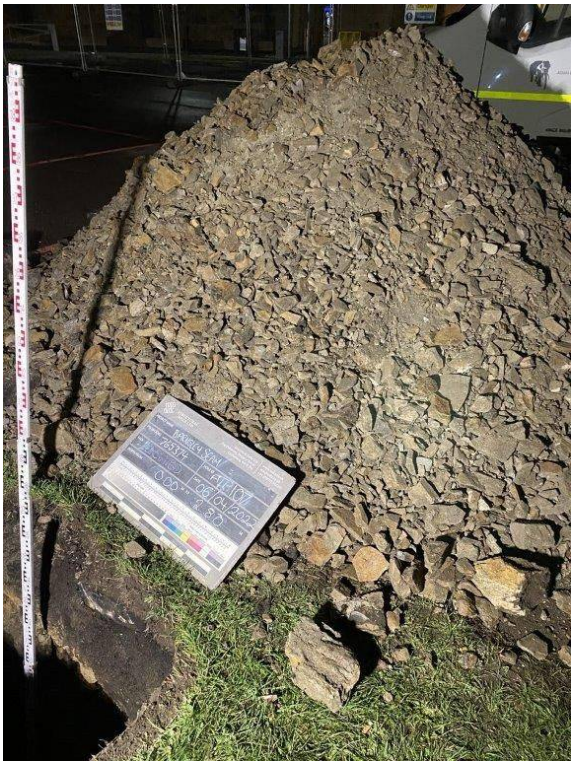
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP107**
Contract Ref:	Start: **07.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **07.04.22**	**97.34**	**E:434661.5 N:406628.3**	**2** of **3**

Additional Remarks

07/04/2022:





Method Used:	**Inspection pit + Machine dug**	Plant Used:	**Unknown**	Logged By:	**EClarkson**	Checked By:	

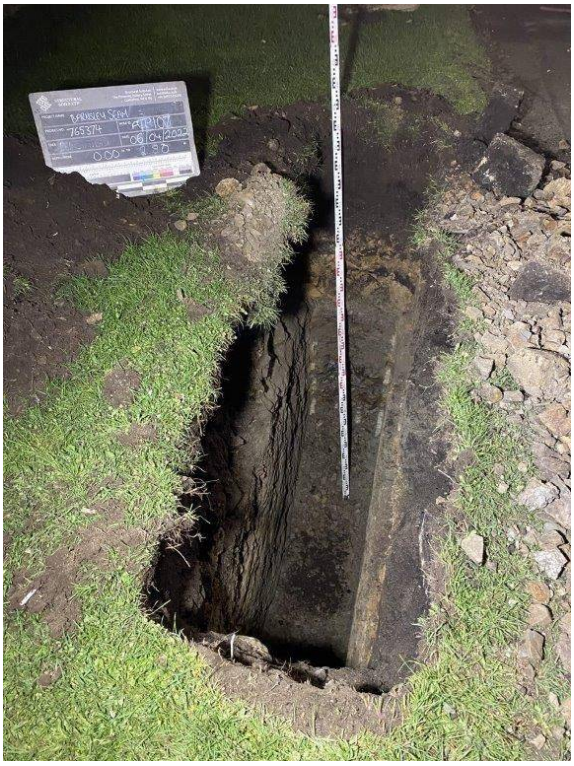
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP107**
Contract Ref:	Start: **07.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **07.04.22**	**97.34**	**E:434661.5 N:406628.3**	**3** of **3**



Method Used:	**Inspection pit + Machine dug**	Plant Used:	**Unknown**	Logged By:	**EClarkson**	Checked By:	AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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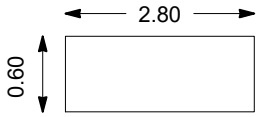
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP108-SA**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**16.03.22** End: **16.03.22**	**97.27**	**E:434645.3 N:406617.0**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
0.00-0.15	1	B				MADE GROUND: Black Tarmac	0.15	
0.00-0.15	101	ES						
0.00-0.15	2	D				MADE GROUND: Dark brown and grey very sandy silty angular to subangular fine to coarse GRAVEL of tarmac, coal, concrete and sandstone. Sand is fine to coarse.		
0.15-0.70	3	B				. . . 0.15-0.25m: White and light grey sandy gravel (sub base)	(0.55)	
0.50	102	ES	1xT+1xJ+1xV			. . . 0.30-0.40m: High cobble content.		
0.50	4	D					0.70	
0.70-1.00	5	B				POSSIBLE MADE GROUND: Yellowish brown, dark brown and grey slightly clayey very sandy angular to subangular fine to coarse GRAVEL of sandstone and occasional coal. Sand is fine to coarse.	(0.30)	
0.80	103	ES	1xT+1xJ+1xV					
0.80	6	D					1.00	
1.00-1.20	7	B				Firm grey mottled orangish brown gravelly silty CLAY. Gravel is angular to subangular fine to coarse weathered sandstone and mudstone and rare coal.	1.20	
1.10	104	ES	1xT+1xJ+1xV					
1.10	8	D						
1.20-2.00	9	B				Very weak dark grey weathered MUDSTONE.	(0.80)	
1.80	10	D						
							2.00	
						Trial pit terminated at 2.00m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Trial pit remained dry and stable during excavation.
3. Trial pit backfilled with arisings in reverse order upon completion.
4. Plate load test carried out at 0.45m. Soak away test carried out 1.80-2.00m.
5. Trial pit terminated at 2.00m depth.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

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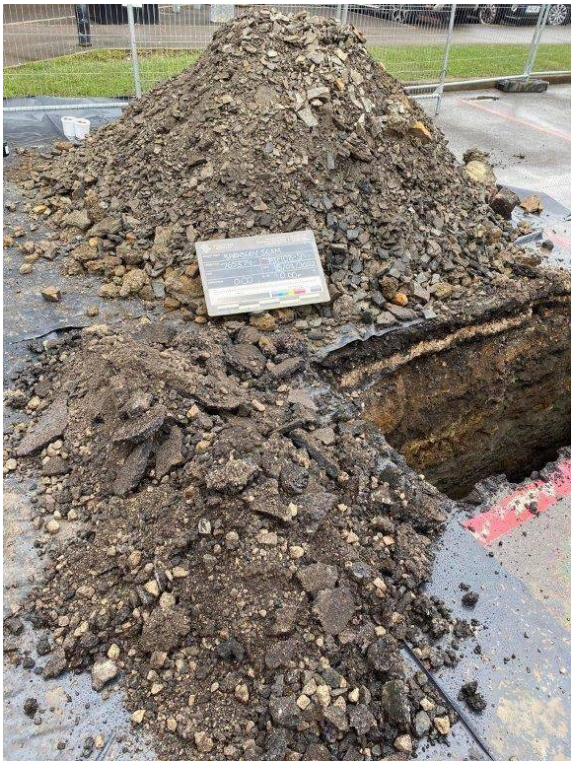
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP108-SA**
Contract Ref:	Start: **16.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **16.03.22**	**97.27**	**E:434645.3 N:406617.0**	**2** of **3**

Additional Remarks

16/03/2022:





Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP108-SA**
Contract Ref:	Start: **16.03.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **16.03.22**	**97.27**	**E:434645.3 N:406617.0**	**3** of **3**



Method Used:	Plant Used:	Logged By:	Checked By:
Machine dug	**Caterpillar 428D backhoe loader**	**EClarkson**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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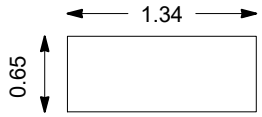
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP109**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22** End: **06.04.22**	**89.13**	**E:434683.7 N:406677.1**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Paving slabs	0.07	
						MADE GROUND: Dark brown medium to coarse SAND.	0.13	
						MADE GROUND: Black slightly silty sandy angular to subangular fine to coarse GRAVEL of sandstone slate and brick fragments. Sand is fine to coarse of ash.	0.30	
						. . . 0.20-0.25m: Old clay land drain		
						Extremely weak blueish grey locally mottled orange MUDSTONE.	0.53	
						Trial pit terminated at 0.53m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 0.53m depth.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Vacuum extraction + Hand	**Unknown**	**FRenvoize**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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STRUCTURAL SOILS

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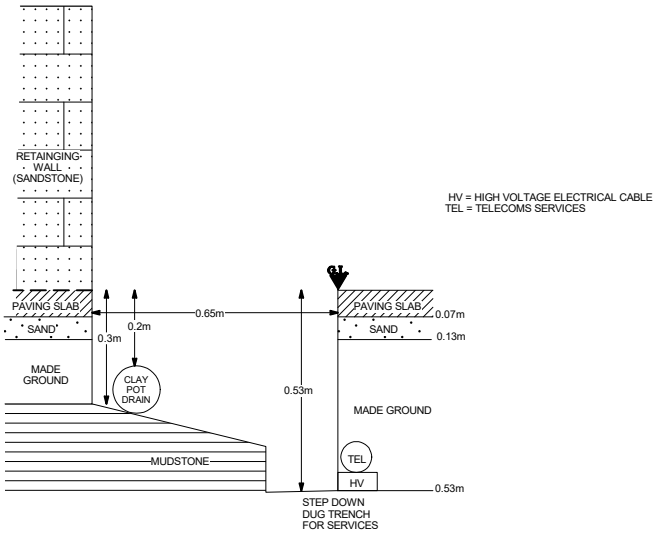
TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP109**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**89.13**	**E:434683.7 N:406677.1**	**2** of **3**

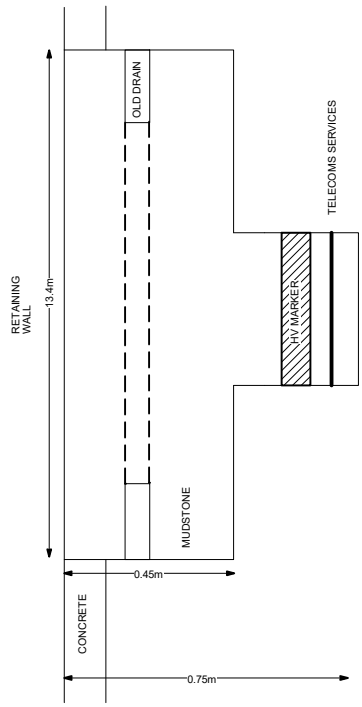
Additional Remarks

06/04/2022:

Section



Plan



Method Used:	**Vacuum extraction + Hand**	Plant Used:	**Unknown**	Logged By:	**FRenvoize**	Checked By:	AGS

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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP109**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**89.13**	**E:434683.7 N:406677.1**	**3** of **3**





Method Used:	Plant Used:	Logged By:	Checked By:
Vacuum extraction + Hand dug	**Unknown**	**FRenvoize**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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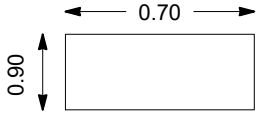
TRIAL PIT LOG

Contract:	Client:	Trial Pit:
Seam Barnsley	**Arcadis LLP**	**ATP110**

Contract Ref:	Start:	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	**06.04.22** End: **06.04.22**	**92.05**	**E:434667.5 N:406632.5**	**1** of **3**

Samples and In-situ Tests				Water	Backfill	Description of Strata	Depth (Thickness)	Material Graphic Legend
Depth	No	Type	Results					
						MADE GROUND: Paving slabs	0.07	
						MADE GROUND: Dark brown medium to coarse SAND.	0.18	
						MADE GROUND: Black sandy slightly silty angular to subangular fine to coarse GRAVEL of sandstone slate and brick fragments. Sand is fine to coarse of ash.	0.30	
						. . . 0.26-0.30m: Old clay land drain. Layed onto the mudstone.	0.34	
						Extremely weak light blueish grey locally mottled orange MUDSTONE.		
						Trial pit terminated at 0.34m depth.		

Plan (Not to Scale)



General Remarks

1. Position checked with Ground Penetrating Radar, CAT and Genny prior to excavation.
2. Inspection pit hand dug to 0.34m depth.
3. Trial pit remained dry and stable during excavation.

All dimensions in metres | Scale: **1:25**

Method Used:	Plant Used:	Logged By:	Checked By:
Vacuum extraction + Hand	**Unknown**	**FRenvoize**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 20/05/22 - 15:50 | JM2 |

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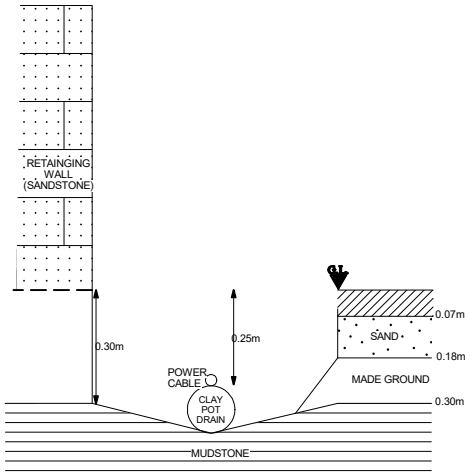
TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP110**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**92.05**	**E:434667.5 N:406632.5**	**2** of **3**

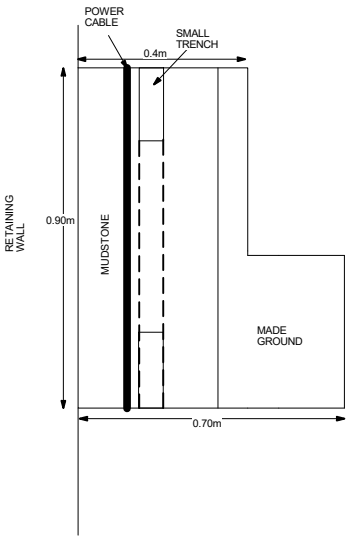
Additional Remarks

06/04/2022:

Section



Plan



Method Used:	**Vacuum extraction + Hand**	Plant Used:	**Unknown**	Logged By:	**FRenvoize**	Checked By:	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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TRIAL PIT LOG

Contract:		Client:		Trial Pit:
Seam Barnsley		**Arcadis LLP**		**ATP110**
Contract Ref:	Start: **06.04.22**	Ground Level:	National Grid Co-ordinate:	Sheet:
765374	End: **06.04.22**	**92.05**	**E:434667.5 N:406632.5**	**3** of **3**





Method Used:	**Vacuum extraction + Hand dug**	Plant Used:	**Unknown**	Logged By:	**FRenvoize**	Checked By:	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Log TRIAL PIT LOG - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 20/05/22 - 15:50 | JM2 |

APPENDIX C -
IN-SITU TESTING

(i) Standard Penetration Test (SPT) Summary Sheet

(ii) SPT N Value v Depth

(iii) SPT N_{60} Value v Depth

(iv) Plate Load Test

(v) Soakaway Test

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
ABH101	1.20		1.00	Dry	5,3	150	2,2,1,3		N=8	SIS-175-3000	11/05/2021	55	7	
	2.00		1.50	Dry	6,6	150	3,2,2,2		N=9	SIS-175-3000	11/05/2021	55	8	
	3.00		1.50	Dry	1,0	150	1,2,2,4		N=9	SIS-175-3000	11/05/2021	55	8	
	4.00		1.50	Dry	11,17	150	34,46,4+	155	11,17/34,46,4	SIS-175-3000	11/05/2021	55		
									for 5mm					
	4.50		1.50	Dry	34	75	50+	50	34/50	SIS-175-3000	11/05/2021	55		
									for 50mm					
ABH102	1.10				4,3	150	3,3,3,4		N=13	SIS-175-3000	11/05/2021	55	12	
	2.00				3,1	150	1,1,1,2		N=5	SIS-175-3000	11/05/2021	55	5	
	3.00				2,1	150	1,2,3,3		N=9	SIS-175-3000	11/05/2021	55	8	
	4.00				5,3	150	4,2,1,5		N=12	SIS-175-3000	11/05/2021	55	11	
	5.00				2,3	150	3,4,5,6		N=18	SIS-175-3000	11/05/2021	55	16	
	6.00				6,6	150	11,12,22,30		N=75	SIS-175-3000	11/05/2021	55	69	
	6.70				14,18	150	50+	60	14,18/50	SIS-175-3000	11/05/2021	55		
									for 60mm					
ABH103	1.20		1.00	Dry	1,2	150	1,0,4,4		N=9	SIS-175-3000	11/05/2021	55	8	
	2.00		1.20	Dry	5,3	150	2,2,2,2		N=8	SIS-175-3000	11/05/2021	55	7	
	3.00		1.20	Dry	5,7	150	8,11,14,11		N=44	SIS-175-3000	11/05/2021	55	40	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Compiled By		Date	Contract Ref:
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Contract: **Seam Barnsley**			Page: **1** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
ABH103	3.80		1.20	Dry	21,22	150	46,4+	80	21,22/46,4	SIS-175-3000	11/05/2021	55		
									for 5mm					
ABH104	1.20		1.00	Dry	2,1	150	2,2,2,3		N=9	SIS-175-3000	11/05/2021	55	8	
	2.00		1.50	Dry	3,2	150	4,4,4,4		N=16	SIS-175-3000	11/05/2021	55	15	
	3.00		1.50	Dry	6,6	150	5,4,3,5		N=17	SIS-175-3000	11/05/2021	55	16	
	4.00		1.50	Dry	4,3	150	2,3,5,7		N=17	SIS-175-3000	11/05/2021	55	16	
	5.00		1.50	Dry	2,1	150	3,3,3,5		N=14	SIS-175-3000	11/05/2021	55	13	
	6.00		1.50	Dry	6,6	150	6,10,12,22		N=50	SIS-175-3000	11/05/2021	55	46	
	7.10		1.50	Dry	29	75	50+	70	29/50	SIS-175-3000	11/05/2021	55		
									for 70mm					
ABH105	1.50		1.50	Dry	5,6	150	4,4,5,5		N=18	AR1862-2021	28/05/2021	95	28	
	2.50		1.50	Dry	5,6	150	6,6,4,3		N=19	AR1862-2021	28/05/2021	95	30	
	3.50		1.50	Dry	3,2	150	3,2,3,3		N=11	AR1862-2021	28/05/2021	95	17	
	4.50		1.50	Dry	1,1	150	2,2,4,4		N=12	AR1862-2021	28/05/2021	95	19	
	5.90		1.50	Dry	25	75	25,25,50	225	25/25,25,50	AR1862-2021	28/05/2021	95		
									for 75mm					
	6.30		1.50	Dry	10,12	150	18,26,30,26		N=100	AR1862-2021	28/05/2021	95	158	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Compiled By		Date	Contract Ref:
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Contract: **Seam Barnsley**			Page: **2** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
ABH106	1.50		1.50	Dry	3,4	150	3,4,3,4		N=14	AR1862-2021	28/05/2021	95	22	
	2.50		1.50	Dry	2,2	150	2,2,2,2		N=8	AR1862-2021	28/05/2021	95	13	
	3.50		1.50	Dry	2,2	150	3,3,2,3		N=11	AR1862-2021	28/05/2021	95	17	
	4.50		1.50	Dry	2,3	150	3,3,4,4		N=14	AR1862-2021	28/05/2021	95	22	
	6.00		1.50	Dry	5,5	150	5,4,4,4		N=17	AR1862-2021	28/05/2021	95	27	
	7.50		3.00	Dry	4,4	150	4,4,4,5		N=17	AR1862-2021	28/05/2021	95	27	
	9.00		3.00	Dry	25	50	36,14+	90	25/36,14	AR1862-2021	28/05/2021	95		
									for 15mm					
	9.20		3.00	Dry	25	50	100+	60	25/100	AR1862-2021	28/05/2021	95		
									for 60mm					
ABH107	1.60		1.30		1,0	150	1,1,1,1		N=4	SIS-175-3000	11/05/2021	55	4	
	2.20		1.30		1,1	150	1,2,2,2		N=7	SIS-175-3000	11/05/2021	55	6	
	3.00		3.00		2,2	150	2,2,2,2		N=8	SIS-175-3000	11/05/2021	55	7	
	4.00		3.00		3,3	150	3,3,3,3		N=12	SIS-175-3000	11/05/2021	55	11	
	5.00		3.00		2,3	150	4,3,3,6		N=16	SIS-175-3000	11/05/2021	55	15	
	6.00		3.00		11,14	150	14,16,25+,25+	205	11,14/14,16,25,25	SIS-175-3000	11/05/2021	55		
									for 20mm					
ABH107	6.80		3.00		30	75	50+	40	30/50	SIS-175-3000	11/05/2021	55		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Contract: **Seam Barnsley**			Page: **3** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 40mm					
ABH108	1.20		1.20		5,3	150	3,1,1,1		N=6	SIS-175-3000	11/05/2021	55	6	
	2.00		2.00		3,2	150	2,3,3,3		N=11	SIS-175-3000	11/05/2021	55	10	
	3.00		2.00		2,3	150	2,3,4,3		N=12	SIS-175-3000	11/05/2021	55	11	
	4.00		2.00		5,6	150	5,5,6,6		N=22	SIS-175-3000	11/05/2021	55	20	
	5.00		2.00		5,5	150	8,8,15,24		N=55	SIS-175-3000	11/05/2021	55	50	
	5.80		2.00		29	75	47,3+	80	29/47,3	SIS-175-3000	11/05/2021	55		
									for 5mm					
ABH109	1.20				15,7	150	7,8,6,7		N=28	SIS-175-3000	11/05/2021	55	26	
	2.00		1.30		4,3	150	3,1,2,2		N=8	SIS-175-3000	11/05/2021	55	7	
	3.00		3.00		3,3	150	2,4,2,2		N=10	SIS-175-3000	11/05/2021	55	9	
	4.00		3.00		3,2	150	2,2,2,2		N=8	SIS-175-3000	11/05/2021	55	7	
	5.00		3.00		5,4	150	4,5,5,4		N=18	SIS-175-3000	11/05/2021	55	16	
	6.00		3.00		3,2	150	2,3,3,4		N=12	SIS-175-3000	11/05/2021	55	11	
	7.50		3.00		2,1	150	2,3,8,13		N=26	SIS-175-3000	11/05/2021	55	24	
	9.00		3.00		14,29	150	47+,3+	50	14,29/47,3	SIS-175-3000	11/05/2021	55		
									for 3mm					
ABH110	1.20		1.00		3,2	150	1,1,1,2		N=5	SIS-175-3000	11/05/2021	55	5	

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Compiled By		Date	Contract Ref:
JMcCarthy	**JMCCARTHY**	**19.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **4** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
ABH110	2.00		1.30		4,1	150	2,2,2,2		N=8	SIS-175-3000	11/05/2021	55	7	
	3.00		1.30		2,1	150	1,2,2,2		N=7	SIS-175-3000	11/05/2021	55	6	
	4.00		1.30		1,1	150	1,1,2,3		N=7	SIS-175-3000	11/05/2021	55	6	
	5.00		1.30		4,5	150	5,5,7,8		N=25	SIS-175-3000	11/05/2021	55	23	
	6.00		1.30		9,8	150	13,15,19,22		N=69	SIS-175-3000	11/05/2021	55	63	
	7.00		1.30		25	0	25+	0	NP	SIS-175-3000	11/05/2021	55		
ABH111	1.50		1.50	Dry	4,3	150	4,5,6,6		N=21	AR1862-2021	28/05/2021	95	33	
	2.50		1.50	Dry	19,6	90	13,12,13,12		N=50	AR1862-2021	28/05/2021	95	79	
	3.50		1.50	Dry	6,9	150	18,22,10+	180	6,9/18,22,10	AR1862-2021	28/05/2021	95		
									for 30mm					
	4.20		1.50	Dry	25	40	100+	60	25/100	AR1862-2021	28/05/2021	95		
									for 60mm					
ABH112	1.20		1.20	Dry	4,4	150	7,8,7,9		N=31	SIS-175-3000	11/05/2021	55	28	
	2.00		1.20	Dry	4,4	150	5,9,23,27		N=64	SIS-175-3000	11/05/2021	55	59	
	3.00		1.20	Dry	13,16	150	50+	50	13,16/50	SIS-175-3000	11/05/2021	55		
									for 50mm					
	4.00		1.20	Dry	20,26	150	50+	60	20,26/50	SIS-175-3000	11/05/2021	55		

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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Compiled By		Date	Contract Ref:
JMcCarthy	**JMCCARTHY**	**19.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **5** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
									for 60mm					
	4.30		1.20		25	20	25+	10	25/25	SIS-175-3000	11/05/2021	55		
									for 10mm					
AWS102	1.20			Dry	3,2	150	4,3,2,2		N=11					
	2.00			Dry	1,7	150	4,3,1,1		N=9					
	3.00			Dry	1,3	150	4,5,4,4		N=17					
	4.00			Dry	25	60	28,22+	115	25/28,22					
									for 40mm					
AWS103	1.00			Dry	4,4	150	6,9,4,4		N=23					
	2.00			Dry	3,3	150	3,2,8,3		N=16					
	3.00			Dry	4,3	150	3,2,2,4		N=11					
	4.00			Dry	3,2	150	3,2,2,4		N=11					
	5.00			Dry	1,0	150	1,0,3,3		N=7					
AWS104	1.00			0.00	6,8	150	8,6,5,5		N=24					
	2.00			0.00	1,0	150	0,1,1,1		N=3					
	3.00			0.00	2,2	150	2,3,3,4		N=12					
	4.00			0.00	5,5	150	7,5,4,5		N=21					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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JMcCarthy	**JMCCARTHY**	**19.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **6** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
AWS104	5.00			0.00	22,5	95	25,25+	135	22,5/25,25					
									for 60mm					
AWS105	1.20			Dry	3,4	150	4,4,4,3		N=15					
	2.00			Dry	1,0	150	1,0,1,1		N=3					
	3.00			Dry	2,2	150	2,2,2,2		N=8					
	4.00			Dry	4,3	150	3,5,5,7		N=20					
	5.00			Dry	12,11	150	50+	60	12,11/50					
									for 60mm					
AWS106	1.20			0.00	5,6	150	10,10,4,4		N=28					
	2.00			0.00	3,3	150	3,2,3,3		N=11					
	3.00			0.00	3,3	150	2,3,2,3		N=10					
	4.00			0.00	2,2	150	2,3,2,2		N=9					
	5.00			0.00	1,3	150	3,3,2,3		N=11					
AWS107	1.20	98		Dry	2,2	150	3,3,3,3		N=12					
	2.00	85		Dry	3,3	150	5,4,3,3		N=15					
	3.00	75		Dry	2,2	150	2,2,1,2		N=7					
	4.00	65		Dry	2,8	150	1,2,2,2		N=7					

Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
JMcCarthy	**JMCCARTHY**	**19.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **7** of **8**

STANDARD PENETRATION TEST SUMMARY TABLE

Exploratory Position ID	Depth (m)	Hole Dia (mm)	Casing Depth (m)	Water Depth (m)	Seating Drive		Test Drive			Hammer ID	Calibration Date	Energy Ratio (%)	N_{60}	Comments
					Blows	Pen (mm)	Blows	R (mm)	Result					
AWS107	5.00	65		Dry	2,2	150	3,2,3,2		N=10					
AWS108	1.20	98		Dry	1,1	150	0,1,0,1		N=2					
	2.00	85		Dry	1,0	150	1,0,1,1		N=3					
	3.00	85		Dry	1,2	150	2,1,2,2		N=7					
	4.00	75		Dry	3,3	150	2,3,3,3		N=11					
	5.00	75		Dry	5,6	150	6,8,7,9		N=30					
AWS109	1.20	85		Dry	1,1	150	1,1,1,2		N=5					
	2.00	85		Dry	1,1	150	1,2,2,3		N=8					
	3.00	85		Dry	11,12	150	14,16,15,5+	295	11,12/14,16,15,5					
									for 70mm					
AWS110	1.20	75		Dry	5,19	150	40,10+	85	5,19/40,10					
									for 10mm					

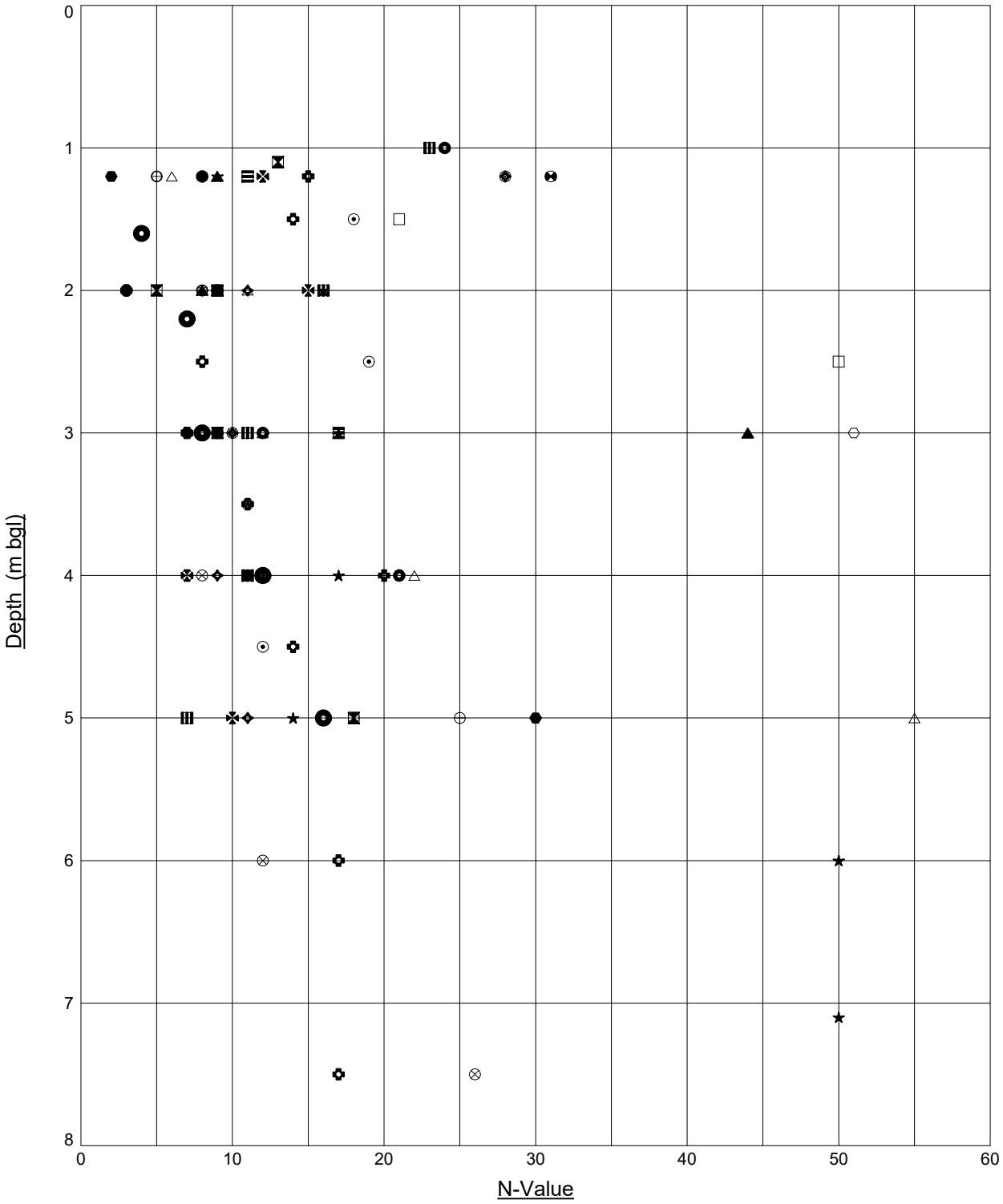
Notes:
1. Tests carried out in general accordance with BS EN ISO 22476-3:2005+A1:2011.
2. Reported blows are for 75mm penetration unless indicated "+".
3. Where full test drive was not achieved, actual penetration (R) and total test drive blows are reported.
4. Tests carried out using a split spoon sampler unless noted as SPT(c) (denotes use of solid cone method) in the comments column.
5. Entries in the water depth column reflects the measured water depth at time of test.

N_{60} = (Measured hammer energy ratio / 60) x N value

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W. Yorkshire WF10 1NJ

Compiled By		Date	Contract Ref:
JMcCarthy	**JMCCARTHY**	**19.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **8** of **8**

STANDARD PENETRATION TEST (SPT N-Value) vs DEPTH

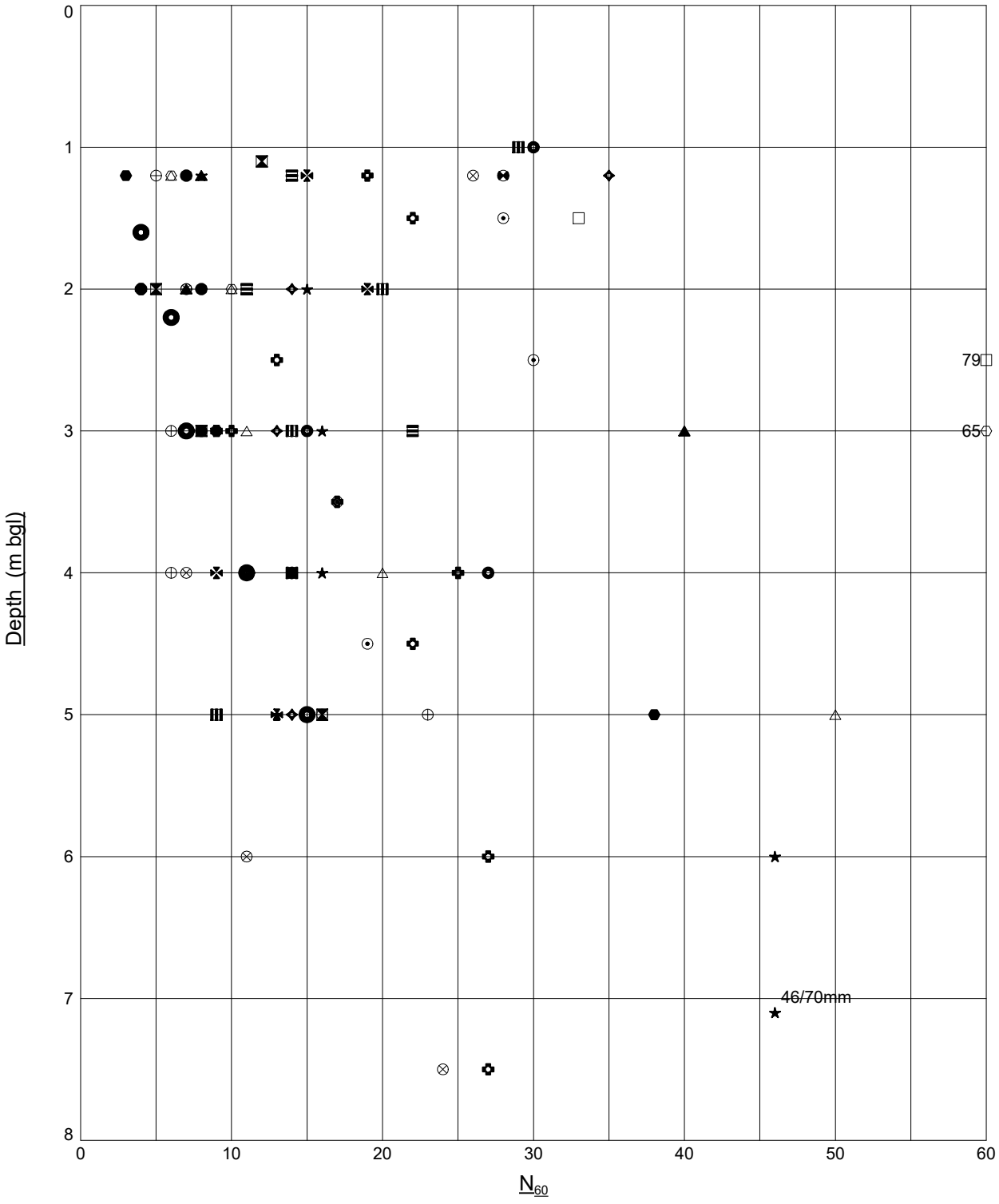


Key: ● = ABH101, ⧓ = ABH102, ▲ = ABH103, ★ = ABH104, ⊙ = ABH105, ✿ = ABH106, ◉ = ABH107, △ = ABH108, ⊗ = ABH109, ⊕ = ABH110, □ = ABH111, ⚉ = ABH112, 〓 = AWS102, ||| = AWS103, ✪ = AWS104, ✤ = AWS105, ❖ = AWS106, ⧓ = AWS107, ⬢ = AWS108, ⬡ = AWS109

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Contract **Seam Barnsley**	Date **19.05.22**	Compiled By JM2
	Client **Arcadis LLP**	Contract Ref: **765374**	AGS

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph G - PLOTS - SITE - GENERAL - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01. | 19/05/22 - 11:56 | JM2 |

STANDARD PENETRATION TEST (SPT N_{60}) vs DEPTH



Key: ● = ABH101, ⧓ = ABH102, ▲ = ABH103, ★ = ABH104, ⊙ = ABH105, ✿ = ABH106, ◉ = ABH107, △ = ABH108, ⊗ = ABH109, ⊕ = ABH110, □ = ABH111, ☢ = ABH112, 〓 = AWS102, ||| = AWS103, ✪ = AWS104, ✤ = AWS105, ❖ = AWS106, ✠ = AWS107, ⬢ = AWS108, ⬡ = AWS109

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Contract **Seam Barnsley**	Date **19.05.22**	Compiled By JM
	Client **Arcadis LLP**	Contract Ref: **765374**	AGS

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STRUCTURAL SOILS LTD

INSITU TESTING REPORT

1774

Report No. 765374.R01(00)

Date 30-March-2022 Contract Seam Barnsley

Client Arcadis
Address Suite1A
4 Piccadilly Place
Manchester
M1 3BN

For the Attention of Jonny Aykroyd

Order received	02-March-2022	Client Reference	
Testing Started	17-March-2022	Client Order No.	
Testing Completed	29-March-2022	Instruction Type	Written

Tests marked 'Not UKAS Accredited' in this report are not included in the UKAS Accreditation Schedule for our Laboratory.

UKAS Accredited Tests

* 4 no. Plate Load Test in occordance with BS1377:Part 9:1990, Clause 4.1

Not - UKAS Tests:

* 4 no.Soakaway Testing to BRE Digest 365
Please note that 3 fills in each pit was not achievable due to time constraints/ground conditions

The results represent the ground conditions at the specified locations and depths at the time of testing.

Please Note: Remaining samples will be retained for a period of one month from today and will then be disposed of.
Test were undertaken on samples 'as received' unless otherwise stated.
Opinions and interpretations expressed in this report are outside the scope of accreditation for this laboratory.

Structural Soils Ltd, The Potteries, Pottery Street, Castleford, WF10 1NJ Tel.01977552255. e-mail matthew.doran@soils.co.uk

TESTING VERIFICATION CERTIFICATE

1774

The test results included in this report are certified as:-

ISSUE STATUS: **FINAL**

In accordance with the Structural Soils Ltd Laboratory Quality Management System, results sheets and summaries of results issued by the laboratory are checked by an approved signatory. The integrity of the test data and results are ensured by control of the computer system employed by the laboratory as part of the Software Verification Program as detailed in the Laboratory Quality Manual.

This testing verification certificate covers all testing compiled on or before the following datetime: **30/03/2022 11:10:53**.

Testing reported after this date is not covered by this Verification Certificate.



Approved Signatory
Matthew Doran (Site Testing Manager (North))

(Head Office)
Bristol Laboratory
Unit 1A, Princess Street
Bedminster
Bristol
BS3 4AG

Castleford Laboratory
The Potteries, Pottery Street
Castleford
West Yorkshire
WF10 1NJ

Hemel Laboratory
18 Frogmore Road
Hemel Hempstead
Hertfordshire
HP3 9RT

Tonbridge Laboratory
Anerley Court, Half Moon Lane
Hildenborough
Tonbridge
TN11 9HU

STRUCTURAL SOILS LTD	Contract: **Seam Barnsley**	Job No: **765374**

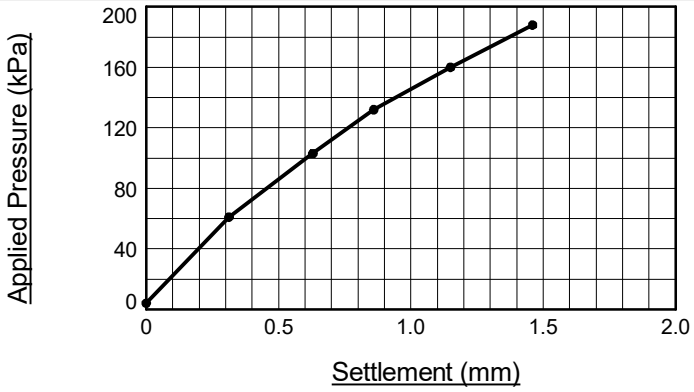
GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | GrfcText L - LAB VERIFICATION REPORT - V02 - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 30/03/22 - 12:10 | MD3 |

PLATE LOADING TEST - INCREMENTAL

BS1377:Part 9:1990, Clause 4.1

Position ID: **ATP101** Depth (m) : **0.45** Date of Test : **29/03/22**

Ground Level:**---** Co-ordinates:**---**



Applied Pressure (kPa)	Average Settlement (mm)
4	0.000
61	0.313
103	0.630
132	0.860
160	1.150
188	1.460

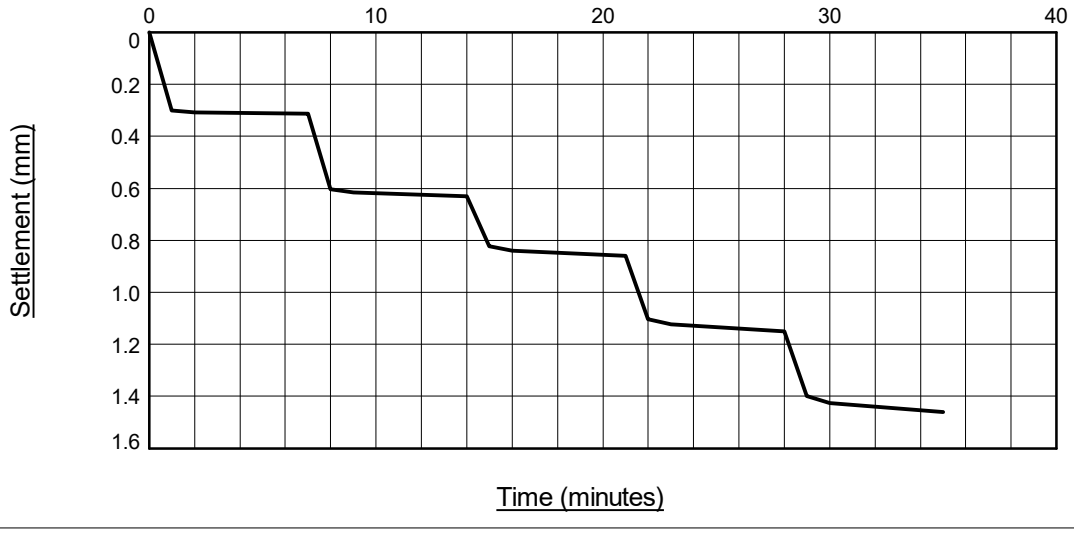


Plate Diameter (mm):	**300**	Reaction Load :	**JCB**
Maximum Applied Pressure (kPa):	**188**	Maximum Applied Deformation (mm) :	**1.460**

Modulus of Subgrade Reaction at 1.25mm

Applied Pressure:	**169**	kPa	Conversion to k_{762} :	**k_{300} x 0.4411**	
k_{300}:	**135200**	kN/m^2/m	k_{762} :	**59637**	kN/m^2/m

Approximate Equivalent CBR Value (%): **12**

Calculations derived from section 7.14 of Department of Transport, Interim Advice Note 73/06 (Draft HD25) February 2009 Design Guidance for Road Pavement Foundations

Additional Information

Environmental Conditions at Time of Test: **Cloudy**
Start Temperature: **10°C**
End Temperature: **10°C**
Distance Between Plate and Wall of Pit (m): **0.1**

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date
MATTHEW DORAN	**30/03/22**

Contract	Contract Ref:
Seam Barnsley	**765374**

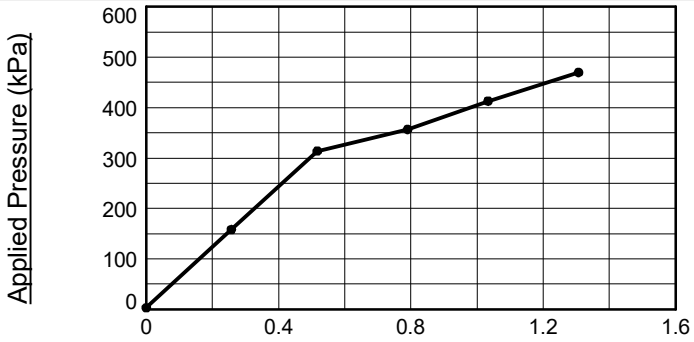
GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - PLATE LOADING [R1] - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
Structural Soils Ltd, Branch Office - Castleford: The Potteries, Pottery Street, Castleford, West Yorkshire, WF10 1NJ. Tel: 01977-552255, Fax: 01977-552299, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 30/03/22 - 12:09 | MD3 |

PLATE LOADING TEST - INCREMENTAL

BS1377:Part 9:1990, Clause 4.1

Position ID: **ATP102** Depth (m) : **0.60** Date of Test : **17/03/22**

Ground Level:--- Co-ordinates:---



Applied Pressure (kPa)	Average Settlement (mm)
3	0.000
158	0.257
314	0.517
357	0.790
413	1.033
470	1.307

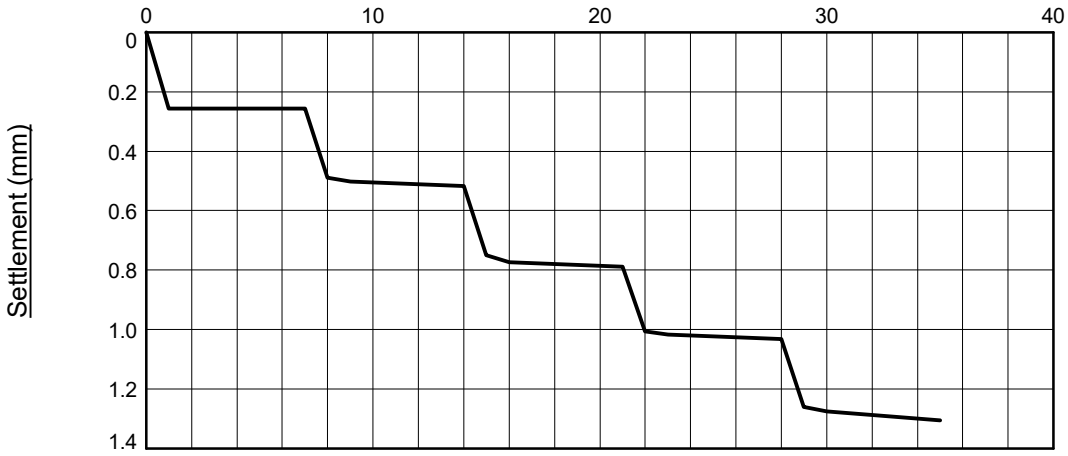


Plate Diameter (mm):	**300**	Reaction Load :	**JCB**
Maximum Applied Pressure (kPa):	**470**	Maximum Applied Deformation (mm) :	**1.307**

Modulus of Subgrade Reaction at 1.25mm

Applied Pressure:	**458**	kPa	Conversion to k_{762} :	**k_{300} x 0.4414**	
k_{300}:	**366400**	kN/m^2/m	k_{762} :	**161729**	kN/m^2/m

Approximate Equivalent CBR Value (%): **65**

Calculations derived from section 7.14 of Department of Transport, Interim Advice Note 73/06 (Draft HD25) February 2009 Design Guidance for Road Pavement Foundations

Additional Information

Environmental Conditions at Time of Test: **Overcast**
Start Temperature: **14°C**
End Temperature: **14°C**
Distance Between Plate and Wall of Pit (m): **0.1**

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
KFLimacher	**KATIE LIMACHER**	**21/03/22**

Contract	Contract Ref:
Seam Barnsley	**765374**

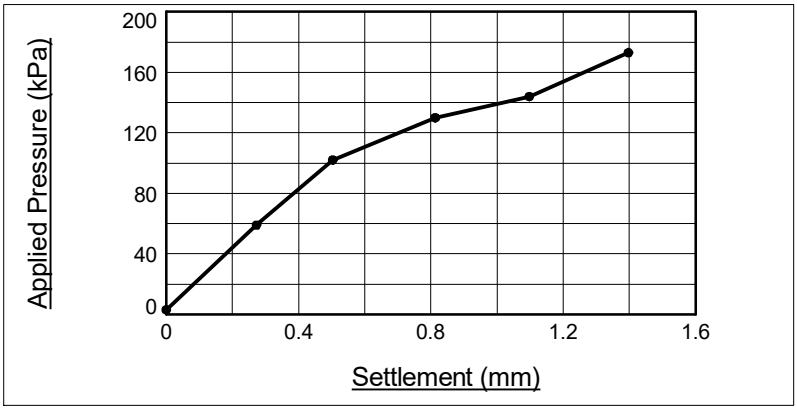
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Structural Soils Ltd, Branch Office - Bristol Lab: 1a Princess Street, Bedminster, Bristol, BS3 4AG. Tel: 0117-947-1000, Fax: 0117-947-1004, Web: www.soils.co.uk, Email: ask@soils.co.uk. | 21/03/22 - 09:38 | KL2 |

PLATE LOADING TEST - INCREMENTAL

BS1377:Part 9:1990, Clause 4.1

Position ID: **ATP105** Depth (m) : **0.50** Date of Test : **16/03/22**

Ground Level:--- Co-ordinates:---



Applied Pressure (kPa)	Average Settlement (mm)
3	0.000
59	0.273
102	0.503
130	0.813
144	1.097
173	1.397

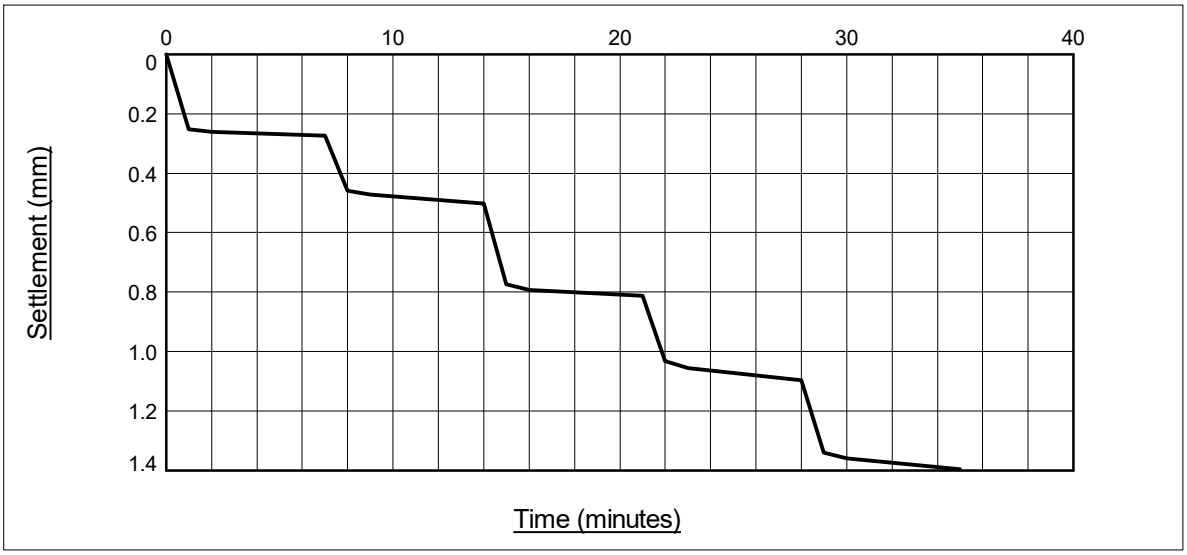


Plate Diameter (mm):	**300**	Reaction Load :	**JCB**
Maximum Applied Pressure (kPa):	**173**	Maximum Applied Deformation (mm) :	**1.397**

Modulus of Subgrade Reaction at 1.25mm

Applied Pressure:	**159**	kPa	Conversion to k_{762} :	**k_{300} x 0.4414**	
k_{300}:	**127200**	kN/m^2/m	k_{762} :	**56146**	kN/m^2/m

Approximate Equivalent CBR Value (%): **10**

Calculations derived from section 7.14 of Department of Transport, Interim Advice Note 73/06 (Draft HD25) February 2009 Design Guidance for Road Pavement Foundations

Additional Information

Environmental Conditions at Time of Test: **Rain**
Start Temperature: **9°C**
End Temperature: **9°C**
Distance Between Plate and Wall of Pit (m): **0.1**

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Bristol
BS3 4AG

Compiled By		Date
KLimacher	**KATIE LIMACHER**	**21/03/22**

Contract	Contract Ref:
Seam Barnsley	**765374**

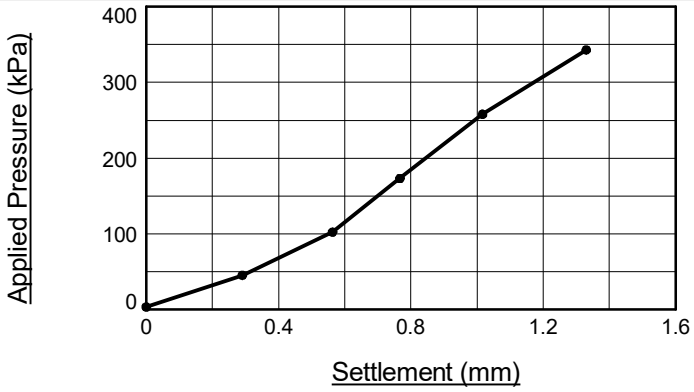
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PLATE LOADING TEST - INCREMENTAL

BS1377:Part 9:1990, Clause 4.1

Position ID: **ATP108** Depth (m) : **0.45** Date of Test : **16/03/22**

Ground Level:**---** Co-ordinates:**---**



Applied Pressure (kPa)	Average Settlement (mm)
3	0.000
45	0.290
102	0.563
173	0.767
258	1.017
343	1.330

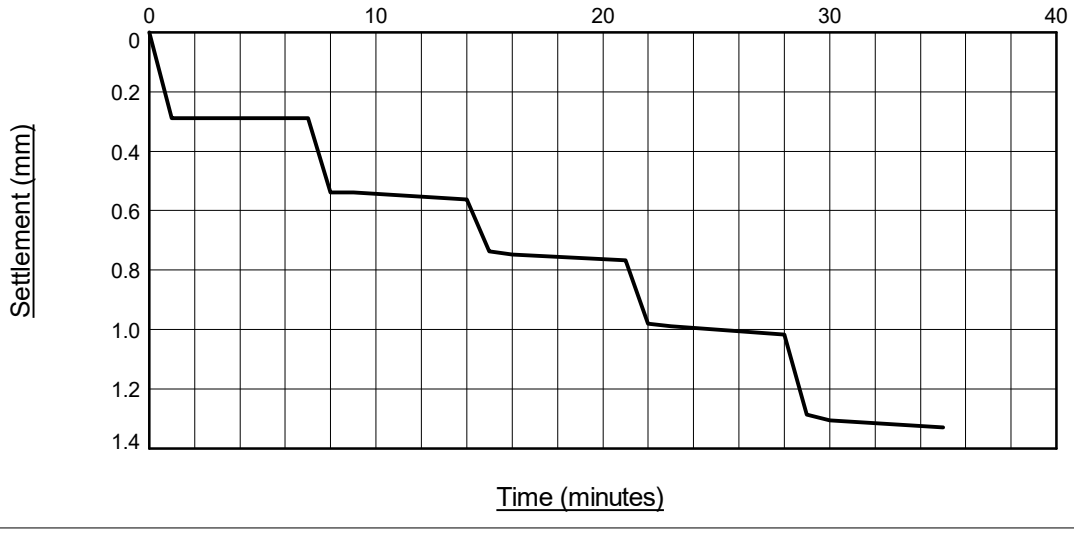


Plate Diameter (mm):	**300**	Reaction Load :	**JCB**
Maximum Applied Pressure (kPa):	**343**	Maximum Applied Deformation (mm) :	**1.330**

Modulus of Subgrade Reaction at 1.25mm

Applied Pressure:	**321**	kPa	Conversion to k_{762} :	**k_{300} x 0.4414**	
k_{300}:	**256800**	kN/m^2/m	k_{762} :	**113352**	kN/m^2/m

Approximate Equivalent CBR Value (%): **35**

Calculations derived from section 7.14 of Department of Transport, Interim Advice Note 73/06 (Draft HD25) February 2009 Design Guidance for Road Pavement Foundations

Additional Information

Environmental Conditions at Time of Test: **Light rain**
Start Temperature: **9°C**
End Temperature: **9°C**
Distance Between Plate and Wall of Pit (m): **0.1**

STRUCTURAL SOILS
1a Princess Street
Bedminster
Bristol
BS3 4AG

Compiled By		Date
KLimacher	**KATIE LIMACHER**	**21/03/22**

Contract	Contract Ref:
Seam Barnsley	**765374**

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - PLATE LOADING [R1] - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01.
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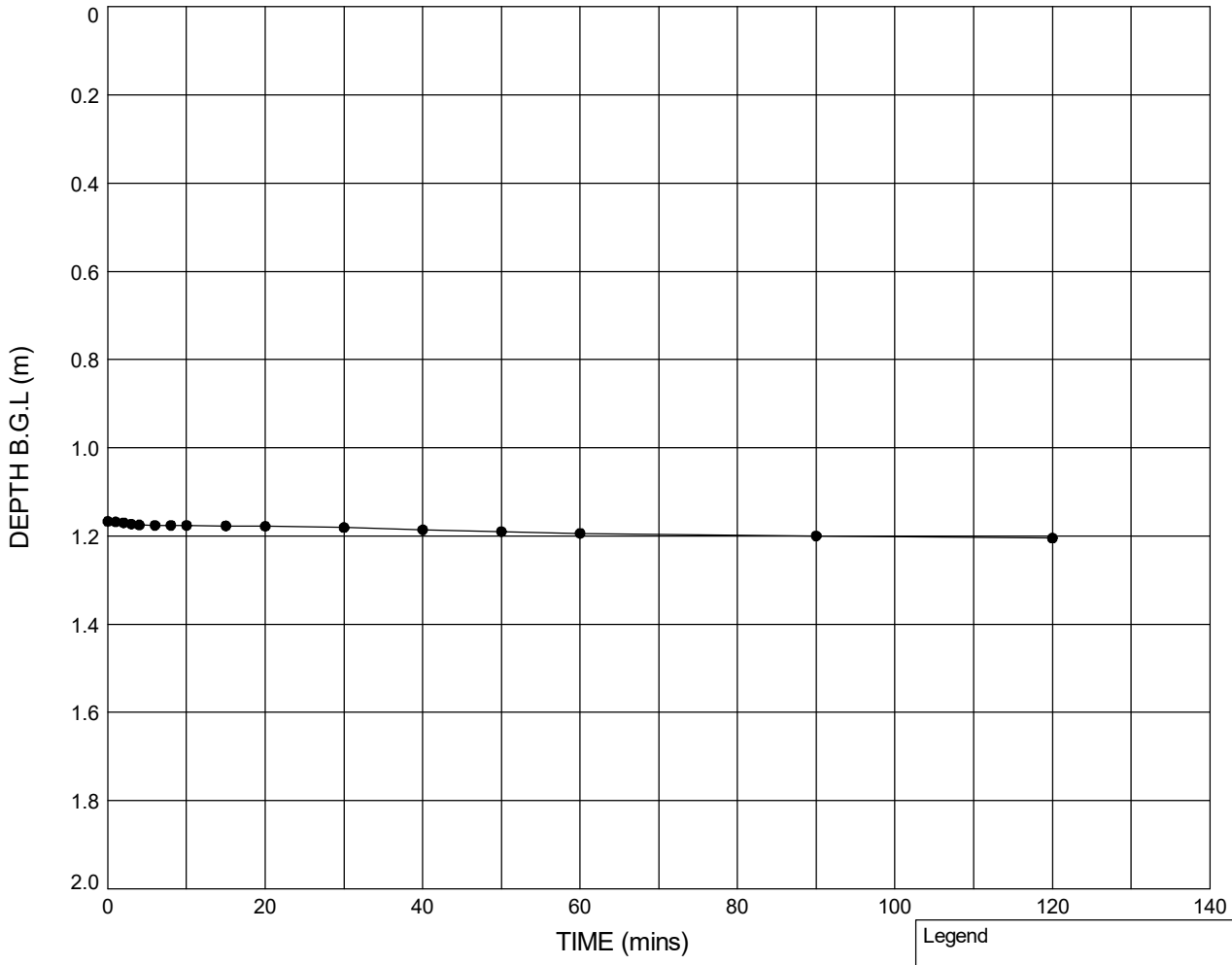
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **ATP101**

Ground Level: **---** Co-ordinates: **---**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



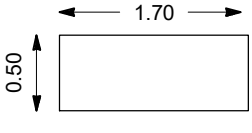
Pit start depth:	=	**1.17**	m
Pit final depth:	=	**2.00**	m
Effective depth, De	=	**0.83**	m
Effective storage volume, V_{p75-25}	=	**0.3540**	m^3
Surface area, a_{p50}	=	**2.6826**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (29.03.22)

Plan (Not to scale)



No Bearing Taken

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By	Date	Checked By	Date
		30/03/22		**30/03/22**
	Contract **Seam Barnsley**		Contract Ref: **765374**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01. | 30/03/22 - 11:54 | MD3 |

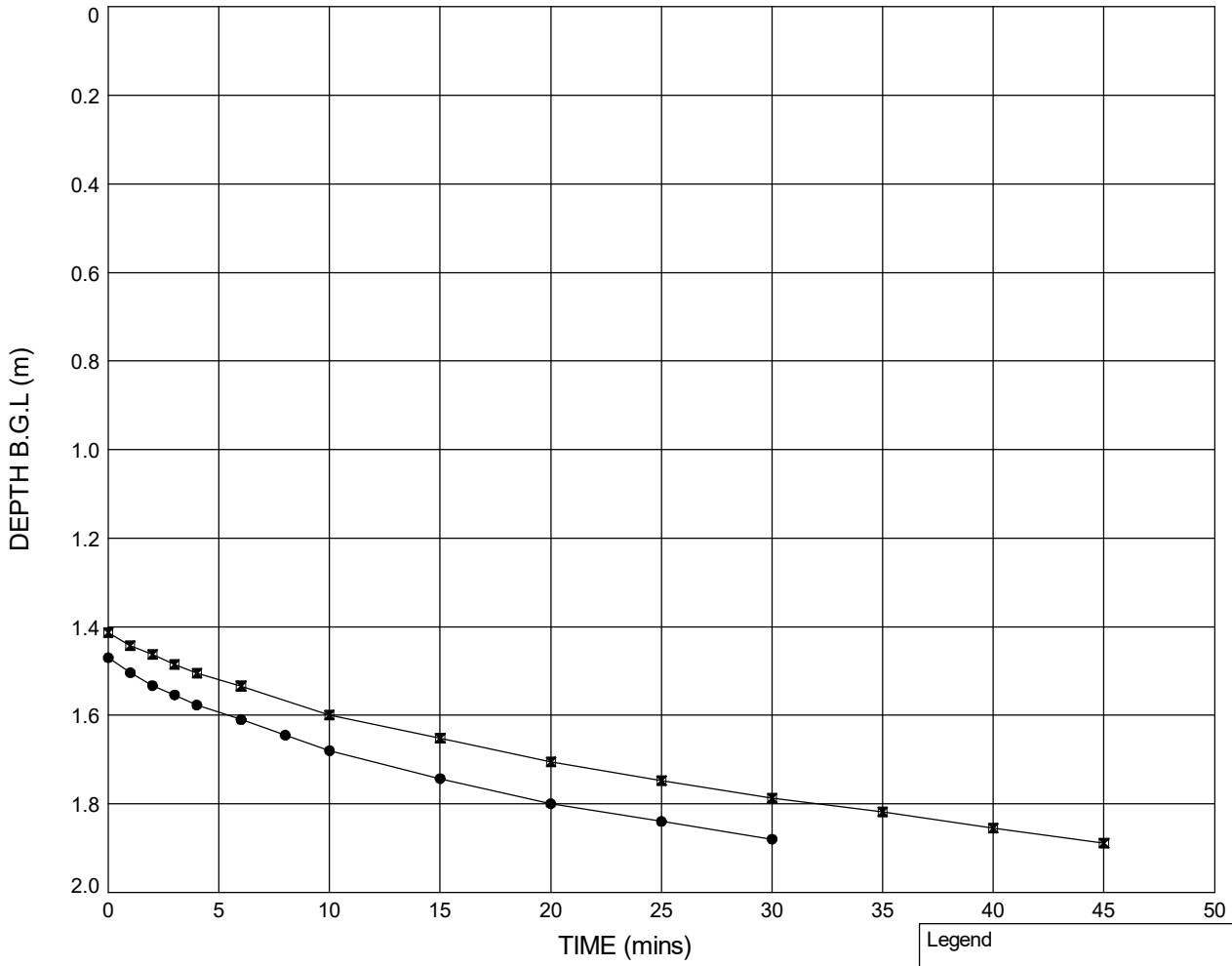
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **ATP102**

Ground Level: **---** Co-ordinates: **---**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



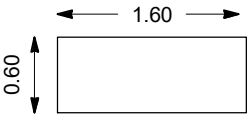
		Test 1	Test 2	
Pit start depth:	=	*2.00*	**1.90**	m
Pit final depth:	=	*1.90*	**1.90**	m
Effective depth, De	=	*0.43*	**0.49**	m
Effective storage volume, V_{p75-25}	=	*0.2064*	**0.2338**	m^3
Surface area, a_{p50}	=	*1.9060*	**2.0314**	m^2
Time, t_{p75-25}	=	*919*	**1370**	secs
Infiltration rate, f	=	*$1.18x10^{-4}$*	**$8.40x10^{-5}$**	m/s

Legend

Test 1 (17.03.22)

Test 2 (17.03.22)

Plan (Not to scale)



No Bearing Taken

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By	Date	Checked By	Date
	KFlynacher	21/03/22		21/03/22
	Contract: **Seam Barnsley**		Contract Ref: **765374**	

GINT_LIBRARY_V10_01.GLB LibVersion: v8_07_001 PrjVersion: v8_07 | Graph I - TP SOAKAWAY - 2 - FINAL REPORT - A4P | 765374-SEAM-BARNSLEY.GPJ - v10_01. | 21/03/22 - 09:54 | KL2 |

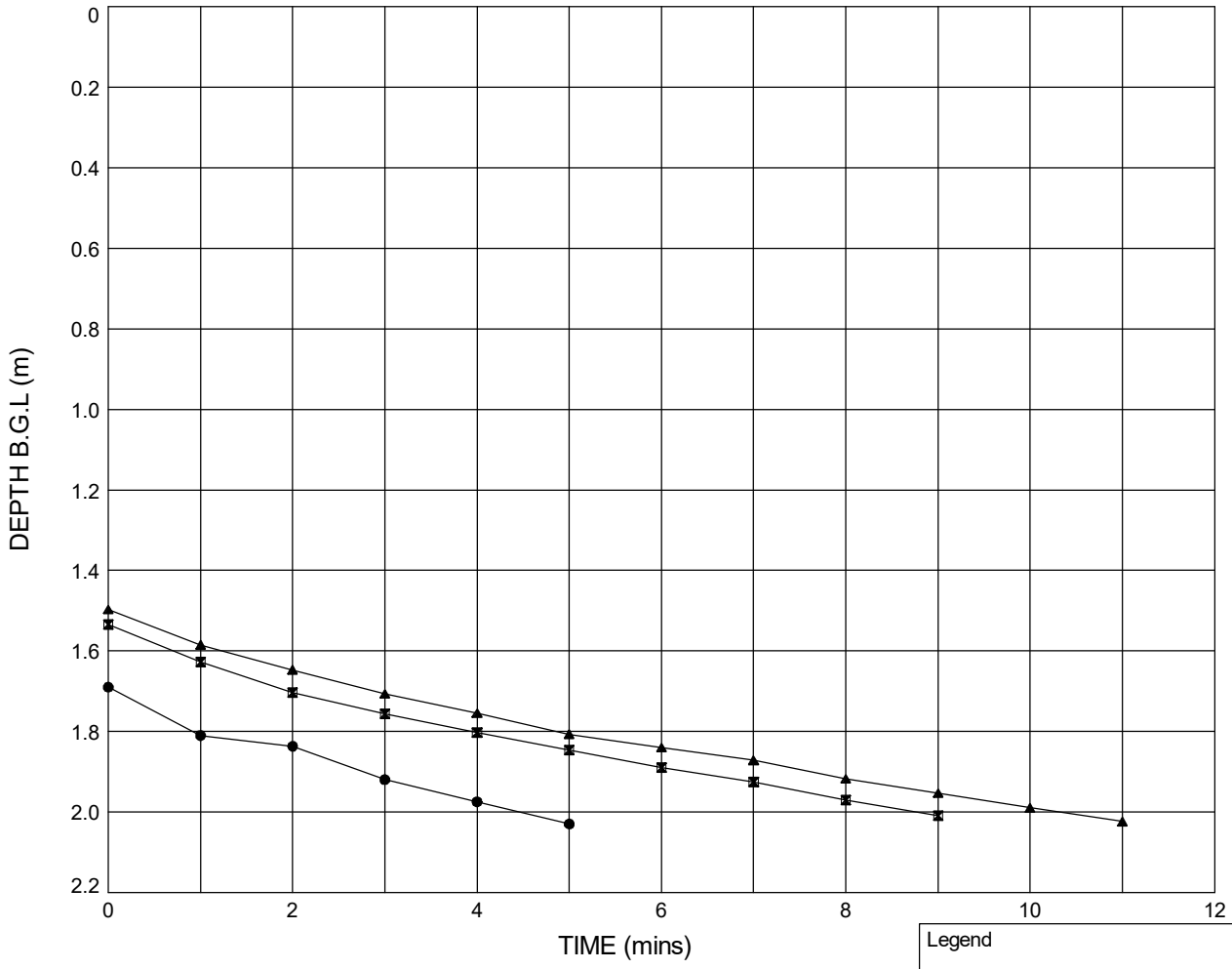
FULL SCALE SOAKAWAY TEST

In accordance with BRE Digest 365

Soakaway Test - Position ID : **ATP105**

Ground Level: **---** Co-ordinates: **---**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME

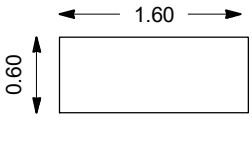


		Test 1	Test 2	Test 3	
Pit start depth:	=	*2.10*	**2.10**	**2.10**	m
Pit final depth:	=	*2.10*	**2.10**	**2.05**	m
Effective depth, De	=	*0.41*	**0.57**	**0.55**	m
Effective storage volume, V_{p75-25}	=	*0.1968*	**0.2712**	**0.2654**	m^3
Surface area, a_{p50}	=	*1.8620*	**2.2030**	**2.1766**	m^2
Time, t_{p75-25}	=	*214*	**366**	**363**	secs
Infiltration rate, f	=	*$4.94x10^{-4}$*	**$3.36x10^{-4}$**	**$3.36x10^{-4}$**	m/s

Legend

- Test 1 (17.03.22)
- Test 2 (17.03.22)
- Test 3 (17.03.22)

Plan (Not to scale)



No Bearing Taken

STRUCTURAL SOILS The Potteries Pottery Street Castleford W. Yorkshire WF10 1NJ	Compiled By	Date	Checked By	Date
	KFlinacher	21/03/22		21/03/22
	Contract: **Seam Barnsley**		Contract Ref: **765374**	

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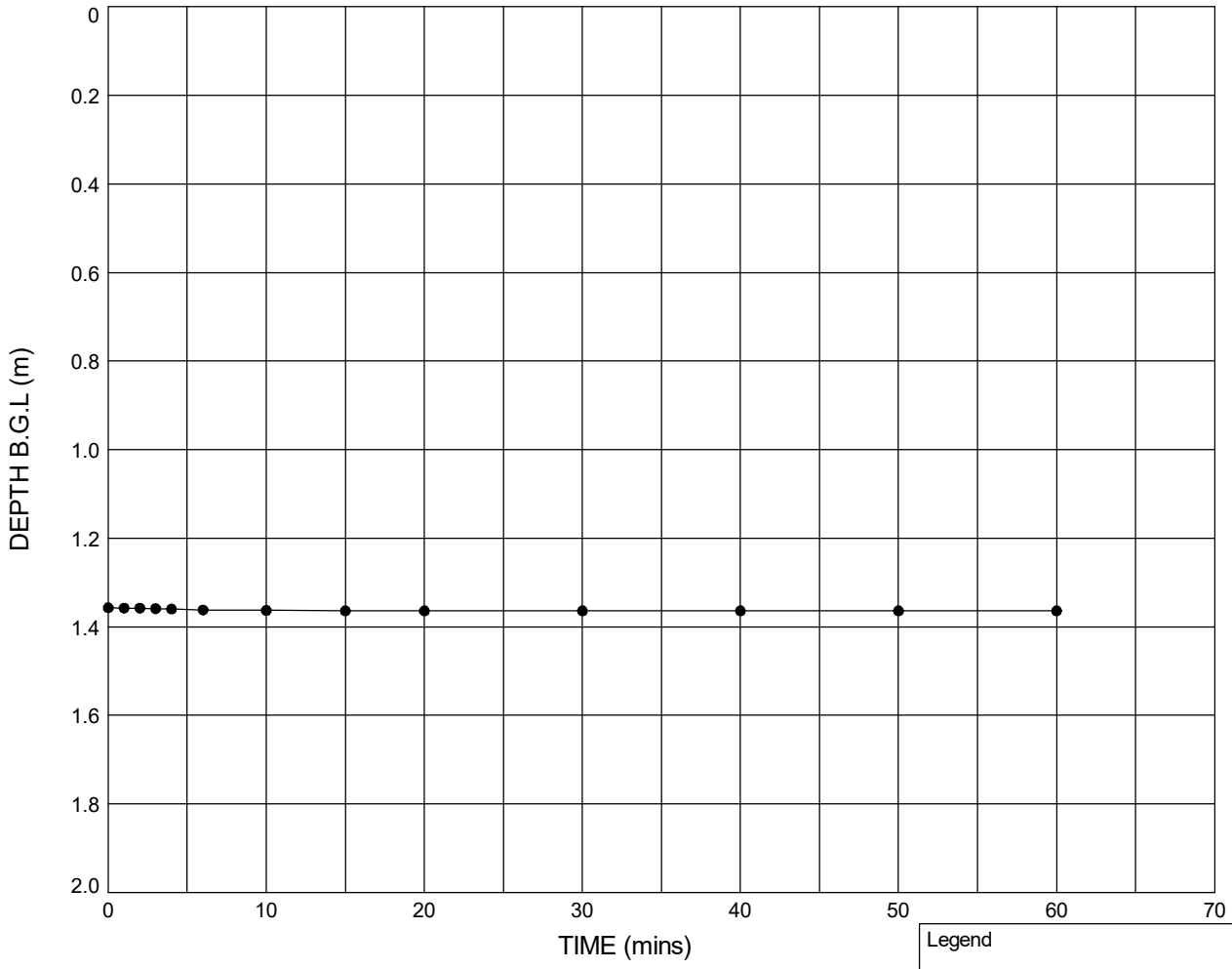
FULL SCALE SOAKAWAY TEST

Non-standard test

Soakaway Test - Position ID : **ATP108**

Ground Level: **---** Co-ordinates: **---**

PLOT OF DEPTH OF WATER BELOW GROUND LEVEL AGAINST TIME



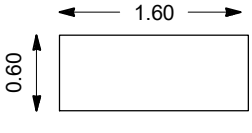
Pit start depth:	=	**2.00**	m
Pit final depth:	=	**2.00**	m
Effective depth, De	=	**0.64**	m
Effective storage volume, V_{p75-25}	=	**0.3086**	m^3
Surface area, a_{p50}	=	**2.3746**	m^2
Time, t_{p75-25}	=	**N/A**	secs
Infiltration rate, f	=	**N/A**	m/s

Notes: Test 1 - Unable to calculate infiltration rate due to insufficient drop in water level.

Legend

● Test 1 (16.03.22)

Plan (Not to scale)



No Bearing Taken

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KFlynacher	**21/03/22**		**21/03/22**

Contract: **Seam Barnsley**

Contract Ref: **765374**

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APPENDIX D - GEOTECHNICAL LABORATORY TESTING

(i) Laboratory Test Results

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
ABH101	10	D	1.20	18.2	NP	NP	NP	67	Brown slightly gravelly slightly sandy SILT
ABH101	18	D	3.00	12.0	30	17	13	79	Brown slightly gravelly slightly sandy CLAY
ABH104	10	D	1.00	10.5	40	21	19	68	Brown slightly gravelly slightly sandy silty CLAY
ABH104	22	D	3.00	3.5	NP	NP	NP	83	Grey slightly gravelly silty CLAY
ABH104	30	D	5.00	15.9	29	15	14	80	Brown slightly gravelly CLAY
ABH105	8	DSPT	1.50	6.7	33	17	16	74	Brown slightly sandy slightly gravelly silty CLAY
ABH105	11	DSPT	2.50	10.3	37	20	17	67	Brown slightly gravelly slightly sandy silty CLAY
ABH105	17	DSPT	4.50	21.7	36	20	16	91	Brown slightly gravelly slightly sandy silty CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
ABH106	10	DSPT	1.50	23.9	45	29	16	31	Black gravelly clayey silty SAND
ABH106	16	DSPT	3.50	11.0	33	19	14	73	Brown grey slightly sandy silty CLAY
ABH106	21	D	5.50	9.3	42	22	20	83	Grey slightly sandy slightly gravelly silty CLAY
ABH106	27	DSPT	7.50	14.5	32	19	13	75	Brown orange slightly gravelly CLAY
ABH107	20	D	4.00	28.9	48	28	20	85	Dark brown slightly sandy slightly gravelly silty CLAY
ABH107	24	D	5.00	17.6	34	17	17	83	Brown slightly sandy slightly gravelly silty CLAY
ABH108	9	D	1.20	14.8	41	23	18	73	Brown slightly sandy slightly gravelly CLAY
ABH108	15	D	3.00	14.8	40	21	19	73	Brown slightly gravelly slightly sandy silty CLAY

SYMBOLS: * denotes BS 1377

SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
ABH108	19	D	4.00	12.9	29	16	13	86	Brown slightly gravelly slightly sandy silty CLAY
ABH109	28	D	6.00	11.1	46	23	23	94	Brown slightly sandy slightly gravelly silty CLAY
ABH110	13	D	2.00	9.9	33	17	16	77	Brown slightly sandy slightly gravelly silty CLAY
ABH110	19	D	3.00	17.6	43	20	23	81	Brown grey slightly sandy slightly gravelly silty CLAY
ABH110	28	D	5.50	17.9	40	22	18	90	Brown slightly sandy slightly gravelly sitly CLAY
ABH111	8	DSPT	1.50	20.5	48	25	23	81	Brown slightly sandy slightly gravelly silty CLAY
ABH111	16	DSPT	3.50	34.8	50	27	23	57	Black slightly sandy slightly gravelly silty CLAY
ABH112	17	DSPT	3.00	15.6	NP	NP	NP	30	Black grey gravelly silty SAND

SYMBOLS: * denotes BS 1377

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Contract:

Seam Barnsley

Contract Ref:

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SUMMARY OF SOIL CLASSIFICATION TESTS

In accordance with Part 1,Part 12 of BS EN ISO 17892

Exploratory Position ID	Sample Ref	Sample Type	Depth (m)	Water Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425um	Description of Sample
ATP104	8	D	1.30	24.0	NP	NP	NP	28	Black ashy gravelly SAND
ATP105-SA	7	B	1.20	26.2	50	25	25	88	Brown slightly gravelly slightly sandy silty CLAY
ATP108-SA	8	D	1.10	19.4	42	24	18	75	Brown slightly sandy slightly gravelly silty CLAY
AWS107	9	DSPT	2.00	12.8	43	22	21	66	Brown slightly silty slightly sandy slightly gravelly CLAY
AWS108	12	AMAL	2.00	42.2	37	17	20	91	Brown slightly sandy slightly gravelly CLAY

SYMBOLS: * denotes BS 1377

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Contract:

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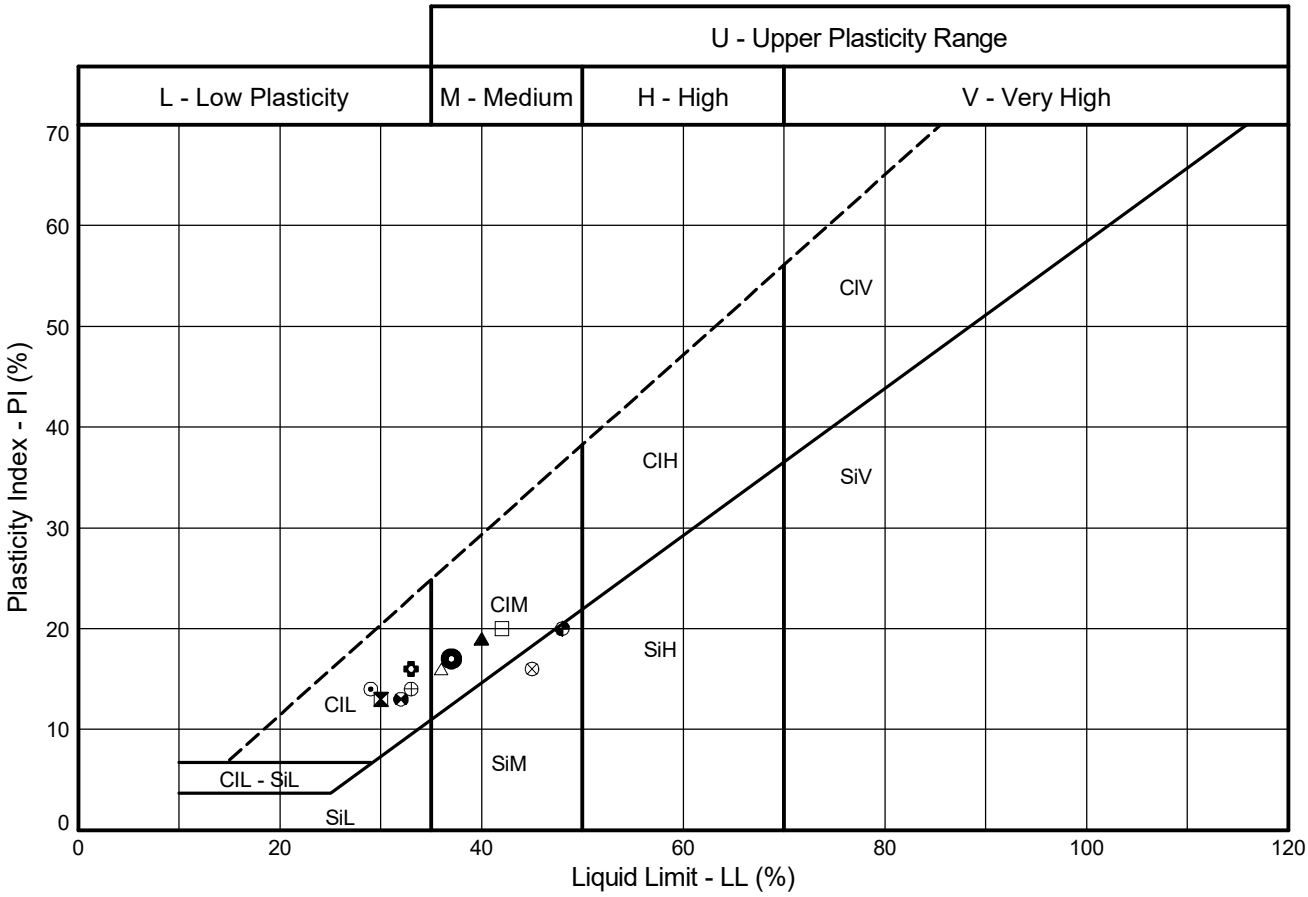
Contract Ref:

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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
	ABH101	10D	1.20	5.3/5.5/6.5	5.2.7	18.2	NP	NP	NP	67	C	
⊠	ABH101	18D	3.00	5.3/5.5/6.5	5.2.7	12.0	30	17	13	79	C	
▲	ABH104	10D	1.00	5.3.14/5.5/6.5	5.2.7	10.5	40	21	19	68	C	
	ABH104	22D	3.00	5.3/5.5/6.5	5.2.7	3.5	NP	NP	NP	83	C	
⊙	ABH104	30D	5.00	5.3/5.5/6.5	5.2.7	15.9	29	15	14	80	C	
✿	ABH105	8DSPT	1.50	5.3.14/5.5/6.5	5.2.7	6.7	33	17	16	74	C	
●	ABH105	11DSPT	2.50	5.3.14/5.5/6.5	5.2.7	10.3	37	20	17	67	C	
△	ABH105	17DSPT	4.50	5.3.14/5.5/6.5	5.2.7	21.7	36	20	16	91	C	
⊗	ABH106	10DSPT	1.50	5.3.14/5.5/6.5	5.2.7	23.9	45	29	16	31	C	
⊕	ABH106	16DSPT	3.50	5.3.14/5.5/6.5	5.2.7	11.0	33	19	14	73	C	
□	ABH106	21D	5.50	5.3/5.5/6.5	5.2.7	9.3	42	22	20	83	C	
⊠	ABH106	27DSPT	7.50	5.3.14/5.5/6.5	5.2.7	14.5	32	19	13	75	C	
◓	ABH107	20D	4.00	5.3/5.5/6.5	5.2.7	28.9	48	28	20	85	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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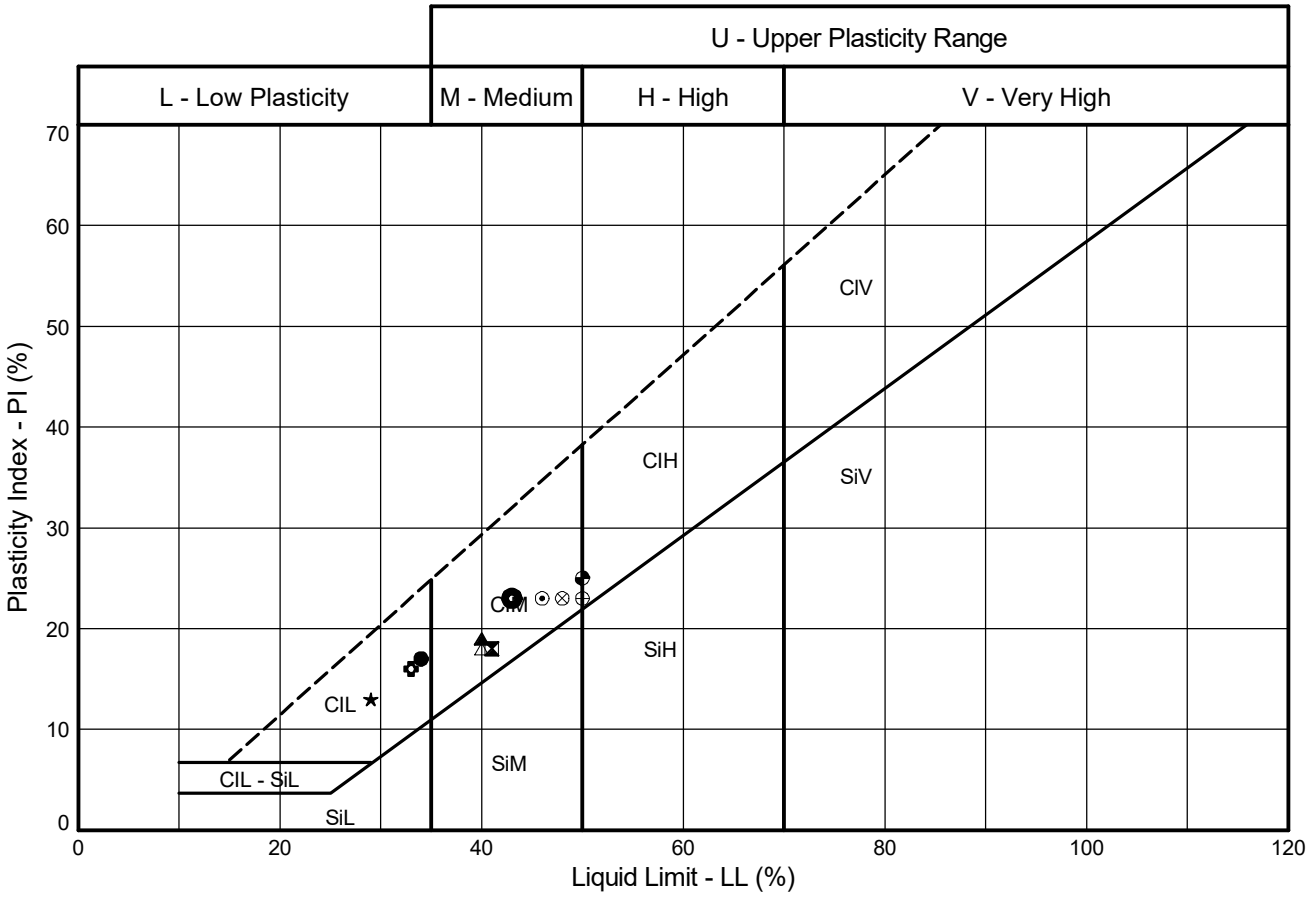
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Contract	Contract Ref:
Seam Barnsley	**765374**

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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	ABH107	24D	5.00	5.3/5.5/6.5	5.2.7	17.6	34	17	17	83	C	
⊠	ABH108	9D	1.20	5.3/5.5/6.5	5.2.7	14.8	41	23	18	73	C	
▲	ABH108	15D	3.00	5.3/5.5/6.5	5.2.7	14.8	40	21	19	73	C	
★	ABH108	19D	4.00	5.3.14/5.5/6.5	5.2.7	12.9	29	16	13	86	C	
⊙	ABH109	28D	6.00	5.3/5.5/6.5	5.2.7	11.1	46	23	23	94	C	
✿	ABH110	13D	2.00	5.3/5.5/6.5	5.2.7	9.9	33	17	16	77	C	
◉	ABH110	19D	3.00	5.3/5.5/6.5	5.2.7	17.6	43	20	23	81	C	
△	ABH110	28D	5.50	5.3.14/5.5/6.5	5.2.7	17.9	40	22	18	90	C	
⊗	ABH111	8DSPT	1.50	5.3.14/5.5/6.5	5.2.7	20.5	48	25	23	81	C	
⊕	ABH111	16DSPT	3.50	5.3.14/5.5/6.5	5.2.7	34.8	50	27	23	57	C	
	ABH112	17DSPT	3.00	5.3.14/5.5/6.5	5.2.7	15.6	NP	NP	NP	30	C	
	ATP104	8D	1.30	5.3.14/5.5/6.5	5.2.7	24.0	NP	NP	NP	28	C	
◓	ATP105-SA	7B	1.20	5.3/5.5/6.5	5.2.7	26.2	50	25	25	88	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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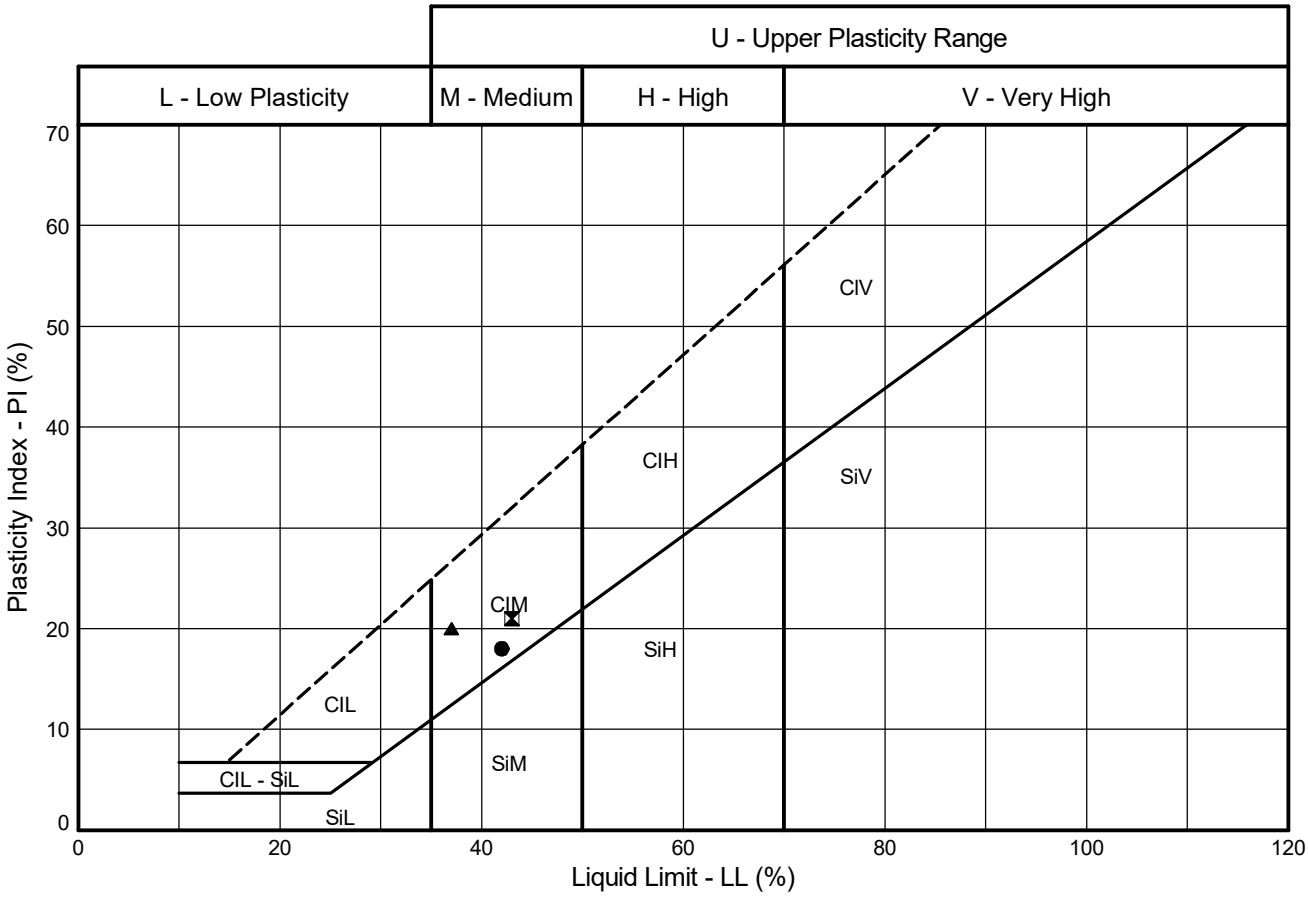
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Seam Barnsley	**765374**

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PI vs LL CHART

According to BS EN 14688-2:2018
Testing in accordance with BS EN ISO 17892-12:2018+A1:2021



Sample Identification				Test Method #	Preparation Method +	WC	LL	PL	PI	<425µm	Lab location	Notes
	Exploratory Position ID	Sample	Depth (m)			%	%	%	%	%		
●	ATP108-SA	8D	1.10	5.3/5.5/6.5	5.2.7	19.4	42	24	18	75	C	
⊠	AWS107	9DSPT	2.00	5.3.14/5.5/6.5	5.2.7	12.8	43	22	21	66	C	
▲	AWS108	12AMAL	2.00	5.3/5.5/6.5	5.2.7	42.2	37	17	20	91	C	

Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.3 - Cone Penetrometer Method; 5.3.14 - One-Point Cone Penetrometer Method; 5.4 - Casagrande Method; 5.5 - Plastic Limit Method; 6.5 - Plasticity Index

Water Content (WC) tested in accordance with BS EN ISO 17892-1:2014

+ Tested in accordance with the following clauses of BS EN ISO 17892-12:2018+A1:2021
5.2.1 - Natural State and 5.2.7 - Wet Sieved

Key: * = Non-standard test, NP = Non plastic, I = Increasing WC, D = Decreasing WC.

Lab location: B = Bristol (BS3 4AG), C = Castleford (WF10 1NJ), H = Hemel Hempstead (HP3 9RT), T = Tonbridge (TN11 9HU)

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Contract	Contract Ref:
Seam Barnsley	**765374**

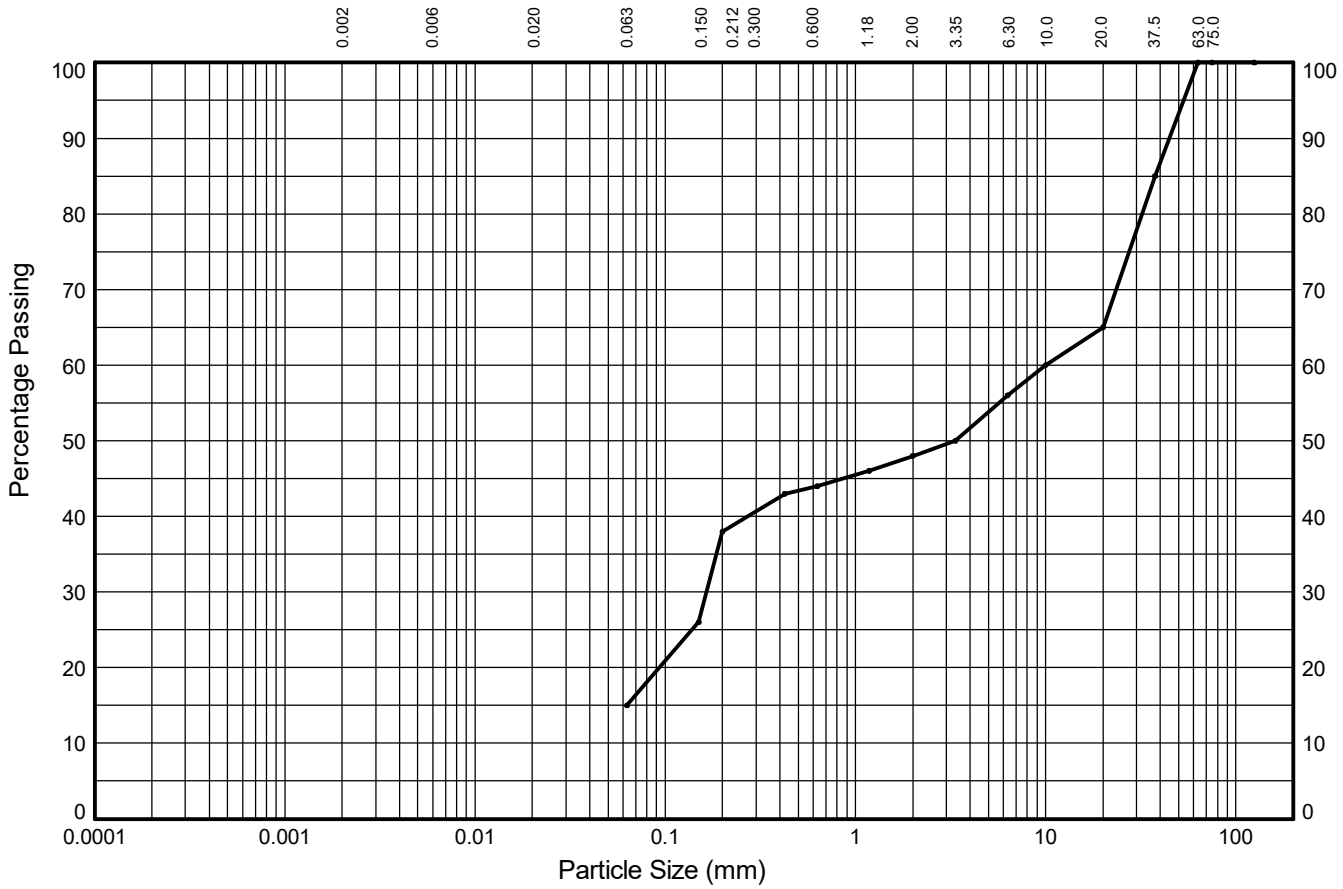
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH102** Sample Ref: **13** Sample Type: **B** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	23%	6%	4%	8%	9%	35%	
	SILT			SAND			GRAVEL			
15%				33%			52%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**85**
20.0	**65**
10.0	**60**
6.30	**56**
3.35	**50**
2.00	**48**
1.18	**46**
0.630	**44**
0.425	**43**
0.200	**38**
0.150	**26**
0.063	**15**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.063**
D_{30} (mm)	**0.165**
D_{50} (mm)	**3.350**
D_{60} (mm)	**10.000**
D_{85} (mm)	**37.500**
D_{90} (mm)	**44.579**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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LORNA WHITWORTH	19/05/22

Contract	Contract Ref:
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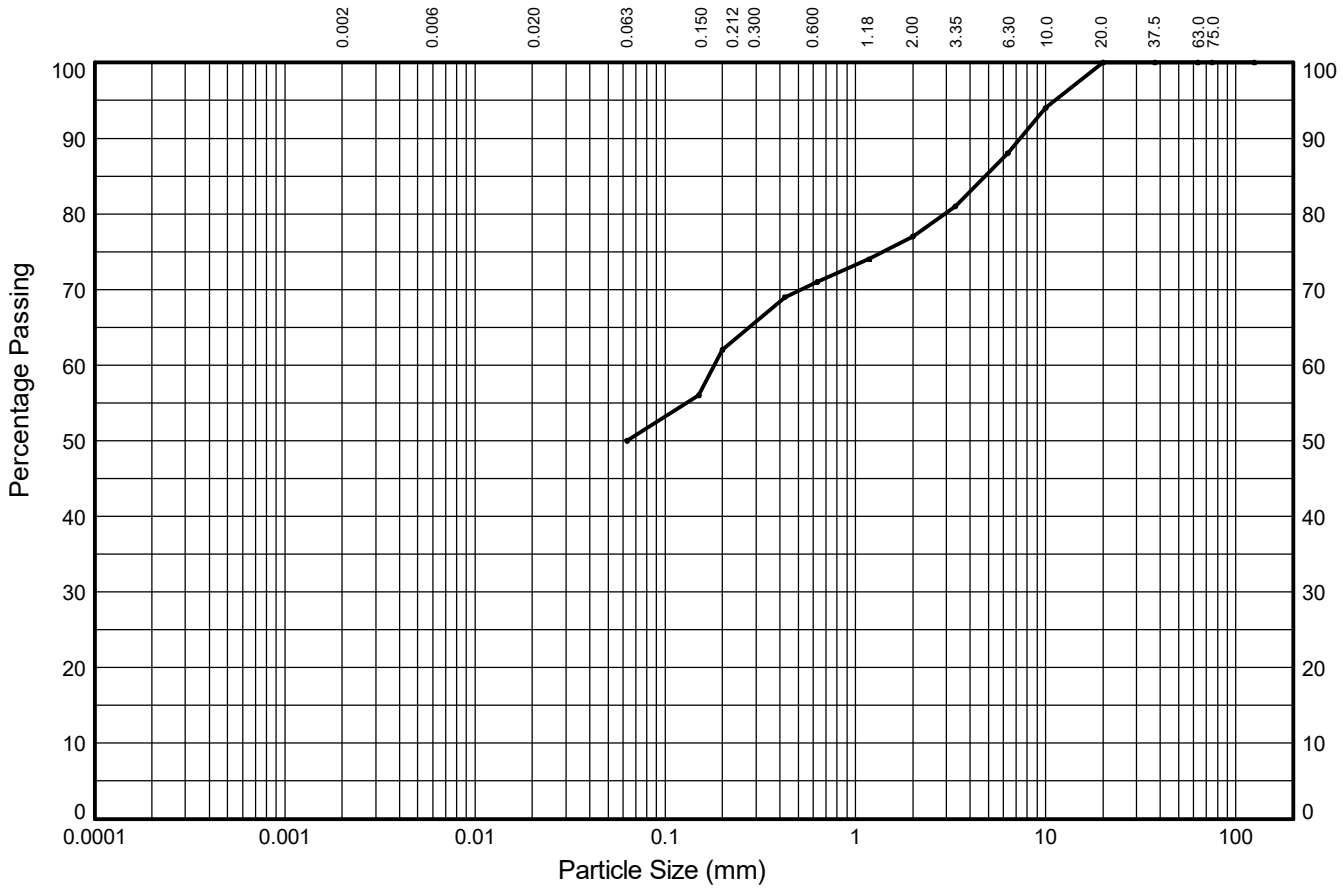
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH103** Sample Ref: **5** Sample Type: **B** Depth (m): **0.90**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	12%	9%	6%	11%	12%	0%	
	SILT			SAND			GRAVEL			
50%				27%			23%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**94**
6.30	**88**
3.35	**81**
2.00	**77**
1.18	**74**
0.630	**71**
0.425	**69**
0.200	**62**
0.150	**56**
0.063	**50**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.063**
D_{60} (mm)	**0.182**
D_{85} (mm)	**4.806**
D_{90} (mm)	**7.349**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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LORNA WHITWORTH	19/05/22

Contract	Contract Ref:
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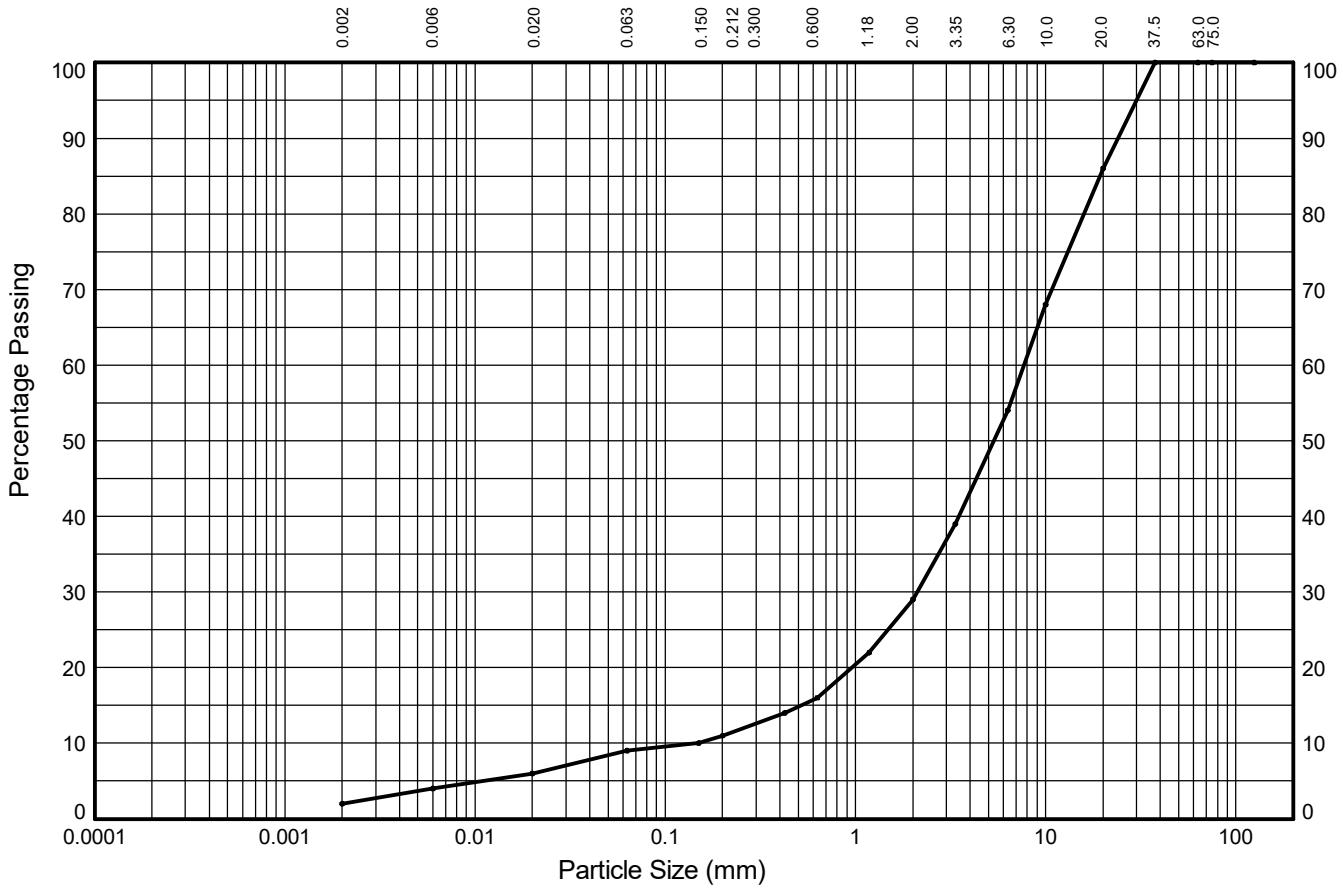
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH105** Sample Ref: **3** Sample Type: **B** Depth (m): **0.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	2%	3%	2%	5%	13%	25%	32%	14%	
	SILT			SAND			GRAVEL			
2%	7%			20%			71%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**86**
10.0	**68**
6.30	**54**
3.35	**39**
2.00	**29**
1.18	**22**
0.630	**16**
0.425	**14**
0.200	**11**
0.150	**10**
0.063	**9**

Particle Diameter (mm)	Percent Passing (%)
0.02	**6**
0.006	**4**
0.002	**2**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.150**
D_{15} (mm)	**0.517**
D_{30} (mm)	**2.106**
D_{50} (mm)	**5.323**
D_{60} (mm)	**7.680**
D_{85} (mm)	**19.244**
D_{90} (mm)	**23.935**
C_U	**51**
C_C	**4**

Soil Description:

Brown sandy silty slightly clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Contract	Contract Ref:
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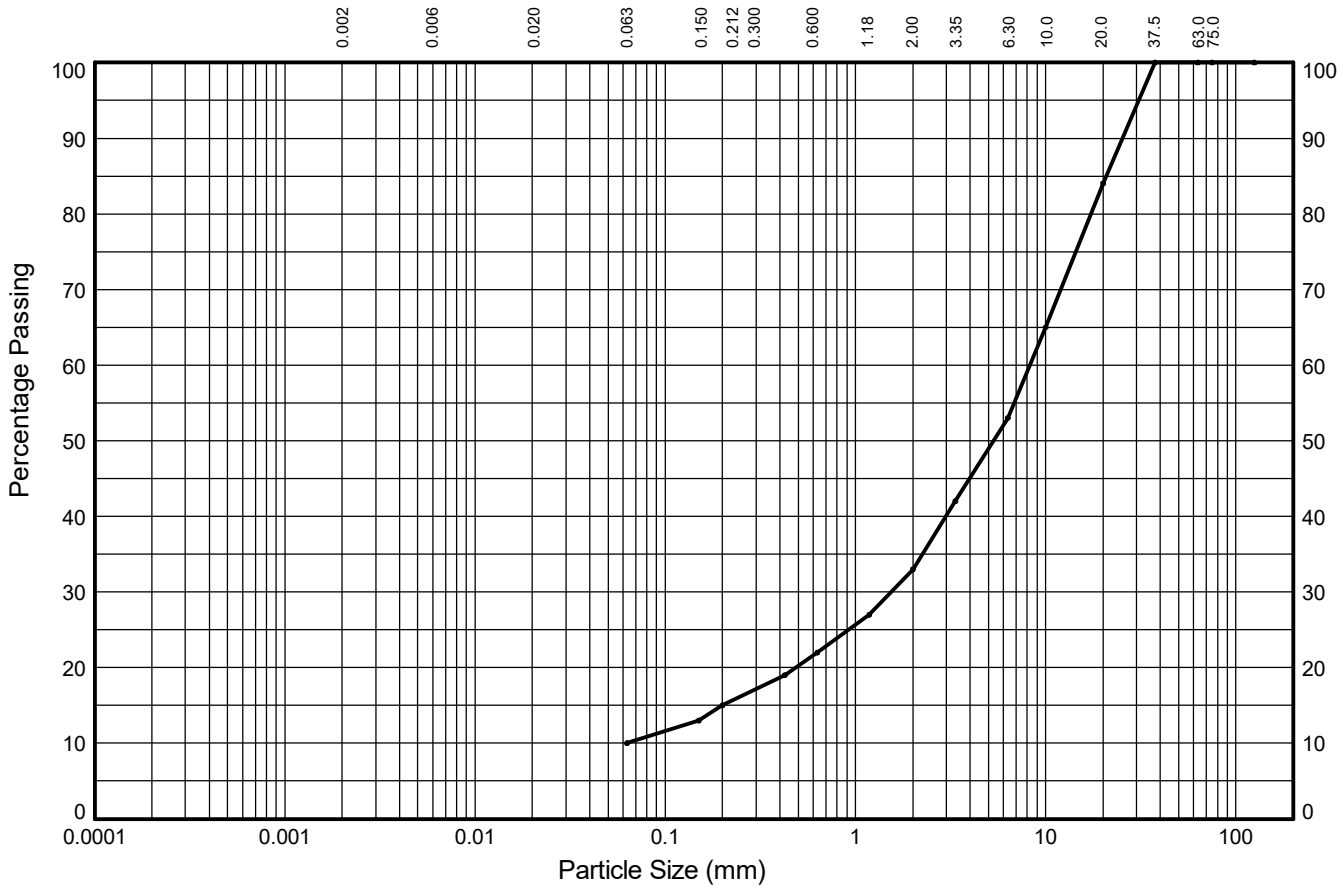
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH106** Sample Ref: **3** Sample Type: **B** Depth (m): **0.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	5%	7%	11%	20%	31%	16%	
	SILT			SAND			GRAVEL			
10%				23%			67%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**84**
10.0	**65**
6.30	**53**
3.35	**42**
2.00	**33**
1.18	**27**
0.630	**22**
0.425	**19**
0.200	**15**
0.150	**13**
0.063	**10**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.063**
D_{15} (mm)	**0.200**
D_{30} (mm)	**1.536**
D_{50} (mm)	**5.303**
D_{60} (mm)	**8.249**
D_{85} (mm)	**20.801**
D_{90} (mm)	**25.317**
C_U	**131**
C_C	**5**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Seam Barnsley	**765374**

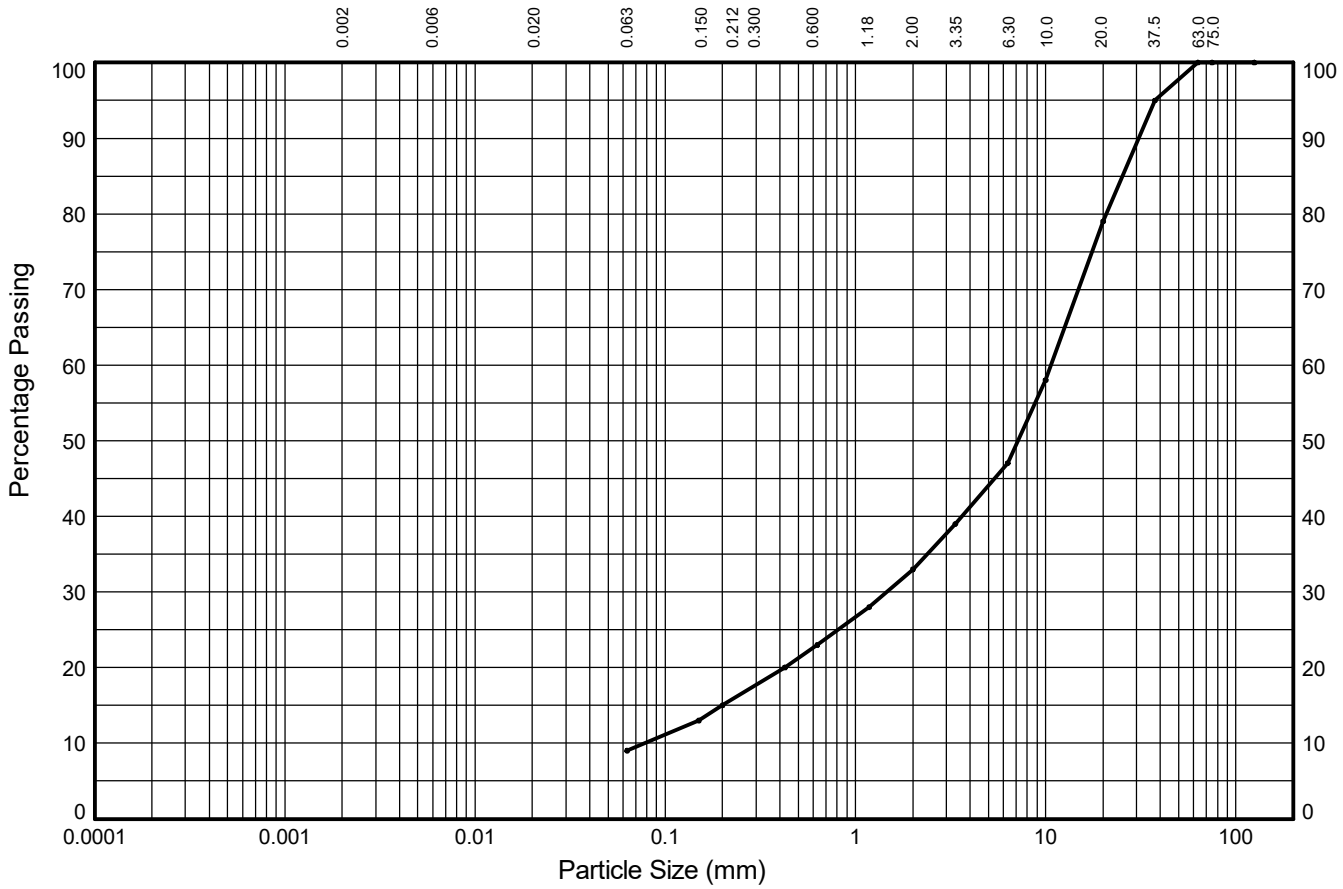
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH106** Sample Ref: **5** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	6%	8%	10%	14%	32%	21%	
	SILT			SAND			GRAVEL			
9%				24%			67%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**95**
20.0	**79**
10.0	**58**
6.30	**47**
3.35	**39**
2.00	**33**
1.18	**28**
0.630	**23**
0.425	**20**
0.200	**15**
0.150	**13**
0.063	**9**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.078**
D_{15} (mm)	**0.200**
D_{30} (mm)	**1.457**
D_{50} (mm)	**7.146**
D_{60} (mm)	**10.682**
D_{85} (mm)	**25.317**
D_{90} (mm)	**30.812**
C_U	**137**
C_C	**3**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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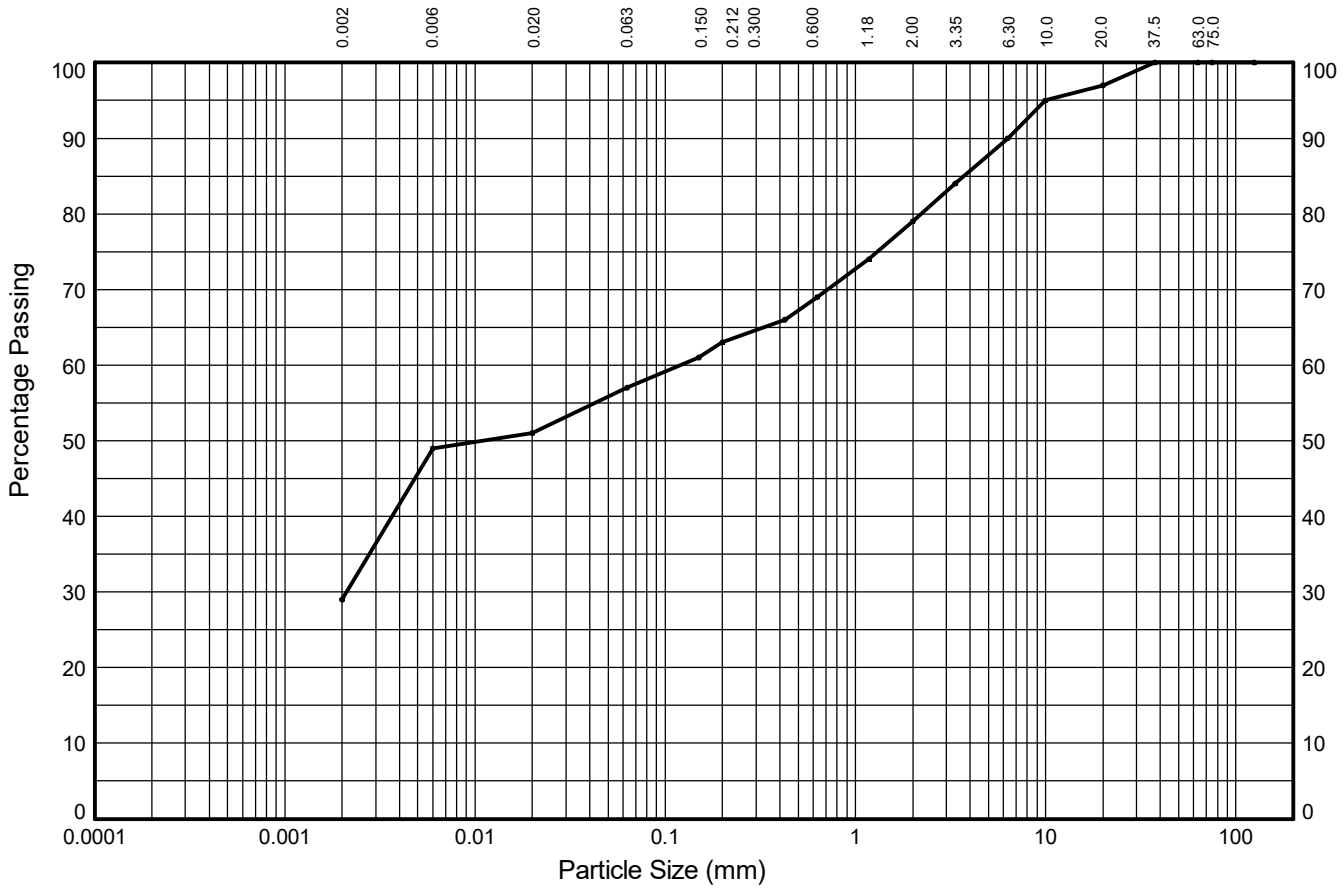
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Seam Barnsley	**765374**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH108** Sample Ref: **8** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	20%	2%	6%	6%	6%	10%	11%	7%	3%	
	SILT			SAND			GRAVEL			
29%	28%			22%			21%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**97**
10.0	**95**
6.30	**90**
3.35	**84**
2.00	**79**
1.18	**74**
0.630	**69**
0.425	**66**
0.200	**63**
0.150	**61**
0.063	**57**

Particle Diameter (mm)	Percent Passing (%)
0.02	**51**
0.006	**49**
0.002	**29**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.002**
D_{50} (mm)	**0.011**
D_{60} (mm)	**0.121**
D_{85} (mm)	**3.722**
D_{90} (mm)	**6.300**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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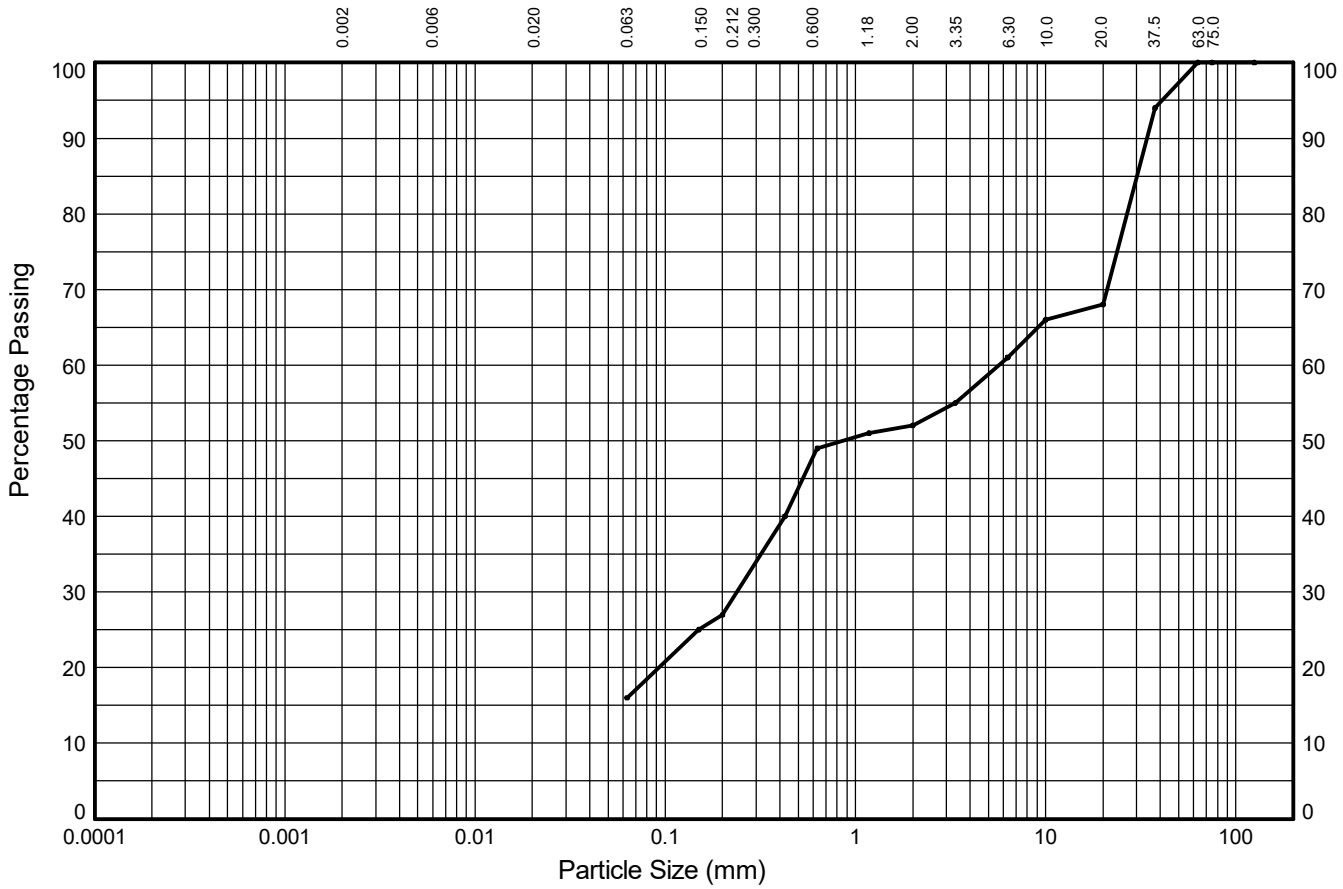
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH109** Sample Ref: **13** Sample Type: **B** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	11%	22%	3%	9%	7%	32%	
	SILT			SAND			GRAVEL			
16%				36%			48%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**94**
20.0	**68**
10.0	**66**
6.30	**61**
3.35	**55**
2.00	**52**
1.18	**51**
0.630	**49**
0.425	**40**
0.200	**27**
0.150	**25**
0.063	**16**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.238**
D_{50} (mm)	**0.862**
D_{60} (mm)	**5.671**
D_{85} (mm)	**30.167**
D_{90} (mm)	**34.043**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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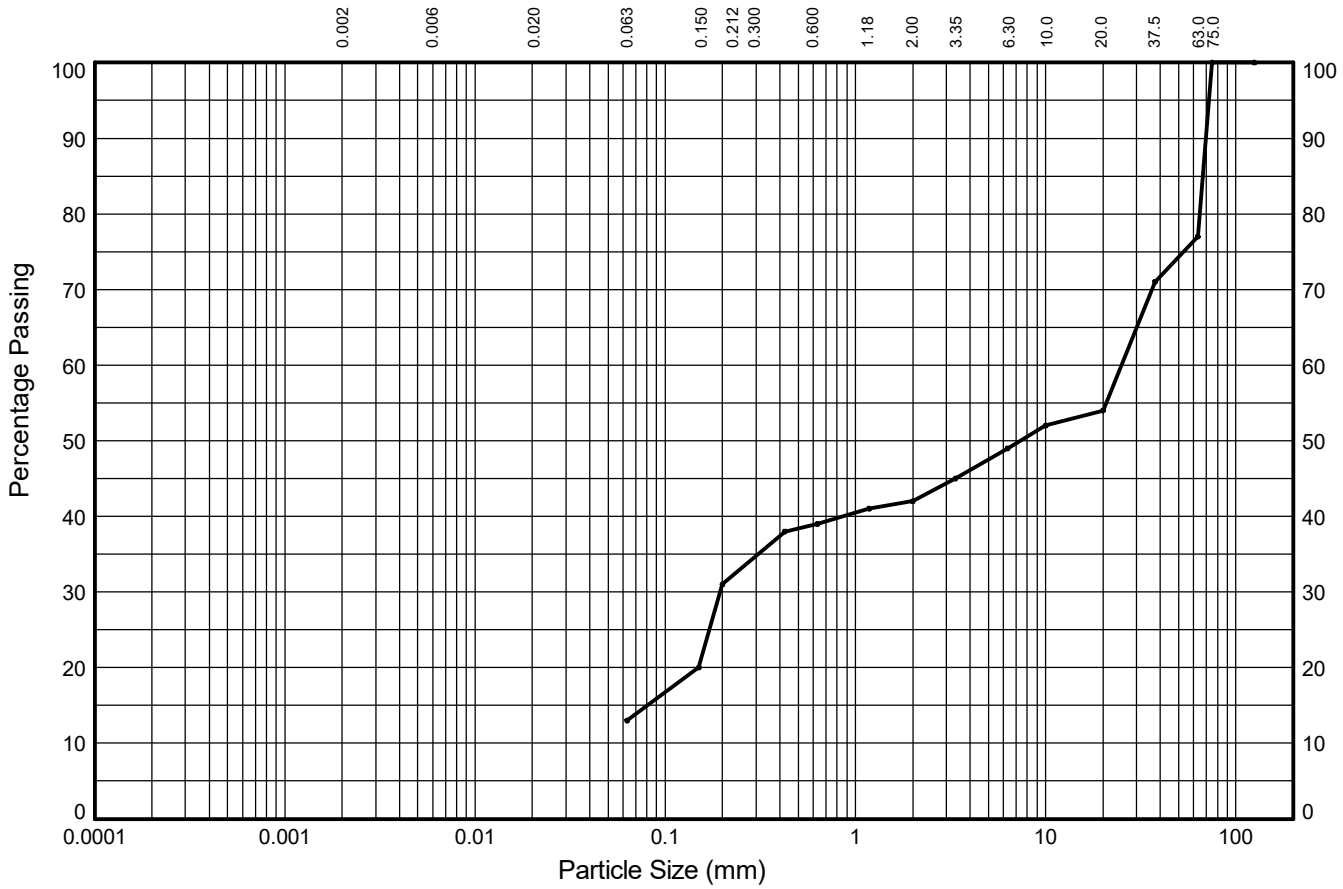
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH109** Sample Ref: **21** Sample Type: **B** Depth (m): **4.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	18%	8%	3%	7%	5%	23%	
	SILT			SAND			GRAVEL			
13%				29%			35%			23%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**77**
37.5	**71**
20.0	**54**
10.0	**52**
6.30	**49**
3.35	**45**
2.00	**42**
1.18	**41**
0.630	**39**
0.425	**38**
0.200	**31**
0.150	**20**
0.063	**13**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.081**
D_{30} (mm)	**0.195**
D_{50} (mm)	**7.349**
D_{60} (mm)	**24.968**
D_{85} (mm)	**66.939**
D_{90} (mm)	**69.525**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very sandy silty/clayey GRAVEL with medium cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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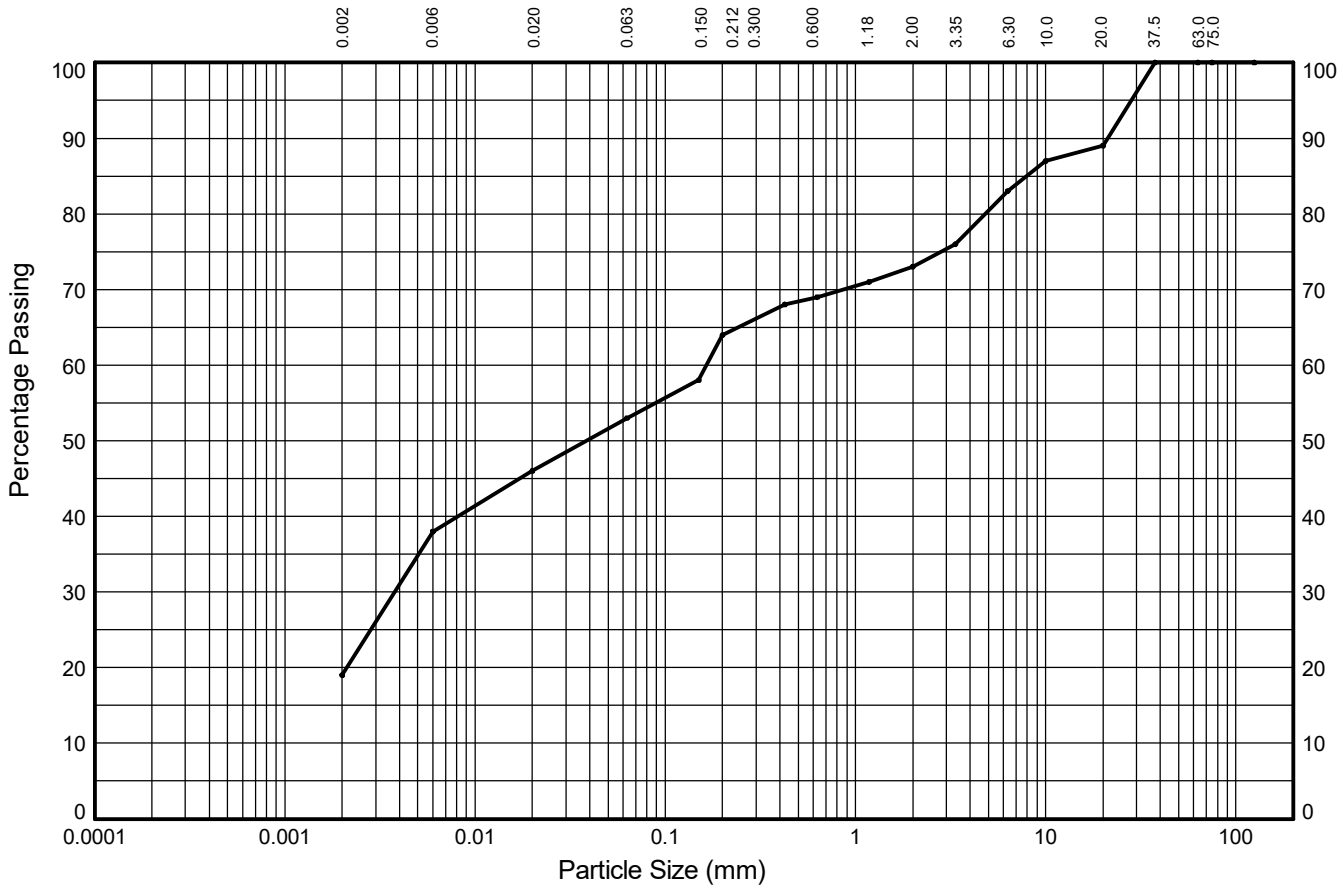
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH109** Sample Ref: **29** Sample Type: **B** Depth (m): **6.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	19%	8%	7%	11%	5%	4%	10%	6%	11%	
	SILT			SAND			GRAVEL			
19%	34%			20%			27%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**89**
10.0	**87**
6.30	**83**
3.35	**76**
2.00	**73**
1.18	**71**
0.630	**69**
0.425	**68**
0.200	**64**
0.150	**58**
0.063	**53**

Particle Diameter (mm)	Percent Passing (%)
0.02	**46**
0.006	**38**
0.002	**19**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.004**
D_{50} (mm)	**0.039**
D_{60} (mm)	**0.165**
D_{85} (mm)	**7.937**
D_{90} (mm)	**21.176**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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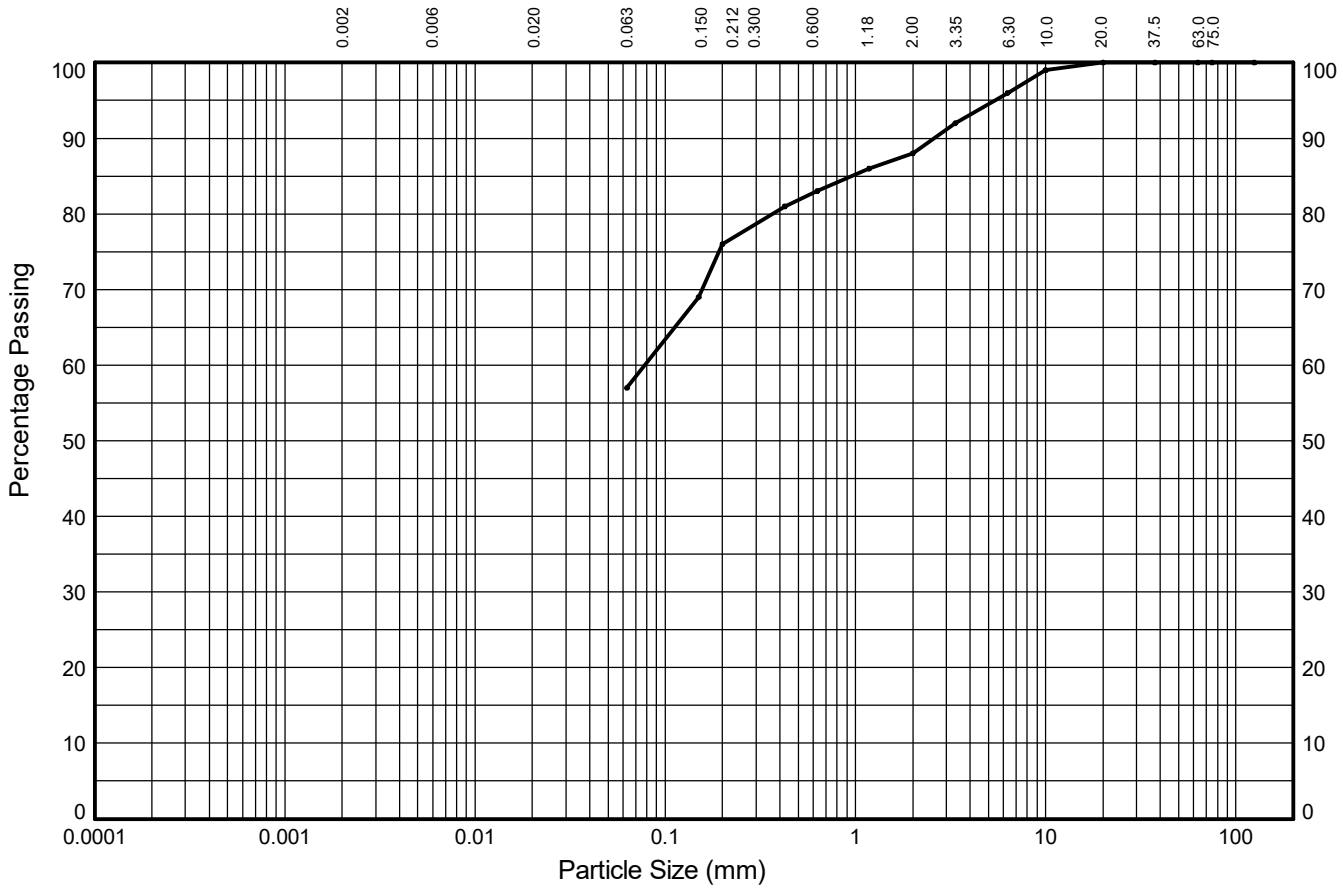
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH109** Sample Ref: **33** Sample Type: **B** Depth (m): **7.30**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	19%	7%	5%	8%	4%	0%	
	SILT			SAND			GRAVEL			
57%				31%			12%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**99**
6.30	**96**
3.35	**92**
2.00	**88**
1.18	**86**
0.630	**83**
0.425	**81**
0.200	**76**
0.150	**69**
0.063	**57**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**NA**
D_{60} (mm)	**0.078**
D_{85} (mm)	**0.957**
D_{90} (mm)	**2.588**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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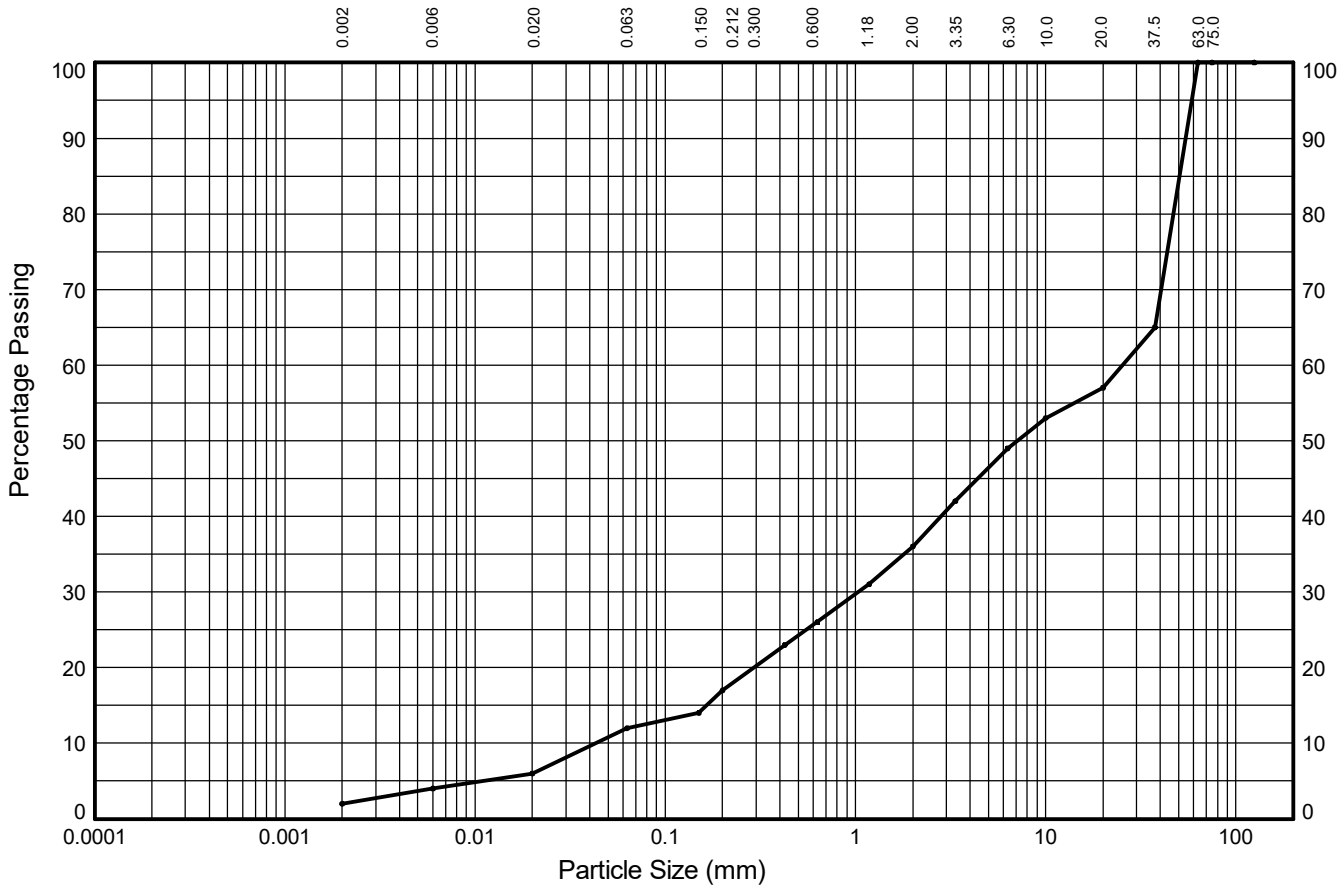
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH110** Sample Ref: **5** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	2%	6%	5%	9%	10%	13%	8%	43%	
	SILT			SAND			GRAVEL			
2%	10%			24%			64%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**65**
20.0	**57**
10.0	**53**
6.30	**49**
3.35	**42**
2.00	**36**
1.18	**31**
0.630	**26**
0.425	**23**
0.200	**17**
0.150	**14**
0.063	**12**

Particle Diameter (mm)	Percent Passing (%)
0.02	**6**
0.006	**4**
0.002	**2**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.043**
D_{15} (mm)	**0.165**
D_{30} (mm)	**1.041**
D_{50} (mm)	**7.071**
D_{60} (mm)	**25.317**
D_{85} (mm)	**50.441**
D_{90} (mm)	**54.321**
C_U	**589**
C_C	**1.00**

Soil Description:

Black very sandy silty slightly clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
LORNA WHITWORTH	19/05/22

Contract	Contract Ref:
Seam Barnsley	**765374**

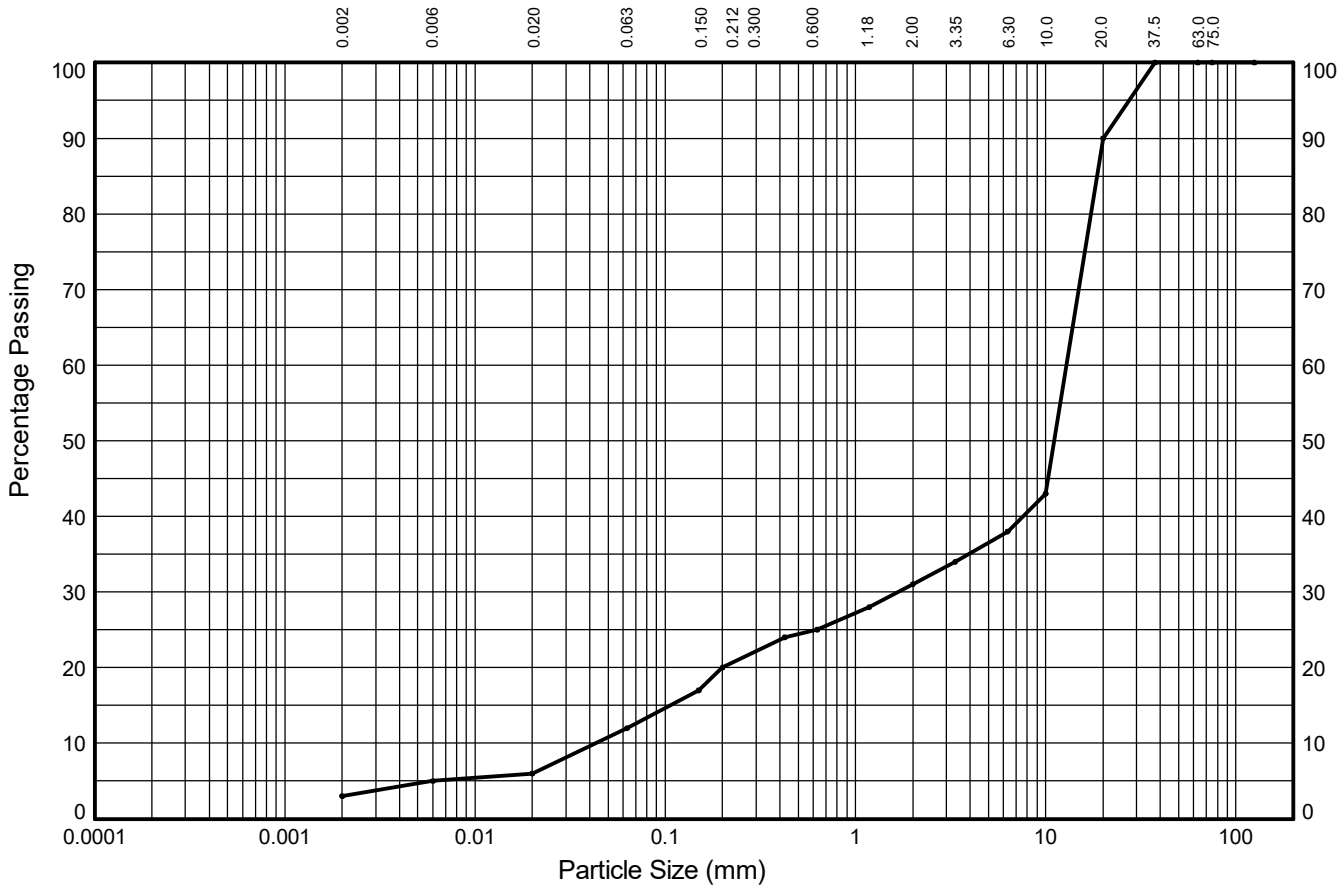
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH110** Sample Ref: **14** Sample Type: **B** Depth (m): **2.00**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	2%	1%	6%	8%	5%	6%	7%	52%	10%	
	SILT			SAND			GRAVEL			
3%	9%			19%			69%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**90**
10.0	**43**
6.30	**38**
3.35	**34**
2.00	**31**
1.18	**28**
0.630	**25**
0.425	**24**
0.200	**20**
0.150	**17**
0.063	**12**

Particle Diameter (mm)	Percent Passing (%)
0.02	**6**
0.006	**5**
0.002	**3**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.043**
D_{15} (mm)	**0.106**
D_{30} (mm)	**1.677**
D_{50} (mm)	**11.088**
D_{60} (mm)	**12.849**
D_{85} (mm)	**18.578**
D_{90} (mm)	**20.000**
C_U	**299**
C_C	**5**

Soil Description:

Brown sandy silty slightly clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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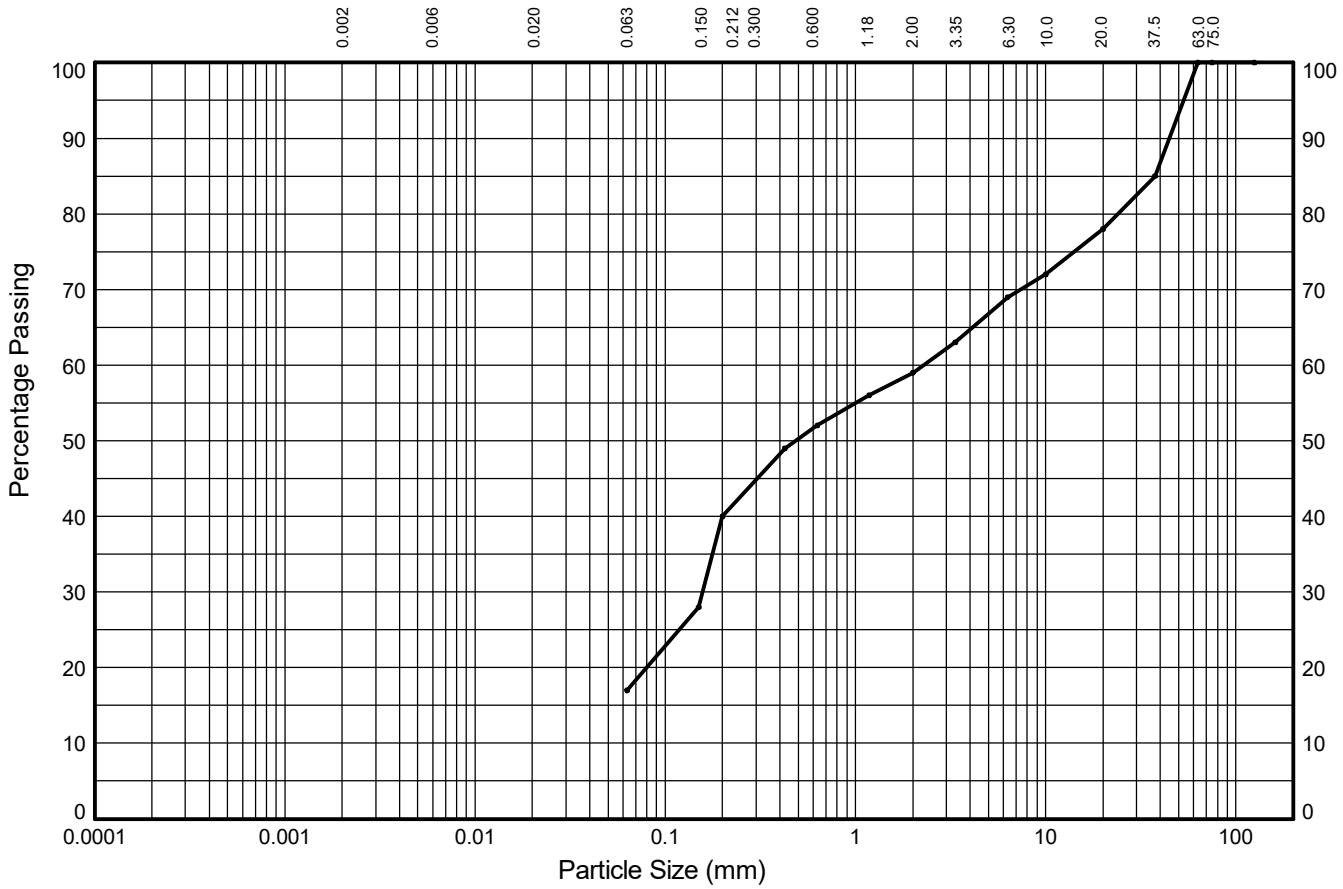
Contract	Contract Ref:
Seam Barnsley	**765374**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH111** Sample Ref: **5** Sample Type: **B** Depth (m): **0.80**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	23%	12%	7%	10%	9%	22%	
	SILT			SAND			GRAVEL			
17%				42%			41%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**85**
20.0	**78**
10.0	**72**
6.30	**69**
3.35	**63**
2.00	**59**
1.18	**56**
0.630	**52**
0.425	**49**
0.200	**40**
0.150	**28**
0.063	**17**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.157**
D_{50} (mm)	**0.485**
D_{60} (mm)	**2.275**
D_{85} (mm)	**37.500**
D_{90} (mm)	**44.579**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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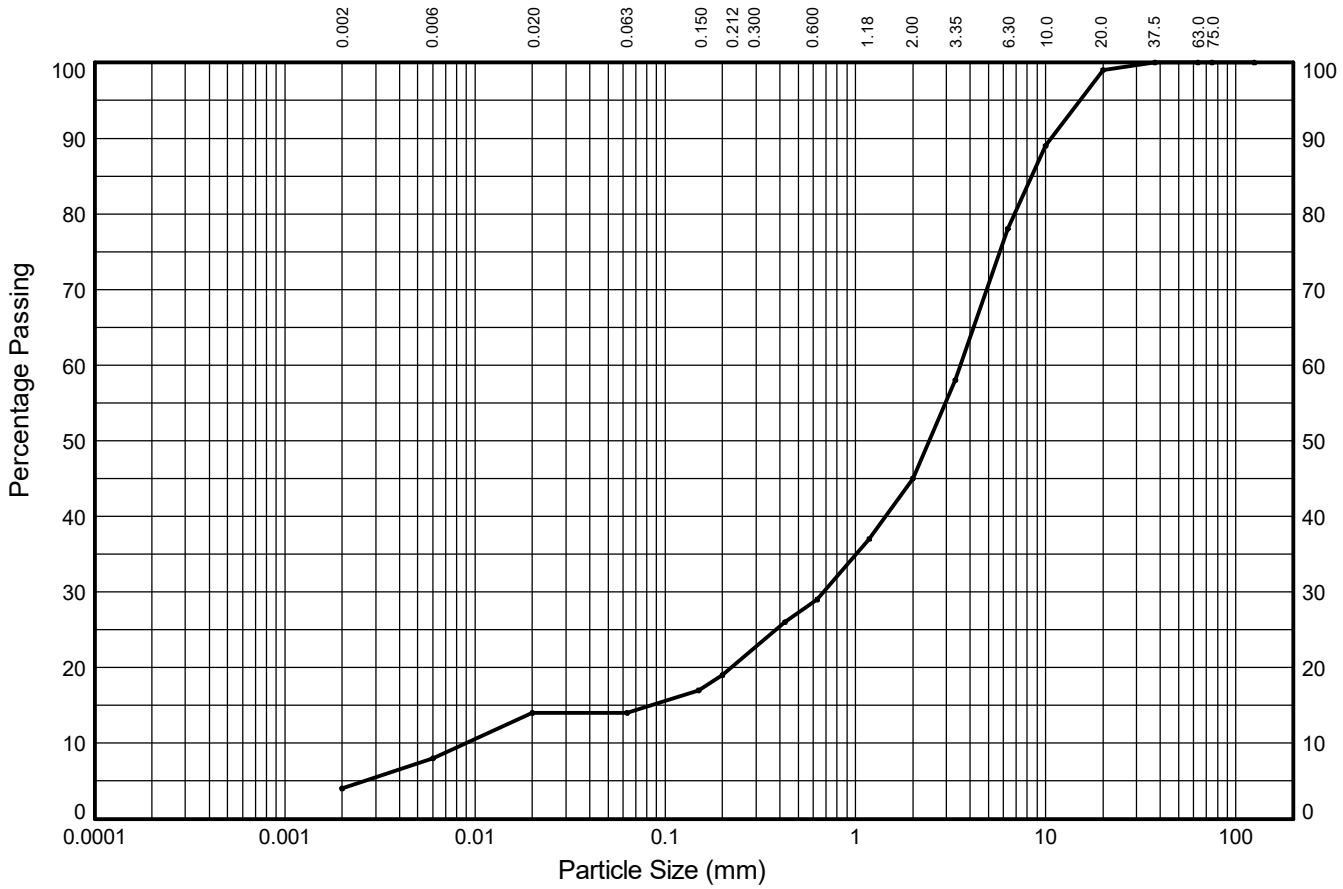
Contract	Contract Ref:
Seam Barnsley	**765374**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH112** Sample Ref: **3** Sample Type: **B** Depth (m): **0.35**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	4%	6%	0%	5%	10%	16%	33%	21%	1%	
	SILT			SAND			GRAVEL			
4%	10%			31%			55%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**99**
10.0	**89**
6.30	**78**
3.35	**58**
2.00	**45**
1.18	**37**
0.630	**29**
0.425	**26**
0.200	**19**
0.150	**17**
0.063	**14**

Particle Diameter (mm)	Percent Passing (%)
0.02	**14**
0.006	**8**
0.002	**4**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.009**
D_{15} (mm)	**0.084**
D_{30} (mm)	**0.681**
D_{50} (mm)	**2.439**
D_{60} (mm)	**3.568**
D_{85} (mm)	**8.453**
D_{90} (mm)	**10.718**
C_U	**398**
C_C	**15**

Soil Description:

Black very sandy slightly clayey silty GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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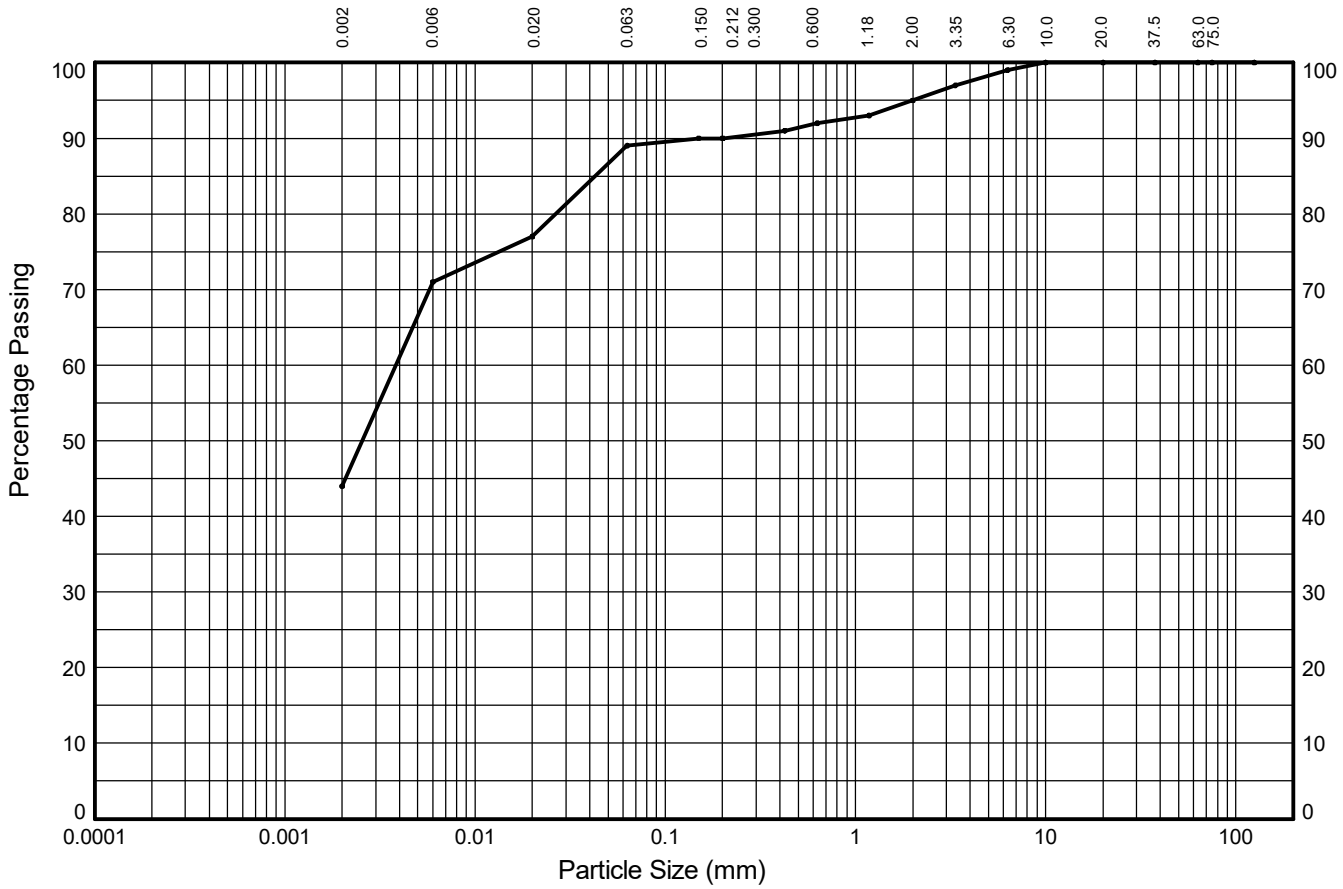
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ABH112** Sample Ref: **10** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	27%	6%	12%	1%	2%	3%	4%	1%	0%	
	SILT			SAND			GRAVEL			
44%	45%			6%			5%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**99**
3.35	**97**
2.00	**95**
1.18	**93**
0.630	**92**
0.425	**91**
0.200	**90**
0.150	**90**
0.063	**89**

Particle Diameter (mm)	Percent Passing (%)
0.02	**77**
0.006	**71**
0.002	**44**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.003**
D_{60} (mm)	**0.004**
D_{85} (mm)	**0.043**
D_{90} (mm)	**0.150**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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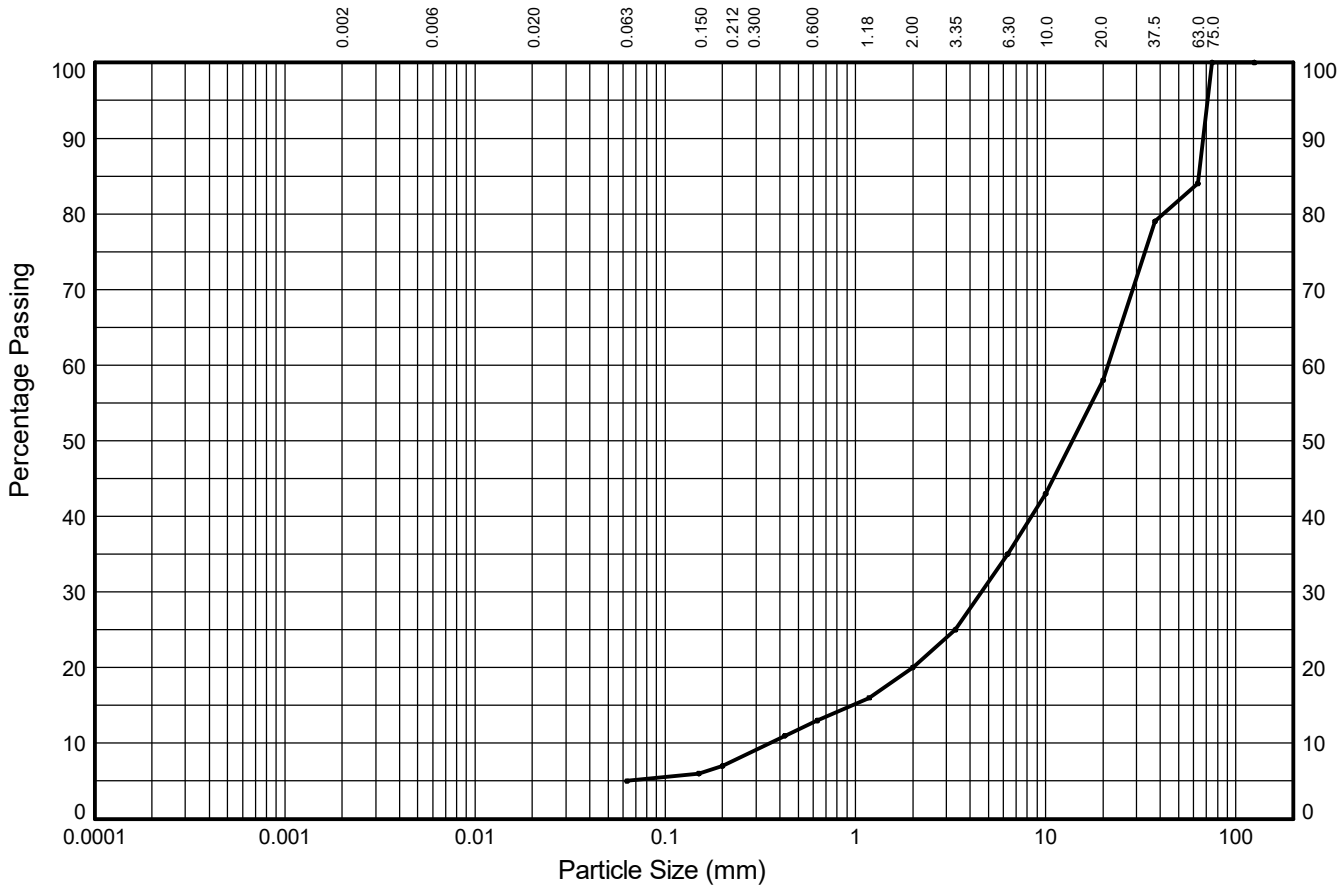
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ATP102-SA** Sample Ref: **5** Sample Type: **B** Depth (m): **0.25**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	2%	6%	7%	15%	23%	26%	
	SILT			SAND			GRAVEL			
5%				15%			64%			16%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**84**
37.5	**79**
20.0	**58**
10.0	**43**
6.30	**35**
3.35	**25**
2.00	**20**
1.18	**16**
0.630	**13**
0.425	**11**
0.200	**7**
0.150	**6**
0.063	**5**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.352**
D_{15} (mm)	**0.957**
D_{30} (mm)	**4.594**
D_{50} (mm)	**13.819**
D_{60} (mm)	**21.234**
D_{85} (mm)	**63.690**
D_{90} (mm)	**67.257**
C_U	**60**
C_C	**3**

Soil Description:

Black sandy silty/clayey GRAVEL with medium cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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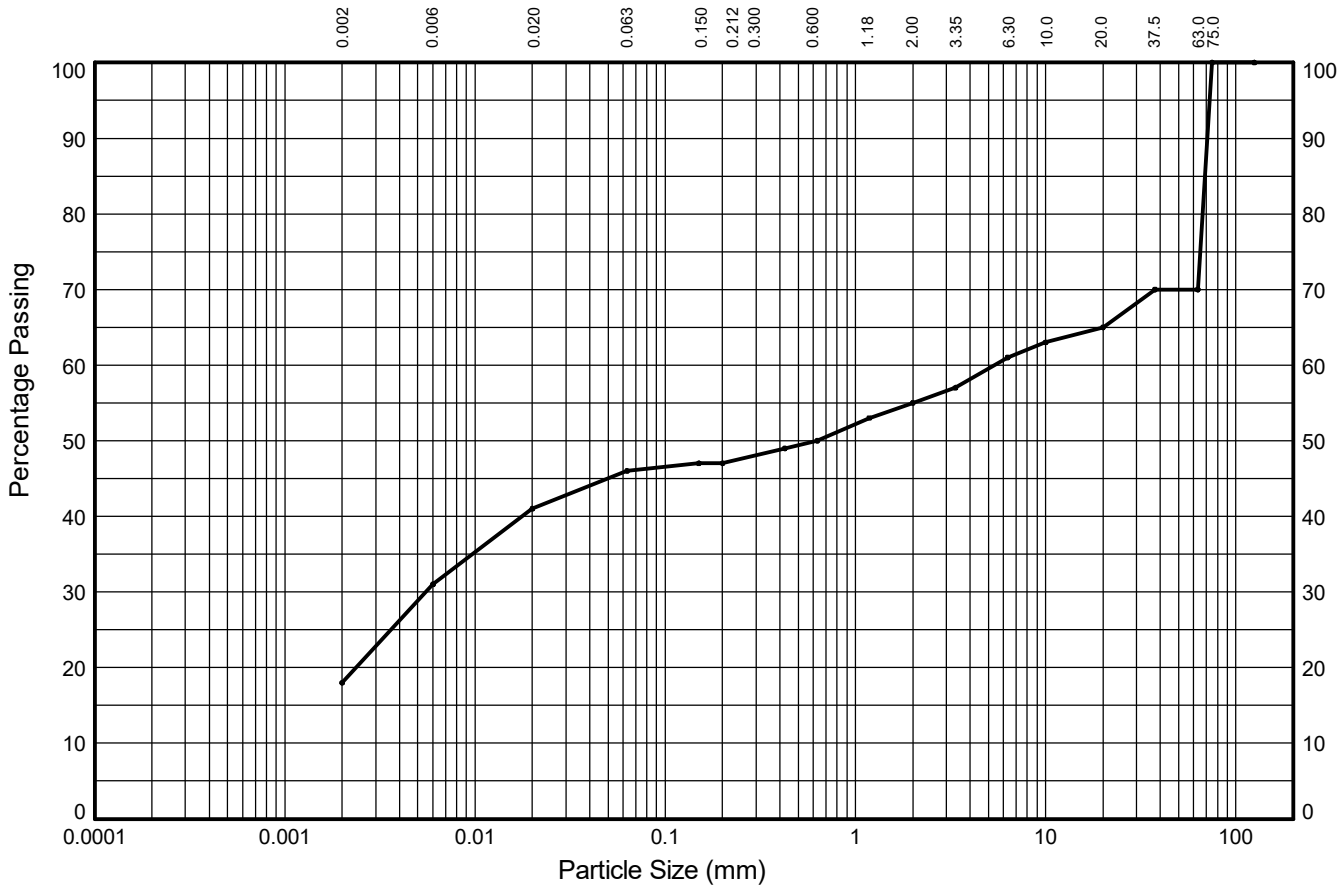
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ATP102-SA** Sample Ref: **7** Sample Type: **B** Depth (m): **1.40**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	13%	10%	5%	1%	3%	5%	6%	4%	5%	
	SILT			SAND			GRAVEL			
18%	28%			9%			15%			30%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**70**
37.5	**70**
20.0	**65**
10.0	**63**
6.30	**61**
3.35	**57**
2.00	**55**
1.18	**53**
0.630	**50**
0.425	**49**
0.200	**47**
0.150	**47**
0.063	**46**

Particle Diameter (mm)	Percent Passing (%)
0.02	**41**
0.006	**31**
0.002	**18**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**0.006**
D_{50} (mm)	**0.630**
D_{60} (mm)	**5.380**
D_{85} (mm)	**68.739**
D_{90} (mm)	**70.765**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy slightly gravelly silty CLAY with high cobble content

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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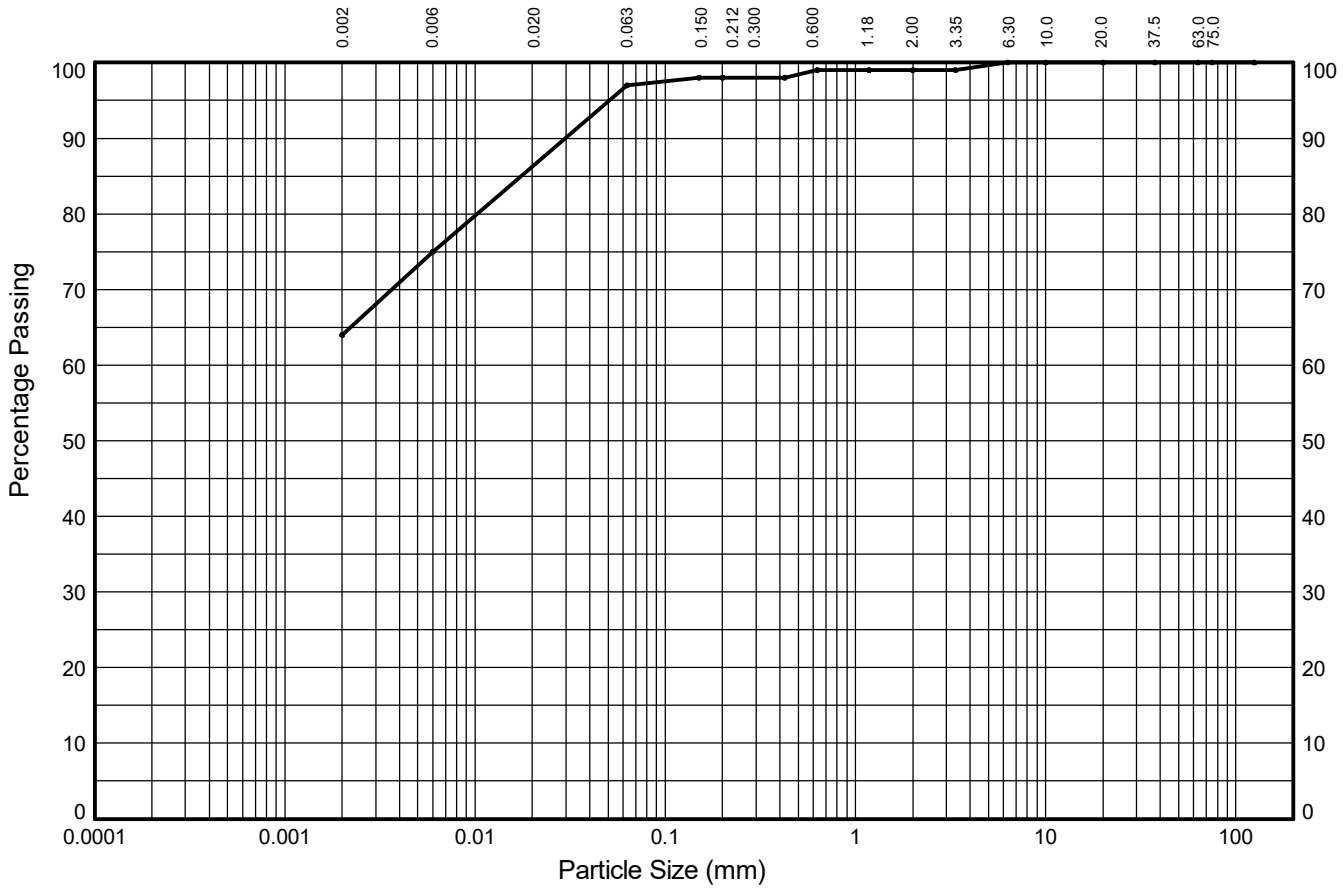
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2, 5.4 of BS EN ISO 17892:Part 4:2016

Position ID: **ATP105-SA** Sample Ref: **7** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	7%	-162%	188%	1%	1%	0%	1%	0%	0%	
	SILT			SAND			GRAVEL			
64%	33%			2%			1%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**100**
10.0	**100**
6.30	**100**
3.35	**99**
2.00	**99**
1.18	**99**
0.630	**99**
0.425	**98**
0.200	**98**
0.150	**98**
0.063	**97**

Particle Diameter (mm)	Percent Passing (%)
0.02	**-91**
0.006	**75**
0.002	**64**

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.000**
D_{15} (mm)	**0.000**
D_{30} (mm)	**0.000**
D_{50} (mm)	**0.000**
D_{60} (mm)	**0.000**
D_{85} (mm)	**0.059**
D_{90} (mm)	**0.060**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly gravelly slightly sandy silty CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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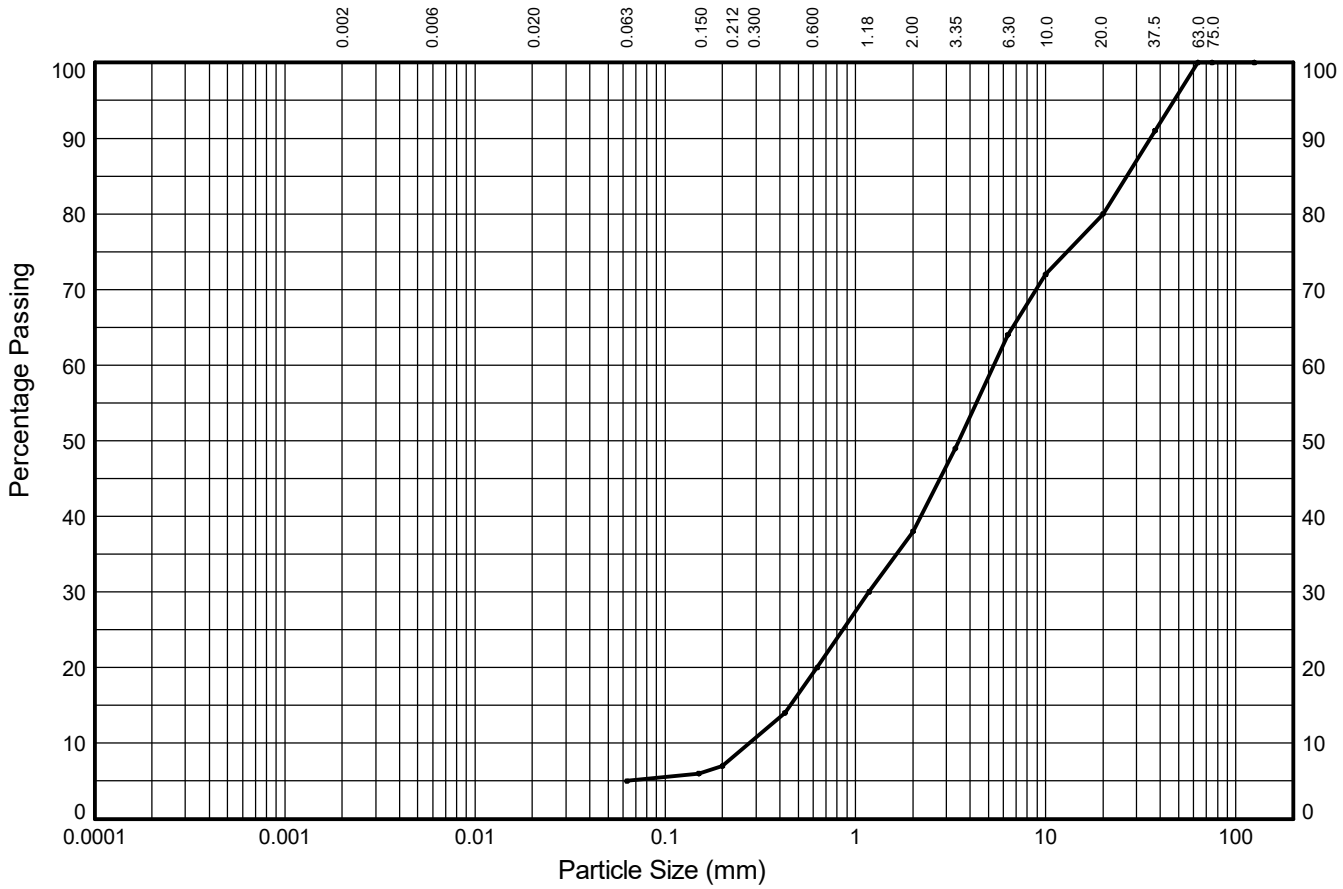
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **ATP108-SA** Sample Ref: **3** Sample Type: **B** Depth (m): **0.15**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	2%	13%	18%	26%	16%	20%	
	SILT			SAND			GRAVEL			
5%				33%			62%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**91**
20.0	**80**
10.0	**72**
6.30	**64**
3.35	**49**
2.00	**38**
1.18	**30**
0.630	**20**
0.425	**14**
0.200	**7**
0.150	**6**
0.063	**5**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.276**
D_{15} (mm)	**0.454**
D_{30} (mm)	**1.180**
D_{50} (mm)	**3.494**
D_{60} (mm)	**5.323**
D_{85} (mm)	**26.615**
D_{90} (mm)	**35.417**
C_U	**19**
C_C	**0.95**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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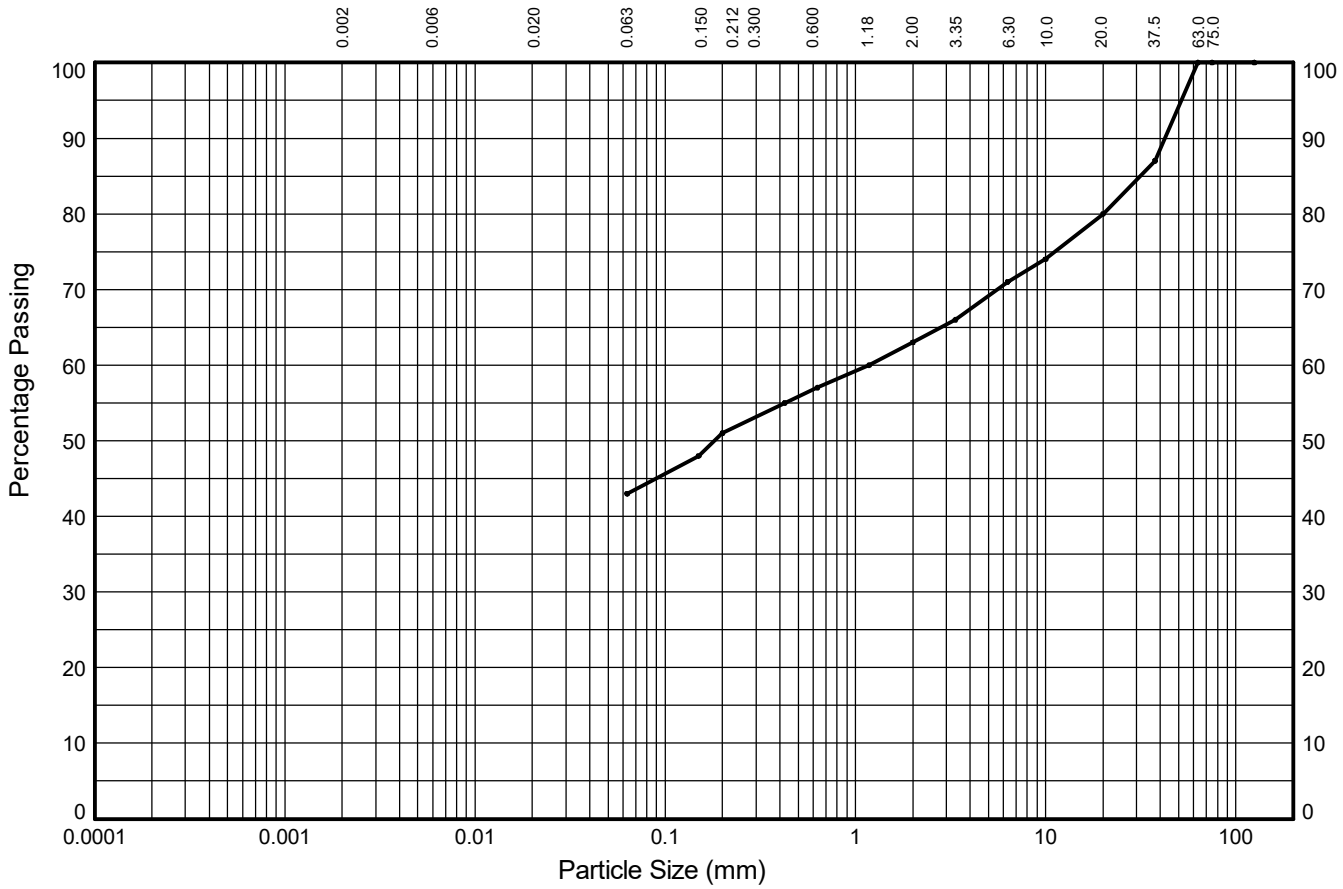
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS101** Sample Ref: **5** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	8%	6%	6%	8%	9%	20%	
	SILT			SAND			GRAVEL			
43%				20%			37%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**87**
20.0	**80**
10.0	**74**
6.30	**71**
3.35	**66**
2.00	**63**
1.18	**60**
0.630	**57**
0.425	**55**
0.200	**51**
0.150	**48**
0.063	**43**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**NA**
D_{30} (mm)	**NA**
D_{50} (mm)	**0.182**
D_{60} (mm)	**1.180**
D_{85} (mm)	**31.335**
D_{90} (mm)	**42.269**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown slightly sandy gravelly CLAY

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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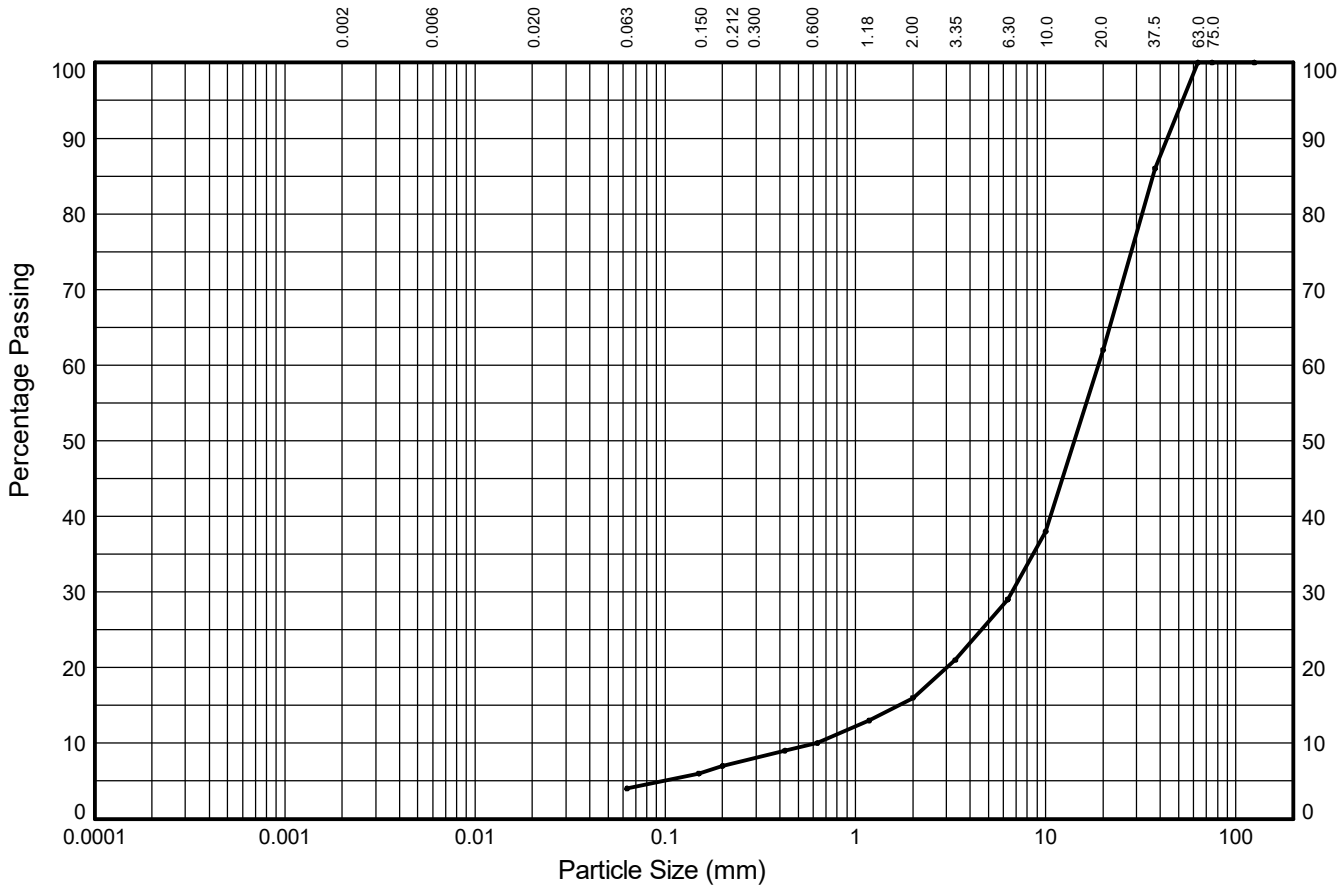
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Seam Barnsley	**765374**

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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS104** Sample Ref: **1** Sample Type: **B** Depth (m): **0.10**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	3%	3%	6%	13%	33%	38%	
	SILT			SAND			GRAVEL			
4%				12%			84%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**86**
20.0	**62**
10.0	**38**
6.30	**29**
3.35	**21**
2.00	**16**
1.18	**13**
0.630	**10**
0.425	**9**
0.200	**7**
0.150	**6**
0.063	**4**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.630**
D_{15} (mm)	**1.677**
D_{30} (mm)	**6.632**
D_{50} (mm)	**14.142**
D_{60} (mm)	**18.877**
D_{85} (mm)	**36.531**
D_{90} (mm)	**43.492**
C_U	**30**
C_C	**4**

Soil Description:

Brown sandy slightly silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Contract	Contract Ref:
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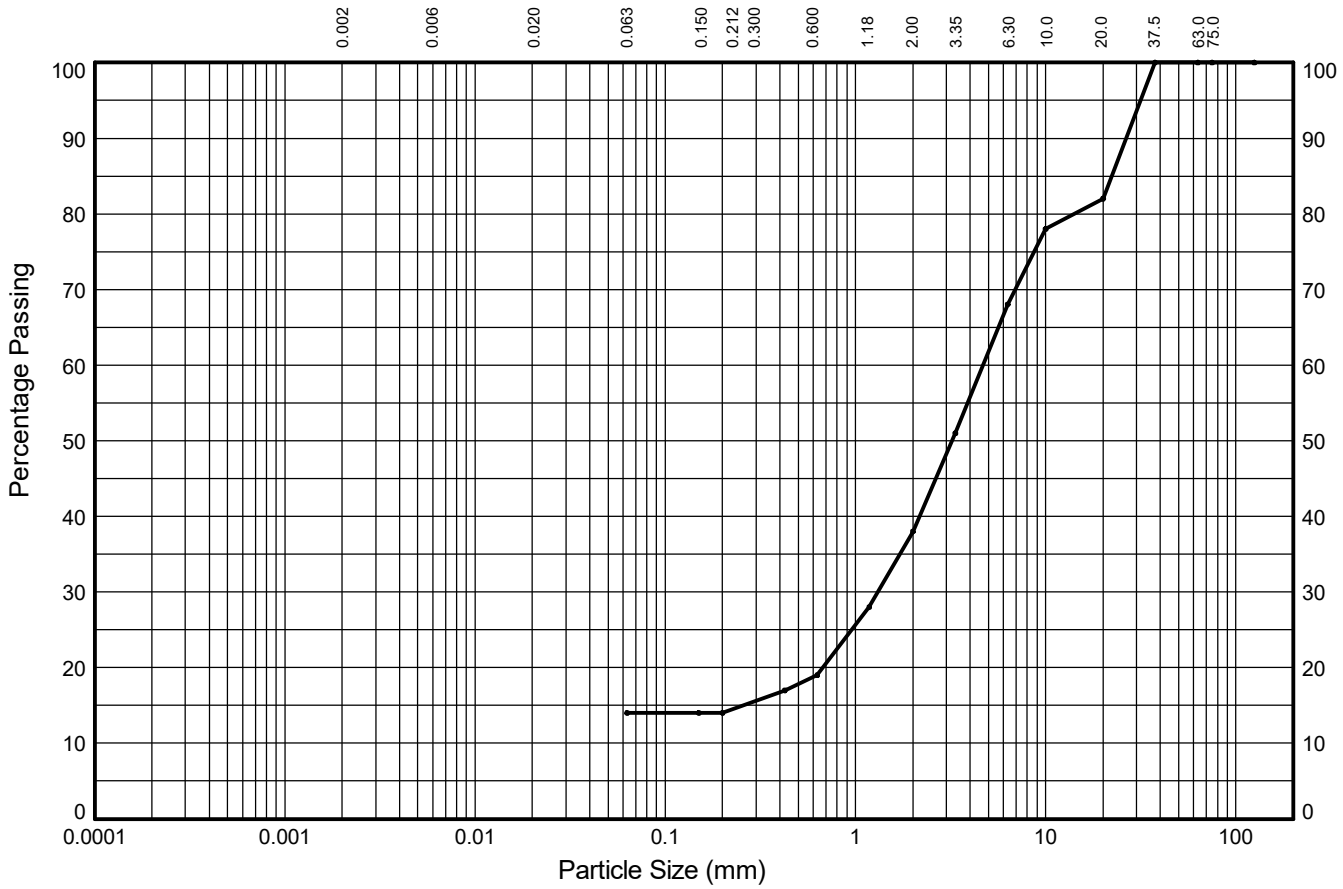
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS105** Sample Ref: **1** Sample Type: **B** Depth (m): **0.15**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	0%	5%	19%	30%	14%	18%	
	SILT			SAND			GRAVEL			
14%				24%			62%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**82**
10.0	**78**
6.30	**68**
3.35	**51**
2.00	**38**
1.18	**28**
0.630	**19**
0.425	**17**
0.200	**14**
0.150	**14**
0.063	**14**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**NA**
D_{15} (mm)	**0.257**
D_{30} (mm)	**1.311**
D_{50} (mm)	**3.220**
D_{60} (mm)	**4.680**
D_{85} (mm)	**22.209**
D_{90} (mm)	**26.446**
C_U	**NA**
C_C	**NA**

Soil Description:

Brown very sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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LORNA WHITWORTH	19/05/22

Contract	Contract Ref:
Seam Barnsley	**765374**

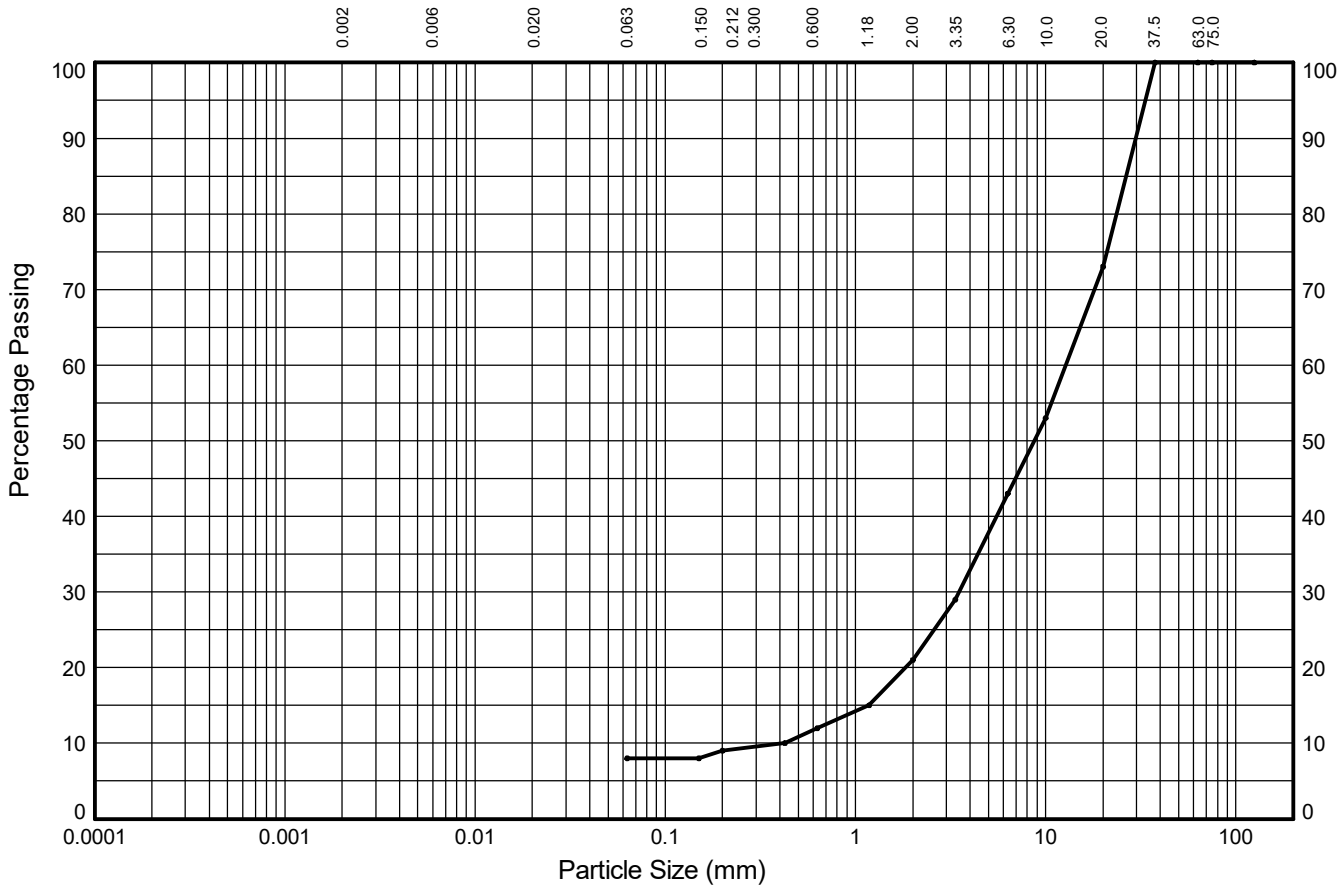
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS106** Sample Ref: **1** Sample Type: **B** Depth (m): **0.15**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	1%	3%	9%	22%	30%	27%	
	SILT			SAND			GRAVEL			
8%				13%			79%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**100**
20.0	**73**
10.0	**53**
6.30	**43**
3.35	**29**
2.00	**21**
1.18	**15**
0.630	**12**
0.425	**10**
0.200	**9**
0.150	**8**
0.063	**8**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.425**
D_{15} (mm)	**1.180**
D_{30} (mm)	**3.505**
D_{50} (mm)	**8.706**
D_{60} (mm)	**12.746**
D_{85} (mm)	**26.446**
D_{90} (mm)	**29.711**
C_U	**30**
C_C	**2**

Soil Description:

Brown sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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Compiled By	Date
LORNA WHITWORTH	19/05/22

Contract	Contract Ref:
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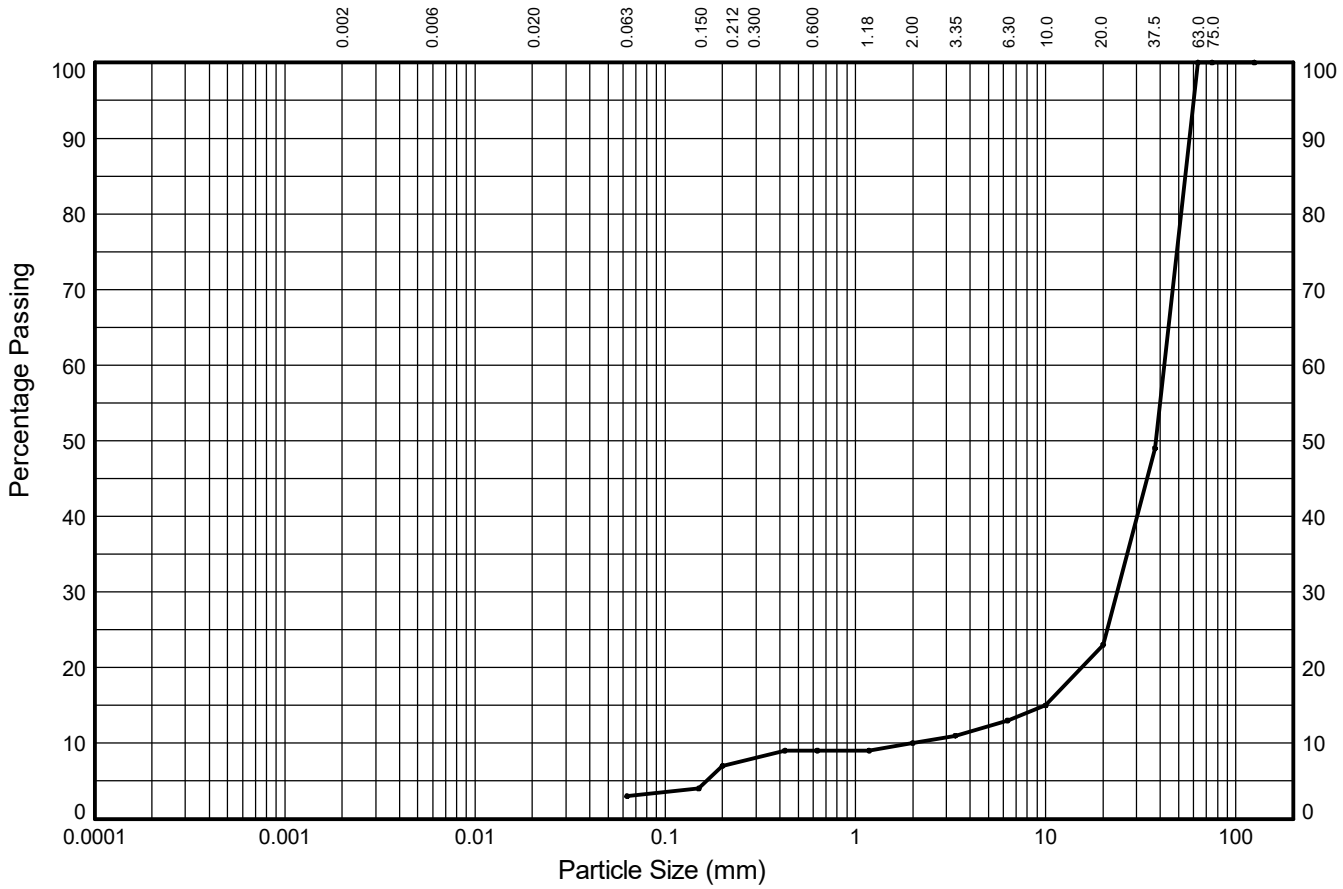
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS107** Sample Ref: **7** Sample Type: **B** Depth (m): **1.20**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	4%	2%	1%	3%	10%	77%	
	SILT			SAND			GRAVEL			
3%				7%			90%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**49**
20.0	**23**
10.0	**15**
6.30	**13**
3.35	**11**
2.00	**10**
1.18	**9**
0.630	**9**
0.425	**9**
0.200	**7**
0.150	**4**
0.063	**3**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**2.000**
D_{15} (mm)	**10.000**
D_{30} (mm)	**23.688**
D_{50} (mm)	**37.883**
D_{60} (mm)	**41.940**
D_{85} (mm)	**54.085**
D_{90} (mm)	**56.907**
C_U	**21**
C_C	**7**

Soil Description:

Brown sandy slightly silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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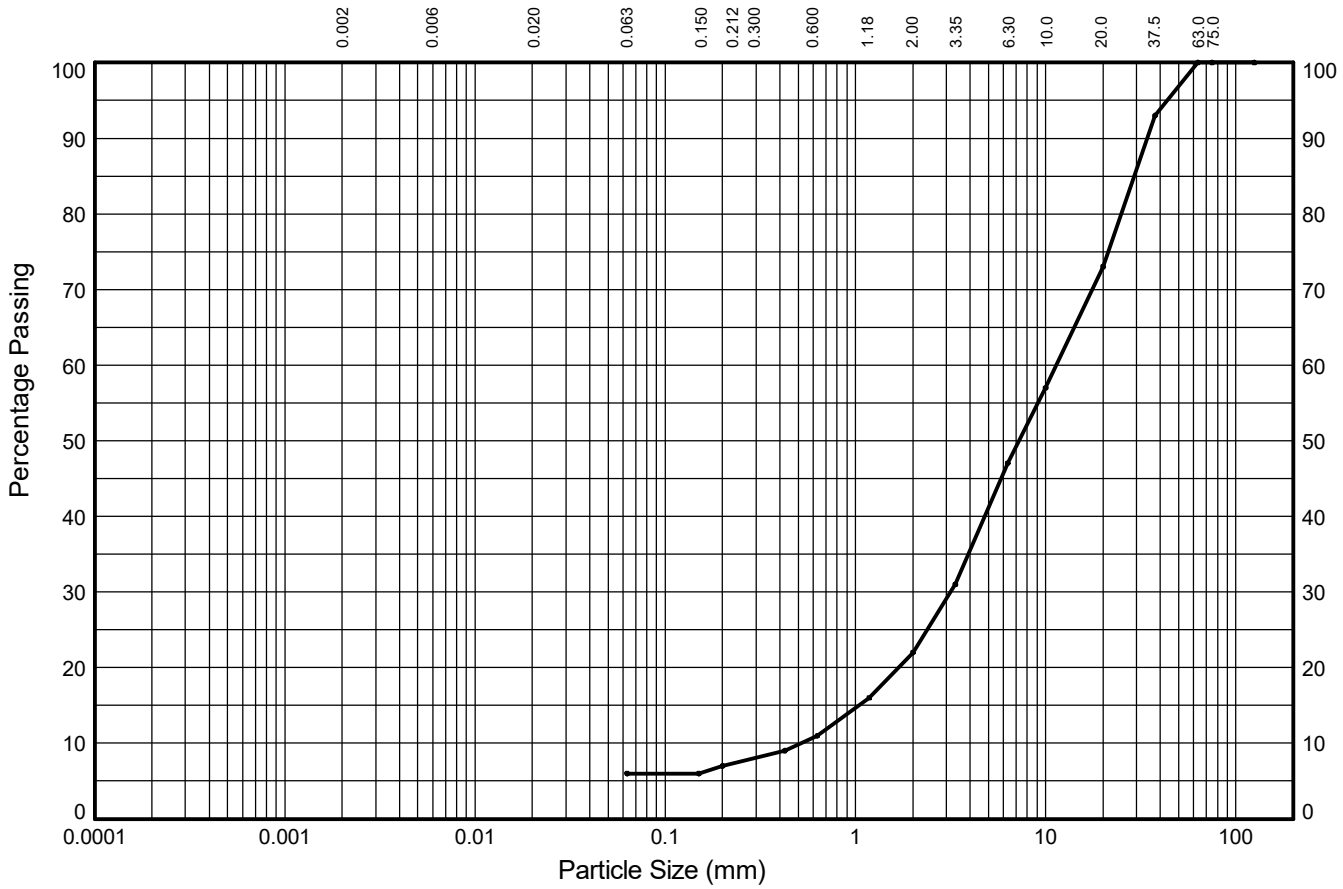
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PARTICLE SIZE DISTRIBUTION TEST

In accordance with clauses 5.2 of BS EN ISO 17892:Part 4:2016

Position ID: **AWS110** Sample Ref: **1** Sample Type: **B** Depth (m): **0.17**



CLAY	fine	medium	coarse	fine	medium	coarse	fine	medium	coarse	COBBLES
	-	-	-	1%	4%	11%	25%	26%	27%	
	SILT			SAND			GRAVEL			
6%				16%			78%			0%

Test Sieve (mm)	Percent Passing (%)
125.0	**100**
75.0	**100**
63.0	**100**
37.5	**93**
20.0	**73**
10.0	**57**
6.30	**47**
3.35	**31**
2.00	**22**
1.18	**16**
0.630	**11**
0.425	**9**
0.200	**7**
0.150	**6**
0.063	**6**

Particle Diameter (mm)	Percent Passing (%)

Sedimentation sample was not pre-treated

Coefficients	
D_{10} (mm)	**0.517**
D_{15} (mm)	**1.041**
D_{30} (mm)	**3.163**
D_{50} (mm)	**7.237**
D_{60} (mm)	**11.388**
D_{85} (mm)	**29.163**
D_{90} (mm)	**34.126**
C_U	**22**
C_C	**2**

Soil Description:

Brown sandy silty/clayey GRAVEL

Key: C_U = Uniformity coefficient. C_C = Coefficient of curvature as defined in BS EN ISO 14688-2:2018

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH101	9.75	A	80.77	36.01	3.779	61	1.02	1.09	1.11	2.1	SANDSTONE
ABH101	9.75	D	97.81	75.76	3.621	76	0.63	1.21	0.76	2.1	SANDSTONE
ABH101	9.88	A	65.03	43.75	6.301	60	1.74	1.09	1.89	2.0	SANDSTONE
ABH101	10.29	A	66.98	54.46	5.773	68	1.24	1.15	1.43	1.9	SANDSTONE
ABH101	10.29	D	97.81	79.68	1.122	80	0.18	1.23	0.22	1.9	SANDSTONE
ABH101	11.88	A	84.31	48.91	2.587	72	0.49	1.18	0.58	1.8	SANDSTONE
ABH101	11.88	D	106.01	81.34	2.116	81	0.32	1.24	0.40	1.8	SANDSTONE
ABH101	12.30	A	62.56	43.01	8.527	59	2.49	1.07	2.67	1.8	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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Compiled By		Date	Contract Ref:
lschramm	**LSCHRAMM**	**23.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **1** of **10**

SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH101	12.43	A	67.07	52.5	8.706	67	1.94	1.14	2.21	1.7	SANDSTONE
ABH101	12.43	D	99.4	75.59	6.633	76	1.16	1.20	1.40	1.7	SANDSTONE
ABH103	8.10	A	88.55	42.39	12.891	69	2.70	1.16	3.12	1.6	SANDSTONE
ABH103	8.65	A	124.02	50.95	4.708	90	0.59	1.30	0.76	1.9	SANDSTONE
ABH103	8.65	D	150	78.8	0.384	79	0.06	1.23	0.08	1.9	SANDSTONE
ABH103	9.15	A	61.61	31.78	7.001	50	2.81	1.00	2.81	2.2	SANDSTONE
ABH103	9.71	A	37.28	24.58	5.975	34	5.12	0.84	4.31	1.8	SANDSTONE
ABH103	10.33	A	57.46	36.4	10.101	52	3.79	1.01	3.85	1.7	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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lschramm	**LSCHRAMM**	**23.05.22**	**765374**
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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH103	11.21	A	65.18	24.87	1.764	45	0.85	0.96	0.82	1.7	SANDSTONE
ABH104	14.56	A	64.16	45.53	1.705	61	0.46	1.09	0.50	1.4	SANDSTONE
ABH104	14.70	A	52.14	39.09	7.446	51	2.87	1.01	2.89	1.4	SANDSTONE
ABH104	14.86	A	59.62	37.97	4.932	54	1.71	1.03	1.77	2.8	SANDSTONE
ABH104	14.86	D	108.08	86.19	0.652	86	0.09	1.28	0.11	2.8	SANDSTONE
ABH104	14.96	A	75.93	44.48	6.896	66	1.60	1.13	1.81	2.4	SANDSTONE
ABH104	14.96	D	98	80.39	4.957	80	0.77	1.24	0.95	2.4	SANDSTONE
ABH104	15.11	A	91.15	26.21	6.770	55	2.23	1.05	2.33	2.5	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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Compiled By		Date	Contract Ref:
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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH104	15.25	A	64.46	27.73	5.915	48	2.60	0.98	2.54	2.0	SANDSTONE
ABH105	15.01	A	85.87	60.83	9.147	82	1.38	1.25	1.71	2.9	SANDSTONE
ABH105	15.01	D	164.08	82.51	4.199	83	0.62	1.25	0.77	2.9	SANDSTONE
ABH105	15.63	A	107.08	64.01	5.662	93	0.65	1.32	0.86	2.7	SANDSTONE
ABH105	15.63	D	188.04	83.61	2.573	84	0.37	1.26	0.46	2.7	SANDSTONE
ABH105	16.20	A	67.68	49.61	8.062	65	1.89	1.13	2.13	2.6	SANDSTONE
ABH105	16.20	D	137.48	79.29	3.782	79	0.60	1.23	0.74	2.6	SANDSTONE
ABH106	14.14	A	79.27	62.8	7.003	80	1.10	1.23	1.36	1.6	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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Compiled By		Date	Contract Ref:
lschramm	**LSCHRAMM**	**23.05.22**	**765374**
Contract: **Seam Barnsley**			Page: **4** of **10**

SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH106	14.14	D	154.54	79.27	4.070	79	0.65	1.23	0.80	1.6	SANDSTONE
ABH106	14.57	A	74.89	50.8	5.674	70	1.17	1.16	1.36	1.6	SANDSTONE
ABH106	14.57	D	161.62	79.89	0.975	80	0.15	1.23	0.19	1.6	SANDSTONE
ABH106	14.92	A	67.04	48.08	8.288	64	2.02	1.12	2.26	1.4	SANDSTONE
ABH106	14.92	D	111.83	73.86	5.219	74	0.96	1.19	1.14	1.4	SANDSTONE
ABH106	15.70	A	78.03	63.84	3.259	80	0.51	1.23	0.63	1.8	SANDSTONE
ABH106	15.70	D	161.47	78.09	4.014	78	0.66	1.22	0.80	1.8	SANDSTONE
ABH106	16.00	A	68.66	46.29	5.385	64	1.33	1.11	1.48	1.5	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH106	16.00	D	164.03	74.54	5.111	75	0.92	1.20	1.10	1.5	SANDSTONE
ABH106	16.44	A	109.89	94.58	4.451	115	0.34	1.45	0.49	1.7	SANDSTONE
ABH106	16.44	D	193.98	112.92	2.583	113	0.20	1.44	0.29	1.7	SANDSTONE
ABH107	13.50	D	178.57	58.48	5.739	58	1.68	1.07	1.80	1.5	SANDSTONE
ABH107	13.50	A	98.48	80	9.204	100	0.92	1.37	1.25	1.5	SANDSTONE
ABH107	13.62	D	151.08	63.08	5.547	63	1.39	1.11	1.55	1.8	SANDSTONE
ABH107	13.62	A	102.1	94.32	6.933	111	0.57	1.43	0.81	1.8	SANDSTONE
ABH107	13.77	A	57.3	40.45	7.294	54	2.47	1.04	2.57	1.5	SANDSTONE

Key : A = Axial, D = Diametral, I = Irregular, B = Block, L = Parallel to planes of weakness, P = Perpendicular to planes of weakness. [NS] denotes Non Standard Test.

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Compiled By		Date	Contract Ref:
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Contract: Seam Barnsley			Page: 6 of 10

SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH107	13.77	D	92.24	61.51	4.081	62	1.08	1.10	1.18	1.5	SANDSTONE
ABH110	12.70	A	64.87	45.41	11.107	61	2.96	1.10	3.24	1.8	SANDSTONE
ABH110	12.70	D	95.62	63.98	5.302	64	1.30	1.12	1.45	1.8	SANDSTONE
ABH110	13.43	A	47.26	34.41	6.168	46	2.98	0.96	2.86	1.1	SILTSTONE
ABH110	13.43	D	71.75	64.24	2.248	64	0.54	1.12	0.61	1.1	SILTSTONE
ABH110	14.40	A	52.29	30.5	8.966	45	4.42	0.95	4.21	1.7	SANDSTONE
ABH110	14.40	D	69.41	63.48	5.200	63	1.29	1.11	1.44	1.7	SANDSTONE
ABH110	14.89	A	50.76	39.06	3.431	50	1.36	1.00	1.36	1.5	SANDSTONE

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH110	15.62	A	54.98	34.92	8.435	49	3.45	0.99	3.43	1.5	SANDSTONE
ABH110	15.62	D	101.75	58.03	5.773	58	1.71	1.07	1.83	1.5	SANDSTONE
ABH110	17.00	D	200.13	63.15	3.514	63	0.88	1.11	0.98	1.4	SANDSTONE
ABH110	17.00	A	92.88	78.85	11.580	97	1.24	1.34	1.67	1.4	SANDSTONE
ABH111	12.19	A	118.87	72.87	6.248	105	0.57	1.40	0.79	1.9	SANDSTONE
ABH111	12.41	A	84.96	56.25	12.587	78	2.07	1.22	2.53	1.1	SANDSTONE
ABH111	12.41	D	179.74	76.46	8.866	76	1.52	1.21	1.84	1.1	SANDSTONE
ABH111	12.66	A	68.18	53.02	4.780	68	1.04	1.15	1.19	1.9	SANDSTONE

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH111	12.91	A	71.48	47	10.393	65	2.43	1.13	2.74	1.2	SANDSTONE
ABH111	12.91	D	142.78	80.5	4.200	81	0.65	1.24	0.80	1.2	SANDSTONE
ABH111	13.12	A	65.87	46.56	12.503	62	3.20	1.11	3.54	1.5	SANDSTONE
ABH111	13.12	D	108.6	71.34	5.786	71	1.14	1.17	1.33	1.5	SANDSTONE
ABH111	13.43	A	110.1	72.11	7.268	101	0.72	1.37	0.98	1.3	SANDSTONE
ABH111	13.43	D	210.7	72.31	4.121	72	0.79	1.18	0.93	1.3	SANDSTONE
ABH112	14.00	A	58.06	33.97	9.657	50	3.85	1.00	3.85	1.4	SANDSTONE
ABH112	14.00	D	89.6	80.93	1.430	81	0.22	1.24	0.27	1.4	SANDSTONE

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SUMMARY OF POINT LOAD INDEX TEST RESULTS

RT03 Point Load Testing (in accordance with ISRM 2007)

Exploratory Position ID	Depth (m)	Type of Test	Width or Length (W or L) (mm)	Platen Separation (D) (mm)	Failure Load (P) (kN)	Equivalent Diameter (D_e) (mm)	Point Load (I_s) (MN/m^2)	Size Factor (F)	Point Load Index ($I_{s(50)}$) (MN/m^2)	Moisture Content (%)	Rock Type
ABH112	14.28	A	66.82	44.21	7.937	61	2.11	1.10	2.31	0.99	SANDSTONE
ABH112	14.28	D	79.11	80.15	1.067	80	0.17	1.24	0.21	0.99	SANDSTONE
ABH112	14.33	A	67.17	38.96	8.046	58	2.41	1.07	2.58	2.4	SANDSTONE
ABH112	14.33	D	126.99	120.21	1.897	120	0.13	1.48	0.19	2.4	SANDSTONE
ABH112	14.49	A	80.04	48.04	13.299	70	2.72	1.16	3.16	1.8	SANDSTONE
ABH112	14.52	A	50.55	27.48	3.035	42	1.72	0.93	1.59	1.4	SANDSTONE

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH101** Sample Ref: **1** Sample Type: **C** Depth (m) : **10.34**

Bulk Density (Mg/m^3): **2.26** Dry Density (Mg/m^3): **2.03** Moisture Content (%): **11**
Length (mm): **178.21** Diameter (mm): **89.67** Length/Diameter Ratio: **1.99**
Test Duration (mins:secs): **06:49** Stress Rate (MPa/s): **0.0348** Load at Failure (kN): **88.6**
UCS (MPa): **14.0** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH101** Sample Ref: **2** Sample Type: **C** Depth (m) : **12.02**

Bulk Density (Mg/m^3): **2.45** Dry Density (Mg/m^3): **2.30** Moisture Content (%): **6.4**
Length (mm): **200.18** Diameter (mm): **89.56** Length/Diameter Ratio: **2.24**
Test Duration (mins:secs): **07:43** Stress Rate (MPa/s): **0.0349** Load at Failure (kN): **103.4**
UCS (MPa): **16.4** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Light brown & grey SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH102** Sample Ref: **1** Sample Type: **C** Depth (m) : **12.72**

Bulk Density (Mg/m^3): **2.40** Dry Density (Mg/m^3): **2.27** Moisture Content (%): **5.5**
Length (mm): **235.26** Diameter (mm): **85.61** Length/Diameter Ratio: **2.75**
Test Duration (mins:secs): **09;30** Stress Rate (MPa/s): **0.0382** Load at Failure (kN): **106.6**
UCS (MPa): **18.5** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH102** Sample Ref: **2** Sample Type: **C** Depth (m) : **18.50**

Bulk Density (Mg/m^3): **2.46** Dry Density (Mg/m^3): **2.35** Moisture Content (%): **4.7**
Length (mm): **232.47** Diameter (mm): **84.46** Length/Diameter Ratio: **2.75**
Test Duration (mins:secs): **20:34** Stress Rate (MPa/s): **0.0393** Load at Failure (kN): **261.1**
UCS (MPa): **46.6** Failure Type: **Multiple shear**

Note: **Axis of loading parallel to core axis**
Description: **Grey SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH103** Sample Ref: **1** Sample Type: **C** Depth (m) : **8.03**

Bulk Density (Mg/m^3): **2.44** Dry Density (Mg/m^3): **2.33** Moisture Content (%): **4.6**
Length (mm): **152.12** Diameter (mm): **89.29** Length/Diameter Ratio: **1.70**
Test Duration (mins:secs): **09:31** Stress Rate (MPa/s): **0.0351** Load at Failure (kN): **123.9**
UCS (MPa): **19.8** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Light brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH103** Sample Ref: **2** Sample Type: **C** Depth (m) : **11.36**

Bulk Density (Mg/m^3): **2.42** Dry Density (Mg/m^3): **2.30** Moisture Content (%): **5.1**
Length (mm): **232.34** Diameter (mm): **89.63** Length/Diameter Ratio: **2.59**
Test Duration (mins:secs): **12:55** Stress Rate (MPa/s): **0.0349** Load at Failure (kN): **174.0**
UCS (MPa): **27.6** Failure Type: **Multiple fracture**

Note: **Axis of loading parallel to core axis**
Description: **Light brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH104** Sample Ref: **1** Sample Type: **C** Depth (m) : **13.62**

Bulk Density (Mg/m^3): **2.42** Dry Density (Mg/m^3): **2.30** Moisture Content (%): **5.5**
Length (mm): **232.93** Diameter (mm): **89.71** Length/Diameter Ratio: **2.60**
Test Duration (mins:secs): **09:43** Stress Rate (MPa/s): **0.0348** Load at Failure (kN): **126.1**
UCS (MPa): **20.0** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH104** Sample Ref: **2** Sample Type: **C** Depth (m) : **14.49**

Bulk Density (Mg/m^3): **2.55** Dry Density (Mg/m^3): **2.41** Moisture Content (%): **5.8**
Length (mm): **231.71** Diameter (mm): **89.77** Length/Diameter Ratio: **2.58**
Test Duration (mins:secs): **09:40** Stress Rate (MPa/s): **0.0348** Load at Failure (kN): **135.7**
UCS (MPa): **21.4** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH104** Sample Ref: **3** Sample Type: **C** Depth (m) : **15.50**

Bulk Density (Mg/m^3): **2.43** Dry Density (Mg/m^3): **2.29** Moisture Content (%): **5.9**
Length (mm): **229.11** Diameter (mm): **85.72** Length/Diameter Ratio: **2.67**
Test Duration (mins:secs): **13:17** Stress Rate (MPa/s): **0.0381** Load at Failure (kN): **174.8**
UCS (MPa): **30.3** Failure Type: **Multiple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH105** Sample Ref: **1** Sample Type: **C** Depth (m) : **15.40**

Bulk Density (Mg/m^3): **2.44** Dry Density (Mg/m^3): **2.31** Moisture Content (%): **5.6**
Length (mm): **231.01** Diameter (mm): **89.78** Length/Diameter Ratio: **2.57**
Test Duration (mins:secs): **10:30** Stress Rate (MPa/s): **0.0347** Load at Failure (kN): **145.5**
UCS (MPa): **23.0** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	**24/05/22**
Contract: **Seam Barnsley**	Job No: **765374**	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH106** Sample Ref: **1** Sample Type: **C** Depth (m) : **14.64**

Bulk Density (Mg/m^3): **2.36** Dry Density (Mg/m^3): **2.25** Moisture Content (%): **4.7**
Length (mm): **231.96** Diameter (mm): **86.03** Length/Diameter Ratio: **2.70**
Test Duration (mins:secs): **09:17** Stress Rate (MPa/s): **0.0379** Load at Failure (kN): **122.9**
UCS (MPa): **21.1** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	24/05/22

Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH106** Sample Ref: **2** Sample Type: **C** Depth (m) : **16.70**

Bulk Density (Mg/m^3): **2.39** Dry Density (Mg/m^3): **2.29** Moisture Content (%): **4.6**
Length (mm): **232.37** Diameter (mm): **85.75** Length/Diameter Ratio: **2.71**
Test Duration (mins:secs): **06:12** Stress Rate (MPa/s): **0.0381** Load at Failure (kN): **92.1**
UCS (MPa): **15.9** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.
Remarks: **PRE-EXISTING FRACTURE**



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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The Potteries
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Compiled By		Date
	LORNA WHITWORTH	24/05/22
Contract: **Seam Barnsley**	Job No: **765374**	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH106** Sample Ref: **3** Sample Type: **C** Depth (m) : **20.96**

Bulk Density (Mg/m^3): **2.46** Dry Density (Mg/m^3): **2.32** Moisture Content (%): **6.0**
Length (mm): **229.96** Diameter (mm): **86.05** Length/Diameter Ratio: **2.67**
Test Duration (mins:secs): **09:41** Stress Rate (MPa/s): **0.0378** Load at Failure (kN): **134.8**
UCS (MPa): **23.2** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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The Potteries
Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By		Date
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Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH107** Sample Ref: **1** Sample Type: **C** Depth (m) : **13.45**

Bulk Density (Mg/m^3): **2.33** Dry Density (Mg/m^3): **2.25** Moisture Content (%): **3.5**
Length (mm): **232.71** Diameter (mm): **69.88** Length/Diameter Ratio: **3.33**
Test Duration (mins:secs): **10:15** Stress Rate (MPa/s): **0.0574** Load at Failure (kN): **140.9**
UCS (MPa): **36.7** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
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Compiled By		Date
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Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH110** Sample Ref: **1** Sample Type: **C** Depth (m) : **12.66**

Bulk Density (Mg/m^3): **2.43** Dry Density (Mg/m^3): **2.34** Moisture Content (%): **3.7**
Length (mm): **231.28** Diameter (mm): **72.25** Length/Diameter Ratio: **3.20**
Test Duration (mins:secs): **11:30** Stress Rate (MPa/s): **0.0537** Load at Failure (kN): **154.4**
UCS (MPa): **37.7** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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Compiled By		Date
	LORNA WHITWORTH	24/05/22

Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH110** Sample Ref: **2** Sample Type: **C** Depth (m) : **14.55**

Bulk Density (Mg/m^3): **2.43** Dry Density (Mg/m^3): **2.30** Moisture Content (%): **5.5**
Length (mm): **231.71** Diameter (mm): **72.48** Length/Diameter Ratio: **3.20**
Test Duration (mins:secs): **07:00** Stress Rate (MPa/s): **0.0533** Load at Failure (kN): **79.9**
UCS (MPa): **19.4** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

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Compiled By		Date
	LORNA WHITWORTH	24/05/22

Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH110** Sample Ref: **3** Sample Type: **C** Depth (m) : **16.73**

Bulk Density (Mg/m^3): **2.43** Dry Density (Mg/m^3): **2.31** Moisture Content (%): **5.5**
Length (mm): **231.55** Diameter (mm): **72.29** Length/Diameter Ratio: **3.20**
Test Duration (mins:secs): **08:10** Stress Rate (MPa/s): **0.0536** Load at Failure (kN): **109.6**
UCS (MPa): **26.7** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By		Date
	LORNA WHITWORTH	24/05/22
Contract: **Seam Barnsley**	Job No: **765374**	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH111** Sample Ref: **1** Sample Type: **C** Depth (m) : **12.29**

Bulk Density (Mg/m^3): **2.38** Dry Density (Mg/m^3): **2.24** Moisture Content (%): **6.4**
Length (mm): **232.48** Diameter (mm): **86.13** Length/Diameter Ratio: **2.70**
Test Duration (mins:secs): **12:35** Stress Rate (MPa/s): **0.0378** Load at Failure (kN): **165.2**
UCS (MPa): **28.4** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
The Potteries
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Compiled By		Date
	LORNA WHITWORTH	24/05/22

Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH111** Sample Ref: **2** Sample Type: **C** Depth (m) : **13.61**

Bulk Density (Mg/m^3): **2.48** Dry Density (Mg/m^3): **2.35** Moisture Content (%): **5.5**
Length (mm): **229.97** Diameter (mm): **89.70** Length/Diameter Ratio: **2.56**
Test Duration (mins:secs): **09:53** Stress Rate (MPa/s): **0.0348** Load at Failure (kN): **127.2**
UCS (MPa): **20.1** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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Compiled By		Date
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Contract	Job No
Seam Barnsley	765374

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH112** Sample Ref: **1** Sample Type: **C** Depth (m) : **13.57**

Bulk Density (Mg/m^3): **2.52** Dry Density (Mg/m^3): **2.40** Moisture Content (%): **5.0**
Length (mm): **231.24** Diameter (mm): **81.63** Length/Diameter Ratio: **2.83**
Test Duration (mins:secs): **10:00** Stress Rate (MPa/s): **0.0631** Load at Failure (kN): **109.2**
UCS (MPa): **20.9** Failure Type: **Simple shear**

Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
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STRUCTURAL SOILS
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Compiled By		Date
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Contract: **Seam Barnsley**	Job No: **765374**	

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UNIAXIAL COMPRESSIVE STRENGTH

Preparation in accordance with ASTM D4543-19
Testing in accordance with ISRM 1974-2006

Borehole: **ABH112** Sample Ref: **2** Sample Type: **C** Depth (m) : **14.30**

Bulk Density (Mg/m^3): **2.27** Dry Density (Mg/m^3): **2.05** Moisture Content (%): **11**
Length (mm): **231.46** Diameter (mm): **84.88** Length/Diameter Ratio: **2.73**
Test Duration (mins:secs): **02:28** Stress Rate (MPa/s): **0.0389** Load at Failure (kN): **23.7**
UCS (MPa): **4.2** Failure Type: **Multiple shear**

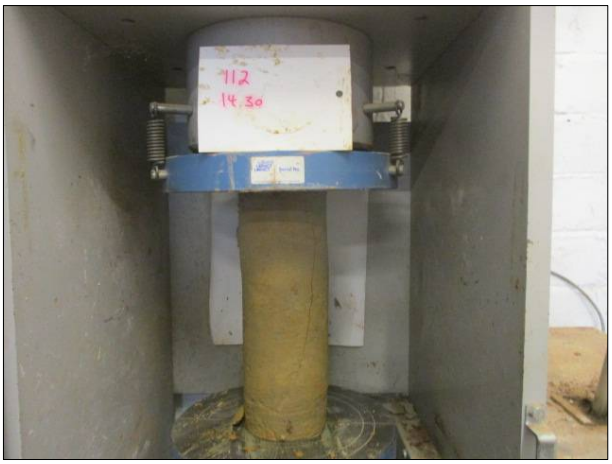
Note: **Axis of loading parallel to core axis**
Description: **Brown SANDSTONE core**
Specimen Preparation: **Specimen was not recored.**
Sample tolerance checks: Straightness: **PASS**. Flatness: **PASS**. Perpendicularity: **PASS**.



PRE-TEST FRONT



PRE-TEST BACK



POST-TEST FRONT



POST-TEST BACK

Samples delivered from site to storage facility. Samples are stored in a frost free environment, at temperatures >4°C
Compression machine: Impact CT340 2000kN Auto Compression Machine Serial No. CT340-22. SSL No. 011076

STRUCTURAL SOILS
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Compiled By		Date
	LORNA WHITWORTH	24/05/22

Contract	Job No
Seam Barnsley	765374

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/03813
Issue Number: 1 **Date:** 28 April, 2022

Client:
Structural Soils Limited (Castleford Lab)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Castleford Lab/Jessica Robertson/Luke Fisher
Project Name: Seam Barnsley
Project Ref: 765374
Order No: N/A
Date Samples Received: 13/04/22
Date Instructions Received: 21/04/22
Date Analysis Completed: 28/04/22

Approved by:

Sophie France
Client Service Manager

Envirolab Job Number: 22/03813 **Client Project Name: Seam Barnsley**

Client Project Ref: 765374

Lab Sample ID	22/03813/1	22/03813/2	22/03813/3	22/03813/4	22/03813/5	22/03813/6	22/03813/7	Units	Limit of Detection	Method ref
Client Sample No	14	20	6	6	13	4	6			
Client Sample ID	ABH101	ABH101	ABH103	ABH105	ABH106	ABH107	ABH107			
Depth to Top	2.00	4.00	1.10	1.10	2.50	0.60	1.10			
Depth To Bottom	3.00	4.45			2.95					
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	24-Mar-22	24-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6	6	6AB	6A	6	6A	6A			
% Stones >10mm$_A$	<0.1	<0.1	27.9	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D$[M#]	7.72	7.22	8.10	9.24	8.75	9.85	8.62	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$[M#]	209	234	128	1750	75	430	50	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$[M#]	0.08	0.06	0.04	0.49	0.03	0.19	0.08	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.08	0.03	0.04	0.53	0.02	0.32	0.08	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/03813 **Client Project Name: Seam Barnsley**

Client Project Ref: 765374

Lab Sample ID	22/03813/8	22/03813/9	22/03813/10	22/03813/11	22/03813/12	22/03813/13	22/03813/14	Units	Limit of Detection	Method ref
Client Sample No	4	4			4	12	19			
Client Sample ID	ABH108	ABH110	ABH110	ABH110	ABH111	ABH111	ABH111			
Depth to Top	0.50	0.70	2.00	5.50	0.60	2.50	4.20			
Depth To Bottom			2.45	6.00		2.85	4.30			
Date Sampled	29-Jan-00	28-Mar-22	28-Mar-22			25-Mar-22	25-Mar-22			
Sample Type	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	6A	6A	6	6	6A	5	6			
% Stones >10mm$_A$	<0.1	7.2	<0.1	<0.1	12.4	<0.1	<0.1	% w/w	0.1	A-T-044
pH BRE$_D$[M#]	9.33	7.96	8.04	6.05	7.89	4.92	6.92	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$[M#]	189	64	16	93	21	21	65	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$[M#]	0.13	0.11	<0.02	0.05	<0.02	<0.02	0.02	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.17	0.19	0.01	0.04	0.03	0.23	0.12	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/03813 **Client Project Name: Seam Barnsley**

Client Project Ref: 765374

Lab Sample ID	22/03813/15	22/03813/16	22/03813/17	22/03813/18	22/03813/19	22/03813/20	22/03813/21	Units	Limit of Detection	Method ref
Client Sample No	4	11	19	7	7	13	6			
Client Sample ID	ABH112	ABH112	ABH112	AWS107	AWS108	AWS108	AWS109			
Depth to Top	0.50	1.20	3.00	1.20	12.00	2.70	1.00			
Depth To Bottom			3.60	1.75	1.65	3.00				
Date Sampled					29-Mar-22	29-Mar-22				
Sample Type	Soil - D	Soil - D	Soil - D	Solid	Soil - D	Soil - D	Soil - D			
Sample Matrix Code	5A	6	6	7	6A	6	6A			
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	28.2	<0.1	20.4	% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.61	7.64	6.66	7.57	8.33	6.28	7.32	pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	175	47	88	<10	62	83	40	mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.15	<0.02	0.03	<0.02	0.03	0.02	<0.02	% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.20	0.02	0.33	<0.01	0.04	0.01	<0.01	% w/w	0.01	A-T-024s

Envirolab Job Number: 22/03813 **Client Project Name: Seam Barnsley**

Client Project Ref: 765374

Lab Sample ID	22/03813/22	22/03813/23						Units	Limit of Detection	Method ref
Client Sample No	11	5								
Client Sample ID	AWS109	AWS111								
Depth to Top	1.50	1.20								
Depth To Bottom	2.00	2.00								
Date Sampled		30-Mar-22								
Sample Type	Soil - B	Soil - D								
Sample Matrix Code	6A	6A								
% Stones >10mm$_A$	16.6	<0.1						% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.26	5.63						pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	56	265						mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	0.03	0.55						% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.02	0.35						% w/w	0.01	A-T-024s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed.
Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,
E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford Lab), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: Seam Barnsley

Clients Project No: 765374

Project No: 22/03813

Date Received: 21/04/2022 (am)

Cool Box Temperatures (°C): 10.3 & 11.0

Lab Sample ID	22/03813/1	22/03813/2	22/03813/3	22/03813/4	22/03813/5	22/03813/8	22/03813/11	22/03813/12	22/03813/13	22/03813/14	22/03813/15	22/03813/16
Client Sample No	14	20	6	6	13	4		4	12	19	4	11
Client Sample ID/Depth	ABH101 2.00-3.00m	ABH101 4.00-4.45m	ABH103 1.10m	ABH105 1.10m	ABH106 2.50-2.95m	ABH108 0.50m	ABH110 5.50-6.00m	ABH111 0.60m	ABH111 2.50-2.85m	ABH111 4.20-4.30m	ABH112 0.50m	ABH112 1.20m
Date Sampled	17/03/22	17/03/22	17/03/22	24/03/22	24/03/22	29/01/00			25/03/22	25/03/22		
Deviation Code												
E (no date)							✓	✓			✓	✓
F	✓	✓	✓	✓	✓	✓			✓	✓		

Lab Sample ID	22/03813/17	22/03813/18	22/03813/21	22/03813/22
Client Sample No	19	7	6	11
Client Sample ID/Depth	ABH112 3.00-3.60m	AWS107 1.20-1.75m	AWS109 1.00m	AWS109 1.50-2.00m
Date Sampled				
Deviation Code				
E (no date)	✓	✓	✓	✓
F				

Key

E (no date) *No sampling date provided (all results affected if not provided)*

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/03813/1	22/03813/2	22/03813/3	22/03813/4	22/03813/5	22/03813/8	22/03813/13	22/03813/14
Client Sample No	14	20	6	6	13	4	12	19
Client Sample ID/Depth	ABH101 2.00-3.00m	ABH101 4.00-4.45m	ABH103 1.10m	ABH105 1.10m	ABH106 2.50-2.95m	ABH108 0.50m	ABH111 2.50-2.85m	ABH111 4.20-4.30m
Date Sampled	17/03/22	17/03/22	17/03/22	24/03/22	24/03/22	29/01/00	25/03/22	25/03/22
Sulphate BRE (water sol 2:1)	✓	✓	✓	✓	✓	✓	✓	✓

Lab Sample ID	22/03813/1	22/03813/2	22/03813/3	22/03813/4	22/03813/5	22/03813/8	22/03813/13	22/03813/14
Client Sample No	14	20	6	6	13	4	12	19
Client Sample ID/Depth	ABH101 2.00-3.00m	ABH101 4.00-4.45m	ABH103 1.10m	ABH105 1.10m	ABH106 2.50-2.95m	ABH108 0.50m	ABH111 2.50-2.85m	ABH111 4.20-4.30m
Date Sampled	17/03/22	17/03/22	17/03/22	24/03/22	24/03/22	29/01/00	25/03/22	25/03/22
Sulphate BRE (acid sol)	✓	✓	✓	✓	✓	✓	✓	✓
Sulphur BRE (total)						✓		
pH BRE						✓		

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/03813/1	22/03813/2	22/03813/3	22/03813/4	22/03813/5	22/03813/6	22/03813/7	22/03813/8	22/03813/9	22/03813/10	22/03813/11	22/03813/12
Client Sample No	14	20	6	6	13	4	6	4	4			4
Client Sample ID/Depth	ABH101 2.00-3.00m	ABH101 4.00-4.45m	ABH103 1.10m	ABH105 1.10m	ABH106 2.50-2.95m	ABH107 0.60m	ABH107 1.10m	ABH108 0.50m	ABH110 0.70m	ABH110 2.00-2.45m	ABH110 5.50-6.00m	ABH111 0.60m
Date Sampled	17/03/22	17/03/22	17/03/22	24/03/22	24/03/22	29/03/22	29/03/22	29/01/00	28/03/22	28/03/22		
A-T-024s	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022
A-T-026s	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022
A-T-028s	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022
A-T-031s	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022
A-T-044	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022

Lab Sample ID	22/03813/13	22/03813/14	22/03813/15	22/03813/16	22/03813/17	22/03813/18	22/03813/19	22/03813/20	22/03813/21	22/03813/22	22/03813/23
Client Sample No	12	19	4	11	19	7	7	13	6	11	5
Client Sample ID/Depth	ABH111 2.50-2.85m	ABH111 4.20-4.30m	ABH112 0.50m	ABH112 1.20m	ABH112 3.00-3.60m	AWS107 1.20-1.75m	AWS108 12.00-1.65m	AWS108 2.70-3.00m	AWS109 1.00m	AWS109 1.50-2.00m	AWS111 1.20-2.00m
Date Sampled	25/03/22	25/03/22					29/03/22	29/03/22			30/03/22
A-T-024s	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022	27/04/2022
A-T-026s	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022
A-T-028s	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022	28/04/2022
A-T-031s	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022
A-T-044	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022	26/04/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/04203
Issue Number: 1 **Date:** 05 May, 2022

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: Luke Fisher
Project Name: Seam Barnsley
Project Ref: 765374
Order No: N/A
Date Samples Received: 29/04/22
Date Instructions Received: 29/04/22
Date Analysis Completed: 05/05/22

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 22/04203

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/04203/1	22/04203/2	22/04203/3					Units	Limit of Detection	Method ref
Client Sample No	25	20	28							
Client Sample ID	ABH106	ABH104	ABH104							
Depth to Top	7.00	3.00	5.00							
Depth To Bottom		3.45	5.45							
Date Sampled	27-Mar-22	15-Mar-22	15-Mar-22							
Sample Type	Soil - D	Soil - D	Soil - D							
Sample Matrix Code	6A	6A	6A							
% Stones >10mm$_A$	3.2	<0.1	<0.1					% w/w	0.1	A-T-044
pH BRE$_D$$^{M\#}$	7.96	8.43	8.06					pH	0.01	A-T-031s
Sulphate BRE (water sol 2:1)$_D$$^{M\#}$	48	49	34					mg/l	10	A-T-026s
Sulphate BRE (acid sol)$_D$$^{M\#}$	<0.02	<0.02	<0.02					% w/w	0.02	A-T-028s
Sulphur BRE (total)$_D$	0.03	0.01	<0.01					% w/w	0.01	A-T-024s

REPORT NOTES

General

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The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: Seam Barnsley

Clients Project No: 765374

Project No: 22/04203

Date Received: 29/04/2022 (am)

Cool Box Temperatures (°C): 7.2

Lab Sample ID	22/04203/1	22/04203/2	22/04203/3
Client Sample No	25	20	28
Client Sample ID/Depth	ABH106 7.00m	ABH104 3.00-3.45m	ABH104 5.00-5.45m
Date Sampled	27/03/22	15/03/22	15/03/22
Deviation Code			
F	✓	✓	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/04203/1	22/04203/2	22/04203/3
Client Sample No	25	20	28
Client Sample ID/Depth	ABH106 7.00m	ABH104 3.00-3.45m	ABH104 5.00-5.45m
Date Sampled	27/03/22	15/03/22	15/03/22
Sulphate BRE (water sol 2:1)	✓	✓	✓
Sulphate BRE (acid sol)	✓	✓	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/04203/1	22/04203/2	22/04203/3
Client Sample No	25	20	28
Client Sample ID/Depth	ABH106 7.00m	ABH104 3.00-3.45m	ABH104 5.00-5.45m
Date Sampled	27/03/22	15/03/22	15/03/22
A-T-024s	05/05/2022	05/05/2022	05/05/2022
A-T-026s	05/05/2022	05/05/2022	05/05/2022
A-T-028s	04/05/2022	04/05/2022	04/05/2022
A-T-031s	04/05/2022	04/05/2022	04/05/2022
A-T-044	04/05/2022	04/05/2022	04/05/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX E - GEOENVIRONMENTAL TESTING

(i) Laboratory Test Results

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/03106
Issue Number: 1 **Date:** 26 April, 2022

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: John McCarthy
Project Name: Seam Barnsley
Project Ref: 765374
Order No: N/A
Date Samples Received: 18/03/22
Date Instructions Received: 31/03/22
Date Analysis Completed: 26/04/22

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
% Moisture at <40C$_A$	-	9.9	-	10.5	-	10.1	-	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D$ M#	8.20	9.05	7.97	8.71	-	8.01	-	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$ M#	-	0.05	-	0.03	-	0.37	-	g/l	0.01	A-T-026s
Cyanide (total)$_A$ M#	-	<1	-	<1	-	<1	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	-	<0.2	-	<0.2	-	mg/kg	0.2	A-T-050s
Organic matter Default$_D$ M#	-	4.1	-	4.8	-	NDP	-	% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D$ M#	2.20	2.39	13.9	2.79	-	NDP	-	% w/w	0.03	A-T-032s
Arsenic$_D$ M#	-	7	-	2	-	18	-	mg/kg	1	A-T-024s
Cadmium$_D$ M#	-	1.1	-	1.1	-	1.3	-	mg/kg	0.5	A-T-024s
Copper$_D$ M#	-	48	-	31	-	142	-	mg/kg	1	A-T-024s
Chromium$_D$ M#	-	22	-	20	-	32	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	-	<1	-	<1	-	mg/kg	1	A-T-040s
Lead$_D$ M#	-	48	-	26	-	168	-	mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	-	<0.17	-	0.36	-	mg/kg	0.17	A-T-024s
Nickel$_D$ M#	-	29	-	28	-	20	-	mg/kg	1	A-T-024s
Selenium$_D$ M#	-	<1	-	<1	-	<1	-	mg/kg	1	A-T-024s
Zinc$_D$ M#	-	77	-	73	-	95	-	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	-	-	-	-	*	-	*			A-T-001
pH (leachable)$_A$ #	-	-	-	-	7.47	-	8.53	pH	0.01	A-T-031w
Sulphate (leachable)$_A$ #	-	-	-	-	9.73	-	22.05	mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A$ #	-	-	-	-	<0.005	-	<0.005	mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A$ #	-	-	-	-	2	-	7	µg/l	1	A-T-025w
Cadmium (leachable)$_A$ #	-	-	-	-	<1	-	<1	µg/l	1	A-T-025w
Copper (leachable)$_A$ #	-	-	-	-	10	-	22	µg/l	1	A-T-025w
Chromium (leachable)$_A$ #	-	-	-	-	<1	-	<1	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	-	-	-	-	<0.05	-	<0.05	mg/l	0.05	A-T-040w
Lead (leachable)$_A$ #	-	-	-	-	10	-	37	µg/l	1	A-T-025w
Mercury (leachable)$_A$ #	-	-	-	-	<0.1	-	<0.1	µg/l	0.1	A-T-025w
Nickel (leachable)$_A$ #	-	-	-	-	1	-	4	µg/l	1	A-T-025w
Selenium (leachable)$_A$ #	-	-	-	-	<1	-	2	µg/l	1	A-T-025w
Zinc (leachable)$_A$ #	-	-	-	-	6	-	10	µg/l	1	A-T-025w

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	-	NAD	-	NAD	-	Amosite	-			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	Loose fibres	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	N/A	-	N/A	-	N/A	-			A-T-045
Asbestos in Soil Quantification % (Hand Picking & Weighing)										
Asbestos in soil % composition (hand picking and weighing)$_{D}$	-	-	-	-	-	<0.001	-	% w/w	0.001	A-T-054

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	0.43	-	0.70	-	24.1	-	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	0.09	-	0.04	-	0.60	-	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	0.78	-	0.63	-	17.4	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	1.44	-	1.03	-	16.5	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	1.37	-	1.02	-	15.2	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	1.49	-	1.14	-	19.5	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.70	-	0.55	-	9.19	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	0.54	-	0.41	-	7.02	-	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	1.47	-	1.09	-	19.4	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	0.16	-	0.11	-	1.69	-	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	3.90	-	3.02	-	51.8	-	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	0.34	-	0.64	-	11.2	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	0.89	-	0.66	-	10.8	-	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	0.13	-	4.02	-	6.67	-	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	3.23	-	3.30	-	58.2	-	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	3.51	-	2.50	-	43.8	-	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	20.5	-	20.9	-	313	-	mg/kg	0.01	A-T-019s

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	-	-	-	0.04	-	0.73	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	-	-	-	<0.02	-	0.05	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	-	-	-	<0.02	-	0.26	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	-	-	-	<0.02	-	0.12	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	-	-	-	<0.02	-	0.08	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	-	-	-	<0.02	-	0.09	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	-	-	-	<0.02	-	0.04	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	-	-	-	<0.02	-	0.03	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	-	-	-	0.02	-	0.17	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	-	-	-	<0.02	-	<0.02	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	-	-	-	0.11	-	1.04	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	-	-	-	<0.02	-	0.28	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	-	-	-	<0.02	-	0.02	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	-	-	-	0.06	-	0.03	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	-	-	-	0.08	-	0.55	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	-	-	-	0.11	-	0.89	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	-	-	-	0.42	-	4.38	µg/l	0.02	A-T-019w

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	3	-	2	-	<10	-	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	1	-	8	-	<10	-	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	2	-	2	-	14	-	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	3	-	3	-	19	-	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	34	-	48	-	87	-	mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	44	-	64	-	120	-	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	2	-	3	-	<10	-	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	3	-	84	-	44	-	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	19	-	30	-	320	-	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	46	-	36	-	812	-	mg/kg	1	A-T-055s
Aro >C21-C35$_A$	-	107	-	51	-	1070	-	mg/kg	1	A-T-055s
Total Aromatics$_A$	-	176	-	204	-	2250	-	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	221	-	268	-	2370	-	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	-	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	Units	Limit of Detection	Method ref
Client Sample No	103	103	104	102	104	103	103			
Client Sample ID	ABH101	ABH103	ABH103	ABH104	ABH104	ATP102-SA	ATP108-SA			
Depth to Top	0.90	1.10	2.50	0.50	0.90	1.00	0.80			
Depth To Bottom										
Date Sampled	17-Mar-22	17-Mar-22	17-Mar-22	15-Mar-22	15-Mar-22	17-Mar-22	16-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4AB	6A	4A	4A	4A			
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	-	-	-	-	<10	-	<10	µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	-	-	-	-	<10	-	<10	µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	-	-	-	-	19	-	<10	µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	-	-	-	-	24	-	<10	µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	-	-	-	-	101	-	<20	µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	-	-	-	-	144	-	<20	µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	-	-	-	-	<10	-	<10	µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	-	-	-	-	11	-	<10	µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	-	-	-	-	16	-	<10	µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	-	-	-	-	17	-	<10	µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	-	-	-	-	66	-	<20	µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	-	-	-	-	210	-	<20	µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
MTBE (leachable)$_A$	-	-	-	-	<1	-	<1	µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	-	-	-	-	22	-	<20	µg/l	20	A-T-055w

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
% Moisture at <40C$_A$	8.5	5.5	-	14.8	-	9.7		% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044
pH$_D^{M\#}$	9.55	8.76	8.76	8.62	-	8.37		pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.14	1.68	-	0.05	-	0.23		g/l	0.01	A-T-026s
Cyanide (total)$_A^{M\#}$	<1	<1	-	<1	-	<1		mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	-	<0.2	-	<0.2		mg/kg	0.2	A-T-050s
Organic matter Default$_D^{M\#}$	24.4	20.4	-	NDP	-	1.7		% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D^{M\#}$	14.2	11.8	17.5	NDP	-	0.97		% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	16	3	-	35	-	5		mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	1.3	1.0	-	3.2	-	2.5		mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	40	64	-	221	-	48		mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	15	64	-	22	-	29		mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	-	<1	-	<1		mg/kg	1	A-T-040s
Lead$_D^{M\#}$	52	125	-	252	-	26		mg/kg	1	A-T-024s
Mercury$_D$	1.87	0.89	-	0.60	-	<0.17		mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	11	22	-	27	-	44		mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	1	1	-	<1	-	<1		mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	95	78	-	291	-	97		mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	-	-	-	-	*	-				A-T-001
pH (leachable)$_A^{\#}$	-	-	-	-	8.11	-		pH	0.01	A-T-031w
Sulphate (leachable)$_A^{\#}$	-	-	-	-	20.6	-		mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A^{\#}$	-	-	-	-	<0.005	-		mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A^{\#}$	-	-	-	-	6	-		µg/l	1	A-T-025w
Cadmium (leachable)$_A^{\#}$	-	-	-	-	<1	-		µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	-	-	-	-	262	-		µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	-	-	-	-	6	-		µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	-	-	-	-	<0.05	-		mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	-	-	-	-	329	-		µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	-	-	-	-	<0.1	-		µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	-	-	-	-	14	-		µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	-	-	-	-	2	-		µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	-	-	-	-	111	-		µg/l	1	A-T-025w

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	-	Amosite	-	NAD				A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-				A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	Board	-	-				A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	-	No	-	N/A				A-T-045

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
PAH-16MS										
Acenaphthene$_A^{M\#}$	1.27	65.8	-	0.67	-	0.52		mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.10	2.40	-	0.22	-	0.01		mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	1.92	77.8	-	2.03	-	0.43		mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	5.48	166	-	10.8	-	0.74		mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	4.52	104	-	10.6	-	0.61		mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	5.15	123	-	12.5	-	0.75		mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	2.26	60.6	-	5.00	-	0.33		mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	2.12	46.7	-	4.58	-	0.30		mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	5.80	253	-	9.24	-	0.75		mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.44	12.7	-	1.01	-	0.07		mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	11.8	430	-	18.2	-	1.58		mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.96	57.9	-	0.49	-	0.31		mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	2.67	67.7	-	6.27	-	0.38		mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	0.54	13.5	-	0.45	-	0.30		mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	8.35	610	-	6.88	-	1.77		mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	10.3	382	-	18.2	-	1.34		mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	63.7	2470	-	107	-	10.2		mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	-	-	-	0.03	-		µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	-	-	-	0.08	-		µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	-	-	-	0.27	-		µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	-	-	-	0.35	-		µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	-	-	-	0.36	-		µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	-	-	-	0.27	-		µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	-	-	-	0.13	-		µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	-	-	-	0.31	-		µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	-	-	-	0.08	-		µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	-	-	-	0.49	-		µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	-	-	-	0.26	-		µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	-	-	-	<0.02	-		µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	-	-	-	0.23	-		µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	-	-	-	0.50	-		µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	-	-	-	3.36	-		µg/l	0.02	A-T-019w

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	1	<50	-	5	-	<1		mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	1	<50	-	4	-	<1		mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	3	<50	-	5	-	1		mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	4	65	-	7	-	1		mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	92	369	-	137	-	4		mg/kg	1	A-T-055s
Total Aliphatics$_A$	102	434	-	157	-	7		mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	1	<50	-	4	-	<1		mg/kg	1	A-T-055s
Aro >C10-C12$_A$	3	57	-	5	-	1		mg/kg	1	A-T-055s
Aro >C12-C16$_A$	27	903	-	19	-	27		mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	80	3850	-	67	-	103		mg/kg	1	A-T-055s
Aro >C21-C35$_A$	155	6330	-	273	-	165		mg/kg	1	A-T-055s
Total Aromatics$_A$	267	11100	-	367	-	296		mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	368	11500	-	525	-	302		mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	-	<0.01	-	<0.01		mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/03106

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38	22/03106/39		Units	Limit of Detection	Method ref
Client Sample No	103	101	102	102	103	103				
Client Sample ID	ABH106	ABH112	ABH112	ABH105	ABH105	ABH105				
Depth to Top	1.00	0.15	0.50	0.80	1.40	1.50				
Depth To Bottom										
Date Sampled	24-Mar-22	18-Mar-22	18-Mar-22	24-Mar-22	17-Mar-22	24-Mar-22				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	4A	4A	4A	4A	5A	5A				
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	-	-	-	-	2	-		µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	-	-	-	-	86	-		µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	-	-	-	-	88	-		µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	-	-	-	-	<10	-		µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	-	-	-	-	15	-		µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	-	-	-	-	60	-		µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	-	-	-	-	148	-		µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
MTBE (leachable)$_A$	-	-	-	-	<1	-		µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	-	-	-	-	45	-		µg/l	20	A-T-055w

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: Seam Barnsley

Clients Project No: 765374

Project No: 22/03106

Date Received: 31/03/2022 (am)

Cool Box Temperatures (°C): 6.4 - 9.2

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/17	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/39
Client Sample No	103	103	104	102	103	103	101	102	102	103
Client Sample ID/Depth	ABH101 0.90m	ABH103 1.10m	ABH103 2.50m	ABH104 0.50m	ATP102-SA 1.00m	ABH106 1.00m	ABH112 0.15m	ABH112 0.50m	ABH105 0.80m	ABH105 1.50m
Date Sampled	17/03/22	17/03/22	17/03/22	15/03/22	17/03/22	24/03/22	18/03/22	18/03/22	24/03/22	24/03/22
Deviation Code										
F	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Key

F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/17	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/39
Client Sample No	103	103	104	102	103	103	101	102	102	103
Client Sample ID/Depth	ABH101 0.90m	ABH103 1.10m	ABH103 2.50m	ABH104 0.50m	ATP102-SA 1.00m	ABH106 1.00m	ABH112 0.15m	ABH112 0.50m	ABH105 0.80m	ABH105 1.50m
Date Sampled	17/03/22	17/03/22	17/03/22	15/03/22	17/03/22	24/03/22	18/03/22	18/03/22	24/03/22	24/03/22
Total Organic Carbon	✓		✓	✓			✓	✓		
PAH (total 17)	✓		✓					✓		
BTEX (total)	✓		✓					✓		
PAH-16MS		✓		✓	✓		✓			
VPHCWG		✓		✓	✓		✓			
Cyanide (total)		✓		✓	✓	✓	✓		✓	✓
Organic matter Default				✓			✓			
Sulphate (water sol 2:1)							✓			

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/03106/3	22/03106/7	22/03106/8	22/03106/10	22/03106/12	22/03106/17	22/03106/25	22/03106/32	22/03106/34	22/03106/35	22/03106/37	22/03106/38
Client Sample No	103	103	104	102	104	103	103	103	101	102	102	103
Client Sample ID/Depth	ABH101 0.90m	ABH103 1.10m	ABH103 2.50m	ABH104 0.50m	ABH104 0.90m	ATP102-SA 1.00m	ATP108-SA 0.80m	ABH106 1.00m	ABH112 0.15m	ABH112 0.50m	ABH105 0.80m	ABH105 1.40m
Date Sampled	17/03/22	17/03/22	17/03/22	15/03/22	15/03/22	17/03/22	16/03/22	24/03/22	18/03/22	18/03/22	24/03/22	17/03/22
A-T-004s	14/04/2022		14/04/2022							11/04/2022	11/04/2022	
A-T-007s	19/04/2022		19/04/2022							11/04/2022	11/04/2022	
A-T-019s	19/04/2022	11/04/2022	19/04/2022	11/04/2022		11/04/2022		11/04/2022	11/04/2022	11/04/2022	11/04/2022	
A-T-019w					07/04/2022		07/04/2022					14/04/2022
A-T-022s	14/04/2022	12/04/2022	14/04/2022	12/04/2022		12/04/2022		11/04/2022	11/04/2022	11/04/2022	11/04/2022	
A-T-022w					07/04/2022		07/04/2022					13/04/2022
A-T-024s		13/04/2022		13/04/2022		13/04/2022		19/04/2022	19/04/2022		19/04/2022	
A-T-025w	25/04/2022		25/04/2022		13/04/2022		13/04/2022			25/04/2022	25/04/2022	21/04/2022
A-T-026s		12/04/2022		12/04/2022		12/04/2022		21/04/2022	21/04/2022		21/04/2022	
A-T-026w	25/04/2022		25/04/2022		08/04/2022		08/04/2022			25/04/2022	25/04/2022	26/04/2022
A-T-030s	14/04/2022		14/04/2022							21/04/2022	08/04/2022	
A-T-031s	20/04/2022	12/04/2022	20/04/2022	12/04/2022		12/04/2022		20/04/2022	20/04/2022	20/04/2022	19/04/2022	
A-T-031w	25/04/2022		25/04/2022		08/04/2022		08/04/2022			25/04/2022	25/04/2022	14/04/2022
A-T-032 OM		13/04/2022		13/04/2022		07/04/2022		20/04/2022	20/04/2022		08/04/2022	
A-T-032s	20/04/2022	13/04/2022	20/04/2022	13/04/2022		07/04/2022		20/04/2022	20/04/2022	21/04/2022	08/04/2022	
A-T-032w	25/04/2022		25/04/2022							25/04/2022	25/04/2022	
A-T-037w	25/04/2022		25/04/2022							25/04/2022	25/04/2022	
A-T-040s		12/04/2022		12/04/2022		12/04/2022		21/04/2022	21/04/2022		21/04/2022	
A-T-040w					08/04/2022		08/04/2022					14/04/2022
A-T-042sTCN		19/04/2022		19/04/2022		19/04/2022		14/04/2022	08/04/2022		08/04/2022	
A-T-042wTCN					09/04/2022		09/04/2022					19/04/2022
A-T-044	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
A-T-045		06/04/2022		06/04/2022		06/04/2022		08/04/2022	08/04/2022		08/04/2022	
A-T-050s		09/04/2022		09/04/2022		09/04/2022		09/04/2022	09/04/2022		09/04/2022	
A-T-050w	25/04/2022		25/04/2022							25/04/2022	25/04/2022	
A-T-054						11/04/2022						
A-T-055s		12/04/2022		12/04/2022		12/04/2022		11/04/2022	11/04/2022		11/04/2022	
A-T-055w					08/04/2022		08/04/2022					19/04/2022
A-T-ANCs	20/04/2022		20/04/2022							20/04/2022	19/04/2022	
Calc-no stones	25/04/2022		25/04/2022							25/04/2022	25/04/2022	
Probe (w)	25/04/2022		25/04/2022							25/04/2022	25/04/2022	

Lab Sample ID	22/03106/39
Client Sample No	103
Client Sample ID/Depth	ABH105 1.50m
Date Sampled	24/03/22
A-T-004s	
A-T-007s	
A-T-019s	11/04/2022
A-T-019w	
A-T-022s	11/04/2022
A-T-022w	
A-T-024s	19/04/2022
A-T-025w	
A-T-026s	21/04/2022
A-T-026w	
A-T-030s	
A-T-031s	20/04/2022
A-T-031w	
A-T-032 OM	20/04/2022
A-T-032s	20/04/2022
A-T-032w	
A-T-037w	
A-T-040s	21/04/2022
A-T-040w	
A-T-042sTCN	08/04/2022
A-T-042wTCN	
A-T-044	12/04/2022
A-T-045	08/04/2022
A-T-050s	09/04/2022
A-T-050w	
A-T-054	
A-T-055s	11/04/2022
A-T-055w	
A-T-ANCs	
Calc-no stones	
Probe (w)	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/03290
Issue Number: 1 **Date:** 25 April, 2022

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK
WF10 1NJ

Project Manager: John McCarthy
Project Name: Seam Barnsley
Project Ref: 765374
Order No: N/A
Date Samples Received: 30/03/22
Date Instructions Received: 06/04/22
Date Analysis Completed: 25/04/22

Approved by:



Sophie France
Client Service Manager

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
% Moisture at <40C$_A$	16.0	-	15.8	14.2	-	6.8	17.5	% w/w	0.1	A-T-044
% Stones >10mm$_A$	<0.1	15.0	<0.1	5.3	<0.1	26.5	16.0	% w/w	0.1	A-T-044
pH$_D$$^{M\#}$	7.39	-	7.97	7.73	-	9.70	8.91	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D$$^{M\#}$	1.77	-	0.07	0.07	-	0.21	0.13	g/l	0.01	A-T-026s
Cyanide (total)$_A$$^{M\#}$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	-	<0.2	<0.2	-	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic matter Default$_D$$^{M\#}$	38.2	-	8.4	58.3	-	8.4	3.9	% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D$$^{M\#}$	22.1	-	4.85	33.8	-	4.87	2.25	% w/w	0.03	A-T-032s
Arsenic$_D$$^{M\#}$	83	-	31	42	-	3	4	mg/kg	1	A-T-024s
Cadmium$_D$$^{M\#}$	3.9	-	6.7	2.9	-	1.0	1.6	mg/kg	0.5	A-T-024s
Copper$_D$$^{M\#}$	196	-	493	205	-	34	30	mg/kg	1	A-T-024s
Chromium$_D$$^{M\#}$	30	-	134	24	-	25	109	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	-	<1	<1	-	<1	<1	mg/kg	1	A-T-040s
Lead$_D$$^{M\#}$	462	-	2660	289	-	69	65	mg/kg	1	A-T-024s
Mercury$_D$	0.83	-	<0.17	0.76	-	1.59	1.35	mg/kg	0.17	A-T-024s
Nickel$_D$$^{M\#}$	52	-	53	46	-	15	27	mg/kg	1	A-T-024s
Selenium$_D$$^{M\#}$	2	-	<1	2	-	<1	<1	mg/kg	1	A-T-024s
Zinc$_D$$^{M\#}$	315	-	1100	205	-	94	105	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	-	*	-	-	*	-	-			A-T-001
pH (leachable)$_A$$^{\#}$	-	7.41	-	-	7.56	-	-	pH	0.01	A-T-031w
Sulphate (leachable)$_A$$^{\#}$	-	15.58	-	-	5.43	-	-	mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A$$^{\#}$	-	<0.005	-	-	0.016	-	-	mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A$$^{\#}$	-	2	-	-	13	-	-	µg/l	1	A-T-025w
Cadmium (leachable)$_A$$^{\#}$	-	<1	-	-	<1	-	-	µg/l	1	A-T-025w
Copper (leachable)$_A$$^{\#}$	-	5	-	-	21	-	-	µg/l	1	A-T-025w
Chromium (leachable)$_A$$^{\#}$	-	<1	-	-	6	-	-	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	-	<0.05	-	-	<0.05	-	-	mg/l	0.05	A-T-040w
Lead (leachable)$_A$$^{\#}$	-	4	-	-	13	-	-	µg/l	1	A-T-025w
Mercury (leachable)$_A$$^{\#}$	-	<0.1	-	-	<0.1	-	-	µg/l	0.1	A-T-025w
Nickel (leachable)$_A$$^{\#}$	-	<1	-	-	<1	-	-	µg/l	1	A-T-025w
Selenium (leachable)$_A$$^{\#}$	-	<1	-	-	<1	-	-	µg/l	1	A-T-025w
Zinc (leachable)$_A$$^{\#}$	-	6	-	-	10	-	-	µg/l	1	A-T-025w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	-	NAD	NAD	-	NAD	NAD			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	-	N/A	N/A	-	N/A	N/A			A-T-045

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
PAH-16MS										
Acenaphthene$_{A}^{M\#}$	0.44	-	0.05	0.79	-	0.20	0.01	mg/kg	0.01	A-T-019s
Acenaphthylene$_{A}^{M\#}$	0.13	-	0.04	0.33	-	0.05	<0.01	mg/kg	0.01	A-T-019s
Anthracene$_{A}^{M\#}$	1.62	-	0.13	2.94	-	0.57	<0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_{A}^{M\#}$	9.80	-	0.57	6.94	-	2.09	0.06	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_{A}^{M\#}$	7.60	-	0.63	4.88	-	1.60	0.05	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_{A}^{M\#}$	7.80	-	0.68	5.56	-	1.47	<0.05	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_{A}^{M\#}$	4.86	-	0.50	2.08	-	1.01	<0.05	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_{A}^{M\#}$	3.33	-	0.23	2.14	-	0.54	<0.07	mg/kg	0.07	A-T-019s
Chrysene$_{A}^{M\#}$	9.18	-	0.59	5.77	-	1.70	<0.06	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_{A}^{M\#}$	0.81	-	0.08	0.57	-	0.19	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene$_{A}^{M\#}$	26.1	-	0.95	13	-	3.90	0.11	mg/kg	0.08	A-T-019s
Fluorene$_{A}^{M\#}$	0.30	-	0.04	0.87	-	0.17	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_{A}^{M\#}$	5.46	-	0.57	2.64	-	1.18	<0.03	mg/kg	0.03	A-T-019s
Naphthalene $_{A}^{M\#}$	0.42	-	0.10	1.47	-	0.62	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene$_{A}^{M\#}$	8.18	-	0.61	10.7	-	1.94	0.09	mg/kg	0.03	A-T-019s
Pyrene$_{A}^{M\#}$	24	-	0.75	10.6	-	3.65	0.10	mg/kg	0.07	A-T-019s
Total PAH-16MS$_{A}^{M\#}$	110	-	6.52	71.3	-	20.9	0.42	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	0.03	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	0.04	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	<0.02	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	0.03	-	-	<0.02	-	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	0.10	-	-	<0.02	-	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	-	<0.01	<0.15	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	1	-	<1	11	-	<10	<1	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	1	-	<1	7	-	<10	<1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	4	-	<1	13	-	<10	<1	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	5	-	1	14	-	<10	<1	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	123	-	24	18	-	1030	5	mg/kg	1	A-T-055s
Total Aliphatics$_A$	133	-	25	63	-	1030	5	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	2	-	<1	9	-	<10	1	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	2	-	<1	11	-	<10	<1	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	10	-	4	49	-	13	1	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	69	-	8	109	-	70	<1	mg/kg	1	A-T-055s
Aro >C21-C35$_A$	265	-	37	246	-	477	3	mg/kg	1	A-T-055s
Total Aromatics$_A$	349	-	49	424	-	560	5	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	482	-	74	487	-	1590	10	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	-	<0.01	<0.05	-	<0.01	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	Units	Limit of Detection	Method ref
Client Sample No	101	102	101	102	103	102	102			
Client Sample ID	ATP104	ATP104	ABH110	ABH110	ABH110	ABH108	AWS106			
Depth to Top	0.50	1.00	0.20	0.70	0.90	0.50	0.50			
Depth To Bottom										
Date Sampled	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	28-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4AB	4AE	4A	4A	4A	6A			
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	-	<20	-	-	<20	-	-	µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	-	<20	-	-	<20	-	-	µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	-	<10	-	-	<10	-	-	µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	-	<20	-	-	<20	-	-	µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	-	<20	-	-	<20	-	-	µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
MTBE (leachable)$_A$	-	<1	-	-	<1	-	-	µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	-	<20	-	-	<20	-	-	µg/l	20	A-T-055w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
% Moisture at <40C$_A$	-	16.2	13.9	-	10.4	18.4	18.8	% w/w	0.1	A-T-044
% Stones >10mm$_A$	32.6	<0.1	10.5	42.7	43.8	<0.1	<0.1	% w/w	0.1	A-T-044
pH$_D^{M\#}$	-	8.09	7.57	8.10	8.47	7.96	7.60	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	0.02	0.02	-	0.03	0.05	0.13	g/l	0.01	A-T-026s
Cyanide (total)$_A^{M\#}$	-	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	<0.2	-	<0.2	<0.2	<0.2	mg/kg	0.2	A-T-050s
Organic matter Default$_D^{M\#}$	-	46.7	20.3	-	22.4	16.7	37.7	% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D^{M\#}$	-	27.1	11.8	0.50	13	9.67	21.9	% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	-	41	22	-	35	33	21	mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	-	3.1	1.7	-	1.2	2.5	1.6	mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	-	383	116	-	78	139	223	mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	-	35	17	-	13	43	20	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1	-	<1	<1	<1	mg/kg	1	A-T-040s
Lead$_D^{M\#}$	-	189	81	-	104	464	157	mg/kg	1	A-T-024s
Mercury$_D$	-	1.63	<0.17	-	0.80	3.04	0.67	mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	-	48	34	-	17	31	33	mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	-	2	<1	-	1	1	2	mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	-	159	67	-	103	381	124	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	*	-	-	-	-	-	-			A-T-001
pH (leachable)$_A^{\#}$	7.28	-	-	-	-	-	-	pH	0.01	A-T-031w
Sulphate (leachable)$_A^{\#}$	410.92	-	-	-	-	-	-	mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A^{\#}$	<0.005	-	-	-	-	-	-	mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A^{\#}$	1	-	-	-	-	-	-	µg/l	1	A-T-025w
Cadmium (leachable)$_A^{\#}$	<1	-	-	-	-	-	-	µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	2	-	-	-	-	-	-	µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	<1	-	-	-	-	-	-	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-	-	-	-	-	-	mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	<1	-	-	-	-	-	-	µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	<0.1	-	-	-	-	-	-	µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	<1	-	-	-	-	-	-	µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	<1	-	-	-	-	-	-	µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	3	-	-	-	-	-	-	µg/l	1	A-T-025w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	-	NAD	NAD	-	NAD	NAD	NAD			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	N/A	N/A	-	N/A	N/A	N/A			A-T-045

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	0.06	0.03	-	0.53	0.43	0.15	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	0.06	0.03	-	0.22	0.21	0.10	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	0.24	0.11	-	1.93	1.30	0.55	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.85	0.30	-	8.77	4.58	1.90	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.62	0.22	-	6.44	3.66	1.39	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	0.75	0.27	-	6.12	3.91	1.56	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	0.35	0.12	-	3.73	2.38	0.76	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	0.25	0.11	-	2.29	1.34	0.52	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	0.85	0.31	-	7.03	4.24	1.77	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	0.08	<0.04	-	0.75	0.48	0.16	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	1.46	0.51	-	14.5	9.14	4.03	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	0.07	0.04	-	0.34	0.33	0.14	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	0.41	0.14	-	4.81	2.77	0.92	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	0.99	0.38	-	0.72	0.96	0.43	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	1.43	0.65	-	6.65	5.33	2.52	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	1.30	0.43	-	13.4	8.25	3.62	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	9.77	3.65	-	78.2	49.3	20.5	mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	0.05	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	0.04	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	<0.02	-	-	-	-	-	-	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	0.09	-	-	-	-	-	-	µg/l	0.02	A-T-019w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.05	<0.05	-	<0.15	<0.05	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	5	2	-	7	6	4	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	2	<1	-	4	4	1	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	5	2	-	8	6	4	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	6	2	-	9	7	5	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	33	8	-	55	97	38	mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	51	15	-	82	120	52	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	5	2	-	6	7	5	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	6	2	-	7	10	5	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	18	6	-	27	36	16	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	31	9	-	108	135	41	mg/kg	1	A-T-055s
Aro >C21-C35$_A$	-	78	22	-	437	575	161	mg/kg	1	A-T-055s
Total Aromatics$_A$	-	137	42	-	585	762	228	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	189	56	-	665	882	280	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.05	<0.05	-	<0.05	<0.05	<0.01	mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36	22/03290/40	22/03290/41	Units	Limit of Detection	Method ref
Client Sample No	103	101	102	103	101	101	102			
Client Sample ID	AWS106	AWS101	AWS101	AWS101	AWS107	AWS111	AWS111			
Depth to Top	1.00	0.40	1.00	2.65	0.80	0.30	1.00			
Depth To Bottom				3.00						
Date Sampled	30-Mar-22	31-Mar-22	31-Mar-22	31-Mar-22	30-Mar-22	30-Mar-22	30-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4AB	4A	4A	5A	4A	4AB	4AB			
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-	-	-	-	-	-	µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	14	-	-	-	-	-	-	µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-	-	-	-	-	-	µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-	-	-	-	-	-	µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-	-	-	-	-	-	µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<20	-	-	-	-	-	-	µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-	-	-	-	-	-	µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	11	-	-	-	-	-	-	µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	16	-	-	-	-	-	-	µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	15	-	-	-	-	-	-	µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	42	-	-	-	-	-	-	µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	56	-	-	-	-	-	-	µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-	-	-	-	-	-	µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	<20	-	-	-	-	-	-	µg/l	20	A-T-055w

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
% Moisture at <40C$_A$	13.1	11.0	8.8	13.1	-	9.5	-	% w/w	0.1	A-T-044
% Stones >10mm$_A$	8.8	24.4	<0.1	18.0	37.5	<0.1	44.5	% w/w	0.1	A-T-044
pH$_D^{M\#}$	8.86	8.88	9.22	8.71	9.48	9.56	-	pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	0.05	0.02	0.01	0.11	-	0.16	-	g/l	0.01	A-T-026s
Cyanide (total)$_A^{M\#}$	<1	<1	<1	<1	-	<1	-	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	<0.2	<0.2	<0.2	<0.2	-	<0.2	-	mg/kg	0.2	A-T-050s
Organic matter Default$_D^{M\#}$	16.6	1.1	0.4	31.5	-	23.0	-	% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D^{M\#}$	9.64	0.65	0.21	18.2	4.60	13.4	-	% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	14	2	2	30	-	6	-	mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	1.6	0.5	0.7	1.7	-	1.1	-	mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	92	15	14	149	-	52	-	mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	28	7	16	86	-	32	-	mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	<1	<1	<1	<1	-	<1	-	mg/kg	1	A-T-040s
Lead$_D^{M\#}$	78	14	15	150	-	177	-	mg/kg	1	A-T-024s
Mercury$_D$	0.74	<0.17	<0.17	0.85	-	1.98	-	mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	26	15	24	43	-	13	-	mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	<1	<1	<1	2	-	3	-	mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	107	56	43	131	-	140	-	mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	-	-	-	-	-	-	*			A-T-001
pH (leachable)$_A^{\#}$	-	-	-	-	-	-	8.60	pH	0.01	A-T-031w
Sulphate (leachable)$_A^{\#}$	-	-	-	-	-	-	10.40	mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A^{\#}$	-	-	-	-	-	-	<0.005	mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A^{\#}$	-	-	-	-	-	-	12	µg/l	1	A-T-025w
Cadmium (leachable)$_A^{\#}$	-	-	-	-	-	-	<1	µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	-	-	-	-	-	-	130	µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	-	-	-	-	-	-	8	µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	-	-	-	-	-	-	<0.05	mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	-	-	-	-	-	-	21	µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	-	-	-	-	-	-	<0.1	µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	-	-	-	-	-	-	<1	µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	-	-	-	-	-	-	<1	µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	-	-	-	-	-	-	31	µg/l	1	A-T-025w

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	NAD	NAD	NAD	NAD	-	NAD	-			A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-	-	-			A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	N/A	N/A	N/A	N/A	-	N/A	-			A-T-045

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Client Project Name: Seam Barnsley

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Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
PAH-16MS										
Acenaphthene$_A^{M\#}$	0.10	0.02	<0.01	3.85	-	2.70	-	mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	0.08	<0.01	<0.01	0.22	-	0.52	-	mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	0.39	0.03	<0.02	7.73	-	8.62	-	mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	1.32	0.09	<0.04	14.5	-	26.3	-	mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	1.24	0.08	<0.04	8.75	-	15.2	-	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	1.24	0.09	<0.05	8.67	-	15.2	-	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	0.85	0.08	<0.05	4.62	-	12.4	-	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	0.39	<0.07	<0.07	3.14	-	6.07	-	mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	1.26	0.10	<0.06	11.3	-	20.6	-	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	0.17	<0.04	<0.04	0.93	-	2.35	-	mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	2.46	0.21	<0.08	32.2	-	45.2	-	mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	0.09	<0.01	<0.01	3.65	-	2.20	-	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	0.98	0.07	<0.03	5.84	-	15.9	-	mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	0.54	0.06	<0.03	1.51	-	1.15	-	mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	1.52	0.17	0.04	25.3	-	24.3	-	mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	2.12	0.17	<0.07	27.9	-	39.9	-	mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	14.8	1.17	<0.08	160	-	239	-	mg/kg	0.01	A-T-019s

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	-	-	-	-	-	-	0.03	µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	-	-	-	-	-	-	0.02	µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	-	-	-	-	-	-	0.03	µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	-	-	-	-	-	-	0.02	µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	-	-	-	-	-	-	0.05	µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	-	-	-	-	-	-	0.16	µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	-	-	-	-	-	-	<0.02	µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	-	-	-	-	-	-	0.02	µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	-	-	-	-	-	-	0.03	µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	-	-	-	-	-	-	0.03	µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	-	-	-	-	-	-	0.17	µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	-	-	-	-	-	-	0.56	µg/l	0.02	A-T-019w

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	3	<1	<1	6	-	<10	-	mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	2	<1	<1	3	-	<10	-	mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	3	<1	<1	7	-	<10	-	mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	4	<1	<1	8	-	<10	-	mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	80	10	4	165	-	293	-	mg/kg	1	A-T-055s
Total Aliphatics$_A$	92	10	4	189	-	293	-	mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	4	<1	<1	6	-	<10	-	mg/kg	1	A-T-055s
Aro >C10-C12$_A$	4	<1	<1	8	-	<10	-	mg/kg	1	A-T-055s
Aro >C12-C16$_A$	15	2	<1	39	-	39	-	mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	28	4	1	157	-	229	-	mg/kg	1	A-T-055s
Aro >C21-C35$_A$	103	14	4	630	-	1070	-	mg/kg	1	A-T-055s
Total Aromatics$_A$	154	20	5	840	-	1340	-	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	247	31	10	1030	-	1620	-	mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	<0.01	<0.01	<0.01	<0.01	-	<0.01	-	mg/kg	0.01	A-T-022s

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Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	Units	Limit of Detection	Method ref
Client Sample No	102	103	104	102	101	102	103			
Client Sample ID	ABH102	ABH102	ABH102	AWS105	ABH107	ABH107	ABH107			
Depth to Top	0.40	0.90	2.00	1.00	0.20	0.60	1.10			
Depth To Bottom										
Date Sampled	30-Mar-22	30-Mar-22	31-Mar-22	31-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22			
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES			
Sample Matrix Code	4A	4A	4A	4A	4A	4A	4AB			
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	-	-	-	-	-	-	<20	µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	-	-	-	-	-	-	<20	µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	-	-	-	-	-	-	<10	µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	-	-	-	-	-	-	<20	µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	-	-	-	-	-	-	<20	µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
MTBE (leachable)$_A$	-	-	-	-	-	-	<1	µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	-	-	-	-	-	-	<20	µg/l	20	A-T-055w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
% Moisture at <40C$_A$	-	21.0	14.8	-	2.1			% w/w	0.1	A-T-044
% Stones >10mm$_A$	23.1	<0.1	<0.1	<0.1	<0.1			% w/w	0.1	A-T-044
pH$_D^{M\#}$	-	7.90	9.15	8.10	10.82			pH	0.01	A-T-031s
Sulphate (water sol 2:1)$_D^{M\#}$	-	0.07	0.05	-	0.12			g/l	0.01	A-T-026s
Cyanide (total)$_A^{M\#}$	-	<1	<1	-	<1			mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC$_A$	-	<0.2	<0.2	-	<0.2			mg/kg	0.2	A-T-050s
Organic matter Default$_D^{M\#}$	-	3.7	3.0	-	12.1			% w/w	0.1	A-T-032 OM
Total Organic Carbon$_D^{M\#}$	-	2.16	1.72	6.70	7.02			% w/w	0.03	A-T-032s
Arsenic$_D^{M\#}$	-	23	3	-	<1			mg/kg	1	A-T-024s
Cadmium$_D^{M\#}$	-	1.1	0.9	-	4.7			mg/kg	0.5	A-T-024s
Copper$_D^{M\#}$	-	38	16	-	39			mg/kg	1	A-T-024s
Chromium$_D^{M\#}$	-	32	24	-	1480			mg/kg	1	A-T-024s
Chromium (hexavalent)$_D$	-	<1	<1	-	<1			mg/kg	1	A-T-040s
Lead$_D^{M\#}$	-	38	55	-	82			mg/kg	1	A-T-024s
Mercury$_D$	-	<0.17	<0.17	-	1.28			mg/kg	0.17	A-T-024s
Nickel$_D^{M\#}$	-	41	18	-	38			mg/kg	1	A-T-024s
Selenium$_D^{M\#}$	-	<1	<1	-	6			mg/kg	1	A-T-024s
Zinc$_D^{M\#}$	-	92	39	-	164			mg/kg	5	A-T-024s
Leachate Prep NRA (10:1)$_A$	*	-	-	-	-					A-T-001
pH (leachable)$_A^{\#}$	8.97	-	-	-	-			pH	0.01	A-T-031w
Sulphate (leachable)$_A^{\#}$	201.18	-	-	-	-			mg/l	1	A-T-026w
Cyanide (total) (leachable)$_A^{\#}$	<0.005	-	-	-	-			mg/l	0.005	A-T-042wTCN
Arsenic (leachable)$_A^{\#}$	2	-	-	-	-			µg/l	1	A-T-025w
Cadmium (leachable)$_A^{\#}$	<1	-	-	-	-			µg/l	1	A-T-025w
Copper (leachable)$_A^{\#}$	2	-	-	-	-			µg/l	1	A-T-025w
Chromium (leachable)$_A^{\#}$	1	-	-	-	-			µg/l	1	A-T-025w
Chromium (hexavalent) (leachable)$_A$	<0.05	-	-	-	-			mg/l	0.05	A-T-040w
Lead (leachable)$_A^{\#}$	<1	-	-	-	-			µg/l	1	A-T-025w
Mercury (leachable)$_A^{\#}$	<0.1	-	-	-	-			µg/l	0.1	A-T-025w
Nickel (leachable)$_A^{\#}$	<1	-	-	-	-			µg/l	1	A-T-025w
Selenium (leachable)$_A^{\#}$	2	-	-	-	-			µg/l	1	A-T-025w
Zinc (leachable)$_A^{\#}$	2	-	-	-	-			µg/l	1	A-T-025w

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
Asbestos in Soil (inc. matrix)										
Asbestos in soil$_{D}^{\#}$	-	NAD	NAD	-	NAD					A-T-045
Asbestos Matrix (visual)$_{D}$	-	-	-	-	-					A-T-045
Asbestos Matrix (microscope)$_{D}$	-	-	-	-	-					A-T-045
Asbestos ACM - Suitable for Water Absorption Test?$_{D}$	-	N/A	N/A	-	N/A					A-T-045

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
PAH-16MS										
Acenaphthene$_A^{M\#}$	-	0.03	8.65	-	19.2			mg/kg	0.01	A-T-019s
Acenaphthylene$_A^{M\#}$	-	<0.01	0.06	-	0.26			mg/kg	0.01	A-T-019s
Anthracene$_A^{M\#}$	-	0.05	9.26	-	22.4			mg/kg	0.02	A-T-019s
Benzo(a)anthracene$_A^{M\#}$	-	0.11	12.2	-	21.2			mg/kg	0.04	A-T-019s
Benzo(a)pyrene$_A^{M\#}$	-	0.08	6.64	-	12.5			mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene$_A^{M\#}$	-	0.08	5.62	-	11.8			mg/kg	0.05	A-T-019s
Benzo(ghi)perylene$_A^{M\#}$	-	<0.05	3.12	-	7.94			mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene$_A^{M\#}$	-	<0.07	2.11	-	4.59			mg/kg	0.07	A-T-019s
Chrysene$_A^{M\#}$	-	0.10	10.2	-	16.9			mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene$_A^{M\#}$	-	<0.04	0.72	-	1.49			mg/kg	0.04	A-T-019s
Fluoranthene$_A^{M\#}$	-	0.29	26.9	-	52.8			mg/kg	0.08	A-T-019s
Fluorene$_A^{M\#}$	-	0.03	6.49	-	12.8			mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene$_A^{M\#}$	-	<0.03	4.17	-	10.1			mg/kg	0.03	A-T-019s
Naphthalene $_A^{M\#}$	-	<0.03	12	-	0.37			mg/kg	0.03	A-T-019s
Phenanthrene$_A^{M\#}$	-	0.24	30	-	75.7			mg/kg	0.03	A-T-019s
Pyrene$_A^{M\#}$	-	0.23	22.8	-	43.7			mg/kg	0.07	A-T-019s
Total PAH-16MS$_A^{M\#}$	-	1.24	161	-	314			mg/kg	0.01	A-T-019s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
PAH 16MS (leachable)										
Acenaphthene (leachable)$_A$	4.19	-	-	-	-			µg/l	0.02	A-T-019w
Acenaphthylene (leachable)$_A$	0.12	-	-	-	-			µg/l	0.02	A-T-019w
Anthracene (leachable)$_A$	3.01	-	-	-	-			µg/l	0.02	A-T-019w
Benzo(a)anthracene (leachable)$_A$	0.24	-	-	-	-			µg/l	0.02	A-T-019w
Benzo(a)pyrene (leachable) $_A$	0.19	-	-	-	-			µg/l	0.02	A-T-019w
Benzo(b)fluoranthene (leachable)$_A$	0.20	-	-	-	-			µg/l	0.02	A-T-019w
Benzo(ghi)perylene (leachable)$_A$	0.11	-	-	-	-			µg/l	0.02	A-T-019w
Benzo(k)fluoranthene (leachable)$_A$	0.09	-	-	-	-			µg/l	0.02	A-T-019w
Chrysene (leachable)$_A$	0.30	-	-	-	-			µg/l	0.02	A-T-019w
Dibenzo(ah)anthracene (leachable)$_A$	0.03	-	-	-	-			µg/l	0.02	A-T-019w
Fluoranthene (leachable)$_A$	0.84	-	-	-	-			µg/l	0.02	A-T-019w
Fluorene (leachable)$_A$	1.82	-	-	-	-			µg/l	0.02	A-T-019w
Indeno(123-cd)pyrene (leachable)$_A$	0.12	-	-	-	-			µg/l	0.02	A-T-019w
Naphthalene (leachable) $_A$	1.02	-	-	-	-			µg/l	0.02	A-T-019w
Phenanthrene (leachable)$_A$	3.32	-	-	-	-			µg/l	0.02	A-T-019w
Pyrene (leachable)$_A$	0.70	-	-	-	-			µg/l	0.02	A-T-019w
Total PAH 16MS (leachable)$_A$	16.3	-	-	-	-			µg/l	0.02	A-T-019w

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
TPH CWG with Clean Up *C1										
Ali >C5-C6$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
Ali >C6-C8$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
Ali >C8-C10$_A$	-	<1	<10	-	<50			mg/kg	1	A-T-055s
Ali >C10-C12$_A^{M\#}$	-	<1	<10	-	<50			mg/kg	1	A-T-055s
Ali >C12-C16$_A^{M\#}$	-	<1	<10	-	<50			mg/kg	1	A-T-055s
Ali >C16-C21$_A^{M\#}$	-	<1	<10	-	113			mg/kg	1	A-T-055s
Ali >C21-C35$_A^{M\#}$	-	<1	74	-	374			mg/kg	1	A-T-055s
Total Aliphatics$_A$	-	<1	74	-	487			mg/kg	1	A-T-055s
Aro >C5-C7$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
Aro >C7-C8$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
Aro >C8-C10$_A$	-	<1	<10	-	<50			mg/kg	1	A-T-055s
Aro >C10-C12$_A$	-	<1	124	-	69			mg/kg	1	A-T-055s
Aro >C12-C16$_A$	-	<1	237	-	2340			mg/kg	1	A-T-055s
Aro >C16-C21$_A^{M\#}$	-	<1	609	-	7320			mg/kg	1	A-T-055s
Aro >C21-C35$_A$	-	<1	1040	-	9330			mg/kg	1	A-T-055s
Total Aromatics$_A$	-	<1	2010	-	19100			mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35)$_A$	-	<1	2090	-	19500			mg/kg	1	A-T-055s
BTEX - Benzene$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
BTEX - Toluene$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
BTEX - m & p Xylene$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
BTEX - o Xylene$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s
MTBE$_A^{\#}$	-	<0.01	<0.01	-	<0.01			mg/kg	0.01	A-T-022s

Envirolab Job Number: 22/03290

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/03290/59	22/03290/61	22/03290/66	22/03290/67	22/03290/70			Units	Limit of Detection	Method ref
Client Sample No	101	103	103	104	101					
Client Sample ID	AWS108	AWS108	AWS109	AWS109	AWS110					
Depth to Top	0.40	1.50	1.00	1.20	0.20					
Depth To Bottom										
Date Sampled	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22	29-Mar-22					
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Solid					
Sample Matrix Code	4A	3A	4B	6A	7					
TPH CWG (leachable) with Clean Up *C1										
Ali >C5-C6 (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
Ali >C6-C8 (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
Ali >C8-C10 (leachable)$_A$	<10	-	-	-	-			µg/l	10	A-T-055w
Ali >C10-C12 (leachable)$_A$	<10	-	-	-	-			µg/l	10	A-T-055w
Ali >C12-C16 (leachable)$_A$	<10	-	-	-	-			µg/l	10	A-T-055w
Ali >C16-C21 (leachable)$_A$	<10	-	-	-	-			µg/l	10	A-T-055w
Ali >C21-C35 (leachable)$_A$	<20	-	-	-	-			µg/l	20	A-T-055w
Total Aliphatics (leachable)$_A$	<20	-	-	-	-			µg/l	10	A-T-055w
Aro >C5-C7 (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
Aro >C7-C8 (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
Aro >C8-C10 (leachable)$_A$	<10	-	-	-	-			µg/l	10	A-T-055w
Aro >C10-C12 (leachable)$_A$	15	-	-	-	-			µg/l	10	A-T-055w
Aro >C12-C16 (leachable)$_A$	425	-	-	-	-			µg/l	10	A-T-055w
Aro >C16-C21 (leachable)$_A$	585	-	-	-	-			µg/l	10	A-T-055w
Total Aromatics (leachable)$_A$	1116	-	-	-	-			µg/l	20	A-T-055w
TPH (Ali & Aro >C5-C35) (leachable)$_A$	1116	-	-	-	-			µg/l	20	A-T-055w
BTEX - Benzene (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
BTEX - Toluene (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
BTEX - Ethyl Benzene (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
BTEX - o Xylene (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
BTEX - m & p Xylene (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
MTBE (leachable)$_A$	<1	-	-	-	-			µg/l	1	A-T-022w
Aro >C21-C35 (leachable)$_A$	91	-	-	-	-			µg/l	20	A-T-055w

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Castleford), The Potteries, Pottery Street, Castleford, West Yorkshire, UK, WF10 1NJ

Project: Seam Barnsley

Clients Project No: 765374

Project No: 22/03290

Date Received: 06/04/2022 (am)

Cool Box Temperatures (°C): 4.1 - 6.4

Lab Sample ID	22/03290/5
Client Sample No	102
Client Sample ID/Depth	ABH110 0.70m
Date Sampled	28/03/22
Deviation Code	
F	✓

Key
F *Maximum holding time exceeded between sampling date and analysis for analytes listed below*

HOLDING TIME EXCEEDANCES

Lab Sample ID	22/03290/5
Client Sample No	102
Client Sample ID/Depth	ABH110 0.70m
Date Sampled	28/03/22
VPHCWG	✓

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/03290/1	22/03290/2	22/03290/4	22/03290/5	22/03290/6	22/03290/20	22/03290/24	22/03290/25	22/03290/33	22/03290/34	22/03290/35	22/03290/36
Client Sample No	101	102	101	102	103	102	102	103	101	102	103	101
Client Sample ID/Depth	ATP104 0.50m	ATP104 1.00m	ABH110 0.20m	ABH110 0.70m	ABH110 0.90m	ABH108 0.50m	AWS106 0.50m	AWS106 1.00m	AWS101 0.40m	AWS101 1.00m	AWS101 2.65-3.00m	AWS107 0.80m
Date Sampled	28/03/22	28/03/22	28/03/22	28/03/22	28/03/22	30/03/22	30/03/22	30/03/22	31/03/22	31/03/22	31/03/22	30/03/22
A-T-004s											14/04/2022	
A-T-007s											19/04/2022	
A-T-019s	14/04/2022		14/04/2022	14/04/2022		14/04/2022	14/04/2022		14/04/2022	14/04/2022	14/04/2022	14/04/2022
A-T-019w		14/04/2022			14/04/2022			14/04/2022				
A-T-022s	13/04/2022		13/04/2022	21/04/2022		13/04/2022	13/04/2022		21/04/2022	21/04/2022	13/04/2022	21/04/2022
A-T-022w		19/04/2022			19/04/2022			19/04/2022				
A-T-024s	20/04/2022		20/04/2022	20/04/2022		20/04/2022	20/04/2022		20/04/2022	20/04/2022		20/04/2022
A-T-025w		22/04/2022			22/04/2022			22/04/2022			25/04/2022	
A-T-026s	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022
A-T-026w		19/04/2022			19/04/2022			19/04/2022			25/04/2022	
A-T-030s											20/04/2022	
A-T-031s	19/04/2022		19/04/2022	19/04/2022		19/04/2022	19/04/2022		19/04/2022	19/04/2022	19/04/2022	19/04/2022
A-T-031w		14/04/2022			14/04/2022			14/04/2022			25/04/2022	
A-T-032 OM	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022
A-T-032s	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022	21/04/2022	21/04/2022
A-T-032w											25/04/2022	
A-T-037w											25/04/2022	
A-T-040s	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022	21/04/2022		21/04/2022
A-T-040w		19/04/2022			19/04/2022			19/04/2022				
A-T-042sTCN	14/04/2022		14/04/2022	14/04/2022		14/04/2022	14/04/2022		14/04/2022	14/04/2022		14/04/2022
A-T-042wTCN		19/04/2022			19/04/2022			19/04/2022				
A-T-044	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
A-T-045	08/04/2022		08/04/2022	08/04/2022		08/04/2022	08/04/2022		08/04/2022	08/04/2022		08/04/2022
A-T-050s	13/04/2022		13/04/2022	13/04/2022		13/04/2022	13/04/2022		13/04/2022	13/04/2022		13/04/2022
A-T-050w											25/04/2022	
A-T-055s	19/04/2022		19/04/2022	21/04/2022		19/04/2022	19/04/2022		21/04/2022	21/04/2022		21/04/2022
A-T-055w		19/04/2022			19/04/2022			19/04/2022				
A-T-ANCs											19/04/2022	
Calc-no stones											25/04/2022	
Probe (w)											25/04/2022	

Lab Sample ID	22/03290/40	22/03290/41	22/03290/45	22/03290/46	22/03290/47	22/03290/54	22/03290/55	22/03290/56	22/03290/57	22/03290/59	22/03290/61	22/03290/66
Client Sample No	101	102	102	103	104	102	101	102	103	101	103	103
Client Sample ID/Depth	AWS111 0.30m	AWS111 1.00m	ABH102 0.40m	ABH102 0.90m	ABH102 2.00m	AWS105 1.00m	ABH107 0.20m	ABH107 0.60m	ABH107 1.10m	AWS108 0.40m	AWS108 1.50m	AWS109 1.00m
Date Sampled	30/03/22	30/03/22	30/03/22	30/03/22	31/03/22	31/03/22	29/03/22	29/03/22	29/03/22	29/03/22	29/03/22	29/03/22
A-T-004s							14/04/2022					
A-T-007s							19/04/2022					
A-T-019s	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022			14/04/2022	14/04/2022
A-T-019w									14/04/2022	14/04/2022		
A-T-022s	21/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022			13/04/2022	13/04/2022
A-T-022w									19/04/2022	19/04/2022		
A-T-024s	20/04/2022	20/04/2022	20/04/2022	20/04/2022	20/04/2022	20/04/2022		20/04/2022			20/04/2022	20/04/2022
A-T-025w							25/04/2022		22/04/2022	22/04/2022		
A-T-026s	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022		21/04/2022			21/04/2022	21/04/2022
A-T-026w							25/04/2022		19/04/2022	19/04/2022		
A-T-030s							20/04/2022					
A-T-031s	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022			19/04/2022	19/04/2022
A-T-031w							25/04/2022		14/04/2022	14/04/2022		
A-T-032 OM	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022		21/04/2022			21/04/2022	21/04/2022
A-T-032s	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022			21/04/2022	21/04/2022
A-T-032w							25/04/2022					
A-T-037w							25/04/2022					
A-T-040s	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022	21/04/2022		21/04/2022			21/04/2022	21/04/2022
A-T-040w									19/04/2022	19/04/2022		
A-T-042sTCN	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022	14/04/2022		14/04/2022			14/04/2022	14/04/2022
A-T-042wTCN									19/04/2022	19/04/2022		
A-T-044	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
A-T-045	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022	08/04/2022		08/04/2022			08/04/2022	08/04/2022
A-T-050s	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022		13/04/2022			13/04/2022	13/04/2022
A-T-050w							25/04/2022					
A-T-055s	21/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022	19/04/2022		19/04/2022			19/04/2022	22/04/2022
A-T-055w									19/04/2022	19/04/2022		
A-T-ANCs							19/04/2022					
Calc-no stones							25/04/2022					
Probe (w)							25/04/2022					

Lab Sample ID	22/03290/67	22/03290/70
Client Sample No	104	101
Client Sample ID/Depth	AWS109 1.20m	AWS110 0.20m
Date Sampled	29/03/22	29/03/22
A-T-004s	14/04/2022	
A-T-007s	21/04/2022	
A-T-019s	14/04/2022	14/04/2022
A-T-019w		
A-T-022s	13/04/2022	13/04/2022
A-T-022w		
A-T-024s		20/04/2022
A-T-025w	25/04/2022	
A-T-026s		21/04/2022
A-T-026w	25/04/2022	
A-T-030s	20/04/2022	
A-T-031s	19/04/2022	19/04/2022
A-T-031w	25/04/2022	
A-T-032 OM		21/04/2022
A-T-032s	21/04/2022	21/04/2022
A-T-032w	25/04/2022	
A-T-037w	25/04/2022	
A-T-040s		21/04/2022
A-T-040w		
A-T-042sTCN		14/04/2022
A-T-042wTCN		
A-T-044	12/04/2022	12/04/2022
A-T-045		08/04/2022
A-T-050s		13/04/2022
A-T-050w	25/04/2022	
A-T-055s		19/04/2022
A-T-055w		
A-T-ANCs	19/04/2022	
Calc-no stones	25/04/2022	
Probe (w)	25/04/2022	

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

envirolab
Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	22/03106
Issue Number:	1
Date:	26-Apr-22

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK, WF10 1NJ

Project Manager:	John McCarthy
Project Name:	Seam Barnsley
Project Ref:	765374
Order No:	N/A
Date Samples Received:	18-Mar-22
Date Instructions Received:	31-Mar-22
Date Analysis Completed:	26-Apr-22

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

This report shall not be reproduced, except in full, without written approval from Envirolab.

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

HWOL TPH Code: EH_CU_1D_AL: Extractable hydrocarbons - i.e. everything extracted by the solvent(s), Clean-up - e.g. by florisil, silica gel, GC - Single coil gas chromatography, Aliphatics only

Approved by:



Richard Wong
Client Manager

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	22/03106/3				
Client Sample Number				103		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				ABH101				
Depth to Top				0.9				
Depth to Bottom								
Date Sampled				17/03/2022				
Sample Type				Soil - ES				
Sample Matrix Code				4AB				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**8.20**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.19**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.08**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**4.5**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**2.2**		3	5	6
PAH Sum of 17 (mg/kg)$_A$	A-T-019	N	N	**5.14**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**<10**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.002	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.021	**0.210**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.007	**0.070**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.002	**0.020**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.011	**0.110**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.005	**0.050**	4	50	200
Chloride	A-T-026	N	N	16	**161**	800	15000	25000
Fluoride	A-T-026	N	N	0.4	**4.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	9	**95**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	57	**570**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.4				
Conductivity (µS/cm)	A-T-037	N	N	113				
Mass Sample (kg)				0.194				
Dry Matter (%)	A-T-044	N	N	90.4				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	22/03106/8				
Client Sample Number				104		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				ABH103				
Depth to Top				2.5				
Depth to Bottom								
Date Sampled				17/03/2022				
Sample Type				Soil - ES				
Sample Matrix Code				4AB				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**7.97**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.08**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.08**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**16.8**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**13.9**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**14**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**81**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.003	**0.030**	0.5	2	25
Barium	A-T-025	N	N	0.045	**0.450**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.015	**0.150**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.013	**0.130**	0.5	10	30
Nickel	A-T-025	N	N	0.001	**0.010**	0.4	10	40
Lead	A-T-025	N	N	0.010	**0.100**	0.5	10	50
Antimony	A-T-025	N	N	0.006	**0.060**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.004	**0.040**	4	50	200
Chloride	A-T-026	N	N	22	**219**	800	15000	25000
Fluoride	A-T-026	N	N	0.9	**9.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	67	**671**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	174	**1740**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	20.80	**208**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.6				
Conductivity (µS/cm)	A-T-037	N	N	349				
Mass Sample (kg)				0.207				
Dry Matter (%)	A-T-044	N	N	84.6				

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Units 7 & 8, Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

Final Test Report

Envirolab Job Number:	22/03290
Issue Number:	1
Date:	25-Apr-22

Client: Structural Soils Limited (Castleford)
The Potteries
Pottery Street
Castleford
West Yorkshire
UK, WF10 1NJ

Project Manager:	John McCarthy
Project Name:	Seam Barnsley
Project Ref:	765374
Order No:	N/A
Date Samples Received:	30-Mar-22
Date Instructions Received:	6-Apr-22
Date Analysis Completed:	25-Apr-22

Notes - Soil analysis

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid

Predominant Matrix Codes: 1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

Analytical results reflect the quality of the sample at the time of analysis only. Opinions and interpretations expressed are outside the scope of our accreditation.

Please contact us if you need any further information.

HWOL TPH Code: EH_CU_1D_AL: Extractable hydrocarbons - i.e. everything extracted by the solvent(s), Clean-up - e.g. by florisil, silica gel, GC - Single coil gas chromatography, Aliphatics only

Approved by:



Richard Wong
Client Manager

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	22/03290/35				
Client Sample Number				103		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				AWS101				
Depth to Top				2.65				
Depth to Bottom				3.00				
Date Sampled				31/03/2022				
Sample Type				Soil - ES				
Sample Matrix Code				5A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**8.10**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.07**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.07**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**1.8**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**0.5**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**<0.08**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**<10**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.001	**0.010**	0.5	2	25
Barium	A-T-025	N	N	0.018	**0.180**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	<0.001	**<0.01**	0.5	10	70
Copper	A-T-025	N	N	0.003	**0.030**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.002	**0.020**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.005	**0.050**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.006	**0.060**	4	50	200
Chloride	A-T-026	N	N	1	**12**	800	15000	25000
Fluoride	A-T-026	N	N	0.3	**3.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	4	**36**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	<20	**<200**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.5				
Conductivity (µS/cm)	A-T-037	N	N	22				
Mass Sample (kg)				0.196				
Dry Matter (%)	A-T-044	N	N	89.5				

Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	22/03290/55				
Client Sample Number				101		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				ABH107				
Depth to Top				0.2				
Depth to Bottom								
Date Sampled				29/03/2022				
Sample Type				Soil - ES				
Sample Matrix Code				4A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**9.48**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.51**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.19**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**4.5**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**4.6**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**123**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**275**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.002	**0.020**	0.5	2	25
Barium	A-T-025	N	N	0.102	**1.020**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.002	**0.020**	0.5	10	70
Copper	A-T-025	N	N	0.002	**0.020**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.002	**0.020**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.024	**0.240**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.013	**0.130**	4	50	200
Chloride	A-T-026	N	N	30	**301**	800	15000	25000
Fluoride	A-T-026	N	N	0.4	**4.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	13	**128**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	96	**960**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	8.3				
Conductivity (µS/cm)	A-T-037	N	N	191				
Mass Sample (kg)				0.185				
Dry Matter (%)	A-T-044	N	N	94.4				

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

Sample Details						Landfill Waste Acceptance Criteria Limits		
Lab Sample ID	Method	ISO17025	MCERTS	22/03290/67				
Client Sample Number				104		Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
Client Sample ID				AWS109				
Depth to Top				1.2				
Depth to Bottom								
Date Sampled				29/03/2022				
Sample Type				Soil - ES				
Sample Matrix Code				6A				
Solid Waste Analysis								
pH (pH Units)$_D$	A-T-031	N	N	**8.10**		-	>6	-
ANC to pH 4 (mol/kg)$_D$	A-T-ANC	N	N	**0.15**		-	to be evaluated	to be evaluated
ANC to pH 6 (mol/kg)$_D$	A-T-ANC	N	N	**0.11**		-	to be evaluated	to be evaluated
Loss on Ignition (%)$_D$	A-T-030	N	N	**10.4**		-	-	10
Total Organic Carbon (%)$_D$	A-T-032	N	N	**6.7**		3	5	6
PAH Sum of 17 (mg/kg) $_A$	A-T-019	N	N	**1.41**		100	-	-
Mineral Oil (mg/kg)$_{A\ EH_CU_1D_AL}$	A-T-007	N	N	**<10**		500	-	-
Sum of 7 PCBs (mg/kg)$_A$	A-T-004	N	N	**<0.007**		1	-	-
Sum of BTEX (mg/kg)$_A$	A-T-022	N	N	**<0.01**		6	-	-
Eluate Analysis				**10:1**	**10:1**	**Limit values for compliance leaching test using**		
				mg/l	**mg/kg**	**BS EN 12457-2 at L/S 10 l/kg (mg/kg)**		
Arsenic	A-T-025	N	N	0.012	**0.120**	0.5	2	25
Barium	A-T-025	N	N	0.010	**0.100**	20	100	300
Cadmium	A-T-025	N	N	<0.001	**<0.01**	0.04	1	5
Chromium	A-T-025	N	N	0.010	**0.100**	0.5	10	70
Copper	A-T-025	N	N	0.009	**0.090**	2	50	100
Mercury	A-T-025	N	N	<0.0005	**<0.005**	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.004	**0.040**	0.5	10	30
Nickel	A-T-025	N	N	<0.001	**<0.01**	0.4	10	40
Lead	A-T-025	N	N	0.010	**0.100**	0.5	10	50
Antimony	A-T-025	N	N	<0.001	**<0.01**	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	**<0.01**	0.1	0.5	7
Zinc	A-T-025	N	N	0.011	**0.110**	4	50	200
Chloride	A-T-026	N	N	24	**236**	800	15000	25000
Fluoride	A-T-026	N	N	1.0	**10.0**	10	150	500
Sulphate as SO_4	A-T-026	N	N	10	**105**	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	91	**910**	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	**<0.1**	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<2.0	**<200**	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	8.8				
Conductivity (µS/cm)	A-T-037	N	N	182				
Mass Sample (kg)				0.221				
Dry Matter (%)	A-T-044	N	N	79.3				

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Units 7 & 8 Sandpits Business Park
Mottram Road, Hyde, Cheshire, SK14 3AR

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 22/04661
Issue Number: 1 **Date:** 23 May, 2022

Client:
Structural Soils Limited (Bristol)
The Old School
Stillhouse Lane
Bedminster
Bristol
UK
BS3 4EB

Project Manager: John McCarthy
Project Name: Seam Barnsley
Project Ref: 765374
Order No: N/A
Date Samples Received: 13/05/22
Date Instructions Received: 13/05/22
Date Analysis Completed: 23/05/22

Approved by:



Sophie France
Client Service Manager

UKAS TESTING
1247

Envirolab Job Number: 22/04661

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/04661/1	22/04661/2	22/04661/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	ABH101	ABH105	ABH112							
Depth to Top	9.50	15.00	14.50							
Depth To Bottom										
Date Sampled	11-May-22	11-May-22	11-May-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
pH (w)$_{A}^{\#}$	7.63	7.45	7.19					pH	0.01	A-T-031w
Sulphate (w)$_{A}^{\#}$	164	167	186					mg/l	1	A-T-026w
Cyanide (total) (w)$_{A}^{\#}$	<0.005	<0.005	<0.005					mg/l	0.005	A-T-042wTCN
Phenols - Total by HPLC (w)$_{A}$	<0.01	<0.01	<0.01					mg/l	0.01	A-T-050w
Arsenic (dissolved)$_{A}^{\#}$	3	3	<2					µg/l	1	A-T-025w
Boron (dissolved)$_{A}^{\#}$	46	88	133					µg/l	10	A-T-025w
Cadmium (dissolved)$_{A}^{\#}$	0.5	<0.2	2.4					µg/l	0.2	A-T-025w
Copper (dissolved)$_{A}^{\#}$	89	22	12					µg/l	1	A-T-025w
Chromium (dissolved)$_{A}^{\#}$	7	8	<2					µg/l	1	A-T-025w
Chromium (hexavalent) (w)$_{A}^{\#}$	<0.01	<0.01	<0.01					mg/l	0.01	A-T-040w
Lead (dissolved)$_{A}^{\#}$	46	28	<2					µg/l	1	A-T-025w
Mercury (dissolved)$_{A}^{\#}$	<0.1	<0.1	<0.2					µg/l	0.1	A-T-025w
Nickel (dissolved)$_{A}^{\#}$	26	16	67					µg/l	1	A-T-025w
Zinc (dissolved)$_{A}^{\#}$	92	31	17					µg/l	1	A-T-025w

Envirolab Job Number: 22/04661

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/04661/1	22/04661/2	22/04661/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	ABH101	ABH105	ABH112							
Depth to Top	9.50	15.00	14.50							
Depth To Bottom										
Date Sampled	11-May-22	11-May-22	11-May-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
PAH 16MS (w)										
Acenaphthene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Acenaphthylene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Anthracene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(a)anthracene (w)$_A^\#$	0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(a)pyrene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(b)fluoranthene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(ghi)perylene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Benzo(k)fluoranthene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Chrysene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Dibenzo(ah)anthracene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Fluoranthene (w)$_A^\#$	0.03	<0.01	<0.01					µg/l	0.01	A-T-019w
Fluorene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Indeno(123-cd)pyrene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Naphthalene (w)$_A^\#$	<0.01	<0.01	<0.01					µg/l	0.01	A-T-019w
Phenanthrene (w)$_A^\#$	0.06	<0.01	<0.01					µg/l	0.01	A-T-019w
Pyrene (w)$_A^\#$	0.03	<0.01	<0.01					µg/l	0.01	A-T-019w
Total PAH 16MS (w)$_A^\#$	0.13	<0.01	<0.01					µg/l	0.01	A-T-019w

Envirolab Job Number: 22/04661

Client Project Name: Seam Barnsley

Client Project Ref: 765374

Lab Sample ID	22/04661/1	22/04661/2	22/04661/3					Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	ABH101	ABH105	ABH112							
Depth to Top	9.50	15.00	14.50							
Depth To Bottom										
Date Sampled	11-May-22	11-May-22	11-May-22							
Sample Type	Water - EW	Water - EW	Water - EW							
Sample Matrix Code	N/A	N/A	N/A							
TPH CWG (w) with Clean Up *C1										
Ali >C5-C6 $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Ali >C6-C8 $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Ali >C8-C10 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C10-C12 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C12-C16 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C16-C21 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Ali >C21-C35 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Total Aliphatics $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C5-C7 $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Aro >C7-C8 $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
Aro >C8-C10 $(w)_A$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C10-C12 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C12-C16 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C16-C21 $(w)_A^{\#}$	<5	<5	<5					µg/l	5	A-T-055w
Aro >C21-C35 $(w)_A$	<10	<10	<10					µg/l	10	A-T-055w
Total Aromatics $(w)_A$	<10	<10	<10					µg/l	10	A-T-055w
TPH (Ali & Aro >C5-C35) $(w)_A$	<10	<10	<10					µg/l	10	A-T-055w
BTEX - Benzene $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - Toluene $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - Ethyl Benzene $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - m & p Xylene $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
BTEX - o Xylene $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w
MTBE $(w)_A^{\#}$	<1	<1	<1					µg/l	1	A-T-022w

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.
The results reported herein relate only to the material supplied to the laboratory.
The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.
Analytical results reflect the quality of the sample at the time of analysis only.
Opinions and interpretations expressed are outside the scope of our accreditation.
If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.
A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.
The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:
All results are reported as dry weight (<40°C).
For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.
For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any “A” subscripts
All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:
Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:
Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:
Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.
Stones etc. are not removed from the sample prior to analysis.
Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:
1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.
Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.
Secondary Matrix Codes:
A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

Key:
IS indicates Insufficient Sample for analysis.
US indicates Unsuitable Sample for analysis.
NDP indicates No Determination Possible.
NAD indicates No Asbestos Detected.
N/A indicates Not Applicable.
Superscript # indicates method accredited to ISO 17025.
Superscript "M" indicates method accredited to MCERTS.
Subscript "A" indicates analysis performed on the sample as received.
Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve
EPH CWG results have humics mathematically subtracted through instrument calculation
TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

v2

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: Structural Soils Limited (Bristol), The Old School , Stillhouse Lane, Bedminster, Bristol, UK, BS3 4EB

Project: Seam Barnsley

Clients Project No: 765374

Project No: 22/04661

Date Received: 13/05/2022 (am)

Cool Box Temperatures (°C): 13.9

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	22/04661/1	22/04661/2	22/04661/3
Client Sample No			
Client Sample ID/Depth	ABH101 9.50m	ABH105 15.00m	ABH112 14.50m
Date Sampled	11/05/22	11/05/22	11/05/22
A-T-019w	23/05/2022	23/05/2022	23/05/2022
A-T-022w	18/05/2022	18/05/2022	18/05/2022
A-T-025w	19/05/2022	19/05/2022	20/05/2022
A-T-026w	17/05/2022	17/05/2022	17/05/2022
A-T-031w	18/05/2022	18/05/2022	18/05/2022
A-T-040w	17/05/2022	17/05/2022	17/05/2022
A-T-042wTCN	17/05/2022	17/05/2022	17/05/2022
A-T-050w	17/05/2022	17/05/2022	17/05/2022
A-T-055w	18/05/2022	18/05/2022	18/05/2022

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

APPENDIX F - CALIBRATION CERTIFICATES AND PERMITS

(i) SPT Calibration Records

(ii) Coal Authority Permit 24715

(iii) BMBC Traffic Permits

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

ARCHWAY ENGINEERING (UK) LTD
AINLEYS INDUSTRIAL ESTATE
ELLAND
WEST YORKSHIRE
HX5 9JP

SPT Hammer Ref:	175-3000
Test Date:	11/05/2021
Report Date:	11/05/2021
File Name:	175.spt
Test Operator:	BH

Instrumented Rod Data

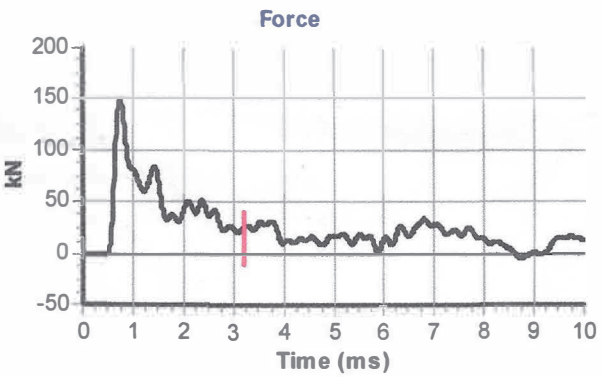
Diameter d_r (mm):	53
Wall Thickness t_r (mm):	6.5
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	7080
Accelerometer No.2:	11609

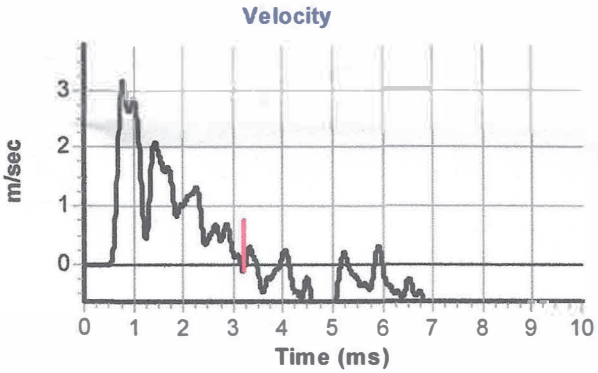
SPT Hammer Information

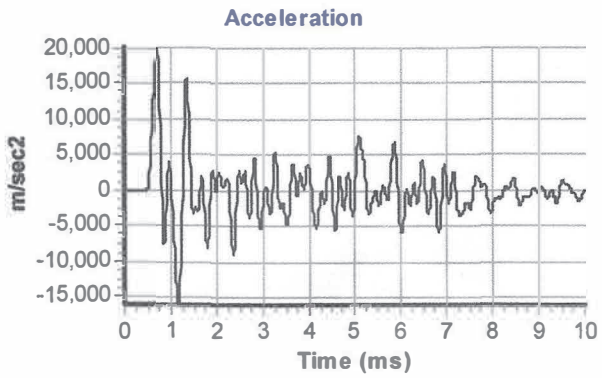
Hammer Mass m (kg):	62.4
Falling Height h (mm):	760
SPT String Length L (m):	10.0

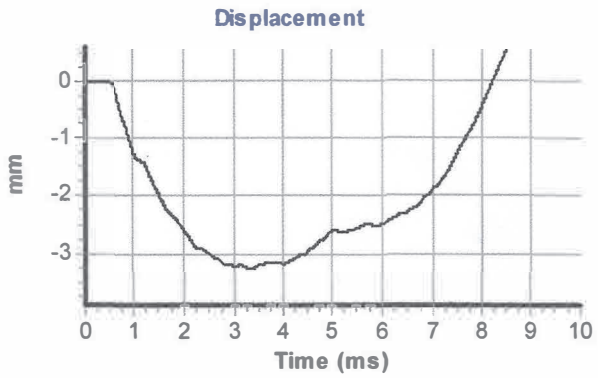
Comments / Location

SO66964









Calculations

Area of Rod A (mm2):	968
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	258

Energy Ratio E_r (%): 55

Signed: B.HOWARTH

Title: SALES ENGINEER

The recommended calibration interval is 12 months

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SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Scott Pincher
JB Site Investigations
DC103/9
Windmill Way West
Ramparts Business Park

SPT Hammer Ref:	DART384
Test Date:	21/06/2021
Report Date:	22/06/2021
File Name:	DART384.spt
Test Operator:	SP

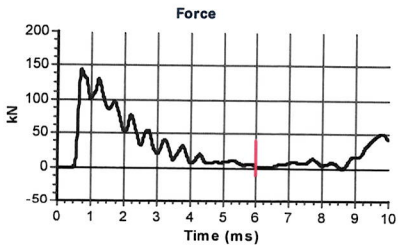
Instrumented Rod Data

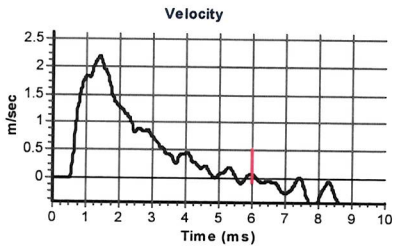
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.1
Rod Length l_r (m):	1.0
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

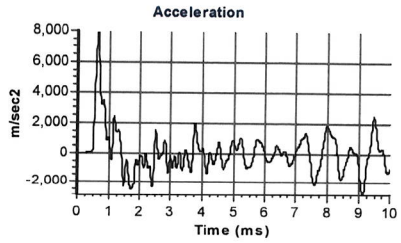
SPT Hammer Information

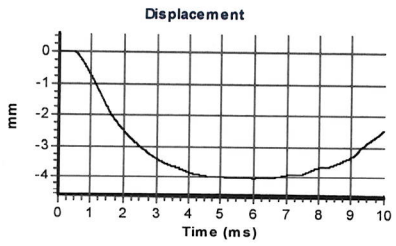
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.2

Comments / Location









Calculations

Area of Rod A (mm2):	918
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	360

Energy Ratio E_r (%): **76**

Signed:

Title: Director

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The Coal Authority

Permit to Enter or Disturb Coal Authority Interests

Permit 24715

Name and Address of Permit Holder:

Barnsley Metropolitan Borough Council
1 Westgate
Western Street
Barnsley
S70 2DR

Site Location:

Car Park
County Way
Barnsley

This certificate hereby grants the above named Permit Holder a Permit to carry out:-

Ground investigation by ten boreholes to 21m to determine ground conditions

within the Authority's interests at the identified site location above as shown on the Grant Permit Boundary (overleaf) for the period of 12 months from the granted date shown below. *The granting of this Permit does not constitute advice given by the Authority in relation to the proposed operations. It is the Permit Holder's responsibility to obtain appropriate health, safety, environmental, technical and legal advice.*

Conditions:

- *Manned entry (i.e. into mine entries/workings) is strictly prohibited.*
- *Water flush*
- *Gas Monitoring CO, CH_4, CO_2, O_2, H_2S at borehole and rig*
- *Operators undertaking the work must be in possession of this certificate and the Permit boundary plan at the time of works*
- *Appropriate borehole sealing without delay and to withstand site level changes*

Signed: Paul Hobson Granted Date: ***07 March 2022***

For and on behalf of The Coal Authority

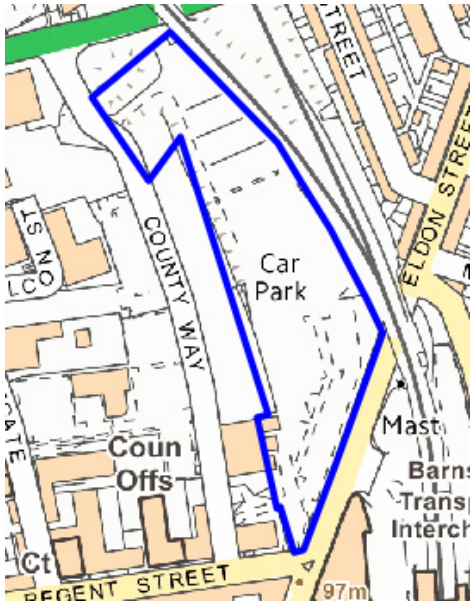
Nominated Representative: Paul Hobson, Permitting Manager;
The Coal Authority, Permitting Office, 200 Lichfield Lane, Mansfield, Notts, NG18 4RG
Tel: 01623 637450; E-Mail: permissions@coal.gov.uk

The Coal Authority

Granted Permit Boundary

Permit Ref: 24715

Permit Boundary:



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BARNSLEY
Metropolitan Borough Council

Environment & Transport
Assistant Director: P. Castle
P.O. Box 601, Barnsley, S70 9FA.

Temporary traffic management approval

Licence No:	54,510	**Stage:**	APPROVED
Application Date:	18/03/2022	**Time:**	15:56:31
Start Date:	06/04/2022	**Estimated End Date:**	07/04/2022
Location:	From Schwabisch Gmund Way to Regent Street ELDON STREET NORTH BARNSLEY		

Description:

Temporary one-way restriction from Schwabisch Gmund Way to Regent street

Additional Conditions (if any):

Please note that the dates stated above are the approved dates and if further dates or an extension is required another application should be submitted.

We publish temporary traffic restrictions on the internet at www.barnsley.gov.uk/roadworks and this information is broadcast on local news, radio and is regularly utilised by emergency services, SYPTE etc. Therefore, if the works involving the use of any temporary traffic management are completed earlier than the end date stated above, please ensure you contact 01226 773555 to notify us of the amended dates. If the works are cancelled or rescehduled please notify us as soon as possible so we can update our records

Please ensure that any temporary traffic signals are operated in vehicle actuated mode and that queueing traffic monitored and if necessary cleared using manual control.

You are responsible for arranging to suspend any bus stops affected by this approval, the position of any temporary bus stops should be agreed with Barnsley MBC.

A copy of this approval should be available on site for inspection by both South Yorkshire Police and BMBC Highway Inspectors.

Please contact 01226 773555 if there are any issues regarding this approval.

STRUCTURAL SOILS LT
The Potteries
Pottery Street
Castleford

WF10 1NJ

BARNSLEY
Metropolitan Borough Council

Environment & Transport
Assistant Director: P. Castle
P.O. Box 601, Barnsley, S70 9FA.

Temporary traffic management approval

Licence No:	54,509	**Stage:**	APPROVED
Application Date:	18/03/2022	**Time:**	15:25:58
Start Date:	06/04/2022	**Estimated End Date:**	07/04/2022
Location:	Junction Eldon Street North REGENT STREET BARNSLEY		

Description:

Temporary right turn only restriction

Additional Conditions (if any):

Please note that the dates stated above are the approved dates and if further dates or an extension is required another application should be submitted.

We publish temporary traffic restrictions on the internet at www.barnsley.gov.uk/roadworks and this information is broadcast on local news, radio and is regularly utilised by emergency services, SYPTE etc. Therefore, if the works involving the use of any temporary traffic management are completed earlier than the end date stated above, please ensure you contact 01226 773555 to notify us of the amended dates. If the works are cancelled or rescehduled please notify us as soon as possible so we can update our records

Please ensure that any temporary traffic signals are operated in vehicle actuated mode and that queueing traffic monitored and if necessary cleared using manual control.

You are responsible for arranging to suspend any bus stops affected by this approval, the position of any temporary bus stops should be agreed with Barnsley MBC.

A copy of this approval should be available on site for inspection by both South Yorkshire Police and BMBC Highway Inspectors.

Please contact 01226 773555 if there are any issues regarding this approval.

STRUCTURAL SOILS LT
The Potteries
Pottery Street
Castleford

WF10 1NJ

APPENDIX G - MONITORING RECORDS

(i) Gas/Groundwater Monitoring Results

IN-SITU GAS MONITORING RESULTS

	Start Date	End Date	Previous	Pressures During	Start	End	Equipment Used & Remarks
Round 1	28/04/2022	28/04/2022	-	Fluctuating	1020	1018	GFM400 SN-10131 | Weather: Cold | Ground: Dry | Wind: Light | Air Temp: 7°C | Summary: Gas
Round 2	11/05/2022	11/05/2022	-	-	-	-	Summary: Gas
Round 3	27/05/2022	27/05/2022	-	Falling	1015	1014	Weather: Sunny | Ground: Dry | Wind: Light | Air Temp: 16°C | Summary: Gas

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH101	1	50	1	15.00	---	9.00 to 15.00	28/04/2022 13:10:00	1019	1020	$-0.6_{(I)}$	-	-	-	-	-	-	-	
ABH101	1	50	1	---	---	9.00 to 15.00	120 secs	1020	1020	$-0.2_{(SS)}$	-	-	-	-	-	-	-	
ABH101	1	50	1 (2)	15.00	---	9.00 to 15.00	28/04/2022 13:13:00	-	-	-	-	0.4	0.0	19.7	0.0	1	0	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	15 secs	-	-	-	-	1.1	0.0	19.7	0.0	1	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	30 secs	-	-	-	-	1.1	0.0	19.3	0.0	3	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	60 secs	-	-	-	-	1.1	0.0	19.2	0.0	5	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	90 secs	-	-	-	-	1.1	0.0	19.2	0.0	3	0	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	120 secs	-	-	-	-	1.1	0.0	19.2	0.0	5	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	150 secs	-	-	-	-	1.1	0.0	19.2	0.0	3	2	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	180 secs	-	-	-	-	1.1	0.0	19.2	0.0	5	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	210 secs	-	-	-	-	1.1	0.0	19.2	0.0	3	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	240 secs	-	-	-	-	1.2	0.0	19.2	0.0	3	1	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	270 secs	-	-	-	-	1.2	0.0	19.2	0.0	3	0	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	300 secs	-	-	-	-	1.2	0.0	19.2	0.0	1	2	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	330 secs	-	-	-	-	1.2	0.0	19.2	0.0	2	0	
ABH101	1	50	1 (2)	---	---	9.00 to 15.00	360 secs	-	-	-	-	1.2	0.0	19.2	0.0	3	1	
ABH101	1	50	1 (3)	15.00	14.87	9.00 to 15.00	28/04/2022 13:23:00	-	-	-	9.54	-	-	-	-	-	-	
ABH101	1	50	2	15.00	---	9.00 to 15.00	11/05/2022 13:40:00	995	995	$0.1_{(I)}$	-	-	-	-	-	-	-	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
RTB	30/05/2022			765374

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH101	1	50	2	---	---	9.00 to 15.00	60 secs	969	995	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH101	1	50	2 (2)	15.00	---	9.00 to 15.00	11/05/2022 13:42:00	-	-	-	-	0.1	0.0	21.9	-	1	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	15 secs	-	-	-	-	0.0	0.0	22.0	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	30 secs	-	-	-	-	0.0	0.0	21.9	-	4	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	60 secs	-	-	-	-	0.0	0.0	21.9	-	4	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	90 secs	-	-	-	-	0.0	0.0	21.9	-	4	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	120 secs	-	-	-	-	0.0	0.0	21.9	-	4	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	180 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	240 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	300 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	360 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	420 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	480 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	540 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (2)	---	---	9.00 to 15.00	600 secs	-	-	-	-	0.0	0.0	21.9	-	3	0	
ABH101	1	50	2 (3)	15.00	14.87	9.00 to 15.00	11/05/2022 13:55:00	-	-	-	9.57	-	-	-	-	-	-	
	Remarks: Samples taken.																	
ABH101	1	50	3	15.00	---	9.00 to 15.00	27/05/2022 14:18:00	1016	0.63	$0.1_{(I)}$	-	-	-	-	-	-	-	
ABH101	1	50	3	---	---	9.00 to 15.00	60 secs	1015	0.05	$0.0_{(SS)}$	-	0.8	0.0	21.2	-	9	0	
ABH101	1	50	3 (2)	15.00	---	9.00 to 15.00	27/05/2022 14:20:00	-	-	-	-	0.8	0.0	20.8	-	7	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	15 secs	-	-	-	-	0.8	0.0	20.5	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	30 secs	-	-	-	-	0.7	0.0	20.2	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	60 secs	-	-	-	-	0.7	0.0	20.1	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	90 secs	-	-	-	-	0.7	0.0	20.1	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	120 secs	-	-	-	-	0.7	0.0	20.1	-	6	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	180 secs	-	-	-	-	0.7	0.0	20.1	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	240 secs	-	-	-	-	0.8	0.0	20.0	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	300 secs	-	-	-	-	0.8	0.0	20.0	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	360 secs	-	-	-	-	0.8	0.0	20.0	-	6	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	420 secs	-	-	-	-	0.8	0.0	20.0	-	5	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	480 secs	-	-	-	-	0.8	0.0	20.0	-	5	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	540 secs	-	-	-	-	0.8	0.0	20.0	-	5	0	
ABH101	1	50	3 (2)	---	---	9.00 to 15.00	600 secs	-	-	-	-	0.8	0.0	20.0	-	5	0	
ABH101	1	50	3 (3)	15.00	14.87	9.00 to 15.00	27/05/2022 14:32:00	-	-	-	9.60	-	-	-	-	-	-	
ABH102	1	50	1	6.00	---	1.00 to 6.00	28/04/2022 12:20:00	1017	1017	$-0.3_{(I)}$	-	-	-	-	-	-	-	
ABH102	1	50	1	---	---	1.00 to 6.00	120 secs	1018	1018	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH102	1	50	1 (2)	6.00	---	1.00 to 6.00	28/04/2022 12:23:00	-	-	-	-	0.3	0.0	20.4	0.0	1	1	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	0.3	0.0	20.5	0.0	1	2	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	0.4	0.0	20.5	0.0	1	0	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	0.4	0.0	20.5	0.0	1	2	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	0.7	0.0	20.3	0.0	2	2	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	0.5	0.0	19.9	0.0	1	0	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	150 secs	-	-	-	-	0.5	0.0	20.1	0.0	0	1	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	0.4	0.0	20.0	0.0	0	0	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	210 secs	-	-	-	-	0.3	0.0	20.0	0.0	0	0	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	0.4	0.0	20.1	0.0	1	0	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	270 secs	-	-	-	-	0.4	0.0	20.1	0.0	0	1	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	0.4	0.0	19.9	0.0	0	1	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	330 secs	-	-	-	-	0.4	0.0	19.8	0.0	0	1	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH102	1	50	1 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	0.3	0.0	20.0	0.0	0	0	
ABH102	1	50	1 (3)	6.00	5.76	1.00 to 6.00	28/04/2022 12:31:00	-	-	-	DRY	-	-	-	-	-	-	
ABH102	1	50	2	6.00	---	1.00 to 6.00	11/05/2022 12:18:00	995	995	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH102	1	50	2	---	---	1.00 to 6.00	60 secs	995	995	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH102	1	50	2 (2)	6.00	---	1.00 to 6.00	11/05/2022 12:20:00	-	-	-	-	0.2	0.0	20.7	-	3	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	0.2	0.0	20.7	-	2	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	0.2	0.0	20.6	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	0.2	0.0	20.7	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	0.2	0.0	20.7	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	0.2	0.0	20.8	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	0.3	0.0	20.8	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	0.3	0.0	20.9	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	0.3	0.0	21.0	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	0.3	0.0	21.1	-	1	2	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	420 secs	-	-	-	-	0.3	0.0	21.1	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	480 secs	-	-	-	-	0.3	0.0	21.2	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	540 secs	-	-	-	-	0.3	0.0	21.2	-	1	0	
ABH102	1	50	2 (2)	---	---	1.00 to 6.00	600 secs	-	-	-	-	0.3	0.0	21.2	-	1	0	
ABH102	1	50	2 (3)	6.00	5.76	1.00 to 6.00	11/05/2022 12:35:00	-	-	-	5.01	-	-	-	-	-	-	
ABH102	1	50	3	6.00	---	1.00 to 6.00	27/05/2022 15:26:00	1015	-0.12	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH102	1	50	3	---	---	1.00 to 6.00	60 secs	1015	-0.1	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH102	1	50	3 (2)	6.00	---	1.00 to 6.00	27/05/2022 15:28:00	-	-	-	-	0.3	0.0	21.1	-	2	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	0.3	0.0	21.0	-	2	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	0.3	0.0	20.9	-	2	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	0.3	0.0	20.9	-	2	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	0.3	0.0	20.9	-	1	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	0.4	0.0	20.9	-	1	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	0.3	0.0	20.8	-	2	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	0.3	0.0	20.8	-	3	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	0.2	0.0	20.9	-	3	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	0.2	0.0	20.9	-	2	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	420 secs	-	-	-	-	0.2	0.0	21.0	-	1	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	480 secs	-	-	-	-	0.2	0.0	21.0	-	1	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	540 secs	-	-	-	-	0.3	0.0	21.1	-	1	0	
ABH102	1	50	3 (2)	---	---	1.00 to 6.00	600 secs	-	-	-	-	0.3	0.0	21.0	-	1	0	
ABH102	1	50	3 (3)	6.00	5.76	1.00 to 6.00	27/05/2022 15:39:00	-	-	-	4.51	-	-	-	-	-	-	
ABH103	1	50	1	3.00	---	0.90 to 3.20	28/04/2022 13:44:00	1020	1020	$-0.2_{(I)}$	-	-	-	-	-	-	-	
ABH103	1	50	1	---	---	0.90 to 3.20	120 secs	1020	1020	$-0.2_{(SS)}$	-	-	-	-	-	-	-	
ABH103	1	50	1 (2)	3.00	---	0.90 to 3.20	28/04/2022 13:47:00	-	-	-	-	1.3	0.0	19.7	0.0	0	0	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	15 secs	-	-	-	-	0.9	0.0	19.4	4.2	1	0	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	30 secs	-	-	-	-	0.8	0.0	18.8	0.0	3	1	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	60 secs	-	-	-	-	0.8	0.0	18.4	0.0	0	0	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	90 secs	-	-	-	-	0.8	0.0	18.4	0.0	0	0	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	120 secs	-	-	-	-	0.8	0.0	18.5	0.0	1	1	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	150 secs	-	-	-	-	0.7	0.0	18.3	0.0	0	1	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	180 secs	-	-	-	-	0.8	0.0	18.5	0.0	5	2	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	210 secs	-	-	-	-	0.7	0.0	18.4	0.0	0	2	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	240 secs	-	-	-	-	0.9	0.0	18.5	0.0	3	4	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	270 secs	-	-	-	-	0.8	0.0	18.4	0.0	0	0	

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	300 secs	-	-	-	-	0.8	0.0	18.4	0.0	0	1	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	330 secs	-	-	-	-	0.9	0.0	18.4	0.0	8	2	
ABH103	1	50	1 (2)	---	---	0.90 to 3.20	360 secs	-	-	-	-	0.8	0.0	18.5	0.0	1	1	
ABH103	1	50	1 (3)	3.00	2.85	0.90 to 3.20	28/04/2022 13:56:00	-	-	-	DRY	-	-	-	-	-	-	
ABH103	1	50	2	3.00	---	0.90 to 3.20	11/05/2022 13:01:00	994	995	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH103	1	50	2	---	---	0.90 to 3.20	60 secs	995	995	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH103	1	50	2 (2)	3.00	---	0.90 to 3.20	11/05/2022 13:03:00	-	-	-	-	0.1	0.0	22.1	-	2	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	15 secs	-	-	-	-	0.2	0.0	22.0	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	30 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	60 secs	-	-	-	-	0.2	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	90 secs	-	-	-	-	0.2	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	120 secs	-	-	-	-	0.2	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	180 secs	-	-	-	-	0.2	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	240 secs	-	-	-	-	0.2	0.0	21.7	-	0	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	300 secs	-	-	-	-	0.2	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	360 secs	-	-	-	-	0.3	0.1	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	420 secs	-	-	-	-	0.2	0.0	21.7	-	0	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	480 secs	-	-	-	-	0.3	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	540 secs	-	-	-	-	0.3	0.0	21.7	-	1	0	
ABH103	1	50	2 (2)	---	---	0.90 to 3.20	600 secs	-	-	-	-	0.3	0.1	21.6	-	1	0	
ABH103	1	50	2 (3)	3.00	2.85	0.90 to 3.20	11/05/2022 13:15:00	-	-	-	DRY	-	-	-	-	-	-	
ABH103	1	50	3	3.00	---	0.90 to 3.20	27/05/2022 14:38:00	1014	1015	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH103	1	50	3	---	---	0.90 to 3.20	60 secs	1015	1015	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH103	1	50	3 (2)	3.00	---	0.90 to 3.20	27/05/2022 14:40:00	-	-	-	-	0.2	0.0	21.9	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	15 secs	-	-	-	-	0.2	0.0	22.1	-	1	0	

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STRUCTURAL SOILS
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Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	30/05/2022			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	30 secs	-	-	-	-	0.2	0.0	22.2	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	60 secs	-	-	-	-	0.3	0.0	21.8	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	90 secs	-	-	-	-	0.3	0.0	21.8	-	0	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	120 secs	-	-	-	-	0.2	0.0	21.8	-	0	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	180 secs	-	-	-	-	0.2	0.0	21.9	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	240 secs	-	-	-	-	0.3	0.0	21.8	-	2	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	300 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	360 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	420 secs	-	-	-	-	0.2	0.1	21.8	-	0	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	480 secs	-	-	-	-	0.2	0.0	21.8	-	0	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	540 secs	-	-	-	-	0.3	0.0	21.7	-	1	0	
ABH103	1	50	3 (2)	---	---	0.90 to 3.20	600 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH103	1	50	3 (3)	3.00	2.85	0.90 to 3.20	27/05/2022 14:51:00	-	-	-	DRY	-	-	-	-	-	-	
ABH104	1	50	1	2.40	---	1.00 to 2.40	28/04/2022 14:00:00	1017	1018	$-0.4_{(I)}$	-	-	-	-	-	-	-	
ABH104	1	50	1	---	---	1.00 to 2.40	120 secs	1019	1019	$-0.3_{(SS)}$	-	-	-	-	-	-	-	
ABH104	1	50	1 (2)	2.40	---	1.00 to 2.40	28/04/2022 14:03:00	-	-	-	-	0.8	0.0	19.0	0.0	10	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	15 secs	-	-	-	-	0.8	0.0	19.3	0.0	18	0	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	30 secs	-	-	-	-	0.8	0.0	19.3	0.0	10	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	60 secs	-	-	-	-	0.8	0.0	19.3	0.0	0	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	90 secs	-	-	-	-	0.8	0.0	19.2	0.0	0	0	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	120 secs	-	-	-	-	0.8	0.0	19.2	0.0	0	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	150 secs	-	-	-	-	0.8	0.0	19.3	0.0	0	2	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	180 secs	-	-	-	-	0.8	0.0	19.3	0.0	0	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	210 secs	-	-	-	-	0.8	0.0	19.2	0.0	0	1	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	240 secs	-	-	-	-	1.2	0.0	19.2	0.0	0	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	270 secs	-	-	-	-	1.6	0.0	19.2	0.0	0	1	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	300 secs	-	-	-	-	1.8	0.0	19.2	0.0	0	0	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	330 secs	-	-	-	-	1.8	0.0	19.2	0.0	0	2	
ABH104	1	50	1 (2)	---	---	1.00 to 2.40	360 secs	-	-	-	-	1.8	0.0	19.2	0.0	0	1	
ABH104	1	50	1 (3)	2.40	2.15	1.00 to 2.40	28/04/2022 14:12:00	-	-	-	DRY	-	-	-	-	-	-	
ABH104	1	50	2	2.40	---	1.00 to 2.40	11/05/2022 12:43:00	996	996	$0.1_{(I)}$	-	-	-	-	-	-	-	
ABH104	1	50	2	---	---	1.00 to 2.40	60 secs	996	996	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH104	1	50	2 (2)	2.40	---	1.00 to 2.40	11/05/2022 12:45:00	-	-	-	-	0.1	0.0	22.0	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	15 secs	-	-	-	-	0.2	0.0	21.9	-	3	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	30 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	60 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	90 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	120 secs	-	-	-	-	0.2	0.0	21.8	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	180 secs	-	-	-	-	0.2	0.0	21.7	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	240 secs	-	-	-	-	0.3	0.0	21.7	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	300 secs	-	-	-	-	0.3	0.0	21.6	-	1	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	360 secs	-	-	-	-	0.4	0.0	21.5	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	420 secs	-	-	-	-	0.4	0.0	21.5	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	480 secs	-	-	-	-	0.5	0.0	21.5	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	540 secs	-	-	-	-	0.5	0.0	21.5	-	0	0	
ABH104	1	50	2 (2)	---	---	1.00 to 2.40	600 secs	-	-	-	-	0.5	0.0	21.5	-	0	0	
ABH104	1	50	2 (3)	2.40	2.05	1.00 to 2.40	11/05/2022 12:56:00	-	-	-	DRY	-	-	-	-	-	-	
ABH104	1	50	3	2.40	---	1.00 to 2.40	27/05/2022 14:55:00	1015	1015	$0.1_{(I)}$	-	-	-	-	-	-	-	
ABH104	1	50	3	---	---	1.00 to 2.40	60 secs	1015	1015	$0.1_{(SS)}$	-	-	-	-	-	-	-	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH104	1	50	3 (2)	2.40	---	1.00 to 2.40	27/05/2022 14:57:00	-	-	-	-	0.2	0.0	22.1	-	3	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	15 secs	-	-	-	-	0.2	0.0	22.0	-	2	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	30 secs	-	-	-	-	0.3	0.0	22.0	-	2	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	60 secs	-	-	-	-	0.4	0.0	21.9	-	2	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	90 secs	-	-	-	-	0.4	0.0	21.9	-	3	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	120 secs	-	-	-	-	0.4	0.0	21.9	-	1	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	180 secs	-	-	-	-	0.4	0.0	21.9	-	0	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	240 secs	-	-	-	-	0.3	0.0	21.9	-	1	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	300 secs	-	-	-	-	0.5	0.0	21.8	-	1	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	360 secs	-	-	-	-	0.4	0.0	21.9	-	2	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	420 secs	-	-	-	-	0.4	0.0	21.8	-	1	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	480 secs	-	-	-	-	0.4	0.0	21.7	-	0	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	540 secs	-	-	-	-	0.3	0.0	21.7	-	0	0	
ABH104	1	50	3 (2)	---	---	1.00 to 2.40	600 secs	-	-	-	-	0.4	0.0	21.8	-	1	0	
ABH104	1	50	3 (3)	2.40	2.15	1.00 to 2.40	27/05/2022 15:08:00	-	-	-	DRY	-	-	-	-	-	-	
ABH105	1	50	1	18.00	---	12.00 to 18.00	28/04/2022 11:47:00	1019	1019	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH105	1	50	1	---	---	12.00 to 18.00	120 secs	1019	1019	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH105	1	50	1 (2)	18.00	---	12.00 to 18.00	28/04/2022 11:50:00	-	-	-	-	0.2	0.0	20.0	0.0	0	0	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	15 secs	-	-	-	-	0.1	0.0	20.6	0.0	0	0	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	30 secs	-	-	-	-	0.0	0.0	20.7	0.0	3	0	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	60 secs	-	-	-	-	0.0	0.0	20.6	0.0	0	2	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	90 secs	-	-	-	-	0.0	0.0	20.7	0.0	0	0	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	120 secs	-	-	-	-	0.0	0.0	20.7	0.0	0	2	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	150 secs	-	-	-	-	0.0	0.0	20.7	0.0	0	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	30/05/2022			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	180 secs	-	-	-	-	0.0	0.0	20.7	0.0	0	4	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	210 secs	-	-	-	-	0.0	0.0	20.8	0.0	1	2	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	240 secs	-	-	-	-	0.0	0.0	20.7	0.0	1	2	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	270 secs	-	-	-	-	0.0	0.0	20.7	0.0	3	4	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	300 secs	-	-	-	-	0.0	0.0	20.8	0.0	1	1	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	330 secs	-	-	-	-	0.0	0.0	20.7	0.0	0	1	
ABH105	1	50	1 (2)	---	---	12.00 to 18.00	360 secs	-	-	-	-	0.0	0.0	20.6	0.0	0	2	
ABH105	1	50	1 (3)	18.00	17.31	12.00 to 18.00	28/04/2022 11:58:00	-	-	-	14.78	-	-	-	-	-	-	
ABH105	1	50	2	18.00	---	12.00 to 18.00	11/05/2022 11:35:00	995	995	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH105	1	50	2	---	---	12.00 to 18.00	60 secs	995	995	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH105	1	50	2 (2)	18.00	---	12.00 to 18.00	11/05/2022 11:37:00	-	-	-	-	0.2	0.0	21.8	-	5	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	15 secs	-	-	-	-	0.7	0.0	21.4	-	17	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	30 secs	-	-	-	-	0.7	0.0	20.8	-	18	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	60 secs	-	-	-	-	0.7	0.0	20.6	-	17	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	90 secs	-	-	-	-	0.7	0.0	20.5	-	16	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	120 secs	-	-	-	-	0.7	0.0	20.5	-	16	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	180 secs	-	-	-	-	0.8	0.0	20.5	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	240 secs	-	-	-	-	0.8	0.0	20.5	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	300 secs	-	-	-	-	0.8	0.0	20.5	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	360 secs	-	-	-	-	0.8	0.0	20.4	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	420 secs	-	-	-	-	0.8	0.0	20.4	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	480 secs	-	-	-	-	0.8	0.0	20.4	-	15	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	540 secs	-	-	-	-	0.8	0.0	20.4	-	14	0	
ABH105	1	50	2 (2)	---	---	12.00 to 18.00	600 secs	-	-	-	-	0.8	0.0	20.4	-	14	0	
ABH105	1	50	2 (3)	18.00	17.31	12.00 to 18.00	11/05/2022 11:50:00	-	-	-	14.75	-	-	-	-	-	-	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
	Remarks: Samples taken.																	
ABH105	1	50	3	18.00	---	12.00 to 18.00	27/05/2022 15:57:00	1000	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH105	1	50	3	---	---	12.00 to 18.00	60 secs	1000	1014	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH105	1	50	3 (2)	18.00	---	12.00 to 18.00	27/05/2022 15:59:00	-	-	-	-	0.3	0.0	21.1	-	1	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	15 secs	-	-	-	-	0.5	0.0	21.2	-	5	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	30 secs	-	-	-	-	0.1	0.0	21.3	-	1	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	60 secs	-	-	-	-	0.1	0.0	21.3	-	1	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	90 secs	-	-	-	-	0.1	0.0	21.3	-	1	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	120 secs	-	-	-	-	0.2	0.0	21.1	-	1	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	180 secs	-	-	-	-	0.4	0.0	20.6	-	2	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	240 secs	-	-	-	-	0.8	0.0	20.3	-	2	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	300 secs	-	-	-	-	1.0	0.0	19.3	-	3	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	360 secs	-	-	-	-	1.3	0.0	18.7	-	3	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	420 secs	-	-	-	-	1.5	0.0	18.2	-	3	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	480 secs	-	-	-	-	1.7	0.0	17.9	-	3	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	540 secs	-	-	-	-	1.8	0.0	17.7	-	3	0	
ABH105	1	50	3 (2)	---	---	12.00 to 18.00	600 secs	-	-	-	-	1.9	0.0	17.5	-	3	0	
ABH105	1	50	3 (3)	18.00	17.31	12.00 to 18.00	27/05/2022 16:10:00	-	-	-	14.79	-	-	-	-	-	-	
ABH106	1	50	1	3.00	---	1.00 to 3.00	28/04/2022 11:14:00	1018	1018	$-0.2_{(I)}$	-	-	-	-	-	-	-	
ABH106	1	50	1	---	---	1.00 to 3.00	120 secs	1019	1019	$-0.2_{(SS)}$	-	-	-	-	-	-	-	
ABH106	1	50	1 (2)	3.00	---	1.00 to 3.00	28/04/2022 11:19:00	-	-	-	-	0.7	0.0	19.5	0.0	11	0	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	2.3	0.0	17.7	0.0	10	0	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	2.2	0.0	17.5	0.0	3	2	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	2.5	0.0	17.4	0.0	3	1	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	2.9	0.0	17.3	0.0	0	1	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	3.1	0.0	17.3	6.4	0	1	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	150 secs	-	-	-	-	3.7	0.0	17.4	0.0	6	5	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	3.3	0.0	17.2	1.3	0	1	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	210 secs	-	-	-	-	2.9	0.0	17.3	0.0	6	5	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	3.2	0.1	17.3	0.0	5	0	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	270 secs	-	-	-	-	3.2	1.1	17.2	0.0	12	0	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	300 secs	-	-	-	-	2.3	0.5	17.3	0.0	11	2	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	330 secs	-	-	-	-	3.2	0.0	17.3	0.1	6	3	
ABH106	1	50	1 (2)	---	---	1.00 to 3.00	360 secs	-	-	-	-	2.9	0.0	17.2	0.0	1	2	
ABH106	1	50	1 (3)	3.00	2.83	1.00 to 3.00	28/04/2022 11:26:00	-	-	-	DRY	-	-	-	-	-	-	
ABH106	1	50	2	3.00	---	1.00 to 3.00	11/05/2022 10:58:00	995	995	$0.1_{(I)}$	-	-	-	-	-	-	-	
ABH106	1	50	2	---	---	1.00 to 3.00	60 secs	995	995	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH106	1	50	2 (2)	3.00	---	1.00 to 3.00	11/05/2022 11:00:00	-	-	-	-	0.1	0.0	21.5	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.1	0.0	21.5	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.1	0.0	21.6	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	0.1	0.0	21.7	-	0	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	300 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	360 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	420 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	480 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	540 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (2)	---	---	1.00 to 3.00	600 secs	-	-	-	-	0.1	0.0	21.8	-	1	0	
ABH106	1	50	2 (3)	3.00	2.83	1.00 to 3.00	11/05/2022 11:15:00	-	-	-	DRY	-	-	-	-	-	-	
ABH106	1	50	3	3.00	---	1.00 to 3.00	27/05/2022 16:12:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH106	1	50	3	---	---	1.00 to 3.00	60 secs	1014	1014	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH106	1	50	3 (2)	3.00	---	1.00 to 3.00	27/05/2022 16:14:00	-	-	-	-	0.1	0.0	21.5	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	15 secs	-	-	-	-	0.1	0.0	20.8	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	30 secs	-	-	-	-	0.1	0.0	20.3	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	60 secs	-	-	-	-	0.1	0.0	20.0	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	90 secs	-	-	-	-	0.1	0.0	20.0	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	120 secs	-	-	-	-	0.1	0.0	20.1	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	180 secs	-	-	-	-	0.3	0.0	20.0	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	240 secs	-	-	-	-	0.4	0.0	19.9	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	300 secs	-	-	-	-	0.4	0.0	19.9	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	360 secs	-	-	-	-	0.3	0.0	20.1	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	420 secs	-	-	-	-	0.1	0.0	20.5	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	480 secs	-	-	-	-	0.1	0.0	20.6	-	1	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	540 secs	-	-	-	-	0.2	0.0	20.6	-	2	0	
ABH106	1	50	3 (2)	---	---	1.00 to 3.00	600 secs	-	-	-	-	0.1	0.0	20.5	-	1	0	
ABH106	1	50	3 (3)	3.00	2.83	1.00 to 3.00	27/05/2022 16:25:00	-	-	-	DRY	-	-	-	-	-	-	
ABH107	1	50	1	5.00	---	1.00 to 5.00	28/04/2022 10:56:00	1019	1019	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH107	1	50	1	---	---	1.00 to 5.00	180 secs	1019	1019	$-0.3_{(SS)}$	-	-	-	-	-	-	-	
ABH107	1	50	1 (2)	5.00	---	1.00 to 5.00	28/04/2022 11:02:00	-	-	-	-	3.3	0.0	18.7	0.0	5	2	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	15 secs	-	-	-	-	0.4	0.0	19.0	0.0	10	7	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	20 secs	-	-	-	-	0.3	0.0	19.2	0.0	1	5	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	0.4	0.0	19.6	0.0	0	7	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	0.3	0.0	19.2	0.0	6	9	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	0.4	0.0	19.1	0.0	0	11	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	150 secs	-	-	-	-	0.3	0.0	19.3	0.0	1	9	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	180 secs	-	-	-	-	0.3	0.0	18.8	0.0	5	1	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	210 secs	-	-	-	-	0.3	0.0	19.1	0.0	1	3	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	240 secs	-	-	-	-	0.4	0.0	19.4	0.0	1	3	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	270 secs	-	-	-	-	0.4	0.0	19.2	0.0	0	1	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	300 secs	-	-	-	-	0.3	0.0	19.1	0.0	0	0	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	330 secs	-	-	-	-	0.4	0.0	19.2	0.0	0	2	
ABH107	1	50	1 (2)	---	---	1.00 to 5.00	360 secs	-	-	-	-	0.3	0.0	19.2	0.0	0	0	
ABH107	1	50	1 (3)	5.00	4.74	1.00 to 5.00	28/04/2022 11:10:00	-	-	-	DRY	-	-	-	-	-	-	
ABH107	1	50	2	5.00	---	1.00 to 5.00	11/05/2022 10:44:00	995	995	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH107	1	50	2	---	---	1.00 to 5.00	60 secs	995	995	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH107	1	50	2 (2)	5.00	---	1.00 to 5.00	11/05/2022 10:47:00	-	-	-	-	0.1	0.0	21.2	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	15 secs	-	-	-	-	1.1	0.0	21.0	-	2	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	30 secs	-	-	-	-	1.1	0.0	20.2	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	1.1	0.0	19.8	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	1.1	0.0	19.8	-	0	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	1.1	0.0	19.9	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	180 secs	-	-	-	-	1.1	0.0	20.0	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	240 secs	-	-	-	-	1.1	0.0	20.1	-	1	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	300 secs	-	-	-	-	1.0	0.0	20.1	-	0	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	360 secs	-	-	-	-	1.0	0.0	20.1	-	1	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	30/05/2022			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	420 secs	-	-	-	-	1.0	0.0	20.1	-	0	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	480 secs	-	-	-	-	1.0	0.0	20.1	-	0	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	540 secs	-	-	-	-	1.0	0.0	20.1	-	0	0	
ABH107	1	50	2 (2)	---	---	1.00 to 5.00	600 secs	-	-	-	-	1.0	0.0	20.1	-	0	0	
ABH107	1	50	2 (3)	5.00	4.74	1.00 to 5.00	11/05/2022 11:00:00	-	-	-	DRY	-	-	-	-	-	-	
ABH107	1	50	3	5.00	---	1.00 to 5.00	27/05/2022 16:27:00	1014	1014	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH107	1	50	3	---	---	1.00 to 5.00	60 secs	1014	1014	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH107	1	50	3 (2)	5.00	---	1.00 to 5.00	27/05/2022 16:29:00	-	-	-	-	0.1	0.0	21.7	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	15 secs	-	-	-	-	1.2	0.0	21.5	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	30 secs	-	-	-	-	1.2	0.0	21.1	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	60 secs	-	-	-	-	1.3	0.0	20.9	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	90 secs	-	-	-	-	1.3	0.0	20.8	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	120 secs	-	-	-	-	1.3	0.0	20.8	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	180 secs	-	-	-	-	1.3	0.0	20.9	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	240 secs	-	-	-	-	1.3	0.0	21.0	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	300 secs	-	-	-	-	1.3	0.0	21.1	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	360 secs	-	-	-	-	1.3	0.0	21.1	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	420 secs	-	-	-	-	1.3	0.0	21.1	-	2	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	480 secs	-	-	-	-	1.2	0.0	21.1	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	540 secs	-	-	-	-	1.3	0.0	21.0	-	1	0	
ABH107	1	50	3 (2)	---	---	1.00 to 5.00	600 secs	-	-	-	-	1.3	0.0	21.1	-	2	0	
ABH107	1	50	3 (3)	5.00	4.74	1.00 to 5.00	27/05/2022 16:40:00	-	-	-	DRY	-	-	-	-	-	-	
ABH110	1	50	1	10.00	---	2.00 to 10.00	28/04/2022 10:16:00	1018	1018	$-0.3_{(I)}$	-	-	-	-	-	-	-	
ABH110	1	50	1	---	---	2.00 to 10.00	120 secs	1019	1019	$-0.2_{(SS)}$	-	-	-	-	-	-	-	

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH110	1	50	1 (2)	10.00	---	2.00 to 10.00	28/04/2022 10:20:00	-	-	-	-	0.8	0.0	20.1	0.0	0	2	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	15 secs	-	-	-	-	1.7	0.0	19.1	0.0	0	1	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	30 secs	-	-	-	-	1.7	0.0	18.5	0.0	0	3	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	60 secs	-	-	-	-	1.7	0.0	18.5	0.0	0	2	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	90 secs	-	-	-	-	1.7	0.0	18.4	0.0	0	1	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	120 secs	-	-	-	-	1.7	0.0	18.5	0.0	0	1	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	150 secs	-	-	-	-	1.7	0.0	18.5	0.0	0	2	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	180 secs	-	-	-	-	1.8	0.0	18.4	0.0	0	1	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	210 secs	-	-	-	-	1.8	0.0	18.4	0.0	0	3	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	240 secs	-	-	-	-	1.8	0.0	18.4	0.0	0	1	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	270 secs	-	-	-	-	1.7	0.0	18.2	0.0	0	2	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	300 secs	-	-	-	-	1.7	0.0	18.3	0.0	0	0	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	330 secs	-	-	-	-	1.8	0.0	18.2	0.0	1	3	
ABH110	1	50	1 (2)	---	---	2.00 to 10.00	360 secs	-	-	-	-	1.7	0.0	18.4	0.0	0	1	
ABH110	1	50	1 (3)	10.00	7.45	2.00 to 10.00	28/04/2022 10:29:00	-	-	-	7.17	-	-	-	-	-	-	
ABH110	1	50	2	10.00	---	2.00 to 10.00	11/05/2022 10:15:00	995	995	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH110	1	50	2	---	---	2.00 to 10.00	60 secs	995	995	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH110	1	50	2 (2)	10.00	---	2.00 to 10.00	11/05/2022 10:17:00	-	-	-	-	0.2	0.0	21.3	-	1	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	15 secs	-	-	-	-	0.6	0.0	21.3	-	1	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	30 secs	-	-	-	-	0.6	0.0	21.2	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	60 secs	-	-	-	-	0.5	0.0	21.2	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	90 secs	-	-	-	-	0.7	0.0	21.2	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	120 secs	-	-	-	-	0.9	0.0	21.0	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	180 secs	-	-	-	-	1.2	0.0	20.7	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	240 secs	-	-	-	-	1.5	0.0	20.4	-	0	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	300 secs	-	-	-	-	1.4	0.0	20.3	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	360 secs	-	-	-	-	0.6	0.0	20.9	-	0	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	420 secs	-	-	-	-	0.3	0.0	21.3	-	1	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	480 secs	-	-	-	-	0.3	0.0	21.4	-	1	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	540 secs	-	-	-	-	0.6	0.0	21.1	-	1	0	
ABH110	1	50	2 (2)	---	---	2.00 to 10.00	600 secs	-	-	-	-	0.7	0.0	21.0	-	1	0	
ABH110	1	50	2 (3)	10.00	7.45	2.00 to 10.00	11/05/2022 10:30:00	-	-	-	DRY	-	-	-	-	-	-	
ABH110	1	50	3	10.00	---	2.00 to 10.00	27/05/2022 16:55:00	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH110	1	50	3	---	---	2.00 to 10.00	60 secs	1015	1015	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH110	1	50	3 (2)	10.00	---	2.00 to 10.00	27/05/2022 16:57:00	-	-	-	-	0.5	0.0	21.4	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	15 secs	-	-	-	-	0.5	0.0	21.4	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	30 secs	-	-	-	-	0.6	0.0	21.4	-	0	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	60 secs	-	-	-	-	0.7	0.0	21.5	-	0	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	90 secs	-	-	-	-	0.9	0.0	21.4	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	120 secs	-	-	-	-	0.9	0.0	21.4	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	180 secs	-	-	-	-	1.0	0.0	21.5	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	240 secs	-	-	-	-	0.9	0.0	21.3	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	300 secs	-	-	-	-	0.8	0.0	21.2	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	360 secs	-	-	-	-	0.9	0.0	21.0	-	0	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	420 secs	-	-	-	-	1.1	0.0	20.9	-	0	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	480 secs	-	-	-	-	0.8	0.0	20.8	-	0	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	540 secs	-	-	-	-	0.7	0.0	21.0	-	1	0	
ABH110	1	50	3 (2)	---	---	2.00 to 10.00	600 secs	-	-	-	-	0.6	0.0	21.0	-	0	0	
ABH110	1	50	3 (3)	10.00	7.45	2.00 to 10.00	27/05/2022 17:08:00	-	-	-	DRY	-	-	-	-	-	-	

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AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH111	1	50	1	6.00	---	1.00 to 6.00	28/04/2022 09:58:00	1018	1018	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH111	1	50	1	---	---	1.00 to 6.00	180 secs	1019	1019	$0.0_{(SS)}$	-	-	-	-	-	-	-	
ABH111	1	50	1 (2)	6.00	---	1.00 to 6.00	28/04/2022 10:03:00	-	-	-	-	0.8	0.0	20.1	0.0	0	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	0.8	0.0	19.9	0.0	0	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	0.8	0.0	19.7	0.0	1	0	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	0.9	0.0	19.7	0.0	1	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	0.8	0.0	19.9	0.0	0	0	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	0.9	0.0	19.8	0.0	3	0	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	150 secs	-	-	-	-	0.8	0.0	19.7	0.0	6	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	0.9	0.0	19.9	0.0	4	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	210 secs	-	-	-	-	0.9	0.0	19.7	0.0	5	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	0.8	0.0	20.1	0.0	5	0	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	270 secs	-	-	-	-	0.9	0.0	19.8	0.0	0	3	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	0.8	0.0	19.9	0.0	3	2	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	330 secs	-	-	-	-	0.8	0.0	19.8	0.0	0	1	
ABH111	1	50	1 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	0.9	0.0	19.9	0.0	3	4	
ABH111	1	50	1 (3)	6.00	5.63	1.00 to 6.00	28/04/2022 10:12:00	-	-	-	DRY	-	-	-	-	-	-	
ABH111	1	50	2	6.00	---	1.00 to 6.00	11/05/2022 09:26:00	996	996	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH111	1	50	2	---	---	1.00 to 6.00	60 secs	996	996	$-0.1_{(SS)}$	-	-	-	-	-	2	0	
ABH111	1	50	2 (2)	6.00	---	1.00 to 6.00	11/05/2022 09:29:00	-	-	-	-	0.1	0.0	21.6	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	2.1	0.0	18.1	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	2.1	0.0	17.7	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	2.1	0.0	17.7	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	2.1	0.0	17.6	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	2.1	0.0	17.6	-	1	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	2.1	0.0	17.5	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	2.1	0.0	17.5	-	1	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	420 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	480 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	540 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (2)	---	---	1.00 to 6.00	600 secs	-	-	-	-	2.1	0.0	17.5	-	0	0	
ABH111	1	50	2 (3)	6.00	5.63	1.00 to 6.00	11/05/2022 09:40:00	-	-	-	DRY	-	-	-	-	-	-	
ABH111	1	50	3	6.00	---	1.00 to 6.00	27/05/2022 17:10:00	1015	1015	$0.0_{(I)}$	-	-	-	-	-	-	-	
ABH111	1	50	3	---	---	1.00 to 6.00	60 secs	1015	1015	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH111	1	50	3 (2)	6.00	---	1.00 to 6.00	27/05/2022 17:12:00	-	-	-	-	0.1	0.0	20.7	-	2	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	15 secs	-	-	-	-	1.9	0.0	20.1	-	2	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	30 secs	-	-	-	-	1.9	0.0	19.2	-	2	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	60 secs	-	-	-	-	1.9	0.0	19.0	-	2	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	90 secs	-	-	-	-	1.9	0.0	18.9	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	120 secs	-	-	-	-	1.9	0.0	18.7	-	2	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	180 secs	-	-	-	-	1.9	0.0	18.7	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	240 secs	-	-	-	-	1.9	0.0	18.6	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	300 secs	-	-	-	-	2.0	0.0	18.5	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	360 secs	-	-	-	-	2.0	0.0	18.4	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	420 secs	-	-	-	-	2.0	0.0	18.5	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	480 secs	-	-	-	-	2.0	0.0	18.5	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	540 secs	-	-	-	-	2.0	0.0	18.4	-	1	0	
ABH111	1	50	3 (2)	---	---	1.00 to 6.00	600 secs	-	-	-	-	2.0	0.0	18.5	-	1	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH111	1	50	3 (3)	6.00	5.63	1.00 to 6.00	27/05/2022 17:23:00	-	-	-	DRY	-	-	-	-	-	-	
ABH112	1	50	1	16.00	---	1.00 to 16.00	28/04/2022 08:31:00	1019	1020	$-0.6_{(I)}$	-	-	-	-	-	-	-	
ABH112	1	50	1	---	---	1.00 to 16.00	120 secs	1019	1019	$-0.6_{(SS)}$	-	-	-	-	-	-	-	
ABH112	1	50	1 (2)	16.00	---	1.00 to 16.00	28/04/2022 08:36:00	-	-	-	-	0.6	0.0	19.9	5.8	0	0	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	15 secs	-	-	-	-	0.7	0.0	19.0	0.0	11	0	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	30 secs	-	-	-	-	1.0	0.0	19.4	1.0	8	8	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	60 secs	-	-	-	-	0.6	0.0	14.8	0.0	5	3	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	90 secs	-	-	-	-	1.0	0.0	14.7	0.0	15	5	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	120 secs	-	-	-	-	0.4	0.0	14.8	0.0	3	5	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	150 secs	-	-	-	-	0.7	0.0	15.1	0.0	5	10	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	180 secs	-	-	-	-	0.8	0.1	14.8	0.0	15	11	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	210 secs	-	-	-	-	0.4	0.5	14.7	0.0	10	4	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	240 secs	-	-	-	-	0.5	0.0	15.0	0.0	0	1	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	270 secs	-	-	-	-	0.4	0.0	15.2	0.0	15	5	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	300 secs	-	-	-	-	0.5	0.0	15.5	0.0	0	7	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	330 secs	-	-	-	-	0.6	0.0	14.6	0.0	0	7	
ABH112	1	50	1 (2)	---	---	1.00 to 16.00	360 secs	-	-	-	-	0.5	0.0	15.0	0.0	0	11	
ABH112	1	50	1 (3)	16.00	15.82	1.00 to 16.00	28/04/2022 08:45:00	-	-	-	14.50	-	-	-	-	-	-	
ABH112	1	50	2	16.00	---	1.00 to 16.00	11/05/2022 14:07:00	985	994	$0.1_{(I)}$	-	-	-	-	-	-	-	
ABH112	1	50	2	---	---	1.00 to 16.00	60 secs	992	994	$0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH112	1	50	2 (2)	16.00	---	1.00 to 16.00	11/05/2022 14:09:00	-	-	-	-	0.1	0.0	22.1	-	2	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	15 secs	-	-	-	-	4.9	0.0	21.4	-	6	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	30 secs	-	-	-	-	5.0	0.0	18.7	-	8	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	60 secs	-	-	-	-	5.0	0.0	14.8	-	7	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	90 secs	-	-	-	-	5.0	0.0	14.4	-	7	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	120 secs	-	-	-	-	5.0	0.0	14.4	-	7	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	180 secs	-	-	-	-	4.0	0.0	13.7	-	6	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	240 secs	-	-	-	-	3.2	0.0	12.6	-	5	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	300 secs	-	-	-	-	2.6	0.0	11.9	-	4	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	360 secs	-	-	-	-	2.5	0.0	11.7	-	3	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	420 secs	-	-	-	-	2.3	0.0	11.5	-	3	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	480 secs	-	-	-	-	2.1	0.0	11.5	-	2	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	540 secs	-	-	-	-	2.0	0.0	11.5	-	2	0	
ABH112	1	50	2 (2)	---	---	1.00 to 16.00	600 secs	-	-	-	-	1.9	0.0	11.7	-	2	0	
ABH112	1	50	2 (3)	16.00	15.82	1.00 to 16.00	11/05/2022 14:20:00	-	-	-	14.46	-	-	-	-	-	-	
	Remarks: Samples taken.																	
ABH112	1	50	3	16.00	---	1.00 to 16.00	27/05/2022 17:25:00	1010	1014	$-0.1_{(I)}$	-	-	-	-	-	-	-	
ABH112	1	50	3	---	---	1.00 to 16.00	60 secs	1012	1014	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
ABH112	1	50	3 (2)	16.00	---	1.00 to 16.00	27/05/2022 17:27:00	-	-	-	-	0.1	0.0	21.6	-	4	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	15 secs	-	-	-	-	0.1	0.0	21.6	-	4	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	30 secs	-	-	-	-	0.1	0.0	21.6	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	60 secs	-	-	-	-	0.1	0.0	21.6	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	90 secs	-	-	-	-	0.1	0.0	21.6	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	120 secs	-	-	-	-	0.1	0.0	21.6	-	4	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	180 secs	-	-	-	-	0.2	0.0	20.0	-	4	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	240 secs	-	-	-	-	0.2	0.0	16.6	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	300 secs	-	-	-	-	0.3	0.0	14.8	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	360 secs	-	-	-	-	0.3	0.0	13.2	-	3	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	420 secs	-	-	-	-	0.4	0.0	11.7	-	2	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

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Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	480 secs	-	-	-	-	0.8	0.0	10.2	-	2	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	540 secs	-	-	-	-	1.1	0.0	10.3	-	2	0	
ABH112	1	50	3 (2)	---	---	1.00 to 16.00	600 secs	-	-	-	-	1.2	0.0	10.5	-	2	0	
ABH112	1	50	3 (3)	16.00	15.82	1.00 to 16.00	27/05/2022 17:38:00	-	-	-	14.25	-	-	-	-	-	-	
AWS102	1	50	1	2.60	---	0.60 to 2.60	28/04/2022 14:14:00	1003	1018	$-3.1_{(I)}$	-	-	-	-	-	-	-	
AWS102	1	50	1	---	---	0.60 to 2.60	180 secs	1004	1019	$-3.0_{(SS)}$	-	-	-	-	-	-	-	
AWS102	1	50	1 (2)	2.60	---	0.60 to 2.60	28/04/2022 14:18:00	-	-	-	-	1.2	0.0	19.9	0.0	1	2	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	15 secs	-	-	-	-	0.3	0.0	20.4	0.0	1	0	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	30 secs	-	-	-	-	0.3	0.0	20.6	0.0	1	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	60 secs	-	-	-	-	0.3	0.0	20.5	0.0	0	0	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	90 secs	-	-	-	-	0.3	0.0	20.5	0.0	1	0	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	120 secs	-	-	-	-	0.3	0.0	20.5	0.0	0	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	150 secs	-	-	-	-	0.3	0.0	20.5	0.0	0	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	180 secs	-	-	-	-	0.3	0.0	20.4	0.0	0	0	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	210 secs	-	-	-	-	0.4	0.0	20.4	0.0	1	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	240 secs	-	-	-	-	0.3	0.0	20.3	0.0	0	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	270 secs	-	-	-	-	0.4	0.0	20.3	0.0	0	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	300 secs	-	-	-	-	0.3	0.0	20.5	0.0	0	1	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	330 secs	-	-	-	-	0.3	0.0	20.4	0.0	0	0	
AWS102	1	50	1 (2)	---	---	0.60 to 2.60	360 secs	-	-	-	-	0.4	0.0	20.5	0.0	0	1	
AWS102	1	50	1 (3)	2.60	2.19	0.60 to 2.60	28/04/2022 14:27:00	-	-	-	DRY	-	-	-	-	-	-	
AWS102	1	50	2	2.60	---	0.60 to 2.60	11/05/2022 13:19:00	954	954	$0.1_{(I)}$	-	-	-	-	-	-	-	
AWS102	1	50	2	---	---	0.60 to 2.60	60 secs	954	954	$0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS102	1	50	2 (2)	2.60	---	0.60 to 2.60	11/05/2022 13:21:00	-	-	-	-	0.1	0.0	22.0	-	1	0	

Key: I = Initial, Min = Minimum, P = Peak, SS = Steady State. Note: LEL = Lower Explosive Limit = 5% v/v.

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	15 secs	-	-	-	-	0.1	0.0	22.0	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	30 secs	-	-	-	-	0.1	0.0	22.0	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	60 secs	-	-	-	-	0.2	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	90 secs	-	-	-	-	0.2	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	120 secs	-	-	-	-	0.3	0.0	21.8	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	180 secs	-	-	-	-	0.3	0.0	21.8	-	0	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	240 secs	-	-	-	-	0.3	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	300 secs	-	-	-	-	0.2	0.0	21.9	-	0	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	360 secs	-	-	-	-	0.1	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	420 secs	-	-	-	-	0.1	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	480 secs	-	-	-	-	0.1	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	540 secs	-	-	-	-	0.1	0.0	21.9	-	1	0	
AWS102	1	50	2 (2)	---	---	0.60 to 2.60	600 secs	-	-	-	-	0.1	0.0	21.9	-	1	0	
AWS102	1	50	2 (3)	2.60	2.19	0.60 to 2.60	11/05/2022 13:35:00	-	-	-	DRY	-	-	-	-	-	-	
AWS102	1	50	3	2.60	---	0.60 to 2.60	27/05/2022 15:10:00	1015	1015	$0.1_{(I)}$	-	-	-	-	-	-	-	
AWS102	1	50	3	---	---	0.60 to 2.60	60 secs	1015	1015	$0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS102	1	50	3 (2)	2.60	---	0.60 to 2.60	27/05/2022 15:12:00	-	-	-	-	0.1	0.0	21.6	-	2	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	15 secs	-	-	-	-	0.1	0.0	21.6	-	2	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	30 secs	-	-	-	-	0.1	0.0	21.6	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	60 secs	-	-	-	-	0.1	0.0	21.6	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	90 secs	-	-	-	-	0.1	0.0	21.6	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	120 secs	-	-	-	-	0.1	0.0	21.6	-	2	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	180 secs	-	-	-	-	0.2	0.0	21.6	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	240 secs	-	-	-	-	0.1	0.0	21.5	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	300 secs	-	-	-	-	0.1	0.0	21.6	-	1	0	

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	360 secs	-	-	-	-	0.1	0.0	21.7	-	2	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	420 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	480 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	540 secs	-	-	-	-	0.1	0.0	21.7	-	2	0	
AWS102	1	50	3 (2)	---	---	0.60 to 2.60	600 secs	-	-	-	-	0.1	0.0	21.7	-	1	0	
AWS102	1	50	3 (3)	2.60	2.19	0.60 to 2.60	27/05/2022 15:23:00	-	-	-	DRY	-	-	-	-	-	-	
AWS106	1	50	1	2.00	---	1.00 to 2.00	28/04/2022 11:35:00	1016	1017	$-0.4_{(I)}$	-	-	-	-	-	-	-	
AWS106	1	50	1	---	---	1.00 to 2.00	120 secs	1018	1019	$-0.4_{(SS)}$	-	-	-	-	-	-	-	
AWS106	1	50	1 (2)	2.00	---	1.00 to 2.00	28/04/2022 11:38:00	-	-	-	-	3.0	0.0	17.5	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	15 secs	-	-	-	-	9.2	0.0	11.3	0.0	1	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	30 secs	-	-	-	-	9.3	0.0	10.4	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	60 secs	-	-	-	-	9.5	0.0	10.1	0.0	0	0	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	90 secs	-	-	-	-	9.5	0.0	10.0	0.0	0	0	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	120 secs	-	-	-	-	9.6	0.0	10.0	0.0	0	0	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	150 secs	-	-	-	-	9.6	0.0	10.0	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	180 secs	-	-	-	-	9.6	0.0	9.9	0.0	0	0	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	210 secs	-	-	-	-	9.6	0.0	9.9	0.0	0	2	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	240 secs	-	-	-	-	9.7	0.0	9.9	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	270 secs	-	-	-	-	9.7	0.0	9.9	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	300 secs	-	-	-	-	9.7	0.0	9.8	0.0	0	1	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	330 secs	-	-	-	-	9.7	0.0	9.8	0.0	0	0	
AWS106	1	50	1 (2)	---	---	1.00 to 2.00	360 secs	-	-	-	-	9.7	0.0	9.8	0.0	0	1	
AWS106	1	50	1 (3)	2.00	1.68	1.00 to 2.00	28/04/2022 11:46:00	-	-	-	DRY	-	-	-	-	-	-	
AWS106	1	50	2	2.00	---	1.00 to 2.00	11/05/2022 11:20:00	995	995	$-0.1_{(I)}$	-	-	-	-	-	-	-	

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STRUCTURAL SOILS
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Pottery Street
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W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	30/05/2022			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS106	1	50	2	---	---	1.00 to 2.00	60 secs	995	995	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS106	1	50	2 (2)	2.00	---	1.00 to 2.00	11/05/2022 11:22:00	-	-	-	-	2.1	0.0	20.0	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	15 secs	-	-	-	-	2.1	0.0	19.7	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	30 secs	-	-	-	-	2.2	0.0	19.6	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	60 secs	-	-	-	-	2.5	0.0	19.3	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	90 secs	-	-	-	-	3.2	0.0	18.5	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	120 secs	-	-	-	-	3.5	0.0	18.3	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	180 secs	-	-	-	-	4.1	0.0	17.7	-	1	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	240 secs	-	-	-	-	5.0	0.0	16.7	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	300 secs	-	-	-	-	5.5	0.0	16.2	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	360 secs	-	-	-	-	5.5	0.0	15.8	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	420 secs	-	-	-	-	5.8	0.0	15.6	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	480 secs	-	-	-	-	4.9	0.0	15.5	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	540 secs	-	-	-	-	5.8	0.0	15.4	-	0	0	
AWS106	1	50	2 (2)	---	---	1.00 to 2.00	600 secs	-	-	-	-	5.8	0.0	15.4	-	0	0	
AWS106	1	50	2 (3)	2.00	1.68	1.00 to 2.00	11/05/2022 11:35:00	-	-	-	DRY	-	-	-	-	-	-	
AWS106	1	50	3	2.00	---	1.00 to 2.00	27/05/2022 15:42:00	1014	-0.04	$0.1_{(I)}$	-	-	-	-	-	-	-	
AWS106	1	50	3	---	---	1.00 to 2.00	60 secs	1014	-0.05	$0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS106	1	50	3 (2)	2.00	---	1.00 to 2.00	27/05/2022 15:44:00	-	-	-	-	0.1	0.0	21.8	-	2	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	15 secs	-	-	-	-	3.4	0.0	21.2	-	2	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	30 secs	-	-	-	-	3.6	0.0	18.7	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	60 secs	-	-	-	-	4.3	0.0	16.8	-	2	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	90 secs	-	-	-	-	5.0	0.0	15.8	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	120 secs	-	-	-	-	5.6	0.0	15.1	-	2	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	180 secs	-	-	-	-	6.7	0.0	13.6	-	1	0	

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W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	240 secs	-	-	-	-	7.7	0.0	12.5	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	300 secs	-	-	-	-	7.9	0.0	11.9	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	360 secs	-	-	-	-	8.0	0.0	11.5	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	420 secs	-	-	-	-	8.3	0.0	11.4	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	480 secs	-	-	-	-	8.5	0.0	11.1	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	540 secs	-	-	-	-	8.5	0.0	11.0	-	1	0	
AWS106	1	50	3 (2)	---	---	1.00 to 2.00	600 secs	-	-	-	-	8.6	0.0	10.7	-	1	0	
AWS106	1	50	3 (3)	2.00	1.68	1.00 to 2.00	27/05/2022 15:55:00	-	-	-	DRY	-	-	-	-	-	-	
AWS108	1	50	1	4.00	---	1.00 to 4.00	28/04/2022 10:33:00	1018	1018	$0.0_{(I)}$	-	-	-	-	-	-	-	
AWS108	1	50	1	---	---	1.00 to 4.00	120 secs	1019	1019	$0.0_{(SS)}$	-	-	-	-	-	-	-	
AWS108	1	50	1 (2)	4.00	---	1.00 to 4.00	28/04/2022 10:36:00	-	-	-	-	1.7	0.0	18.7	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	15 secs	-	-	-	-	3.1	0.0	17.6	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	30 secs	-	-	-	-	3.2	0.0	17.5	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	60 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	90 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	120 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	150 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	180 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	210 secs	-	-	-	-	3.2	0.0	17.3	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	240 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	2	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	270 secs	-	-	-	-	3.2	0.0	17.3	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	300 secs	-	-	-	-	3.2	0.0	17.3	0.0	0	0	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	330 secs	-	-	-	-	3.2	0.0	17.4	0.0	0	1	
AWS108	1	50	1 (2)	---	---	1.00 to 4.00	360 secs	-	-	-	-	-	0.0	17.3	0.0	0	1	

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Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS108	1	50	1 (3)	4.00	---	1.00 to 4.00	28/04/2022 10:45:00	-	-	-	-	-	-	-	-	-	-	
AWS108	1	50	2	4.00	---	1.00 to 4.00	11/05/2022 10:00:00	995	995	$-0.1_{(I)}$	-	-	-	-	-	-	-	
AWS108	1	50	2	---	---	1.00 to 4.00	60 secs	995	995	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS108	1	50	2 (2)	4.00	---	1.00 to 4.00	11/05/2022 10:03:00	-	-	-	-	2.1	0.0	20.9	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	15 secs	-	-	-	-	2.1	0.0	19.6	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	30 secs	-	-	-	-	2.2	0.0	18.2	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	60 secs	-	-	-	-	2.2	0.0	18.2	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	90 secs	-	-	-	-	2.2	0.0	18.1	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	120 secs	-	-	-	-	2.3	0.0	18.0	-	1	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	180 secs	-	-	-	-	2.6	0.0	17.8	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	240 secs	-	-	-	-	2.7	0.0	17.7	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	300 secs	-	-	-	-	2.9	0.0	17.4	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	360 secs	-	-	-	-	3.0	0.0	17.3	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	420 secs	-	-	-	-	3.0	0.0	17.3	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	480 secs	-	-	-	-	3.0	0.0	17.3	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	540 secs	-	-	-	-	3.0	0.0	17.3	-	0	0	
AWS108	1	50	2 (2)	---	---	1.00 to 4.00	600 secs	-	-	-	-	3.0	0.0	17.3	-	0	0	
AWS108	1	50	2 (3)	4.00	---	1.00 to 4.00	11/05/2022 10:15:00	-	-	-	DRY	-	-	-	-	-	-	
AWS108	1	50	3	4.00	---	1.00 to 4.00	27/05/2022 16:41:00	1015	0.04	$0.0_{(I)}$	-	-	-	-	-	-	-	
AWS108	1	50	3	---	---	1.00 to 4.00	60 secs	1015	0.04	$0.0_{(SS)}$	-	-	-	-	-	-	-	
AWS108	1	50	3 (2)	4.00	---	1.00 to 4.00	27/05/2022 16:43:00	-	-	-	-	0.1	0.0	21.9	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	15 secs	-	-	-	-	0.6	0.0	21.7	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	30 secs	-	-	-	-	0.7	0.0	21.2	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	60 secs	-	-	-	-	0.7	0.0	20.8	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	90 secs	-	-	-	-	1.0	0.0	20.5	-	2	0	

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STRUCTURAL SOILS
The Potteries
Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	120 secs	-	-	-	-	1.9	0.0	19.5	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	180 secs	-	-	-	-	2.1	0.0	19.3	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	240 secs	-	-	-	-	2.7	0.0	18.6	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	300 secs	-	-	-	-	3.0	0.0	18.3	-	2	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	360 secs	-	-	-	-	3.0	0.0	18.2	-	1	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	420 secs	-	-	-	-	3.0	0.0	18.2	-	1	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	480 secs	-	-	-	-	3.0	0.0	18.2	-	1	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	540 secs	-	-	-	-	3.1	0.0	18.2	-	1	0	
AWS108	1	50	3 (2)	---	---	1.00 to 4.00	600 secs	-	-	-	-	3.0	0.0	18.2	-	1	0	
AWS108	1	50	3 (3)	4.00	---	1.00 to 4.00	27/05/2022 16:54:00	-	-	-	DRY	-	-	-	-	-	-	
AWS110	1	50	1	1.40	---	0.50 to 1.40	28/04/2022 09:40:00	1019	1019	$0.0_{(I)}$	-	-	-	-	-	-	-	
AWS110	1	50	1	---	---	0.50 to 1.40	180 secs	1019	1019	$0.0_{(SS)}$	-	-	-	-	-	-	-	
AWS110	1	50	1 (2)	1.40	---	0.50 to 1.40	28/04/2022 09:45:00	-	-	-	-	0.4	0.0	17.4	1.4	0	1	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	15 secs	-	-	-	-	1.0	0.0	19.8	0.0	5	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	30 secs	-	-	-	-	0.0	0.0	20.0	0.0	12	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	60 secs	-	-	-	-	0.7	0.0	20.1	0.0	1	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	90 secs	-	-	-	-	0.7	0.0	20.0	0.0	0	4	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	120 secs	-	-	-	-	0.6	0.1	19.9	0.0	10	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	150 secs	-	-	-	-	1.0	0.0	19.8	0.0	0	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	180 secs	-	-	-	-	0.7	0.0	19.9	0.0	5	0	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	210 secs	-	-	-	-	0.6	0.0	20.1	0.0	5	1	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	240 secs	-	-	-	-	0.6	0.0	20.3	0.0	5	3	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	270 secs	-	-	-	-	0.7	0.0	20.2	0.0	3	2	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	300 secs	-	-	-	-	0.7	0.0	19.8	0.0	5	10	

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STRUCTURAL SOILS
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Pottery Street
Castleford
W. Yorkshire WF10 1NJ

Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	330 secs	-	-	-	-	0.5	0.0	20.3	0.0	2	1	
AWS110	1	50	1 (2)	---	---	0.50 to 1.40	360 secs	-	-	-	-	0.6	0.1	20.1	0.0	2	5	
AWS110	1	50	1 (3)	1.40	1.25	0.50 to 1.40	28/04/2022 09:53:00	-	-	-	DRY	-	-	-	-	-	-	
AWS110	1	50	2	1.40	---	0.50 to 1.40	11/05/2022 09:45:00	996	996	$-0.1_{(I)}$	-	-	-	-	-	-	-	
AWS110	1	50	2	---	---	0.50 to 1.40	60 secs	996	996	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS110	1	50	2 (2)	1.40	---	0.50 to 1.40	11/05/2022 09:47:00	-	-	-	-	0.7	0.0	20.7	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	15 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	30 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	60 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	120 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	180 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	240 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	300 secs	-	-	-	-	0.6	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	360 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	420 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	480 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	540 secs	-	-	-	-	0.6	0.0	20.8	-	0	0	
AWS110	1	50	2 (2)	---	---	0.50 to 1.40	600 secs	-	-	-	-	0.7	0.0	20.8	-	0	0	
AWS110	1	50	2 (3)	1.40	1.33	0.50 to 1.40	11/05/2022 10:00:00	-	-	-	DRY	-	-	-	-	-	-	
AWS110	1	50	3	1.40	---	0.50 to 1.40	27/05/2022 17:40:00	1014	-0.15	$-0.1_{(I)}$	-	-	-	-	-	-	-	
AWS110	1	50	3	---	---	0.50 to 1.40	60 secs	1014	-0.13	$-0.1_{(SS)}$	-	-	-	-	-	-	-	
AWS110	1	50	3 (2)	1.40	---	0.50 to 1.40	27/05/2022 17:42:00	-	-	-	-	0.6	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	15 secs	-	-	-	-	0.6	0.0	20.8	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	30 secs	-	-	-	-	0.6	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	60 secs	-	-	-	-	0.6	0.0	20.9	-	0	0	

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Compiled By	Date	Checked By	Date	Contract Ref:
	**30/05/2022**			**765374**

Contract: **Seam Barnsley**

AGS

IN-SITU GAS MONITORING RESULTS

Exploratory Position ID	Pipe ref	Pipe diameter (mm)	Monitoring Round	Reported Installation Depth (m)	Measured Installation Depth (mbgl)	Response Zone	Date & Time of Monitoring (elapsed time)	Borehole Pressure (mb)	Atmos Pressure (mb)	Gas Flow (l/hr)	Water Depth (mbgl)	Carbon Dioxide (% / vol)	Methane (% / vol)	Oxygen (% / vol)	LEL (%)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	120 secs	-	-	-	-	0.7	0.0	20.9	-	1	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	180 secs	-	-	-	-	0.7	0.0	21.0	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	240 secs	-	-	-	-	0.7	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	300 secs	-	-	-	-	0.7	0.0	20.9	-	1	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	360 secs	-	-	-	-	0.6	0.0	20.8	-	1	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	420 secs	-	-	-	-	0.6	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	480 secs	-	-	-	-	0.5	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	540 secs	-	-	-	-	0.6	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	600 secs	-	-	-	-	0.7	0.0	20.9	-	0	0	
AWS110	1	50	3 (2)	---	---	0.50 to 1.40	660 secs	-	-	-	-	0.7	0.0	20.9	-	0	0	
AWS110	1	50	3 (3)	1.40	1.33	0.50 to 1.40	27/05/2022 17:54:00	-	-	-	DRY	-	-	-	-	-	-	

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Compiled By	Date	Checked By	Date	Contract Ref:
	30/05/2022			**765374**

Contract: **Seam Barnsley**

AGS

APPENDIX H - REMOTE SENSING AND GEOPHYSIC REPORTS

(i) Centara Reports (Issued as separate documents)

Appendix F

GQRA Tables

				Location Code	ABH101	ABH101	ABH101	ABH102	ABH102	ABH102	ABH103	ABH103	ABH108	ABH108	ABH111	ABH111	ABH111	ABH112	ABH112	ABH112	ABH112	ATP104	AWS101	AWS101
				Sample Depth Range	0.9	2-3	4-4.45	0.4	0.9	2	1.1	2.5	0.5	0.5	0.6	2.5-2.85	4.2-4.3	0.15	0.5	1.2	3-3.6	0.5	0.4	1
				Sampled Date	17/03/2022	17/03/2022	17/03/2022	30/03/2022	30/03/2022	31/03/2022	17/03/2022	17/03/2022	30/01/1900	30/03/2022	25/03/2022	25/03/2022	25/03/2022	18/03/2022	18/03/2022	18/03/2022	18/03/2022	28/03/2022	31/03/2022	31/03/2022
				LQM S4UL Commercial/Industrial - 1% SOM																				
Chem_Group	**ChemName**	**output unit**	**EQL**																					
Metals	Arsenic	mg/kg	1	640	-	-	-	14	2	2	7	-	-	3	-	-	-	3	-	-	-	83	41	22
	Cadmium	mg/kg	0.5	190	-	-	-	1.6	0.5	0.7	1.1	-	-	1	-	-	-	1	-	-	-	3.9	3.1	1.7
	Chromium (hexavalent)	mg/kg	1	33	-	-	-	<1	<1	<1	<1	-	-	<1	-	-	-	<1	-	-	-	<1	<1	<1
	Chromium	mg/kg	1	8600	-	-	-	28	7	16	22	-	-	25	-	-	-	64	-	-	-	30	35	17
	Copper	mg/kg	1	68000	-	-	-	92	15	14	48	-	-	34	-	-	-	64	-	-	-	196	383	116
	Lead	mg/kg	1	2300	-	-	-	78	14	15	48	-	-	69	-	-	-	125	-	-	-	462	189	81
	Mercury	mg/kg	0.17	1100	-	-	-	0.74	<0.17	<0.17	<0.17	-	-	1.59	-	-	-	0.89	-	-	-	0.83	1.63	<0.17
	Nickel	mg/kg	1	980	-	-	-	26	15	24	29	-	-	15	-	-	-	22	-	-	-	52	48	34
	Selenium	mg/kg	1	12000	-	-	-	<1	<1	<1	<1	-	-	<1	-	-	-	1	-	-	-	2	2	<1
	Zinc	mg/kg	5	730000	-	-	-	107	56	43	77	-	-	94	-	-	-	78	-	-	-	315	159	67
Asbestos	Anthophyllite	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Asbestos Containing Material	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Asbestos Matrix (microscope)	-	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Asbestos Matrix (visual)	-	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Asbestos: Actinolite	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Crocidolite Asbestos	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Chrysotile Asbestos	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Amosite Asbestos	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
	Tremolite	Detect	0		-	-	-	0	0	0	0	-	-	0	-	-	-	0	-	-	-	0	0	0
Inorganics	Cyanide Total	mg/kg	1		-	-	-	<1	<1	<1	<1	-	-	<1	-	-	-	<1	-	-	-	<1	<1	<1
	Sulphate (Soluble)	mg/kg	200		-	800	600	-	-	-	400	-	1300	-	<200	<200	200	-	1500	<200	300	-	-	-
	Sulphur as S	%	0.01		-	0.08	0.03	-	-	-	0.04	-	0.17	-	0.03	0.23	0.12	-	0.2	0.02	0.33	-	-	-
PAH	Naphthalene	mg/kg	0.03	(sol)190	-	-	-	0.54	0.06	<0.03	0.13	-	-	0.62	-	-	-	13.5	-	-	-	0.42	0.99	0.38
	Acenaphthene	mg/kg	0.01	(sol)84000	-	-	-	0.1	0.02	<0.01	0.43	-	-	0.2	-	-	-	65.8	-	-	-	0.44	0.06	0.03
	Acenaphthylene	mg/kg	0.01	(sol)83000	-	-	-	0.08	<0.01	<0.01	0.09	-	-	0.05	-	-	-	2.4	-	-	-	0.13	0.06	0.03
	Fluoranthene	mg/kg	0.08	23000	-	-	-	2.46	0.21	<0.08	3.9	-	-	3.9	-	-	-	430	-	-	-	26.1	1.46	0.51
	Anthracene	mg/kg	0.02	520000	-	-	-	0.39	0.03	<0.02	0.78	-	-	0.57	-	-	-	77.8	-	-	-	1.62	0.24	0.11
	Phenanthrene	mg/kg	0.03	22000	-	-	-	1.52	0.17	0.04	3.23	-	-	1.94	-	-	-	610	-	-	-	8.18	1.43	0.65
	Fluorene	mg/kg	0.01	(sol)63000	-	-	-	0.09	<0.01	<0.01	0.34	-	-	0.17	-	-	-	57.9	-	-	-	0.3	0.07	0.04
	Chrysene	mg/kg	0.06	350	-	-	-	1.26	0.1	<0.06	1.47	-	-	1.7	-	-	-	253	-	-	-	9.18	0.85	0.31
	Pyrene	mg/kg	0.07	54000	-	-	-	2.12	0.17	<0.07	3.51	-	-	3.65	-	-	-	382	-	-	-	24	1.3	0.43

				Location Code	ABH101	ABH101	ABH101	ABH102	ABH102	ABH102	ABH103	ABH103	ABH108	ABH108	ABH111	ABH111	ABH111	ABH112	ABH112	ABH112	ABH112	ATP104	AWS101	AWS101
				Sample Depth Range	0.9	2-3	4-4.45	0.4	0.9	2	1.1	2.5	0.5	0.5	0.6	2.5-2.85	4.2-4.3	0.15	0.5	1.2	3-3.6	0.5	0.4	1
				Sampled Date	17/03/2022	17/03/2022	17/03/2022	30/03/2022	30/03/2022	31/03/2022	17/03/2022	17/03/2022	30/01/1900	30/03/2022	25/03/2022	25/03/2022	25/03/2022	18/03/2022	18/03/2022	18/03/2022	18/03/2022	28/03/2022	31/03/2022	31/03/2022
				LQM S4UL Commercial/Industrial - 1% SOM																				
Chem_Group	**ChemName**	**output unit**	**EQL**																					
	Benzo(a)anthracene	mg/kg	0.04	170	-	-	-	1.32	0.09	<0.04	1.44	-	-	2.09	-	-	-	166	-	-	-	9.8	0.85	0.3
	Benzo(b)fluoranthene	mg/kg	0.05	44	-	-	-	1.24	0.09	<0.05	1.49	-	-	1.47	-	-	-	123	-	-	-	7.8	0.75	0.27
	Benzo(k)fluoranthene	mg/kg	0.07	1200	-	-	-	0.39	<0.07	<0.07	0.54	-	-	0.54	-	-	-	46.7	-	-	-	3.33	0.25	0.11
	Benzo(a)pyrene	mg/kg	0.04	35	-	-	-	1.24	0.08	<0.04	1.37	-	-	1.6	-	-	-	104	-	-	-	7.6	0.62	0.22
	Dibenz(a,h)anthracene	mg/kg	0.04	3.5	-	-	-	0.17	<0.04	<0.04	0.16	-	-	0.19	-	-	-	12.7	-	-	-	0.81	0.08	<0.04
	Benzo(g,h,i)perylene	mg/kg	0.05	3900	-	-	-	0.85	0.08	<0.05	0.7	-	-	1.01	-	-	-	60.6	-	-	-	4.86	0.35	0.12
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	500	-	-	-	0.98	0.07	<0.03	0.89	-	-	1.18	-	-	-	67.7	-	-	-	5.46	0.41	0.14
	PAH 16 Total	mg/kg	0.01		-	-	-	14.8	1.17	<0.08	20.5	-	-	20.9	-	-	-	2470	-	-	-	110	9.77	3.65
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08		5.14	-	-	-	-	-	-	14	-	-	-	-	-	-	930	-	-	-	-	-
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	(sol)3200	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	>C6-C8 Aliphatics	mg/kg	0.01	(sol)7800	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	>C8-C10 Aliphatics	mg/kg	1	(sol)2000	-	-	-	3	<1	<1	3	-	-	<10	-	-	-	<50	-	-	-	1	5	2
	>C10-C12 Aliphatics	mg/kg	1	(sol)9700	-	-	-	2	<1	<1	1	-	-	<10	-	-	-	<50	-	-	-	1	2	<1
	>C12-C16 Aliphatics	mg/kg	1	(sol)59000	-	-	-	3	<1	<1	2	-	-	<10	-	-	-	<50	-	-	-	4	5	2
	>C16-C21 Aliphatics	mg/kg	1	800000	-	-	-	4	<1	<1	3	-	-	<10	-	-	-	65	-	-	-	5	6	2
	>C21-C35 Aliphatics	mg/kg	1	800000	-	-	-	80	10	4	34	-	-	1030	-	-	-	369	-	-	-	123	33	8
	Total >C5-C35 Aliphatics	mg/kg	1		-	-	-	92	10	4	44	-	-	1030	-	-	-	434	-	-	-	133	51	15
	>EC5-EC7 Aromatics	mg/kg	0.01	(sol)26000	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	>EC7-EC8 Aromatics	mg/kg	0.01	(vap)56000	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	>EC8-EC10 Aromatics	mg/kg	1	(vap)3500	-	-	-	4	<1	<1	2	-	-	<10	-	-	-	<50	-	-	-	2	5	2
	>EC10-EC12 Aromatics	mg/kg	1	(sol)16000	-	-	-	4	<1	<1	3	-	-	<10	-	-	-	57	-	-	-	2	6	2
	>EC12-EC16 Aromatics	mg/kg	1	(sol)36000	-	-	-	15	2	<1	19	-	-	13	-	-	-	903	-	-	-	10	18	6
	>EC16-EC21 Aromatics	mg/kg	1	28000	-	-	-	28	4	1	46	-	-	70	-	-	-	3850	-	-	-	69	31	9
	>EC21-EC35 Aromatics	mg/kg	1	28000	-	-	-	103	14	4	107	-	-	477	-	-	-	6330	-	-	-	265	78	22
	Total >EC5-EC35 Aromatics	mg/kg	1		-	-	-	154	20	5	-	-	-	560	-	-	-	-	-	-	-	349	137	42
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		-	-	-	247	31	10	221	-	-	1590	-	-	-	11,500	-	-	-	482	189	56
TPH	Aromatics	%	1E-04		-	-	-	-	-	-	0.0176	-	-	-	-	-	-	1.11	-	-	-	-	-	-
	Mineral Oil (C10-40)	mg/kg	10		<10	-	-	-	-	-	-	81	-	-	-	-	-	-	230	-	-	-	-	-
BTEX and MTBE	Benzene	mg/kg	0.01	27	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	Toluene	mg/kg	0.01	(vap)56000	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	Ethylbenzene	mg/kg	0.01	(vap)5700	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05

				Location Code	ABH101	ABH101	ABH101	ABH102	ABH102	ABH102	ABH103	ABH103	ABH108	ABH108	ABH111	ABH111	ABH111	ABH112	ABH112	ABH112	ABH112	ATP104	AWS101	AWS101
				Sample Depth Range	0.9	2-3	4-4.45	0.4	0.9	2	1.1	2.5	0.5	0.5	0.6	2.5-2.85	4.2-4.3	0.15	0.5	1.2	3-3.6	0.5	0.4	1
				Sampled Date	17/03/2022	17/03/2022	17/03/2022	30/03/2022	30/03/2022	31/03/2022	17/03/2022	17/03/2022	30/01/1900	30/03/2022	25/03/2022	25/03/2022	25/03/2022	18/03/2022	18/03/2022	18/03/2022	18/03/2022	28/03/2022	31/03/2022	31/03/2022
				LQM S4UL Commercial/Industrial - 1% SOM																				
Chem_Group	**ChemName**	**output unit**	**EQL**																					
	Xylene (m & p)	mg/kg	0.01	(sol)5900	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	Xylene (o)	mg/kg	0.01	(sol)6660	-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	MTBE	mg/kg	0.01		-	-	-	<0.01	<0.01	<0.01	<0.01	-	-	<0.01	-	-	-	<0.01	-	-	-	<0.01	<0.05	<0.05
	Total BTEX	mg/kg	0.01		<0.01	-	-	-	-	-	-	<0.01	-	-	-	-	-	-	<0.01	-	-	-	-	-
PCB	PCBs (Sum of total)	mg/kg	0.007		<0.007	-	-	-	-	-	-	<0.007	-	-	-	-	-	-	<0.007	-	-	-	-	-
Phenolics	Total Phenols	mg/kg	0.2		-	-	-	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	-	-	-	<0.2	-	-	-	<0.2	<0.2	<0.2
NA	Mass of Dry Sample (Bulk Analysis)	g	1		194	-	-	-	-	-	-	207	-	-	-	-	-	-	203	-	-	-	-	-
Other	% Moisture at <40C	% w/w	0.1		-	-	-	13.1	11	8.8	9.9	-	-	6.8	-	-	-	5.5	-	-	-	16	16.2	13.9
	ANC at pH 4	mol/kg	0.01		0.19	-	-	-	-	-	-	0.08	-	-	-	-	-	-	0.31	-	-	-	-	-
	Organic Matter	%	0.1		-	-	-	16.6	1.1	0.4	4.1	-	-	8.4	-	-	-	20.4	-	-	-	38.2	46.7	20.3
	% Stones >10mm	% w/w	0.1		<0.1	<0.1	<0.1	8.8	24.4	<0.1	<0.1 - 27.9	<0.1	<0.1	26.5	12.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	10.5
	Dry Matter	%	0.1		90.4	-	-	-	-	-	-	84.6	-	-	-	-	-	-	86.4	-	-	-	-	-
	ANC at pH 6 dry soil	mol/kg	0.01		0.08	-	-	-	-	-	-	0.08	-	-	-	-	-	-	0.11	-	-	-	-	-
	Loss on ignition	%	0.6		4.5	-	-	-	-	-	-	16.8	-	-	-	-	-	-	15.2	-	-	-	-	-
	pH (Lab)	pH_Units	0.01		8.2	7.72	7.22	8.86	8.88	9.22	8.1 - 9.05	7.97	9.33	9.7	7.89	4.92	6.92	8.76	7.61 - 8.76	7.64	6.66	7.39	8.09	7.57
	Total Organic Carbon	%	0.03		2.2	-	-	9.64	0.65	0.21	2.39	13.9	-	4.87	-	-	-	11.8	17.5	-	-	22.1	27.1	11.8

				Location Code	AWS101	AWS105	AWS109	AWS109	AWS109	AWS110											
				Sample Depth Range	2.65-3	1	1	1.2	1.5-2	0.2											
				Sampled Date	31/03/2022	31/03/2022	29/03/2022	29/03/2022	29/03/2022	29/03/2022											
				LQM S4UL Commercial/Industrial - 1% SOM							Statistical Summary										
Chem_Group	**ChemName**	**output unit**	**EQL**								Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
Metals	Arsenic	mg/kg	1	640	-	30	3	-	-	<1	12	11	<1	2	83	83	18	5	24	0	0
	Cadmium	mg/kg	0.5	190	-	1.7	0.9	-	-	4.7	12	12	0.5	0.5	4.7	4.7	1.8	1.35	1.3	0	0
	Chromium (hexavalent)	mg/kg	1	33	-	<1	<1	-	-	<1	12	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Chromium	mg/kg	1	8600	-	86	24	-	-	1480	12	12	7	7	1480	1480	153	26.5	419	0	0
	Copper	mg/kg	1	68000	-	149	16	-	-	39	12	12	14	14	383	383	97	56	107	0	0
	Lead	mg/kg	1	2300	-	150	55	-	-	82	12	12	14	14	462	462	114	79.5	121	0	0
	Mercury	mg/kg	0.17	1100	-	0.85	<0.17	-	-	1.28	12	7	<0.17	0.74	1.63	1.63	0.69	0.785	0.6	0	0
	Nickel	mg/kg	1	980	-	43	18	-	-	38	12	12	15	15	52	52	30	27.5	13	0	0
	Selenium	mg/kg	1	12000	-	2	<1	-	-	6	12	5	<1	1	6	6	1.4	0.5	1.6	0	0
	Zinc	mg/kg	5	730000	-	131	39	-	-	164	12	12	39	39	315	315	111	86	77	0	0
Asbestos	Anthophyllite	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Asbestos Containing Material	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Asbestos Matrix (microscope)	-	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Asbestos Matrix (visual)	-	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Asbestos: Actinolite	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Crocidolite Asbestos	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Chrysotile Asbestos	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Amosite Asbestos	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
	Tremolite	Detect	0		-	0	0	-	-	0	12	12	0	ND	0	ND	0	0	0	0	0
Inorganics	Cyanide Total	mg/kg	1		-	<1	<1	-	-	<1	12	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Sulphate (Soluble)	mg/kg	200		-	-	<200	-	300	-	12	8	<200	200	1500	1500	483	300	482	0	0
	Sulphur as S	%	0.01		-	-	<0.01	-	0.02	-	12	11	<0.01	0.02	0.33	0.33	0.11	0.06	0.1	0	0
PAH	Naphthalene	mg/kg	0.03	(sol)190	-	1.51	12	-	-	0.37	12	11	<0.03	0.06	13.5	13.5	2.5	0.48	4.8	0	0
	Acenaphthene	mg/kg	0.01	(sol)84000	-	3.85	8.65	-	-	19.2	12	11	<0.01	0.02	65.8	65.8	8.2	0.315	19	0	0
	Acenaphthylene	mg/kg	0.01	(sol)83000	-	0.22	0.06	-	-	0.26	12	10	<0.01	0.03	2.4	2.4	0.28	0.07	0.67	0	0
	Fluoranthene	mg/kg	0.08	23000	-	32.2	26.9	-	-	52.8	12	11	<0.08	0.21	430	430	48	3.9	121	0	0
	Anthracene	mg/kg	0.02	520000	-	7.73	9.26	-	-	22.4	12	11	<0.02	0.03	77.8	77.8	10	0.675	22	0	0
	Phenanthrene	mg/kg	0.03	22000	-	25.3	30	-	-	75.7	12	12	0.04	0.04	610	610	63	2.585	174	0	0
	Fluorene	mg/kg	0.01	(sol)63000	-	3.65	6.49	-	-	12.8	12	10	<0.01	0.04	57.9	57.9	6.8	0.235	17	0	0
	Chrysene	mg/kg	0.06	350	-	11.3	10.2	-	-	16.9	12	11	<0.06	0.1	253	253	26	1.585	72	0	0
	Pyrene	mg/kg	0.07	54000	-	27.9	22.8	-	-	43.7	12	11	<0.07	0.17	382	382	43	3.58	108	0	0

				Location Code	AWS101	AWS105	AWS109	AWS109	AWS109	AWS110											
				Sample Depth Range	2.65-3	1	1	1.2	1.5-2	0.2											
				Sampled Date	31/03/2022	31/03/2022	29/03/2022	29/03/2022	29/03/2022	29/03/2022											
				LQM S4UL Commercial/Industrial - 1% SOM							Statistical Summary										
Chem_Group	**ChemName**	**output unit**	**EQL**								Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
	Benzo(a)anthracene	mg/kg	0.04	170	-	14.5	12.2	-	-	21.2	12	11	<0.04	0.09	166	166	19	1.765	47	0	0
	Benzo(b)fluoranthene	mg/kg	0.05	44	-	8.67	5.62	-	-	11.8	12	11	<0.05	0.09	123	123	14	1.48	35	1	1
	Benzo(k)fluoranthene	mg/kg	0.07	1200	-	3.14	2.11	-	-	4.59	12	10	<0.07	0.11	46.7	46.7	5.1	0.54	13	0	0
	Benzo(a)pyrene	mg/kg	0.04	35	-	8.75	6.64	-	-	12.5	12	11	<0.04	0.08	104	104	12	1.485	29	1	1
	Dibenz(a,h)anthracene	mg/kg	0.04	3.5	-	0.93	0.72	-	-	1.49	12	9	<0.04	0.08	12.7	12.7	1.4	0.18	3.6	1	1
	Benzo(g,h,i)perylene	mg/kg	0.05	3900	-	4.62	3.12	-	-	7.94	12	11	<0.05	0.08	60.6	60.6	7	0.93	17	0	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	500	-	5.84	4.17	-	-	10.1	12	11	<0.03	0.07	67.7	67.7	8.1	1.08	19	0	0
	PAH 16 Total	mg/kg	0.01		-	160	161	-	-	314	12	11	<0.08	1.17	2470	2470	274	20.7	698	0	0
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08		<0.08	-	-	1.41	-	-	5	4	<0.08	1.41	930	930	190	5.14	414	0	0
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	(sol)3200	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	>C6-C8 Aliphatics	mg/kg	0.01	(sol)7800	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	>C8-C10 Aliphatics	mg/kg	1	(sol)2000	-	6	<10	-	-	<50	12	6	<1	1	<50	6	6.8	4	8.7	0	0
	>C10-C12 Aliphatics	mg/kg	1	(sol)9700	-	3	<10	-	-	<50	12	5	<1	1	<50	3	5.9	2	9.1	0	0
	>C12-C16 Aliphatics	mg/kg	1	(sol)59000	-	7	<10	-	-	<50	12	6	<1	2	<50	7	7	4.5	8.6	0	0
	>C16-C21 Aliphatics	mg/kg	1	800000	-	8	<10	-	-	113	12	8	<1	2	113	113	18	5	35	0	0
	>C21-C35 Aliphatics	mg/kg	1	800000	-	165	74	-	-	374	12	12	4	4	1030	1030	192	77	294	0	0
	Total >C5-C35 Aliphatics	mg/kg	1		-	189	74	-	-	487	12	12	4	4	1030	1030	214	83	303	0	0
	>EC5-EC7 Aromatics	mg/kg	0.01	(sol)26000	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	>EC7-EC8 Aromatics	mg/kg	0.01	(vap)56000	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	>EC8-EC10 Aromatics	mg/kg	1	(vap)3500	-	6	<10	-	-	<50	12	6	<1	2	<50	6	6.8	4.5	8.7	0	0
	>EC10-EC12 Aromatics	mg/kg	1	(sol)16000	-	8	124	-	-	69	12	9	<1	2	124	124	23	4.5	39	0	0
	>EC12-EC16 Aromatics	mg/kg	1	(sol)36000	-	39	237	-	-	2340	12	11	<1	2	2340	2340	300	16.5	692	0	0
	>EC16-EC21 Aromatics	mg/kg	1	28000	-	157	609	-	-	7320	12	12	1	1	7320	7320	1016	57.5	2265	0	0
	>EC21-EC35 Aromatics	mg/kg	1	28000	-	630	1040	-	-	9330	12	12	4	4	9330	9330	1533	186	3026	0	0
	Total >EC5-EC35 Aromatics	mg/kg	1		-	840	2010	-	-	19,100	10	10	5	5	19100	19100	2322	251.5	5927	0	0
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		-	1030	2090	-	-	19,500	12	12	10	10	19500	19500	3079	364.5	6083	0	0
TPH	Aromatics	%	1E-04		-	-	-	-	-	-	2	2	0.0176	0.0176	1.11	1.11		0.5638		0	0
	Mineral Oil (C10-40)	mg/kg	10		<10	-	-	<10	-	-	5	2	<10	81	230	230	65	5	98	0	0
BTEX and MTBE	Benzene	mg/kg	0.01	27	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	Toluene	mg/kg	0.01	(vap)56000	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	Ethylbenzene	mg/kg	0.01	(vap)5700	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0

				Location Code	AWS101	AWS105	AWS109	AWS109	AWS109	AWS110											
				Sample Depth Range	2.65-3	1	1	1.2	1.5-2	0.2											
				Sampled Date	31/03/2022	31/03/2022	29/03/2022	29/03/2022	29/03/2022	29/03/2022											
				LQM S4UL Commercial/Industrial - 1% SOM							Statistical Summary										
Chem_Group	**ChemName**	**output unit**	**EQL**								Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
	Xylene (m & p)	mg/kg	0.01	(sol)5900	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	Xylene (o)	mg/kg	0.01	(sol)6660	-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	MTBE	mg/kg	0.01		-	<0.01	<0.01	-	-	<0.01	12	0	<0.01	ND	<0.05	ND	0.0083	0.005	0.0078	0	0
	Total BTEX	mg/kg	0.01		<0.01	-	-	<0.01	-	-	5	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
PCB	PCBs (Sum of total)	mg/kg	0.007		<0.007	-	-	<0.007	-	-	5	0	<0.007	ND	<0.007	ND	0.0035	0.0035	0	0	0
Phenolics	Total Phenols	mg/kg	0.2		-	<0.2	<0.2	-	-	<0.2	12	0	<0.2	ND	<0.2	ND	0.1	0.1	0	0	0
NA	Mass of Dry Sample (Bulk Analysis)	g	1		196	-	-	221	-	-	5	5	194	194	221	221	204	203	11	0	0
Other	% Moisture at <40C	% w/w	0.1		-	13.1	14.8	-	-	2.1	12	12	2.1	2.1	16.2	16.2	11	12.05	4.4	0	0
	ANC at pH 4	mol/kg	0.01		0.07	-	-	0.15	-	-	5	5	0.07	0.07	0.31	0.31	0.16	0.15	0.097	0	0
	Organic Matter	%	0.1		-	31.5	3	-	-	12.1	12	12	0.4	0.4	46.7	46.7	17	14.35	15	0	0
	% Stones >10mm	% w/w	0.1		42.7	18	<0.1 - 20.4	<0.1	16.6	<0.1	28	11	<0.1	8.8	42.7	42.7	7.1	0.05	11	0	0
	Dry Matter	%	0.1		89.5	-	-	79.3	-	-	5	5	79.3	79.3	90.4	90.4	86	86.4	4.4	0	0
	ANC at pH 6 dry soil	mol/kg	0.01		0.07	-	-	0.11	-	-	5	5	0.07	0.07	0.11	0.11	0.09	0.08	0.019	0	0
	Loss on ignition	%	0.6		1.8	-	-	10.4	-	-	5	5	1.8	1.8	16.8	16.8	9.7	10.4	6.5	0	0
	pH (Lab)	pH_Units	0.01		8.1	8.71	7.32 - 9.15	8.1	7.26	10.82	26	26	4.92	4.92	10.82	10.82	8.1	8.1	1.1	0	0
	Total Organic Carbon	%	0.03		0.5	18.2	1.72	6.7	-	7.02	17	17	0.21	0.21	27.1	27.1	9.3	7.02	8.2	0	0

				Location Code	ABH107	ABH107	ABH107	ABH110	ABH110	ABH110	ABH110	AWS108	AWS108	AWS108	AWS111	AWS111	AWS111	Statistical Summary					
				Sample Depth Range	0.2	0.6	1.1	0.2	0.7	2-2.45	5.5-6	1.2-1.65	1.5	2.7-3	0.3	1	1.2-2						
				Sampled Date	29/03/2022	29/03/2022	29/03/2022	28/03/2022	28/03/2022	28/03/2022	28/03/2022	29/03/2022	29/03/2022	29/03/2022	30/03/2022	30/03/2022	30/03/2022						
Chem_Group	ChemName	output unit	EQL	LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect
Metals	Arsenic	mg/kg	1	40	-	6	-	31	42	-	-	-	23	-	33	21	-	6	6	6	6	42	42
	Cadmium	mg/kg	0.5	85	-	1.1	-	6.7	2.9	-	-	-	1.1	-	2.5	1.6	-	6	6	1.1	1.1	6.7	6.7
	Chromium (hexavalent)	mg/kg	1	6	-	<1	-	<1	<1	-	-	-	<1	-	<1	<1	-	6	0	<1	ND	<1	ND
	Chromium	mg/kg	1	910	-	32	-	134	24	-	-	-	32	-	43	20	-	6	6	20	20	134	134
	Copper	mg/kg	1	7100	-	52	-	493	205	-	-	-	38	-	139	223	-	6	6	38	38	493	493
	Lead	mg/kg	1	310	-	177	-	2660	289	-	-	-	38	-	464	157	-	6	6	38	38	2660	2660
	Mercury	mg/kg	0.17	56	-	1.98	-	<0.17	0.76	-	-	-	<0.17	-	3.04	0.67	-	6	4	<0.17	0.67	3.04	3.04
	Nickel	mg/kg	1	180	-	13	-	53	46	-	-	-	41	-	31	33	-	6	6	13	13	53	53
	Selenium	mg/kg	1	430	-	3	-	<1	2	-	-	-	<1	-	1	2	-	6	4	<1	1	3	3
	Zinc	mg/kg	5	40000	-	140	-	1100	205	-	-	-	92	-	381	124	-	6	6	92	92	1100	1100
Asbestos	Anthophyllite	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Asbestos Containing Material	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Asbestos Matrix (microscope)	-	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Asbestos Matrix (visual)	-	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Asbestos: Actinolite	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Crocidolite Asbestos	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Chrysotile Asbestos	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Amosite Asbestos	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
	Tremolite	Detect	0		-	0	-	0	0	-	-	-	0	-	0	0	-	6	6	0	ND	0	ND
Inorganics	Cyanide Total	mg/kg	1		-	<1	-	<1	<1	-	-	-	<1	-	<1	<1	-	6	0	<1	ND	<1	ND
	Sulphate (Soluble)	mg/kg	200		-	1900	800	-	1100	<200	500	300	-	200	-	-	5500	8	7	<200	200	5500	5500
	Sulphur as S	%	0.01		-	0.32	0.08	-	0.19	0.01	0.04	0.04	-	0.01	-	-	0.35	8	8	0.01	0.01	0.35	0.35
PAH	Naphthalene	mg/kg	0.03	2.3	-	1.15	-	0.1	1.47	-	-	-	<0.03	-	0.96	0.43	-	6	5	<0.03	0.1	1.47	1.47
	Acenaphthene	mg/kg	0.01	(sol)3000	-	2.7	-	0.05	0.79	-	-	-	0.03	-	0.43	0.15	-	6	6	0.03	0.03	2.7	2.7
	Acenaphthylene	mg/kg	0.01	(sol)2900	-	0.52	-	0.04	0.33	-	-	-	<0.01	-	0.21	0.1	-	6	5	<0.01	0.04	0.52	0.52
	Fluoranthene	mg/kg	0.08	1500	-	45.2	-	0.95	13	-	-	-	0.29	-	9.14	4.03	-	6	6	0.29	0.29	45.2	45.2
	Anthracene	mg/kg	0.02	(vap)31000	-	8.62	-	0.13	2.94	-	-	-	0.05	-	1.3	0.55	-	6	6	0.05	0.05	8.62	8.62
	Phenanthrene	mg/kg	0.03	(sol)1300	-	24.3	-	0.61	10.7	-	-	-	0.24	-	5.33	2.52	-	6	6	0.24	0.24	24.3	24.3

				Location Code	ABH107	ABH107	ABH107	ABH110	ABH110	ABH110	ABH110	AWS108	AWS108	AWS108	AWS111	AWS111	AWS111	Statistical Summary					
				Sample Depth Range	0.2	0.6	1.1	0.2	0.7	2-2.45	5.5-6	1.2-1.65	1.5	2.7-3	0.3	1	1.2-2						
				Sampled Date	29/03/2022	29/03/2022	29/03/2022	28/03/2022	28/03/2022	28/03/2022	28/03/2022	29/03/2022	29/03/2022	29/03/2022	30/03/2022	30/03/2022	30/03/2022						
Chem_Group	ChemName	output unit	EQL	LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect
	Fluorene	mg/kg	0.01	(sol)2800	-	2.2	-	0.04	0.87	-	-	-	0.03	-	0.33	0.14	-	6	6	0.03	0.03	2.2	2.2
	Chrysene	mg/kg	0.06	30	-	20.6	-	0.59	5.77	-	-	-	0.1	-	4.24	1.77	-	6	6	0.1	0.1	20.6	20.6
	Pyrene	mg/kg	0.07	3700	-	39.9	-	0.75	10.6	-	-	-	0.23	-	8.25	3.62	-	6	6	0.23	0.23	39.9	39.9
	Benzo(a)anthracene	mg/kg	0.04	11	-	26.3	-	0.57	6.94	-	-	-	0.11	-	4.58	1.9	-	6	6	0.11	0.11	26.3	26.3
	Benzo(b)fluoranthene	mg/kg	0.05	3.9	-	15.2	-	0.68	5.56	-	-	-	0.08	-	3.91	1.56	-	6	6	0.08	0.08	15.2	15.2
	Benzo(k)fluoranthene	mg/kg	0.07	110	-	6.07	-	0.23	2.14	-	-	-	<0.07	-	1.34	0.52	-	6	5	<0.07	0.23	6.07	6.07
	Benzo(a)pyrene	mg/kg	0.04	3.2	-	15.2	-	0.63	4.88	-	-	-	0.08	-	3.66	1.39	-	6	6	0.08	0.08	15.2	15.2
	Dibenz(a,h)anthracene	mg/kg	0.04	0.31	-	2.35	-	0.08	0.57	-	-	-	<0.04	-	0.48	0.16	-	6	5	<0.04	0.08	2.35	2.35
	Benzo(g,h,i)perylene	mg/kg	0.05	360	-	12.4	-	0.5	2.08	-	-	-	<0.05	-	2.38	0.76	-	6	5	<0.05	0.5	12.4	12.4
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	45	-	15.9	-	0.57	2.64	-	-	-	<0.03	-	2.77	0.92	-	6	5	<0.03	0.57	15.9	15.9
	PAH 16 Total	mg/kg	0.01		-	239	-	6.52	71.3	-	-	-	1.24	-	49.3	20.5	-	6	6	1.24	1.24	239	239
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08		123	-	-	-	-	-	-	-	-	-	-	-	-	1	1	123	123	123	123
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	42	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	>C6-C8 Aliphatics	mg/kg	0.01	100	-	<0.01	-	<0.01	<0.15	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.15	ND
	>C8-C10 Aliphatics	mg/kg	1	27	-	<10	-	<1	11	-	-	-	<1	-	6	4	-	6	3	<1	4	11	11
	>C10-C12 Aliphatics	mg/kg	1	(vap)130	-	<10	-	<1	7	-	-	-	<1	-	4	1	-	6	3	<1	1	<10	7
	>C12-C16 Aliphatics	mg/kg	1	(sol)1100	-	<10	-	<1	13	-	-	-	<1	-	6	4	-	6	3	<1	4	13	13
	>C16-C21 Aliphatics	mg/kg	1	(sol)32500	-	<10	-	1	14	-	-	-	<1	-	7	5	-	6	4	<1	1	14	14
	>C21-C35 Aliphatics	mg/kg	1	(sol)32500	-	293	-	24	18	-	-	-	<1	-	97	38	-	6	5	<1	18	293	293
	Total >C5-C35 Aliphatics	mg/kg	1		-	293	-	25	63	-	-	-	<1	-	120	52	-	6	5	<1	25	293	293
	>EC5-EC7 Aromatics	mg/kg	0.01	370	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	>EC7-EC8 Aromatics	mg/kg	0.01	860	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	>EC8-EC10 Aromatics	mg/kg	1	47	-	<10	-	<1	9	-	-	-	<1	-	7	5	-	6	3	<1	5	<10	9
	>EC10-EC12 Aromatics	mg/kg	1	250	-	<10	-	<1	11	-	-	-	<1	-	10	5	-	6	3	<1	5	11	11
	>EC12-EC16 Aromatics	mg/kg	1	1800	-	39	-	4	49	-	-	-	<1	-	36	16	-	6	5	<1	4	49	49
	>EC16-EC21 Aromatics	mg/kg	1	1900	-	229	-	8	109	-	-	-	<1	-	135	41	-	6	5	<1	8	229	229
	>EC21-EC35 Aromatics	mg/kg	1	1900	-	1070	-	37	246	-	-	-	<1	-	575	161	-	6	5	<1	37	1070	1070
	Total >EC5-EC35 Aromatics	mg/kg	1		-	1340	-	49	424	-	-	-	<1	-	762	228	-	6	5	<1	49	1340	1340

				Location Code	ABH107	ABH107	ABH107	ABH110	ABH110	ABH110	ABH110	AWS108	AWS108	AWS108	AWS111	AWS111	AWS111						
				Sample Depth Range	0.2	0.6	1.1	0.2	0.7	2-2.45	5.5-6	1.2-1.65	1.5	2.7-3	0.3	1	1.2-2						
				Sampled Date	29/03/2022	29/03/2022	29/03/2022	28/03/2022	28/03/2022	28/03/2022	28/03/2022	29/03/2022	29/03/2022	29/03/2022	30/03/2022	30/03/2022	30/03/2022	**Statistical Summary**					
Chem_Group	**ChemName**	**output unit**	**EQL**	LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		-	1620	-	74	487	-	-	-	<1	-	882	280	-	6	5	<1	74	1620	1620
TPH	Mineral Oil (C10-40)	mg/kg	10		275	-	-	-	-	-	-	-	-	-	-	-	-	1	1	275	275	275	275
BTEX and MTBE	Benzene	mg/kg	0.01	0.38	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	Toluene	mg/kg	0.01	880	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	Ethylbenzene	mg/kg	0.01	83	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	Xylene (m & p)	mg/kg	0.01	79	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	Xylene (o)	mg/kg	0.01	88	-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	MTBE	mg/kg	0.01		-	<0.01	-	<0.01	<0.05	-	-	-	<0.01	-	<0.05	<0.01	-	6	0	<0.01	ND	<0.05	ND
	Total BTEX	mg/kg	0.01		<0.01	-	-	-	-	-	-	-	-	-	-	-	-	1	0	<0.01	ND	<0.01	ND
PCB	PCBs (Sum of total)	mg/kg	0.01		<0.007	-	-	-	-	-	-	-	-	-	-	-	-	1	0	<0.007	ND	<0.007	ND
Phenolics	Total Phenols	mg/kg	0.2		-	<0.2	-	<0.2	<0.2	-	-	-	<0.2	-	<0.2	<0.2	-	6	0	<0.2	ND	<0.2	ND
NA	Mass of Dry Sample (Bulk Analysis)	g	1		185	-	-	-	-	-	-	-	-	-	-	-	-	1	1	185	185	185	185
Other	% Moisture at <40C	% w/w	0.1		-	9.5	-	15.8	14.2	-	-	-	21	-	18.4	18.8	-	6	6	9.5	9.5	21	21
	ANC at pH 4	mol/kg	0.01		0.51	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0.51	0.51	0.51	0.51
	Organic Matter	%	0.1		-	23	-	8.4	58.3	-	-	-	3.7	-	16.7	37.7	-	6	6	3.7	3.7	58.3	58.3
	% Stones >10mm	% w/w	0.1		37.5	<0.1	<0.1 - 44.5	<0.1	5.3 - 7.2	<0.1	<0.1	28.2	<0.1	<0.1	<0.1	<0.1	<0.1	15	5	<0.1	5.3	44.5	44.5
	Dry Matter	%	0.1		94.4	-	-	-	-	-	-	-	-	-	-	-	-	1	1	94.4	94.4	94.4	94.4
	ANC at pH 6 dry soil	mol/kg	0.01		0.19	-	-	-	-	-	-	-	-	-	-	-	-	1	1	0.19	0.19	0.19	0.19
	Loss on ignition	%	0.6		4.5	-	-	-	-	-	-	-	-	-	-	-	-	1	1	4.5	4.5	4.5	4.5
	pH (Lab)	pH_Units	0.01		9.48	9.56 - 9.85	8.62	7.97	7.73 - 7.96	8.04	6.05	8.33	7.9	6.28	7.96	7.6	5.63	13	13	5.63	5.63	9.85	9.85
	Total Organic Carbon	%	0.03		4.6	13.4	-	4.85	33.8	-	-	-	2.16	-	9.67	21.9	-	7	7	2.16	2.16	33.8	33.8

				Location Code					
				Sample Depth Range					
				Sampled Date					
				LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Robust Only)
Chem_Group	**ChemName**	**output unit**	**EQL**						
Metals	Arsenic	mg/kg	1	40	26	27	12	1	1
	Cadmium	mg/kg	0.5	85	2.7	2.05	2.1	0	0
	Chromium (hexavalent)	mg/kg	1	6	0.5	0.5	0	0	0
	Chromium	mg/kg	1	910	48	32	43	0	0
	Copper	mg/kg	1	7100	192	172	166	0	0
	Lead	mg/kg	1	310	631	233	1004	2	2
	Mercury	mg/kg	0.17	56	1.1	0.715	1.2	0	0
	Nickel	mg/kg	1	180	36	37	14	0	0
	Selenium	mg/kg	1	430	1.5	1.5	1	0	0
	Zinc	mg/kg	5	40000	340	172.5	386	0	0
Asbestos	Anthophyllite	Detect	0		0	0	0	0	0
	Asbestos Containing Material	Detect	0		0	0	0	0	0
	Asbestos Matrix (microscope)	-	0		0	0	0	0	0
	Asbestos Matrix (visual)	-	0		0	0	0	0	0
	Asbestos: Actinolite	Detect	0		0	0	0	0	0
	Crocidolite Asbestos	Detect	0		0	0	0	0	0
	Chrysotile Asbestos	Detect	0		0	0	0	0	0
	Amosite Asbestos	Detect	0		0	0	0	0	0
	Tremolite	Detect	0		0	0	0	0	0
Inorganics	Cyanide Total	mg/kg	1		0.5	0.5	0	0	0
	Sulphate (Soluble)	mg/kg	200		1300	650	1796	0	0
	Sulphur as S	%	0.01		0.13	0.06	0.14	0	0
PAH	Naphthalene	mg/kg	0.03	2.3	0.69	0.695	0.59	0	0
	Acenaphthene	mg/kg	0.01	(sol)3000	0.69	0.29	1	0	0
	Acenaphthylene	mg/kg	0.01	(sol)2900	0.2	0.155	0.2	0	0
	Fluoranthene	mg/kg	0.08	1500	12	6.585	17	0	0
	Anthracene	mg/kg	0.02	(vap)31000	2.3	0.925	3.3	0	0
	Phenanthrene	mg/kg	0.03	(sol)1300	7.3	3.925	9.2	0	0

				Location Code					
				Sample Depth Range					
				Sampled Date					
				LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Rotate Only)
Chem_Group	**ChemName**	**output unit**	**EQL**						
	Fluorene	mg/kg	0.01	(sol)2800	0.6	0.235	0.84	0	0
	Chrysene	mg/kg	0.06	30	5.5	3.005	7.7	0	0
	Pyrene	mg/kg	0.07	3700	11	5.935	15	0	0
	Benzo(a)anthracene	mg/kg	0.04	11	6.7	3.24	9.9	1	1
	Benzo(b)fluoranthene	mg/kg	0.05	3.9	4.5	2.735	5.6	3	3
	Benzo(k)fluoranthene	mg/kg	0.07	110	1.7	0.93	2.3	0	0
	Benzo(a)pyrene	mg/kg	0.04	3.2	4.3	2.525	5.6	3	3
	Dibenz(a,h)anthracene	mg/kg	0.04	0.31	0.61	0.32	0.88	3	3
	Benzo(g,h,i)perylene	mg/kg	0.05	360	3	1.42	4.7	0	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	45	3.8	1.78	6	0	0
	PAH 16 Total	mg/kg	0.01		65	34.9	89	0	0
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08			123		0	0
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	42	0.012	0.005	0.01	0	0
	>C6-C8 Aliphatics	mg/kg	0.01	100	0.02	0.005	0.028	0	0
	>C8-C10 Aliphatics	mg/kg	1	27	4.5	4.5	3.9	0	0
	>C10-C12 Aliphatics	mg/kg	1	(vap)130	3	2.5	2.7	0	0
	>C12-C16 Aliphatics	mg/kg	1	(sol)1100	4.8	4.5	4.6	0	0
	>C16-C21 Aliphatics	mg/kg	1	(sol)32500	5.4	5	4.9	0	0
	>C21-C35 Aliphatics	mg/kg	1	(sol)32500	78	31	110	0	0
	Total >C5-C35 Aliphatics	mg/kg	1		92	57.5	106	0	0
	>EC5-EC7 Aromatics	mg/kg	0.01	370	0.012	0.005	0.01	0	0
	>EC7-EC8 Aromatics	mg/kg	0.01	860	0.012	0.005	0.01	0	0
	>EC8-EC10 Aromatics	mg/kg	1	47	4.5	5	3.4	0	0
	>EC10-EC12 Aromatics	mg/kg	1	250	5.3	5	4.5	0	0
	>EC12-EC16 Aromatics	mg/kg	1	1800	24	26	20	0	0
	>EC16-EC21 Aromatics	mg/kg	1	1900	87	75	88	0	0
	>EC21-EC35 Aromatics	mg/kg	1	1900	348	203.5	409	0	0
	Total >EC5-EC35 Aromatics	mg/kg	1		467	326	510	0	0

				Location Code					
				Sample Depth Range					
				Sampled Date					
				LQM S4UL Residential (without consumption of homegrown produce) - 1% SOM					
Chem_Group	**ChemName**	**output unit**	**EQL**		Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Robusta Only)
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		557	383.5	610	0	0
TPH	Mineral Oil (C10-40)	mg/kg	10			275		0	0
BTEX and MTBE	Benzene	mg/kg	0.01	0.38	0.012	0.005	0.01	0	0
	Toluene	mg/kg	0.01	880	0.012	0.005	0.01	0	0
	Ethylbenzene	mg/kg	0.01	83	0.012	0.005	0.01	0	0
	Xylene (m & p)	mg/kg	0.01	79	0.012	0.005	0.01	0	0
	Xylene (o)	mg/kg	0.01	88	0.012	0.005	0.01	0	0
	MTBE	mg/kg	0.01		0.012	0.005	0.01	0	0
	Total BTEX	mg/kg	0.01			0.005		0	0
PCB	PCBs (Sum of total)	mg/kg	0.01			0.0035		0	0
Phenolics	Total Phenols	mg/kg	0.2		0.1	0.1	0	0	0
NA	Mass of Dry Sample (Bulk Analysis)	g	1			185		0	0
Other	% Moisture at <40C	% w/w	0.1		16	17.1	4.1	0	0
	ANC at pH 4	mol/kg	0.01			0.51		0	0
	Organic Matter	%	0.1		25	19.85	20	0	0
	% Stones >10mm	% w/w	0.1		7.9	0.05	13	0	0
	Dry Matter	%	0.1			94.4		0	0
	ANC at pH 6 dry soil	mol/kg	0.01			0.19		0	0
	Loss on ignition	%	0.6			4.5		0	0
	pH (Lab)	pH_Units	0.01		7.8	7.96	1.2	0	0
	Total Organic Carbon	%	0.03		13	9.67	11	0	0

				Location Code	ABH104	ABH104	ABH104	ABH105	ABH105	ABH105	ABH106	ABH106	ABH106	ATP102	AWS106	AWS107	AWS107									
				Sample Depth Range	0.5	3-3.45	5-5.45	0.8	1.1	1.5	1	2.5-2.95	7	1	0.5	0.8	1.2-1.75									
				Sampled Date	15/03/2022	15/03/2022	15/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	27/03/2022	17/03/2022	30/03/2022	30/03/2022	30/03/2022	**Statistical Summary**							
Chem_Group	**ChemName**	**output unit**	**EQL**	LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration
Metals	Arsenic	mg/kg	1	37	2	-	-	35	-	5	16	-	-	18	4	35	-	7	7	2	2	35	35	16
	Cadmium	mg/kg	0.5	11	1.1	-	-	3.2	-	2.5	1.3	-	-	1.3	1.6	1.2	-	7	7	1.1	1.1	3.2	3.2	1.7
	Chromium (hexavalent)	mg/kg	1	6	<1	-	-	<1	-	<1	<1	-	-	<1	<1	<1	-	7	0	<1	ND	<1	ND	0.5
	Chromium (trivalent)	mg/kg	1	910	20	-	-	22	-	29	15	-	-	32	109	13	-	7	7	13	13	109	109	34
	Copper	mg/kg	1	2400	31	-	-	221	-	48	40	-	-	142	30	78	-	7	7	30	30	221	221	84
	Lead	mg/kg	1	220	26	-	-	252	-	26	52	-	-	168	65	104	-	7	7	26	26	252	252	99
	Mercury	mg/kg	0.17	40	<0.17	-	-	0.6	-	<0.17	1.87	-	-	0.36	1.35	0.8	-	7	5	<0.17	0.36	1.87	1.87	0.74
	Nickel	mg/kg	1	130	28	-	-	27	-	44	11	-	-	20	27	17	-	7	7	11	11	44	44	25
	Selenium	mg/kg	1	250	<1	-	-	<1	-	<1	1	-	-	<1	<1	1	-	7	2	<1	1	1	1	0.64
	Zinc	mg/kg	5	3700	73	-	-	291	-	97	95	-	-	95	105	103	-	7	7	73	73	291	291	123
Asbestos	Anthophyllite	Detect	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
	Asbestos Containing Material	Detect	0		0	-	-	0[#4]	-	0	0	-	-	0	0	0	-	7	7	<0	ND	0	ND	0
	Asbestos Matrix (microscope)	-	0		0	-	-	1[#3]	-	0	0	-	-	1[#1]	0	0	-	7	7	0	1	1	1	0.29
	Asbestos Matrix (visual)	-	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
	Asbestos: Actinolite	Detect	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
	Crocidolite Asbestos	Detect	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
	Asbestos Gravimetric Quantification	%	0.001		-	-	-	-	-	-	-	-	-	<0.001	-	-	-	1	0	<0.001	ND	<0.001	ND	
	Chrysotile Asbestos	Detect	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
	Amosite Asbestos	Detect	0		0	-	-	1	-	0	0	-	-	1	0	0	-	7	7	0	1	1	1	0.29
	Tremolite	Detect	0		0	-	-	0	-	0	0	-	-	0	0	0	-	7	7	0	ND	0	ND	0
Inorganics	Cyanide Total	mg/kg	1		<1	-	-	<1	-	<1	<1	-	-	<1	<1	<1	-	7	0	<1	ND	<1	ND	0.5
	Sulphate (Soluble)	mg/kg	200		-	<200	<200	-	4900	-	-	300	<200	-	-	-	<200	6	2	<200	300	4900	4900	933
	Sulphur as S	%	0.01		-	0.01	<0.01	-	0.53	-	-	0.02	0.03	-	-	-	<0.01	6	4	<0.01	0.01	0.53	0.53	0.1
PAH	Naphthalene	mg/kg	0.03	2.3	4.02	-	-	0.45	-	0.3	0.54	-	-	6.67	<0.03	0.72	-	7	6	<0.03	0.3	6.67	6.67	1.8
	Acenaphthene	mg/kg	0.01	210	0.7	-	-	0.67	-	0.52	1.27	-	-	24.1	0.01	0.53	-	7	7	0.01	0.01	24.1	24.1	4
	Acenaphthylene	mg/kg	0.01	170	0.04	-	-	0.22	-	0.01	0.1	-	-	0.6	<0.01	0.22	-	7	6	<0.01	0.01	0.6	0.6	0.17
	Fluoranthene	mg/kg	0.08	280	3.02	-	-	18.2	-	1.58	11.8	-	-	51.8	0.11	14.5	-	7	7	0.11	0.11	51.8	51.8	14
	Anthracene	mg/kg	0.02	2400	0.63	-	-	2.03	-	0.43	1.92	-	-	17.4	<0.02	1.93	-	7	6	<0.02	0.43	17.4	17.4	3.5
	Phenanthrene	mg/kg	0.03	95	3.3	-	-	6.88	-	1.77	8.35	-	-	58.2	0.09	6.65	-	7	7	0.09	0.09	58.2	58.2	12
	Fluorene	mg/kg	0.01	170	0.64	-	-	0.49	-	0.31	0.96	-	-	11.2	<0.01	0.34	-	7	6	<0.01	0.31	11.2	11.2	2
	Chrysene	mg/kg	0.06	15	1.09	-	-	9.24	-	0.75	5.8	-	-	19.4	<0.06	7.03	-	7	6	<0.06	0.75	19.4	19.4	6.2

				Location Code	ABH104	ABH104	ABH104	ABH105	ABH105	ABH105	ABH106	ABH106	ABH106	ATP102	AWS106	AWS107	AWS107	Statistical Summary						
				Sample Depth Range	0.5	3-3.45	5-5.45	0.8	1.1	1.5	1	2.5-2.95	7	1	0.5	0.8	1.2-1.75							
				Sampled Date	15/03/2022	15/03/2022	15/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	27/03/2022	17/03/2022	30/03/2022	30/03/2022	30/03/2022							
Chem_Group	ChemName	output unit	EQL	LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration
	Pyrene	mg/kg	0.07	620	2.5	-	-	18.2	-	1.34	10.3	-	-	43.8	0.1	13.4	-	7	7	0.1	0.1	43.8	43.8	13
	Benzo(a)anthracene	mg/kg	0.04	7.2	1.03	-	-	10.8	-	0.74	5.48	-	-	16.5	0.06	8.77	-	7	7	0.06	0.06	16.5	16.5	6.2
	Benzo(b)fluoranthene	mg/kg	0.05	2.6	1.14	-	-	12.5	-	0.75	5.15	-	-	19.5	<0.05	6.12	-	7	6	<0.05	0.75	19.5	19.5	6.5
	Benzo(k)fluoranthene	mg/kg	0.07	77	0.41	-	-	4.58	-	0.3	2.12	-	-	7.02	<0.07	2.29	-	7	6	<0.07	0.3	7.02	7.02	2.4
	Benzo(a)pyrene	mg/kg	0.04	2.2	1.02	-	-	10.6	-	0.61	4.52	-	-	15.2	0.05	6.44	-	7	7	0.05	0.05	15.2	15.2	5.5
	Dibenz(a,h)anthracene	mg/kg	0.04	0.24	0.11	-	-	1.01	-	0.07	0.44	-	-	1.69	<0.04	0.75	-	7	6	<0.04	0.07	1.69	1.69	0.58
	Benzo(g,h,i)perylene	mg/kg	0.05	32	0.55	-	-	5	-	0.33	2.26	-	-	9.19	<0.05	3.73	-	7	6	<0.05	0.33	9.19	9.19	3
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	27	0.66	-	-	6.27	-	0.38	2.67	-	-	10.8	<0.03	4.81	-	7	6	<0.03	0.38	10.8	10.8	3.7
	PAH 16 Total	mg/kg	0.01		20.9	-	-	107	-	10.2	63.7	-	-	313	0.42	78.2	-	7	7	0.42	0.42	313	313	85
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08		-	-	-	109	-	-	-	-	-	-	-	-	-	1	1	109	109	109	109	
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	42	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	>C6-C8 Aliphatics	mg/kg	0.01	100	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.15	-	7	0	<0.01	ND	<0.15	ND	0.015
	>C8-C10 Aliphatics	mg/kg	1	27	2	-	-	5	-	<1	1	-	-	<10	<1	7	-	7	4	<1	1	<10	7	3
	>C10-C12 Aliphatics	mg/kg	1	(vap)130	8	-	-	4	-	<1	1	-	-	<10	<1	4	-	7	4	<1	1	<10	8	3.3
	>C12-C16 Aliphatics	mg/kg	1	(sol)1100	2	-	-	5	-	1	3	-	-	14	<1	8	-	7	6	<1	1	14	14	4.8
	>C16-C21 Aliphatics	mg/kg	1	(sol)32500	3	-	-	7	-	1	4	-	-	19	<1	9	-	7	6	<1	1	19	19	6.2
	>C21-C35 Aliphatics	mg/kg	1	(sol)32500	48	-	-	137	-	4	92	-	-	87	5	55	-	7	7	4	4	137	137	61
	Total >C5-C35 Aliphatics	mg/kg	1		64	-	-	157	-	7	102	-	-	120	5	82	-	7	7	5	5	157	157	77
	>EC5-EC7 Aromatics	mg/kg	0.01	70	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	>EC7-EC8 Aromatics	mg/kg	0.01	130	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	>EC8-EC10 Aromatics	mg/kg	1	34	3	-	-	4	-	<1	1	-	-	<10	1	6	-	7	5	<1	1	<10	6	2.9
	>EC10-EC12 Aromatics	mg/kg	1	74	84	-	-	5	-	1	3	-	-	44	<1	7	-	7	6	<1	1	84	84	21
	>EC12-EC16 Aromatics	mg/kg	1	140	30	-	-	19	-	27	27	-	-	320	1	27	-	7	7	1	1	320	320	64
	>EC16-EC21 Aromatics	mg/kg	1	260	36	-	-	67	-	103	80	-	-	812	<1	108	-	7	6	<1	36	812	812	172
	>EC21-EC35 Aromatics	mg/kg	1	1100	51	-	-	273	-	165	155	-	-	1070	3	437	-	7	7	3	3	1070	1070	308
	Total >EC5-EC35 Aromatics	mg/kg	1		-	-	-	-	-	-	-	-	-	-	5	585	-	2	2	5	5	585	585	
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		268	-	-	525	-	302	368	-	-	2370	10	665	-	7	7	10	10	2370	2370	644
TPH	Aromatics	%	1E-04		0.0204	-	-	0.0367	-	0.0296	0.0267	-	-	0.225	-	-	-	5	5	0.0204	0.0204	0.225	0.225	0.068
	Mineral Oil (C10-40)	mg/kg	10		-	-	-	137	-	-	-	-	-	-	-	-	-	1	1	137	137	137	137	
BTEX and MTBE	Benzene	mg/kg	0.01	0.087	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	Toluene	mg/kg	0.01	130	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079

				Location Code	ABH104	ABH104	ABH104	ABH105	ABH105	ABH105	ABH106	ABH106	ABH106	ATP102	AWS106	AWS107	AWS107	Statistical Summary						
				Sample Depth Range	0.5	3-3.45	5-5.45	0.8	1.1	1.5	1	2.5-2.95	7	1	0.5	0.8	1.2-1.75							
				Sampled Date	15/03/2022	15/03/2022	15/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	24/03/2022	27/03/2022	17/03/2022	30/03/2022	30/03/2022	30/03/2022							
Chem_Group	ChemName	output unit	EQL	LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM														Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration
	Ethylbenzene	mg/kg	0.01	47	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	Xylene (m & p)	mg/kg	0.01	56	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	Xylene (o)	mg/kg	0.01	60	<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	MTBE	mg/kg	0.01		<0.01	-	-	<0.01	-	<0.01	<0.01	-	-	<0.01	<0.01	<0.05	-	7	0	<0.01	ND	<0.05	ND	0.0079
	Total BTEX	mg/kg	0.01		-	-	-	<0.01	-	-	-	-	-	-	-	-	-	1	0	<0.01	ND	<0.01	ND	
PCB	PCBs (Sum of total)	mg/kg	0.007		-	-	-	<0.007	-	-	-	-	-	-	-	-	-	1	0	<0.007	ND	<0.007	ND	
Phenolics	Total Phenols	mg/kg	0.2		<0.2	-	-	<0.2	-	<0.2	<0.2	-	-	<0.2	<0.2	<0.2	-	7	0	<0.2	ND	<0.2	ND	0.1
NA	Mass of Dry Sample (Bulk Analysis)	g	1		-	-	-	205	-	-	-	-	-	-	-	-	-	1	1	205	205	205	205	
Other	% Moisture at <40C	% w/w	0.1		10.5	-	-	14.8	-	9.7	8.5	-	-	10.1	17.5	10.4	-	7	7	8.5	8.5	17.5	17.5	12
	ANC at pH 4	mol/kg	0.01		-	-	-	0.16	-	-	-	-	-	-	-	-	-	1	1	0.16	0.16	0.16	0.16	
	Organic Matter	%	0.1		4.8	-	-	0[#2]	-	1.7	24.4	-	-	0[#2]	3.9	22.4	-	7	7	<0	1.7	24.4	24.4	8.2
	% Stones >10mm	% w/w	0.1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	3.2	<0.1	16	43.8	<0.1	16	4	<0.1	3.2	43.8	43.8	6
	Dry Matter	%	0.1		-	-	-	85.4	-	-	-	-	-	-	-	-	-	1	1	85.4	85.4	85.4	85.4	
	ANC at pH 6 dry soil	mol/kg	0.01		-	-	-	0.07	-	-	-	-	-	-	-	-	-	1	1	0.07	0.07	0.07	0.07	
	Loss on ignition	%	0.6		-	-	-	0[#2]	-	-	-	-	-	-	-	-	-	1	1	<0	ND	0	ND	
	pH (Lab)	pH_Units	0.01		8.71	8.43	8.06	8.62	9.24	8.37	9.55	8.75	7.96	8.01	8.91	8.47	7.57	13	13	7.57	7.57	9.55	9.55	8.5
	Total Organic Carbon	%	0.03		2.79	-	-	0[#2]	-	0.97	14.2	-	-	0[#2]	2.25	13	-	7	7	<0	0.97	14.2	14.2	4.7

Data Comments

#1 Loose fibres
#2 Result=NDP
#3 Board
#4 No

				Location Code Sample Depth Range Sampled Date				
Chem_Group	**ChemName**	**output unit**	**EQL**	LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Metals	Arsenic	mg/kg	1	37	16	14	0	0
	Cadmium	mg/kg	0.5	11	1.3	0.8	0	0
	Chromium (hexavalent)	mg/kg	1	6	0.5	0	0	0
	Chromium (trivalent)	mg/kg	1	910	22	34	0	0
	Copper	mg/kg	1	2400	48	72	0	0
	Lead	mg/kg	1	220	65	84	1	1
	Mercury	mg/kg	0.17	40	0.6	0.67	0	0
	Nickel	mg/kg	1	130	27	11	0	0
	Selenium	mg/kg	1	250	0.5	0.24	0	0
	Zinc	mg/kg	5	3700	97	75	0	0
Asbestos	Anthophyllite	Detect	0		0	0	0	0
	Asbestos Containing Material	Detect	0		0	0	0	0
	Asbestos Matrix (microscope)	-	0		0	0.49	0	0
	Asbestos Matrix (visual)	-	0		0	0	0	0
	Asbestos: Actinolite	Detect	0		0	0	0	0
	Crocidolite Asbestos	Detect	0		0	0	0	0
	Asbestos Gravimetric Quantification	%	0.001		0.0005		0	0
	Chrysotile Asbestos	Detect	0		0	0	0	0
	Amosite Asbestos	Detect	0		0	0.49	0	0
	Tremolite	Detect	0		0	0	0	0
Inorganics	Cyanide Total	mg/kg	1		0.5	0	0	0
	Sulphate (Soluble)	mg/kg	200		100	1945	0	0
	Sulphur as S	%	0.01		0.015	0.21	0	0
PAH	Naphthalene	mg/kg	0.03	2.3	0.54	2.5	2	2
	Acenaphthene	mg/kg	0.01	210	0.67	8.9	0	0
	Acenaphthylene	mg/kg	0.01	170	0.1	0.21	0	0
	Fluoranthene	mg/kg	0.08	280	11.8	18	0	0
	Anthracene	mg/kg	0.02	2400	1.92	6.2	0	0
	Phenanthrene	mg/kg	0.03	95	6.65	21	0	0
	Fluorene	mg/kg	0.01	170	0.49	4.1	0	0
	Chrysene	mg/kg	0.06	15	5.8	6.8	1	1

				Location Code				
				Sample Depth Range				
				Sampled Date				
				LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Chem_Group	**ChemName**	**output unit**	**EQL**					
	Pyrene	mg/kg	0.07	620	10.3	15	0	0
	Benzo(a)anthracene	mg/kg	0.04	7.2	5.48	6.2	3	3
	Benzo(b)fluoranthene	mg/kg	0.05	2.6	5.15	7.2	4	4
	Benzo(k)fluoranthene	mg/kg	0.07	77	2.12	2.6	0	0
	Benzo(a)pyrene	mg/kg	0.04	2.2	4.52	5.7	4	4
	Dibenz(a,h)anthracene	mg/kg	0.04	0.24	0.44	0.61	4	4
	Benzo(g,h,i)perylene	mg/kg	0.05	32	2.26	3.3	0	0
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	27	2.67	3.9	0	0
	PAH 16 Total	mg/kg	0.01		63.7	108	0	0
	Polyaromatic hydrocarbons, Total 17	mg/kg	0.08		109		0	0
TPH CWG	>C5-C6 Aliphatics	mg/kg	0.01	42	0.005	0.0076	0	0
	>C6-C8 Aliphatics	mg/kg	0.01	100	0.005	0.026	0	0
	>C8-C10 Aliphatics	mg/kg	1	27	2	2.6	0	0
	>C10-C12 Aliphatics	mg/kg	1	(vap)130	4	2.8	0	0
	>C12-C16 Aliphatics	mg/kg	1	(sol)1100	3	4.8	0	0
	>C16-C21 Aliphatics	mg/kg	1	(sol)32500	4	6.4	0	0
	>C21-C35 Aliphatics	mg/kg	1	(sol)32500	55	48	0	0
	Total >C5-C35 Aliphatics	mg/kg	1		82	56	0	0
	>EC5-EC7 Aromatics	mg/kg	0.01	70	0.005	0.0076	0	0
	>EC7-EC8 Aromatics	mg/kg	0.01	130	0.005	0.0076	0	0
	>EC8-EC10 Aromatics	mg/kg	1	34	3	2.2	0	0
	>EC10-EC12 Aromatics	mg/kg	1	74	5	32	1	1
	>EC12-EC16 Aromatics	mg/kg	1	140	27	113	1	1
	>EC16-EC21 Aromatics	mg/kg	1	260	80	285	1	1
	>EC21-EC35 Aromatics	mg/kg	1	1100	165	365	0	0
	Total >EC5-EC35 Aromatics	mg/kg	1		295		0	0
	TPH >C5-C35 Aliphatics/Aromatics	mg/kg	1		368	788	0	0
TPH	Aromatics	%	1E-04		0.0296	0.088	0	0
	Mineral Oil (C10-40)	mg/kg	10		137		0	0
BTEX and MTBE	Benzene	mg/kg	0.01	0.087	0.005	0.0076	0	0
	Toluene	mg/kg	0.01	130	0.005	0.0076	0	0

				Location Code Sample Depth Range Sampled Date				
				LQM S4UL Residential (with consumption of homegrown produce) - 1% SOM	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Chem_Group	**ChemName**	**output unit**	**EQL**					
	Ethylbenzene	mg/kg	0.01	47	0.005	0.0076	0	0
	Xylene (m & p)	mg/kg	0.01	56	0.005	0.0076	0	0
	Xylene (o)	mg/kg	0.01	60	0.005	0.0076	0	0
	MTBE	mg/kg	0.01		0.005	0.0076	0	0
	Total BTEX	mg/kg	0.01		0.005		0	0
PCB	PCBs (Sum of total)	mg/kg	0.007		0.0035		0	0
Phenolics	Total Phenols	mg/kg	0.2		0.1	0	0	0
NA	Mass of Dry Sample (Bulk Analysis)	g	1		205		0	0
Other	% Moisture at <40C	% w/w	0.1		10.4	3.2	0	0
	ANC at pH 4	mol/kg	0.01		0.16		0	0
	Organic Matter	%	0.1		3.9	11	0	0
	% Stones >10mm	% w/w	0.1		0.05	13	0	0
	Dry Matter	%	0.1		85.4		0	0
	ANC at pH 6 dry soil	mol/kg	0.01		0.07		0	0
	Loss on ignition	%	0.6		0		0	0
	pH (Lab)	pH_Units	0.01		8.47	0.54	0	0
	Total Organic Carbon	%	0.03		2.25	6.1	0	0

Data
Comments
#1 Loose fibres
#2 Result=NDP
#3 Board
#4 No

				Location Code	ABH101	ABH103	ABH104	ABH105	ABH105	ABH107	ABH107	ABH110	ABH112	ATP104	ATP108	AWS101	AWS106	AWS108	AWS109	Statistical Summary				
				Sample Depth Range	0.9	2.5	0.9	0.8	1.4	0.2	1.1	0.9	0.5	1	0.8	2.65-3	1	0.4	1.2					
				Sampled Date	17/03/2022	17/03/2022	15/03/2022	24/03/2022	17/03/2022	29/03/2022	29/03/2022	28/03/2022	18/03/2022	28/03/2022	16/03/2022	31/03/2022	30/03/2022	29/03/2022	29/03/2022					
Chem_Group	ChemName	output unit	EQL	Arcadis GAC - Water Resources - Aquifers - England & Wales																Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration
Metals	Antimony	µg/L	1		<1	6	-	4	-	<1	-	-	2	-	-	<1	-	-	<1	7	3	<1	2	6
	Arsenic	µg/L	1	10	2	3	2	3	6	2	12	13	4	2	7	1	1	2	12	15	15	1	1	13
	Barium	µg/L	1	700	21	45	-	52	-	102	-	-	22	-	-	18	-	-	10	7	7	10	10	102
	Cadmium	µg/L	1	5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	15	0	<1	ND	<1
	Chromium (hexavalent)	µg/L	50	50	-	-	<50	-	<50	-	<50	<50	-	<50	<50	-	<50	<50	-	8	0	<50	ND	<50
	Chromium	µg/L	1	50	<1	<1	<1	3	6	2	8	6	4	<1	<1	<1	<1	1	10	15	8	<1	1	10
	Copper	µg/L	1	2000	7	15	10	28	262	2	130	21	77	5	22	3	2	2	9	15	15	2	2	262
	Lead	µg/L	1	10	11	10	10	41	329	24	21	13	18	4	37	5	<1	<1	10	15	13	<1	4	329
	Mercury	µg/L	0.1	1	<0.5	<0.5	<0.1	<0.5	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	<0.1	<0.1	<0.5	15	0	<0.1	ND	<0.5
	Molybdenum	µg/L	1	70	2	13	-	12	-	2	-	-	4	-	-	2	-	-	4	7	7	2	2	13
	Nickel	µg/L	1	20	<1	1	1	<1	14	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	15	4	<1	1	14
	Selenium	µg/L	1	10	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	2	<1	<1	2	<1	15	3	<1	2	2
	Zinc	µg/L	1	3000	5	4	6	46	111	13	31	10	9	6	10	6	3	2	11	15	15	2	2	111
Inorganics	Chloride	mg/L	1		16.1	21.9	-	35.58	-	30.06	-	-	12.45	-	-	1.24	-	-	23.6	7	7	1.24	1.24	35.58
	Cyanide Total	µg/L	5		-	-	<5	-	<5	-	<5	16	-	<5	<5	-	<5	<5	-	8	1	<5	16	16
	Fluoride	µg/L	100		380	920	-	2460	-	380	-	-	1450	-	-	250	-	-	990	7	7	250	250	2460
	Sulphate	mg/L	1		9.47	67.12	9.73	15.75	20.6	12.79	10.4	5.43	28.16	15.58	22.05	3.63	410.92	201.18	10.45	15	15	3.63	3.63	410.92
PAH	Naphthalene	µg/L	0.02	2	-	-	0.06	-	<0.02	-	0.03	<0.02	-	0.04	0.03	-	<0.02	1.02	-	8	5	<0.02	0.03	1.02
	Acenaphthene	µg/L	0.02	-	-	-	0.04	-	<0.02	-	<0.02	<0.02	-	<0.02	0.73	-	0.05	4.19	-	8	4	<0.02	0.04	4.19
	Acenaphthylene	µg/L	0.02	-	-	-	<0.02	-	0.03	-	<0.02	<0.02	-	<0.02	0.05	-	<0.02	0.12	-	8	3	<0.02	0.03	0.12
	Fluoranthene	µg/L	0.02	-	-	-	0.11	-	0.49	-	0.16	<0.02	-	0.03	1.04	-	<0.02	0.84	-	8	6	<0.02	0.03	1.04
	Anthracene	µg/L	0.02	-	-	-	<0.02	-	0.08	-	<0.02	<0.02	-	<0.02	0.26	-	0.04	3.01	-	8	4	<0.02	0.04	3.01
	Phenanthrene	µg/L	0.02	-	-	-	0.08	-	0.23	-	0.03	<0.02	-	<0.02	0.55	-	<0.02	3.32	-	8	5	<0.02	0.03	3.32
	Fluorene	µg/L	0.02	-	-	-	<0.02	-	<0.02	-	<0.02	<0.02	-	<0.02	0.28	-	<0.02	1.82	-	8	2	<0.02	0.28	1.82
	Chrysene	µg/L	0.02	-	-	-	0.02	-	0.31	-	0.05	<0.02	-	<0.02	0.17	-	<0.02	0.3	-	8	5	<0.02	0.02	0.31
	Pyrene	µg/L	0.02	-	-	-	0.11	-	0.5	-	0.17	<0.02	-	0.03	0.89	-	<0.02	0.7	-	8	6	<0.02	0.03	0.89
	Benzo(a)anthracene	µg/L	0.02	-	-	-	<0.02	-	0.27	-	0.03	<0.02	-	<0.02	0.12	-	<0.02	0.24	-	8	4	<0.02	0.03	0.27
	Benzo(b)fluoranthene	µg/L	0.02	0.025	-	-	<0.02	-	0.36	-	0.03	<0.02	-	<0.02	0.09	-	<0.02	0.2	-	8	4	<0.02	0.03	0.36
	Benzo(k)fluoranthene	µg/L	0.02	0.025	-	-	<0.02	-	0.13	-	<0.02	<0.02	-	<0.02	0.03	-	<0.02	0.09	-	8	3	<0.02	0.03	0.13
	Benzo(a)pyrene	µg/L	0.02	0.01	-	-	<0.02	-	0.35	-	0.02	<0.02	-	<0.02	0.08	-	<0.02	0.19	-	8	4	<0.02	0.02	0.35
	Dibenz(a,h)anthracene	µg/L	0.02	-	-	-	<0.02	-	0.08	-	<0.02	<0.02	-	<0.02	<0.02	-	<0.02	0.03	-	8	2	<0.02	0.03	0.08

				Location Code	ABH101	ABH103	ABH104	ABH105	ABH105	ABH107	ABH107	ABH110	ABH112	ATP104	ATP108	AWS101	AWS106	AWS108	AWS109	Statistical Summary				
				Sample Depth Range	0.9	2.5	0.9	0.8	1.4	0.2	1.1	0.9	0.5	1	0.8	2.65-3	1	0.4	1.2					
				Sampled Date	17/03/2022	17/03/2022	15/03/2022	24/03/2022	17/03/2022	29/03/2022	29/03/2022	28/03/2022	18/03/2022	28/03/2022	16/03/2022	31/03/2022	30/03/2022	29/03/2022	29/03/2022					
Chem_Group	ChemName	output unit	EQL	Arcadis GAC - Water Resources - Aquifers - England & Wales																Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration
	Benzo(g,h,i)perylene	µg/L	0.02	0.025	-	-	<0.02	-	0.27	-	0.02	<0.02	-	<0.02	0.04	-	<0.02	0.11	-	8	4	<0.02	0.02	0.27
	Indeno(1,2,3-c,d)pyrene	µg/L	0.02	0.025	-	-	<0.02	-	0.26	-	0.02	<0.02	-	<0.02	0.02	-	<0.02	0.12	-	8	4	<0.02	0.02	0.26
TPH CWG	>C5-C6 Aliphatics	µg/L	1	See TPH	-	-	<1	-	2	-	<1	<1	-	<1	<1	-	<1	<1	-	8	1	<1	2	2
	>C6-C8 Aliphatics	µg/L	1	See TPH	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	>C8-C10 Aliphatics	µg/L	10	See TPH	-	-	<10	-	<10	-	<10	<10	-	<10	<10	-	<10	<10	-	8	0	<10	ND	<10
	>C10-C12 Aliphatics	µg/L	10	See TPH	-	-	<10	-	<10	-	<10	<10	-	<10	<10	-	14	<10	-	8	1	<10	14	14
	>C12-C16 Aliphatics	µg/L	10	See TPH	-	-	19	-	<10	-	<10	<10	-	<10	<10	-	<10	<10	-	8	1	<10	19	19
	>C16-C21 Aliphatics	µg/L	10	See TPH	-	-	24	-	<10	-	<10	<10	-	<10	<10	-	<10	<10	-	8	1	<10	24	24
	>C21-C35 Aliphatics	µg/L	20	See TPH	-	-	101	-	86	-	<20	<20	-	<20	<20	-	<20	<20	-	8	2	<20	86	101
	Total >C5-C35 Aliphatics	µg/L	10		-	-	144	-	88	-	<20	<20	-	<20	<20	-	<20	<20	-	8	2	<20	88	144
	>EC5-EC7 Aromatics	µg/L	1	1	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	>EC7-EC8 Aromatics	µg/L	1	700	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	>EC8-EC10 Aromatics	µg/L	10	See TPH	-	-	<10	-	<10	-	<10	<10	-	<10	<10	-	<10	<10	-	8	0	<10	ND	<10
	>EC10-EC12 Aromatics	µg/L	10	See TPH	-	-	11	-	<10	-	<10	<10	-	<10	<10	-	11	15	-	8	3	<10	11	15
	>EC12-EC16 Aromatics	µg/L	10	See TPH	-	-	16	-	<10	-	<10	<10	-	<10	<10	-	16	425	-	8	3	<10	16	425
	>EC16-EC21 Aromatics	µg/L	10	See TPH	-	-	17	-	15	-	<10	<10	-	<10	<10	-	15	585	-	8	4	<10	15	585
	>EC21-EC35 Aromatics	µg/L	20	See TPH	-	-	22	-	45	-	<20	<20	-	<20	<20	-	<20	91	-	8	3	<20	22	91
	Total >EC5-EC35 Aromatics	µg/L	20		-	-	66	-	60	-	<20	<20	-	<20	<20	-	42	1116	-	8	4	<20	42	1116
	TPH >C5-C35 Aliphatics/Aromatics	µg/L	20	10	-	-	210	-	148	-	<20	<20	-	<20	<20	-	56	1116	-	8	4	<20	56	1116
BTEX and MTBE	Benzene	µg/L	1	1	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	Toluene	µg/L	1	700	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	Ethylbenzene	µg/L	1	300	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	Xylene (m & p)	µg/L	1	250	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	Xylene (o)	µg/L	1	250	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
	MTBE	µg/L	1	15	-	-	<1	-	<1	-	<1	<1	-	<1	<1	-	<1	<1	-	8	0	<1	ND	<1
Phenolics	Total Phenols	µg/L	10		<10	<10	-	<10	-	<10	-	-	<10	-	-	<10	-	-	<10	7	0	<10	ND	<10
Other	Total Dissolved Solids	mg/L	20		57	174	-	135	-	96	-	-	100	-	-	<20	-	-	91	7	6	<20	57	174
	Dissolved Organic Carbon	µg/L	2000		<2000	20,800	-	<2000	-	<2000	-	-	<2000	-	-	<2000	-	-	<2000	7	1	<2000	20800	20800
	Electrical conductivity *(lab)	µS/cm	10		113	349	-	269	-	191	-	-	201	-	-	22	-	-	182	7	7	22	22	349
	pH (Lab)	pH_Units	0.01		7.43	7.6	7.47	7.5	8.11	8.28	8.6	7.56	7.62	7.41	8.53	7.53	7.28	8.97	8.82	15	15	7.28	7.28	8.97

				Location Code						
				Sample Depth Range						
				Sampled Date						
				Arcadis GAC - Water Resources - Aquifers - England & Wales						
Chem_Group	**ChemName**	**output unit**	**EQL**		Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Metals	Antimony	µg/L	1		6	2	0.5	2.2	0	0
	Arsenic	µg/L	1	10	13	4.8	3	4.2	3	3
	Barium	µg/L	1	700	102	39	22	32	0	0
	Cadmium	µg/L	1	5	ND	0.5	0.5	0	0	0
	Chromium (hexavalent)	µg/L	50	50	ND	25	25	0	0	0
	Chromium	µg/L	1	50	10	2.9	1	3.2	0	0
	Copper	µg/L	1	2000	262	40	10	71	0	0
	Lead	µg/L	1	10	329	36	11	82	11	11
	Mercury	µg/L	0.1	1	ND	0.14	0.05	0.1	0	0
	Molybdenum	µg/L	1	70	13	5.6	4	4.8	0	0
	Nickel	µg/L	1	20	14	1.7	0.5	3.5	0	0
	Selenium	µg/L	1	10	2	0.8	0.5	0.62	0	0
	Zinc	µg/L	1	3000	111	18	9	28	0	0
Inorganics	Chloride	mg/L	1		35.58	20	21.9	11	0	0
	Cyanide Total	µg/L	5		16	4.2	2.5	4.8	0	0
	Fluoride	µg/L	100		2460	976	920	782	0	0
	Sulphate	mg/L	1		410.92	56	15.58	110	0	0
PAH	Naphthalene	µg/L	0.02	2	1.02	0.15	0.03	0.35	0	0
	Acenaphthene	µg/L	0.02	-	4.19	0.63	0.025	1.5	8	8
	Acenaphthylene	µg/L	0.02	-	0.12	0.031	0.01	0.039	8	8
	Fluoranthene	µg/L	0.02	-	1.04	0.34	0.135	0.41	8	8
	Anthracene	µg/L	0.02	-	3.01	0.43	0.025	1	8	8
	Phenanthrene	µg/L	0.02	-	3.32	0.53	0.055	1.1	8	8
	Fluorene	µg/L	0.02	-	1.82	0.27	0.01	0.63	8	8
	Chrysene	µg/L	0.02	-	0.31	0.11	0.035	0.13	8	8
	Pyrene	µg/L	0.02	-	0.89	0.3	0.14	0.35	8	8
	Benzo(a)anthracene	µg/L	0.02	-	0.27	0.088	0.02	0.11	8	8
	Benzo(b)fluoranthene	µg/L	0.02	0.025	0.36	0.09	0.02	0.13	4	4
	Benzo(k)fluoranthene	µg/L	0.02	0.025	0.13	0.038	0.01	0.047	3	3
	Benzo(a)pyrene	µg/L	0.02	0.01	0.35	0.085	0.015	0.12	8	4
	Dibenz(a,h)anthracene	µg/L	0.02	-	0.08	0.021	0.01	0.025	8	8

				Location Code Sample Depth Range Sampled Date						
				Arcadis GAC - Water Resources - Aquifers - England & Wales	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances
Chem_Group	**ChemName**	**output unit**	**EQL**							
	Benzo(g,h,i)perylene	µg/L	0.02	0.025	0.27	0.06	0.015	0.091	3	3
	Indeno(1,2,3-c,d)pyrene	µg/L	0.02	0.025	0.26	0.058	0.015	0.09	2	2
TPH CWG	>C5-C6 Aliphatics	µg/L	1	See TPH	2	0.69	0.5	0.53	8	8
	>C6-C8 Aliphatics	µg/L	1	See TPH	ND	0.5	0.5	0	8	8
	>C8-C10 Aliphatics	µg/L	10	See TPH	ND	5	5	0	8	8
	>C10-C12 Aliphatics	µg/L	10	See TPH	14	6.1	5	3.2	8	8
	>C12-C16 Aliphatics	µg/L	10	See TPH	19	6.8	5	4.9	8	8
	>C16-C21 Aliphatics	µg/L	10	See TPH	24	7.4	5	6.7	8	8
	>C21-C35 Aliphatics	µg/L	20	See TPH	101	31	10	39	8	8
	Total >C5-C35 Aliphatics	µg/L	10		144	37	10	51	0	0
	>EC5-EC7 Aromatics	µg/L	1	1	ND	0.5	0.5	0	0	0
	>EC7-EC8 Aromatics	µg/L	1	700	ND	0.5	0.5	0	0	0
	>EC8-EC10 Aromatics	µg/L	10	See TPH	ND	5	5	0	8	8
	>EC10-EC12 Aromatics	µg/L	10	See TPH	15	7.8	5	4	8	8
	>EC12-EC16 Aromatics	µg/L	10	See TPH	425	60	5	147	8	8
	>EC16-EC21 Aromatics	µg/L	10	See TPH	585	82	10	204	8	8
	>EC21-EC35 Aromatics	µg/L	20	See TPH	91	26	10	29	8	8
	Total >EC5-EC35 Aromatics	µg/L	20		1116	166	26	385	0	0
	TPH >C5-C35 Aliphatics/Aromatics	µg/L	20	10	1116	196	33	379	8	4
BTEX and MTBE	Benzene	µg/L	1	1	ND	0.5	0.5	0	0	0
	Toluene	µg/L	1	700	ND	0.5	0.5	0	0	0
	Ethylbenzene	µg/L	1	300	ND	0.5	0.5	0	0	0
	Xylene (m & p)	µg/L	1	250	ND	0.5	0.5	0	0	0
	Xylene (o)	µg/L	1	250	ND	0.5	0.5	0	0	0
	MTBE	µg/L	1	15	ND	0.5	0.5	0	0	0
Phenolics	Total Phenols	µg/L	10		ND	5	5	0	0	0
Other	Total Dissolved Solids	mg/L	20		174	95	96	53	0	0
	Dissolved Organic Carbon	µg/L	2000		20800	3829	1000	7484	0	0
	Electrical conductivity *(lab)	µS/cm	10		349	190	191	105	0	0
	pH (Lab)	pH_Units	0.01		8.97	7.9	7.6	0.58	0	0

				Location Code	ABH101	ABH105	ABH112											
				Sampled Date	11/05/2022	11/05/2022	11/05/2022											
				Arcadis GAC - Water Resources - Aquifers - England & Wales				Statistical Summary										
Chem_Group	**ChemName**	**output unit**	**EQL**					Number of Results	Number of Detects	Minimum Concentration	Minimum Detect	Maximum Concentration	Maximum Detect	Average Concentration	Median Concentration	Standard Deviation	Number of Guideline Exceedances	Number of Guideline Exceedances (Detects Only)
Metals	Arsenic (Filtered)	µg/L	1	10	3	3	<2	3	2	<2	3	3	3	2.3	3	1.2	0	0
	Boron (Filtered)	µg/L	10	1000	46	88	133	3	3	46	46	133	133	89	88	44	0	0
	Cadmium (Filtered)	µg/L	0.2	5	0.5	<0.2	2.4	3	2	<0.2	0.5	2.4	2.4	1	0.5	1.2	0	0
	Chromium (hexavalent)	µg/L	10	50	<10	<10	<10	3	0	<10	ND	<10	ND	5	5	0	0	0
	Chromium (Filtered)	µg/L	1	50	7	8	<2	3	2	<2	7	8	8	5.3	7	3.8	0	0
	Copper (Filtered)	µg/L	1	2000	89	22	12	3	3	12	12	89	89	41	22	42	0	0
	Lead (Filtered)	µg/L	1	10	46	28	<2	3	2	<2	28	46	46	25	28	23	2	2
	Mercury (Filtered)	µg/L	0.1	1	<0.1	<0.1	<0.2	3	0	<0.1	ND	<0.2	ND	0.067	0.05	0.029	0	0
	Nickel (Filtered)	µg/L	1	20	26	16	67	3	3	16	16	67	67	36	26	27	2	2
	Zinc (Filtered)	µg/L	1	3000	92	31	17	3	3	17	17	92	92	47	31	40	0	0
Inorganics	Cyanide Total (Filtered)	µg/L	5		<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	0	0
	Sulphate (Filtered)	mg/L	1		164	167	186	3	3	164	164	186	186	172	167	12	0	0
PAH	Naphthalene (Filtered)	µg/L	0.01	2	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	Acenaphthene (Filtered)	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Acenaphthylene (Filtered)	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Fluoranthene (Filtered)	µg/L	0.01	-	0.03	<0.01	<0.01	3	1	<0.01	0.03	0.03	0.03	0.013	0.005	0.014	3	3
	Anthracene (Filtered)	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Phenanthrene (Filtered)	µg/L	0.01	-	0.06	<0.01	<0.01	3	1	<0.01	0.06	0.06	0.06	0.023	0.005	0.032	3	3
	Fluorene (Filtered)	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Chrysene (Filtered)	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Pyrene (Filtered)	µg/L	0.01	-	0.03	<0.01	<0.01	3	1	<0.01	0.03	0.03	0.03	0.013	0.005	0.014	3	3
	Benzo(a)anthracene	µg/L	0.01	-	0.01	<0.01	<0.01	3	1	<0.01	0.01	0.01	0.01	0.0067	0.005	0.0029	3	3
	Benzo(b)fluoranthene	µg/L	0.01	0.025	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	Benzo(k)fluoranthene	µg/L	0.01	0.025	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	Benzo(a)pyrene (Filtered)	µg/L	0.01	0.01	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	Dibenz(a,h)anthracene	µg/L	0.01	-	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	3	3
	Benzo(g,h,i)perylene	µg/L	0.01	0.025	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	Indeno(1,2,3-c,d)pyrene	µg/L	0.01	0.025	<0.01	<0.01	<0.01	3	0	<0.01	ND	<0.01	ND	0.005	0.005	0	0	0
	PAH 16 Total (Filtered)	µg/L	0.01		0.13	<0.01	<0.01	3	1	<0.01	0.13	0.13	0.13	0.047	0.005	0.072	0	0
TPH CWG	>C5-C6 Aliphatics	µg/L	1	See TPH	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	3	3
	>C6-C8 Aliphatics	µg/L	1	See TPH	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	3	3
	>C8-C10 Aliphatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>C10-C12 Aliphatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>C12-C16 Aliphatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>C16-C21 Aliphatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>C21-C35 Aliphatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	Total >C5-C35 Aliphatics	µg/L	5		<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	0	0
	>EC5-EC7 Aromatics	µg/L	1	1	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	>EC7-EC8 Aromatics	µg/L	1	700	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	>EC8-EC10 Aromatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>EC10-EC12 Aromatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>EC12-EC16 Aromatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>EC16-EC21 Aromatics	µg/L	5	See TPH	<5	<5	<5	3	0	<5	ND	<5	ND	2.5	2.5	0	3	3
	>EC21-EC35 Aromatics	µg/L	10	See TPH	<10	<10	<10	3	0	<10	ND	<10	ND	5	5	0	3	3
	Total >EC5-EC35	µg/L	10		<10	<10	<10	3	0	<10	ND	<10	ND	5	5	0	0	0
	TPH >C5-C35	µg/L	10	10	<10	<10	<10	3	0	<10	ND	<10	ND	5	5	0	0	0
BTEX and MTBE	Benzene (Filtered)	µg/L	1	1	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Toluene (Filtered)	µg/L	1	700	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Ethylbenzene (Filtered)	µg/L	1	300	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Xylene (m & p) (Filtered)	µg/L	1	250	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	Xylene (o) (Filtered)	µg/L	1	250	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
	MTBE (Filtered)	µg/L	1	15	<1	<1	<1	3	0	<1	ND	<1	ND	0.5	0.5	0	0	0
Phenolics	Total Phenols (Filtered)	µg/L	10		<10	<10	<10	3	0	<10	ND	<10	ND	5	5	0	0	0
Other	pH (Lab) (Filtered)	pH_Unit	0.01		7.63	7.45	7.19	3	3	7.19	7.19	7.63	7.63	7.4	7.45	0.22	0	0

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