Abbeydale
Building Environment Consultants

PHASE 2 GROUND INVESTIGATION REPORT

A635 Barnsley Road, Goldthorpe

Barnsley, South Yorkshire

Report: 151089GI

Date: November 2021

Client:
Barnsley Metropolitan Borough Council
Westgate Plaza 1
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South Yorkshire
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A635 Barnsley Road, Goldthorpe

DOCUMENT VERIFICATION SHEET

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SUMMARY

Grid Ref: 444290(E), 404020(N) **Elevation:** 25m-30m AOD **Site Area:** 2.0 ha

Development proposals:		New roundabout off existing A635 highway, with supporting embankment.
Past site development:		A635 Barnsley Road. Opencast mine in fields to south.
Ground Conditions	**Made Ground:**	Shallow made ground from highway, deep made ground associated with former opencast mine.
	Natural Soils:	Cohesive residual soils found to 2.50m.
	Bedrock:	Mudstone of Middle Coal Measures.
	Groundwater:	Found from 1.40m bgl in backfilled opencast.
	Shallow mining:	Voids encountered in two boreholes north of A635.
Environmental Assessment:		Existing soils suitable for reuse or retention in any new soft landscaping areas.
Ground gases:		Contractor to monitor excavations for ground gases.
Remediation:		If any imported soils used for landscaping areas they will need to be chemically validated.
Geotechnical Considerations:		Drilling and grouting required where shallow workings identified.
Further Investigation:		Additional investigation recommended around revised roundabout footprint and to delineate highwall of former opencast.

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1. INTRODUCTION

On the instruction of Barnsley Metropolitan Borough Council (BMBC), a Phase 2 Ground Investigation was undertaken by Dunelm Geotechnical and Environmental Ltd (Dunelm), under the supervision of Abbeydale Building Environment Consultants Ltd (Abbeydale BEC) on a site off of the A635 Barnsley Road, near Goldthorpe, Barnsley, in South Yorkshire.

The site is situated on the west side of Goldthorpe, centred on National Grid Reference 444324, 404048, with a site area of around 2.0 ha. See Figure 1.

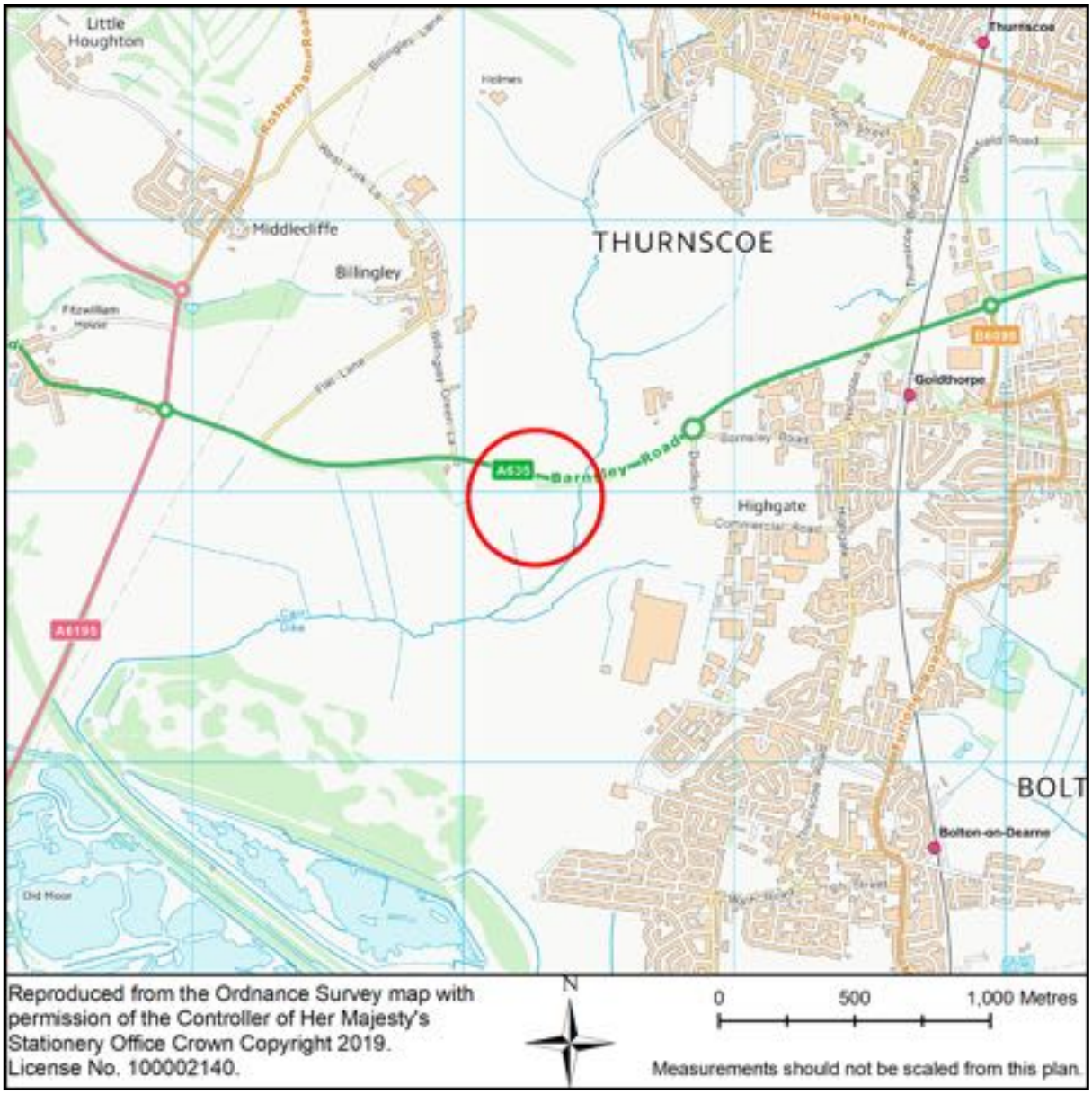

FIGURE 1 - LOCATION PLAN

Dunelm produced a factual report of the findings of the ground investigation (Ref: D13071/00), dated June 2021, which can be presented to potential contractors for design and tendering purposes who can include their own interpretations of the factual information obtained from the Ground Investigation works undertaken.

This interpretative ground investigation report was produced for our client, Barnsley Metropolitan Borough Council, and their advisors and financiers; it should not be relied upon or transferred to any other parties without the express written authorisation of Abbeydale BEC and our client. If any other unauthorised third party comes into possession of this report they rely on it at their own risk and the authors owe them no duty of care or skill.

The comments and recommendations presented in this interpretative Ground Investigation report are based on the findings of a review of available information; ground conditions encountered during the intrusive investigation work and the associated laboratory testing results. There may be other conditions prevailing on the site which have not been disclosed by this investigation and which have therefore not been taken in to account by this report. Responsibility cannot be accepted for conditions not revealed by this investigation.

When writing this report the proposed development was for a new roundabout along the existing A635 Barnsley Road highway, and a supporting embankment at, or close to, existing ground levels. If there are changes to these proposals then some modification to the comments and recommendations given may be required. It should be noted that when the Ground Investigation works were scoped and carried out the proposed roundabout was in a different location to that currently proposed. The revised proposed site layout is shown on the site plan in Appendix A; the previously proposed position is shown on the layout plan included in the Dunelm Factual Report.

2. OBJECTIVES

This report has been undertaken to provide interpretation of the findings of the factual Ground Investigation undertaken by Dunelm, and an evaluation of the current site proposals with regard to geotechnical and engineering considerations to determine what impact the anticipated ground conditions will have on the integrity of the proposed new roundabout and any supporting structures

Consideration is also given to the potential risks from any contaminants in the existing soils to construction workers, and future receptors who may come into contact with underlying soils in any proposed soft landscaping areas.

3. THE SITE

The new roundabout is proposed along a section of the existing A635 Barnsley Road highway to the west of Carr Dike and Billingley Bridge, see Figure 2.

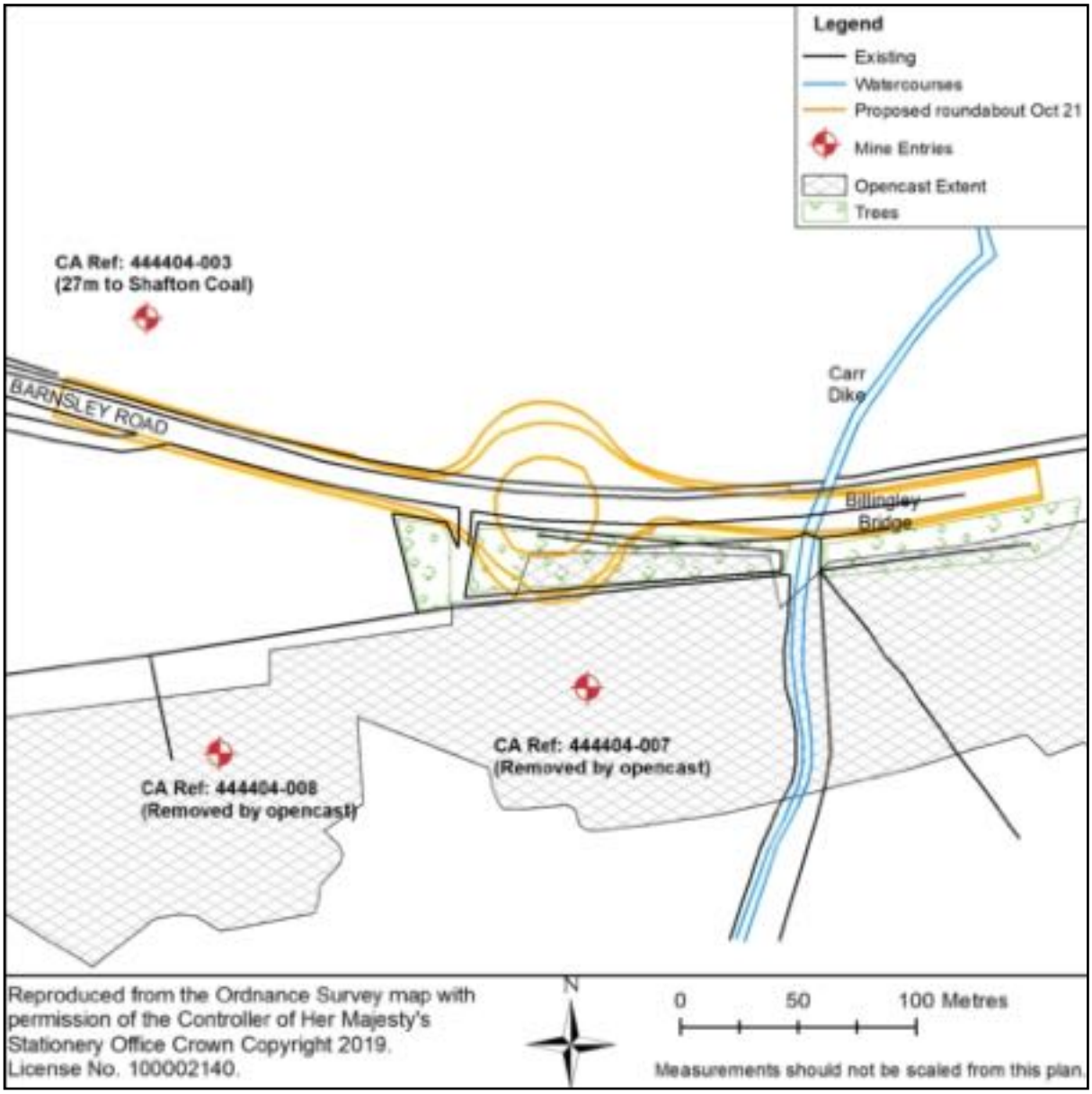

FIGURE 2 - SITE PLAN

Undeveloped fields are present to the north and south of the existing highway, both of which are currently being used to grow agricultural crops. The field on the north side of the A635 Barnsley Road is at a slightly higher elevation than road level, with the generally topography of the area sloping gently from north-west to south-east. A hedge forms the southern boundary of the field.

On the south side of the A635 Barnsley Road a belt of semi-mature woodland is present between the highway and the agricultural fields beyond, which is accessed via a track off A635 Barnsley Road. With ground levels falling to the south-east the level of field is estimated to be around 2.00m to 2.50m lower than road level.

Carr Dike runs roughly north to south on the eastern section of the site; this flows in a southerly direction, passing beneath A635 Barnsley Road in a culvert. As part of the construction of the new roundabout we understand that the alignment of the

existing culvert may need to be adjusted. The proposed roundabout will tie in to the existing road alignment to the east and west, with 2.00m wide grassed verges proposed along the outer extent of most of the new roundabout, and a 3.00m wide cycleway proposed along the northern side of the new roundabout. An access road will feed off the south of the new roundabout into the lower fields to the south of the existing A635 highway.

4. HISTORY

Historic Ordnance Survey (OS) maps of the site and surrounding area were previously obtained from Landmark Information Group, dated 12 June 2019 as part of a previous Coal Mining Risk Assessment undertaken for the originally proposed roundabout position. The historical maps are included in Appendix E. All measurements stated are approximate distances from the site boundaries to the recorded features.

4.1. The Site

The earliest OS map of 1854 shows that the site comprises open fields, Barnsley Road, Thurnscoe Dike (renamed Carr Dike by 1905) and Billingley Bridge. The site appears fairly similar to current day, apart from no woodland is shown bounding the south of Barnsley Road.

From 1962, the map shows that there is an embankment sloping down from Barnsley Road to the south. The 2000 OS map has a label of 'Quarry' in the field south of Barnsley Road. Prior to this map there was no mention of any on-site mining or quarrying activities.

The historical maps of the site largely remain unchanged to the most recent one of 2019, apart from the wooded area which is shown on site, just south of the road.

Although not depicted on the historic OS maps, opencasting of underlying coal resources is known to have taken place on the south side of the A635 highway within the vicinity of the site, dating to the early to mid-1990's.

4.2. Surrounding Area

The earliest map of 1854 shows the area surrounding the site to comprise of mostly open fields. There are a few residential houses in Billingley Green, 250m west of the site. A Sandstone Quarry is marked 500m east of the site, along Barnsley Road, however this is no longer shown on the next map of 1894. Other than this there is no evidence of other mining or quarrying activities.

There is no notable change in the area until 1905 when Goldthorpe Brick Works is shown 500m west of the site, just south of the old quarry. The Brick Works becomes disused by the map of 1931.

By 1966, the Brick Works has been demolished, however the outline of the former clay pit is shown until the 1990s.

5. GEOLOGY

The geological survey maps of the area, Sheet SE40SW, BGS Sheet 87 (Barnsley) and Yorkshire County Series Sheet 275SE have been examined. The site is shown to be underlain by the Pennine Middle Coal Measures, of Late Carboniferous age; dipping gently to the north, by around 3° to 5° from an assessment of outcrop patterns and dip indicators on the geological maps and underground contours on the County Series geological map.

The site is stratigraphically at the top of the Carboniferous Middle Coal Measures sequence, above the Shaft Coal seam, which is shown to outcrop just to the south of the site due to past extraction of the seam by opencast methods. The original crop of the seam is conjectured to have been around 120m further south prior to opencast operations.

The nearest surface geological fault is conjectured approximately 400m to the south of the site, trending north-west to south-east and downthrowing strata to the south-west. Numerous underground faults are recorded on the County Series geological sheet, predominantly within the Barnsley Coal seam, however faulting is also recorded in the Parkgate Coal in the south-west of the surrounding area.

Superficial drift deposits are present over the solid geology in the vicinity of Carr Dike, consisting of alluvium (silt and clay with sand and gravel lenses). The alluvium is also recorded in the field to the south of the road, however past opencast mining will have removed the superficial soils from across most of the area.

As highlighted above, made ground deposits associated with former opencast workings are recorded across most of the site and immediate vicinity; geological sheet SE40SW indicates the opencast was undertaken in two phases, with a conjectured line demarcating the different extents of the opencast phases.

A preliminary geological section has been produced using the geological map to summarise the underlying geological sequence under the site; see Figure 3.

6. MINING RISK ASSESSMENT & QUARRYING

A Coal Mining Risk Assessment report was previously carried out by Abbeydale BEC, dated July 2019 (ref: 151089MRA), for the previously proposed roundabout position. However, a reappraisal of the mining information with reference to the new roundabout location is provided below.

The presence of rock and mineral seams, including coal, which may have been mined or quarried in the area has been determined by the published geological maps and memoirs of the area, and the appended South Yorkshire Mining Advisory Service (SYMAS) report included in Appendix C.

Within the underlying geological sequence there are several named coal seams recorded to have been of economic importance, both at shallow depth (less than 30m below rockhead), and a greater depth. As outlined in the following sections the

geological records and SYMAS report have records of mining have occurred beneath the proposed roundabout by multiple extraction techniques.

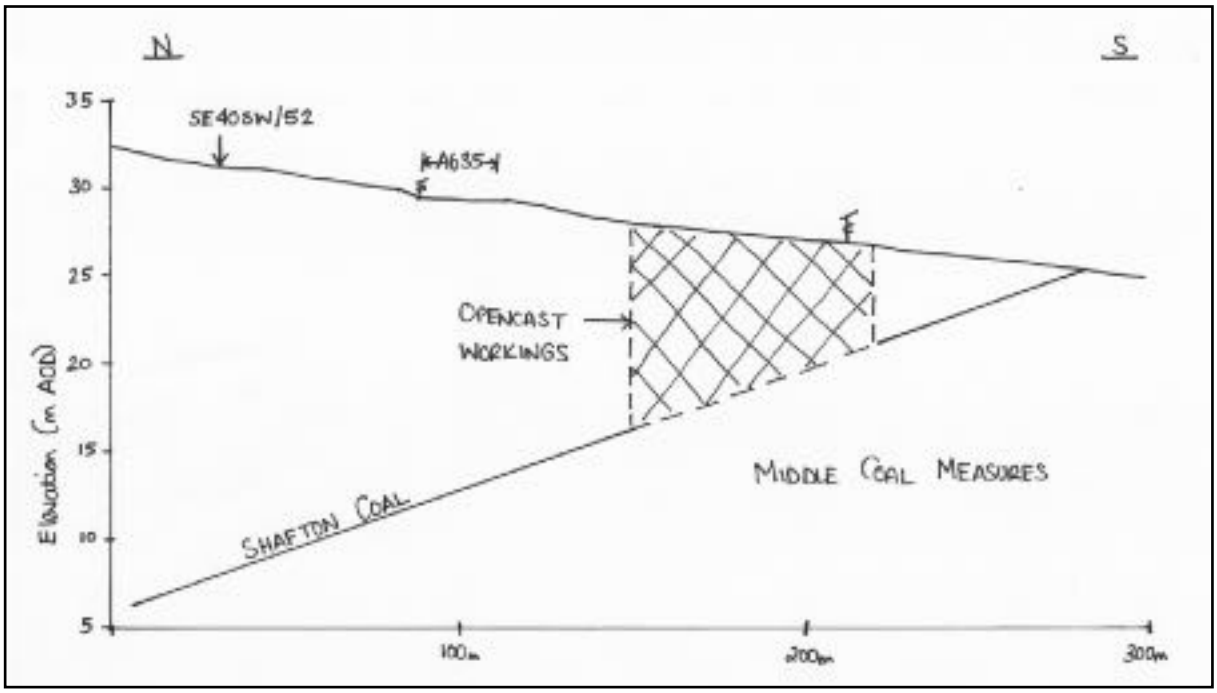

FIGURE 3 - GENERALISED SECTION (VERTICAL EXAGGERATION X 5)

6.1. Opencast Mining

The shallowest coal seam is anticipated to be the Shafton Coal, recorded to be around 1.4m thick in the locality. A shaft around 100m north-west of the site records the Shafton Coal at a depth of around 27.4m (90ft), however with the site up-dip of the seam it would be anticipated at shallower depth under the new roundabout.

The SYMAS report states the Shafton Coal seam is recorded to have been worked by opencast in the vicinity of the proposed roundabout scheme; the approximate extent of the opencast is recorded on the plan provided with the SYMAS report. It is noted that the extents of the opencast are based on the BGS geological map and that SYMAS do not hold any abandonment plan for the former opencast working.

From the available information the opencast highwall is likely to be present just north of the opencasted area, through the southern part of the proposed roundabout.

The opencast workings are recorded to have occurred some time in the early to mid 1990s; SYMAS estimated that the depth of opencast was up to 15m in the north.

6.2. Shallow Mine Workings

The SYMAS report indicates that historic shallow mine workings in the Shafton Coal were identified during the opencast workings, with three bell pits / shafts

identified on the plan attached to the SYMAS report. For the two shafts in the southern field, the opencast workings removed any remnant coal and mining voids and the entire excavation was backfilled. The shaft in the northern field is described as disused, but no details relating to the capping of the shaft were given. However, the shaft is located ~150m from the location of the proposed roundabout, with the section of highway closest to the shaft shown to remain along its current route.

Although no historic mine shafts or coal pits are shown on the available geological maps or historical OS maps, there is the potential for the Shafton Coal to have been worked at shallow depth on the north side of the A635 highway in the past. Shallow mine workings may therefore exist to the north of the former opencast area, beneath the proposed roundabout footprint.

No other potentially shallow depth coal seams are recorded to have been worked across the area. However, the risk of unrecorded shallow mine workings affecting the site was deemed to be **high** based on the available recorded information.

6.3. Deep Mining

The geological map indicates that the next named coal seam is the Sharlston Top Coal (formerly known as the Double Smuts Coal), around 65m to 70m below the Shafton Coal and beneath the Mexbrough Rock Sandstone unit. The Sharlston Top seam is noted to be split by dirt partings but in places contains up to 1.2m (4ft) of coal.

With underground faulting recorded in the Barnsley and deeper Parkgate Coal seams on the County Series geological map, this would indicate that deep mining of these seams has occurred beneath the site. Underground contours on the County Series geological map suggest that the Barnsley Coal is likely to be present at an elevation of approximately -420m Below Ordnance Datum (BOD) (-13780ft) below the site. With ground levels of around 30m AOD in the vicinity of the site this would equate to the Barnsley Coal being at an estimated depth of 450m depth.

From the generalised stratigraphic column on the geological map the deeper Parkgate Coal would be anticipated around 250m below the Barnsley seam.

The resultant risk of any mining activities in the deep coal seams is only deemed to be **low**. These seams and any associated workings are sufficiently deep that collapse of any associated mine workings would not be considered to have the potential to affect the surface stability of proposed roundabout.

6.4. Mine Entries

One recorded mine entry (CA Ref: 444404-003) has been identified across the surrounding area, around 150m north-west of the new roundabout; the shaft is recorded to have extended to 27.43m (90ft) to the Shafton Coal.

In addition, two bell pits / shafts (CA Refs: 444403-008 & 444403-007) were uncovered during the former opencast excavation. It is understood that these were excavated out to their full depth as part of the opencast working, which was then fully backfilled once opencasting had ceased.

At this stage the presence of further unrecorded mine shafts / bell pits cannot be ruled out in areas where opencasting has not been undertaken, with an associated **moderate to high** resultant risk.

7. FIELDWORK

7.1. General

Fieldwork was undertaken from 12 April to 28 April, 23 September and 27 to 28 September 2021 in general accordance with Eurocode 7, BS5930:2015 and BS10175:2011(+A2:2017). The scope of proposed Ground Investigation was specified by Abbeydale BEC to confirm the ground conditions present, including the approximate location of the opencast highwall, and obtain information on the depth and state of the Shafton Coal where outside of the area of recorded opencast workings.

Detailed descriptions of the strata encountered are recorded in the exploratory hole logs in the Dunelm factual report, included as Appendix D for ease of reference. Other exploratory hole logs are included within Appendix F.

7.2. Exploratory Hole Locations

The relative ground levels and positions of the exploratory holes undertaken were assessed relative to existing features using a tape measure; the approximate locations of which are shown on Figure 4.

Based on the available information, targeted investigation was undertaken to confirm the depth and state of backfill in former opencast area , including investigating the area of the recorded highwall which has potential issues regarding differential movement between the area of opencast backfill and natural ground outside of the former opencast. Generally non-targeted exploratory locations were then used elsewhere across the site.

The locations of exploratory holes were restricted due to the presence of the existing highway and the areas of woodland that were present at the time of undertaking the intrusive works. Scheduled exploratory holes TP3 and TP10 could not be undertaken because there was insufficient space in the verge between the highway and the woodland.

No investigation was permitted in the wooded area itself.

OH1 was abandoned and moved to OH1A after the hand-dug inspection pit had been dug as the drilling rig could not get into position due the presence of trees.

7.3. Sampling Strategy

Representative disturbed samples of the soils and weathered rock encountered were taken throughout the course of the intrusive investigation works to facilitate subsequent geotechnical and environmental laboratory testing.

The sampling depths were taken based on professional judgement, the ground conditions encountered or at regular depths through the soil profile, or a combination of all three.

On completion of fieldwork the sample schedules were sent to Abbeydale BEC by Dunelm for the scheduling of subsequent laboratory testing.

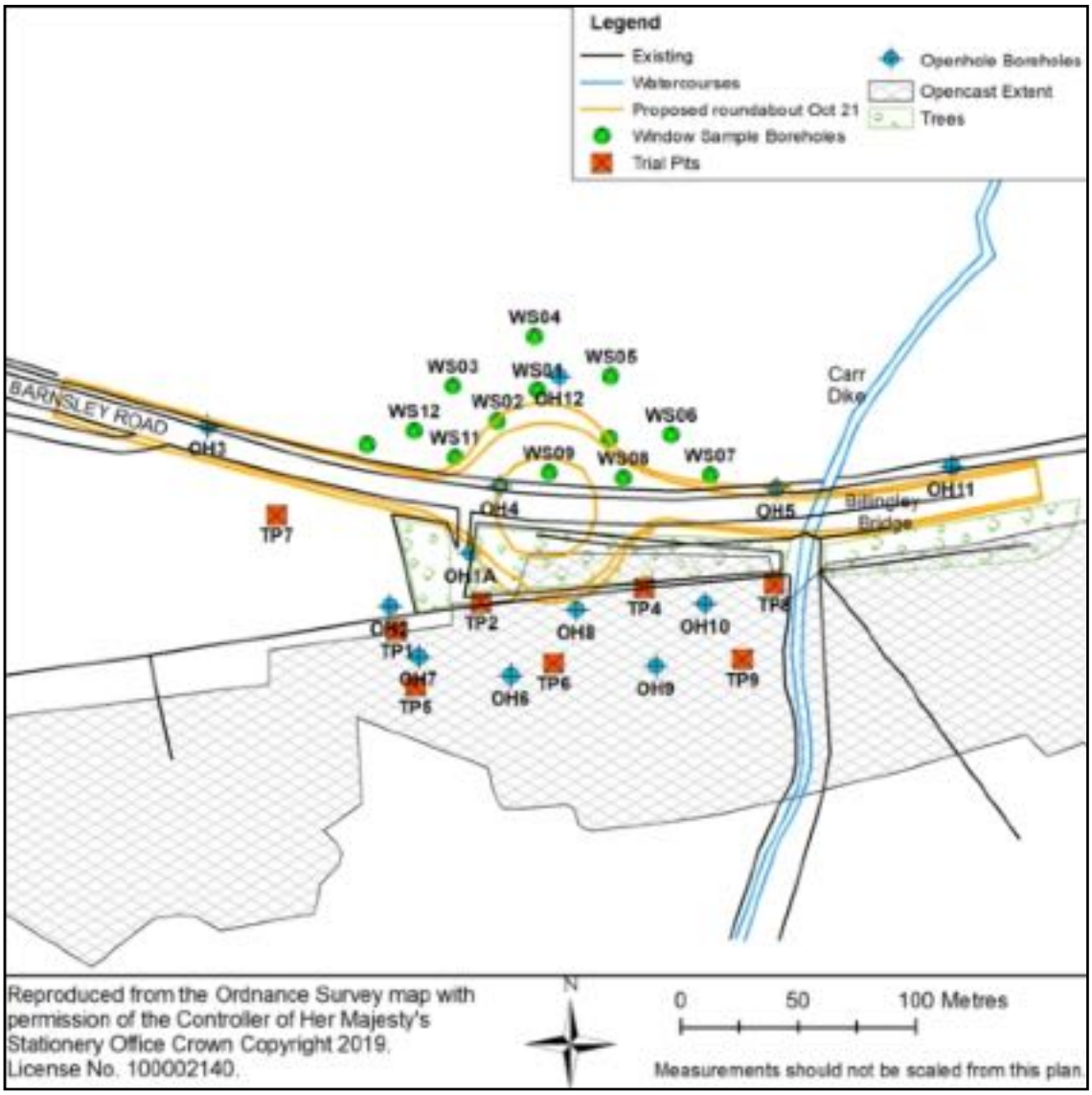

FIGURE 4 - EXPLORATORY HOLE PLAN

7.4. Trial Pits

To allow a detailed assessment of the shallow soils and weathered bedrock, and to attempt to find the extent of the area of open cast, a total of eight trial

pits (TP1 to TP9, minus TP3 which could not be undertaken) were excavated using a JCB 3CX mechanical backhoe excavator with a 600mm wide toothed bucket, to depths of between 2.10m and 5.10m below ground level (bgl).

The trial pits were logged by a Dunelm Engineer from the arisings and examination of the sides and base of the trial pit from the surface. An assessment of the stability of each pit was also recorded.

On completion the trial pits were backfilled with arisings to leave in a safe state.

7.5. Window Sample Holes

A total of thirteen window sample holes (WS1 to WS13) were carried out across the site, ranging in depth from 1.00m and 4.00m bgl, using a tracked window sample rig.

As part of the window sampling in situ Standard Penetration Tests (SPTs) or Cone Penetration Tests (CPTs) were undertaken based on the ground conditions encountered, to provide in situ relative strength information. The SPTs utilised a 50mm split spoon sampler with a 70^0 taper, with the CPTs using a solid cone with a 90^0 taper, driven using a 63.5kg hammer dropping 750mm. The blow counts are recorded for every 75mm driven, as detailed on the appended exploratory logs along with the resultant N values for each test. Where a refusal (N>50) was encountered the total number of blows over the total penetration distance is recorded.

7.6. Rotary Openhole Boreholes

To provide information on the presence of shallow coal seams or associated mine workings, twelve rotary openhole boreholes (OH1A to OH12) were drilled to depths of between 10.26m bgl and 30.00m bgl, using a tracked top driven rotary drilling rig with 102mm diameter roads and a down the hole hammer, using water flush. The strata descriptions were logged by a Dunelm Geotechnical and Environmental Engineer from the flush arisings.

On completion monitoring standpipes were installed in each of the rotary boreholes to facilitate post-investigation groundwater and gas monitoring, with the exception of OH12 which was backfilled on completion.

7.7. Monitoring Installations

To facilitate post-investigation monitoring of the underlying ground gas and groundwater regimes gas monitoring standpipes were installed in each of the rotary openhole boreholes. The individual installation details are shown on the relevant logs for each exploratory hole.

Gas and groundwater monitoring using a Gas Data GFM436 gas monitor was undertaken on six monitoring visits by an Abbeydale BEC Site Engineer. The results of the monitoring are summarised on Table 3 in Appendix B.

8. LABORATORY TESTING

Geotechnical and chemical laboratory testing was scheduled by Abbeydale BEC and carried out by Dunelm's chosen laboratories as part of the requirements of the Ground Investigation.

Geotechnical laboratory testing was undertaken by Solmek Ltd and Professional Soils Laboratory Ltd (PSL) in accordance with BS1377:1990. To assess the geotechnical characteristics of the natural soils a total of seven samples were scheduled for Plasticity Index (Atterberg Limits) testing, with natural moisture content testing carried out on the remainder of samples of natural soils obtained for comparison with the plasticity index testing results. Particle Size Distribution tests and 2.5kg compaction tests with CBRs at each compaction point, were undertaken on three samples of the opencast backfill material. The geotechnical testing results are summarised on Table 1 in Appendix B and shown graphically on Figures 7 and 8.

Samples were also sent to Derwentside Environmental Testing Services Ltd (DETS) and Chemtech Environmental Ltd for chemical analysis for a range of heavy metals, semi-metals and Polycyclic Aromatic Hydrocarbons (PAHs); summarised on Tables 2A to 2D in Appendix B.

Testing certificates are included in the Dunelm factual report; see Appendix D, as well as Appendix G.

9. GROUND CONDITIONS

9.1. General

The ground conditions encountered are recorded in detail in the exploratory logs appended to this report (Appendix D) and summarised on two geological sections, Figures 5 and 6. Any diagram of the possible configuration of ground conditions between exploratory holes is conjectural and given for guidance purposes only. If deemed critical confirmation of intermediate ground conditions should be sought.

9.2. Made Ground

The four boreholes in the highway footpath found made ground associated with the highway, comprising various layers of macadam and sub-base materials to depths ranging from 0.47m bgl to 1.80m bgl.

BH1A and BH2 found topsoil and thin made ground from the surface to 0.70m bgl. The made ground comprised soft sand gravelly clay containing gravel of brick, sandstone, mudstone and clinker.

Across the southern field a mantle of topsoil was encountered from the surface to between 0.30m and 0.40m bgl. In the northern field, topsoil comprising clayey gravelly sand was found from the surface to a maximum depth of 0.30m bgl.

9.3. Backfilled Opencast Workings

The exploratory holes carried out in the fields to the south of the A635 highway were undertaken to assess the spatial extent and depth of the backfilled opencast workings recorded in this area. The information obtained from the intrusive investigation has been used to produce a geological section across the existing A635 highway and into the former opencast area, see Figure 5.

Beneath the topsoil, opencast backfill was encountered in two distinct forms; an upper layer of cohesive made ground comprising sandy gravelly clay, with gravel of mudstone, sandstone and coal, to a maximum depth ranging from 2.70m to 7.20m bgl. Plasticity testing on this cohesive made ground recorded modified plasticity index values of 26% to 27%, equating to a medium volume change potential in accordance with NHBC Ch.4.2. Results of the geotechnical testing undertaken on samples of the cohesive made ground are summarised in Table 4A. As summarised graphically on Figure 7, the moisture content values were generally below the plastic limit values of the two samples of the cohesive made ground sent for plasticity index testing.

Two samples of the cohesive made ground from TP4/2.50m and TP5/2.50m were scheduled for compaction testing to assess the dry density vs moisture content relationship of the soils. The tests recorded the maximum dry densities to range from 1.79Mg/m^3 to 1.87Mg/m^3 with optimum moisture contents from 14% to 17%. Natural moisture contents were recorded as 19% in TP4/2.50m and 21% in TP5/2.50m, 5% and 4% wet of the optimum respectively.

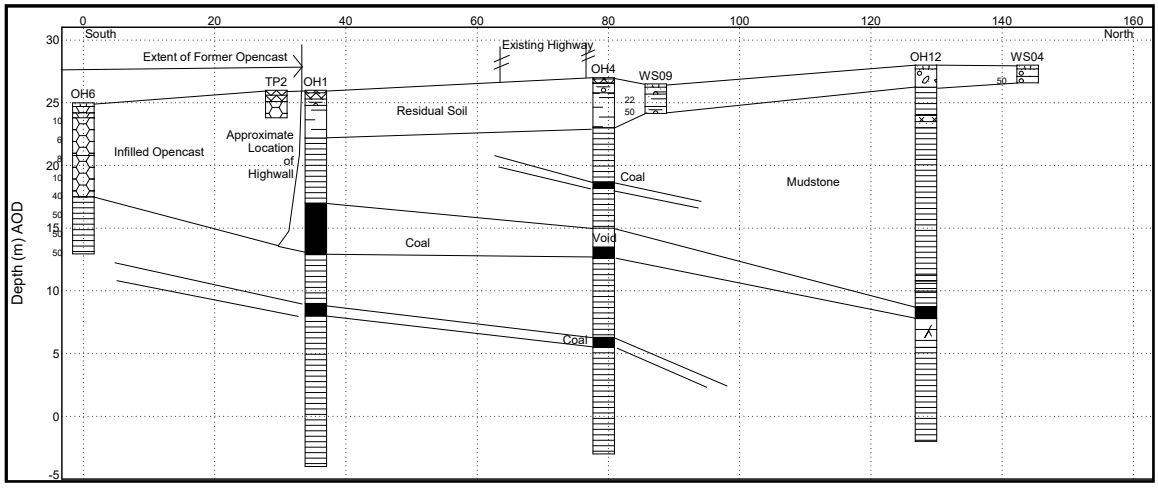

FIGURE 5 - GEOLOGICAL SECTION (SOUTH TO NORTH THROUGH OPENCAST)

In TP1, TP2, TP4 and TP8 the trial pits were extended to the northern extent of the southern field to try locate the highwall of the former opencast. The trial pits encountered made ground backfill to the full depths excavated up to the boundary fence. It is therefore interpreted that the highwall of the former opencast is within the wooded area between the field and the existing A635 Barnsley Road highway.

Cohesive Made Ground	Count	Minimum	Maximum	Mean
Moisture Content (%)	40	7.5	30	18.4
Liquid Limit (%)	2	50	50	50
Plastic Limit (%)	2	23	24	23.5
Fines (%)	2	89	93	91
Modified Plasticity Index (%)	2	26	27	26.5
Loss On Ignition (%)	2	7.8	11	9.4
SPT N Value	13	4	11	7.5
Sulphate (mg/l)	6	2.3	180	69.6
pH	6	5.5	7.6	7.0

TABLE 4A - COHESIVE MADE GROUND TESTING SUMMARY

Beneath the cohesive made ground a deeper layer of granular made ground was encountered, in the form of reworked mudstone. This was logged by the drillers as grey mudstone in the rotary openhole boreholes, however the low SPT N values and quick rates of drilling observed by our Site Engineer indicate that the mudstone was reworked and is indeed opencast backfill. The reworked mudstone made ground was encountered from depths between 2.70m bgl and 7.20m bgl to between 7.20m bgl and 8.70m bgl.

Three particle size distribution tests undertaken on the granular opencast backfill soils confirmed the field descriptions of clayey very sandy gravel / very clayey gravelly sand, with a medium cobble content in sample TP9/2,50m.

SPT N values in the granular made ground ranged between N6 to N26, with a mean value of N13. A summary of the SPT N values against depth is shown on Figure 8, highlighting a general increase in N value with depth.

9.4. Natural Soils

Beneath the topsoil and made ground several of the exploratory holes recorded natural cohesive soil in the form of firm sandy gravelly clay containing sandstone and mudstone, to between 2.20m to 4.20m bgl.

Natural Cohesive Soil	Minimum	Maximum	Mean	Count
Moisture Content (%)	8	31	16	45
Liquid Limit (%)	33	51	41	13
Plastic Limit (%)	19	33	23	13
Fines (%)	80	100	93	13

Natural Cohesive Soil	Minimum	Maximum	Mean	Count
Modified Plasticity Index (%)	13	28	19	13
SPT N Value	20	32	24	10
Sulphate (mg/l)	60	60	60	1
pH	7.8	7.8	7.8	1

TABLE 4B - NATURAL COHESIVE SOIL TESTING SUMMARY

Plasticity testing on the natural clay soils recorded modified plasticity index values to range between 13% to 28%, equating to a low to medium volume change potential when accounting for the fines contents of the samples tested. The moisture content of the natural clay soils were noted to be generally around or below the plastic limit of the samples, with the mean moisture content (16.3%) being below the mean plastic limit value of 22.9%.

A compaction test was undertaken on a sample of the natural clay soils from TP7/1.50m, recording a maximum dry density of 1.78Mg/m^3 at the optimum moisture content of 15%. The natural moisture content of the sample was recorded as 19%, which is 4% wet of the optimum.

In the northern field, natural ground was encountered beneath the topsoil from 0.30m bgl. A medium dense to dense brown clayey gravelly sand was found to a maximum depth of 1.70m bgl. Underlying this was a firm to stiff brown mottled orange sandy gravelly clay containing siltstone. This clay was found to a maximum depth of 2.50m, where siltstone bedrock was encountered.

9.5. Bedrock

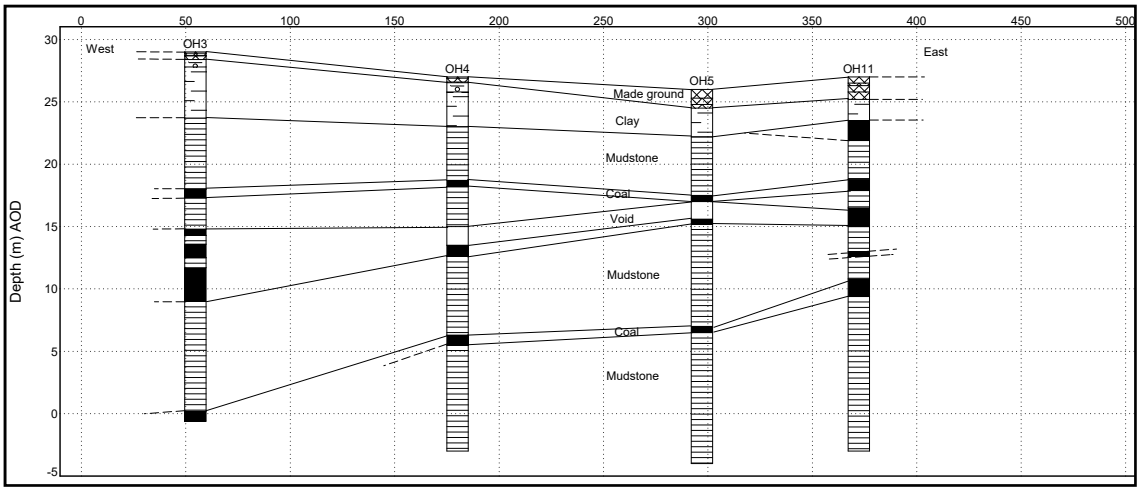

FIGURE 6 - GEOLOGICAL SECTION (WEST TO EAST ALONG EXISTING HIGHWAY)

The exploratory holes recorded bedrock across the site, ranging from depths of 2.05m bgl (TP7) to 5.30m bgl (OH3) where outside of the former opencast area,

increasing to between 7.20m bgl and 8.70m bgl inside the recorded former opencast area.

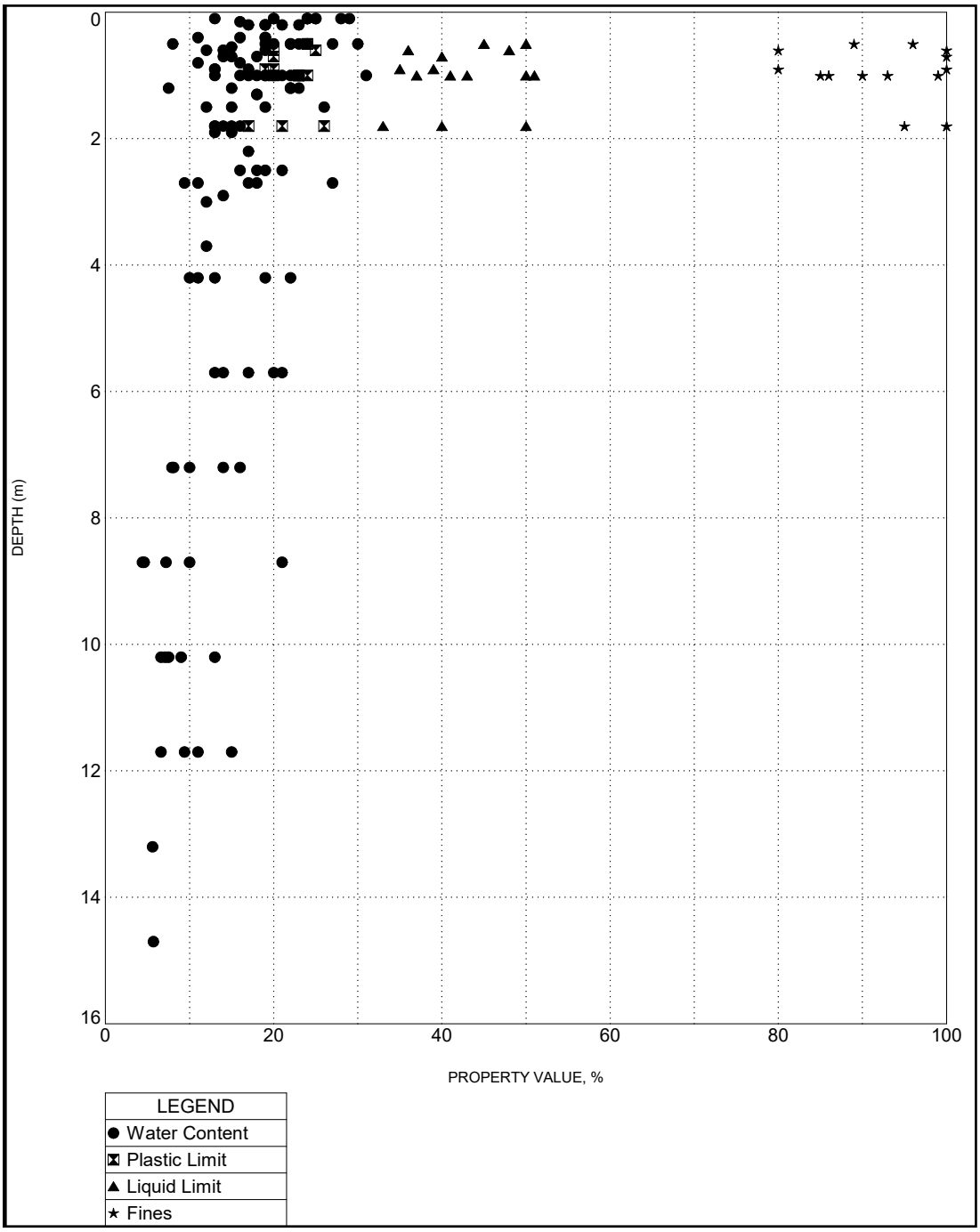

FIGURE 7 - INDEX PROPERTIES VS DEPTH GRAPH

Noticeable increases in SPT N value were recorded in the rotary openhole boreholes when bedrock was encountered, ranging from N40 to refusal (>N50); shown graphically on Figure 8.

Several coal seams were encountered in the underlying bedrock sequence on the north side of the A635 highway, see Figure 6. Interpretation of the

investigation information suggests that there is leafing of the coal seams, with generally three coal seams interpreted. A 1.60m thick coal seam was recorded at very shallow depth in OH11, from 3.50m bgl, which could possibly have been eroded from the geological sequence to the west of this location.

Voiding was noted in two of the rotary openhole boreholes on the north side of the existing A635 Barnsley Road, from 12.00m bgl to 13.50m bgl in OH4 and from 9.00m bgl to 10.40m bgl in OH5. In both exploratory holes a total loss of drilling flush was recorded, with coal identified beneath the voids when drilling flush returned. These are interpreted to represent underground shallow mining of the Shafton Coal seam.

As well as the four boreholes in the existing highway, OH1A, OH2 and OH12 encountered coal seams up to 4.10m in thickness from as shallow as 9.00m bgl. No voids or losses of flush were recorded in these boreholes.

Although shown to be in the footprint of the former opencast, OH7 also encountered a 1.50m thick pocket of coal from 4.20m bgl, within the range of the opencast backfill recorded in adjacent rotary openhole boreholes. As shown on Figure 5 this seam appears to correlate with a coal seam recorded in rotary boreholes on the north side of the existing A635 highway, and also with the basal depth of the opencast made ground recorded in the other rotary openhole boreholes across the former opencast area.

The bedrock sequence between and below the coal seams was recorded to consist of grey mudstone, which extended beyond the basal depths of the rotary openhole boreholes, at a maximum of 30.00m bgl.

As water flush was used during the drilling, the depth of groundwater could not be determined during drilling of the boreholes. However, the trial pits recorded groundwater as shallow as 1.40m bgl in TP1, within the opencast infill. All of the other trial pits also recorded groundwater in the infilled opencast, with the greatest depth to groundwater in TP4 at 3.50m bgl.

In TP7, located outside the area of the former opencast, groundwater was encountered at 3.00m bgl in the mudstone bedrock sequence.

10. GEOTECHNICAL CONSIDERATIONS

10.1. General

An outline plan was available when completing this report. It has been assumed that a new roundabout with embankment is to be constructed at, or close to, existing ground levels. No buildings or hard retaining structures are proposed as part of the development works. If there are changes to these proposals, then some modification to the comments and recommendations given will be required.

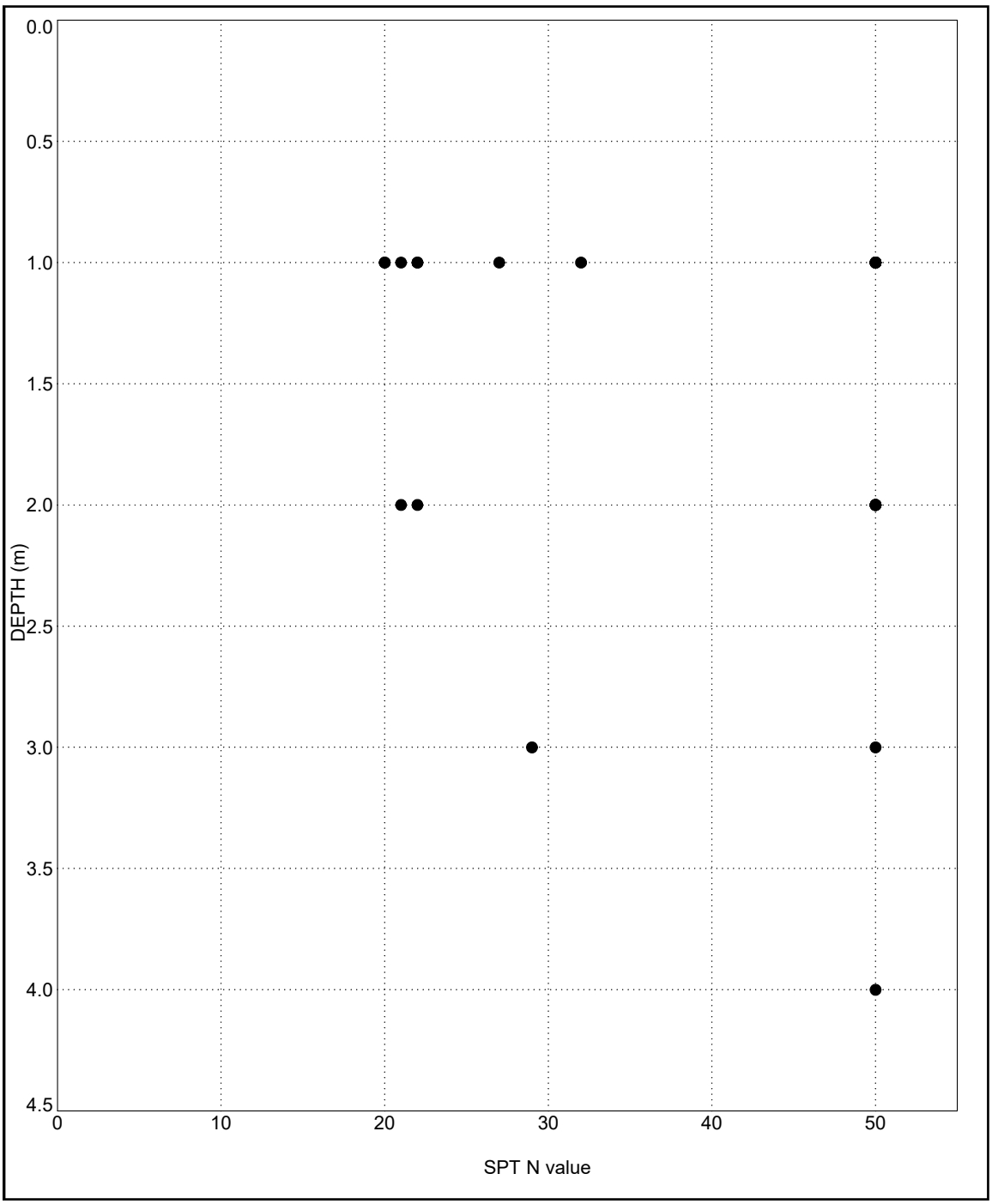

FIGURE 8A - N VALUE VS DEPTH GRAPH (IN WINDOW SAMPLE HOLES)

10.2. Opencast Mining

From the investigation data, the base of the opencast was found between 7.20m to 8.70m bgl. See Figure 5. The SPT N values in the opencast backfill generally recorded an increase in relative strength / density with depth, ranging from N4 to N26.

The highwall was not positively located, with trial pits carried out up to the northern boundary of the southern field finding opencast infill material. The location of the highwall is therefore presumed to within the wooded area

between the southern field and the A635 Barnsley Road highway. There is the potential for differential movement where transitioning from natural soils on the northern side of the former opencast and deep made ground where opencast activities previously occurred.

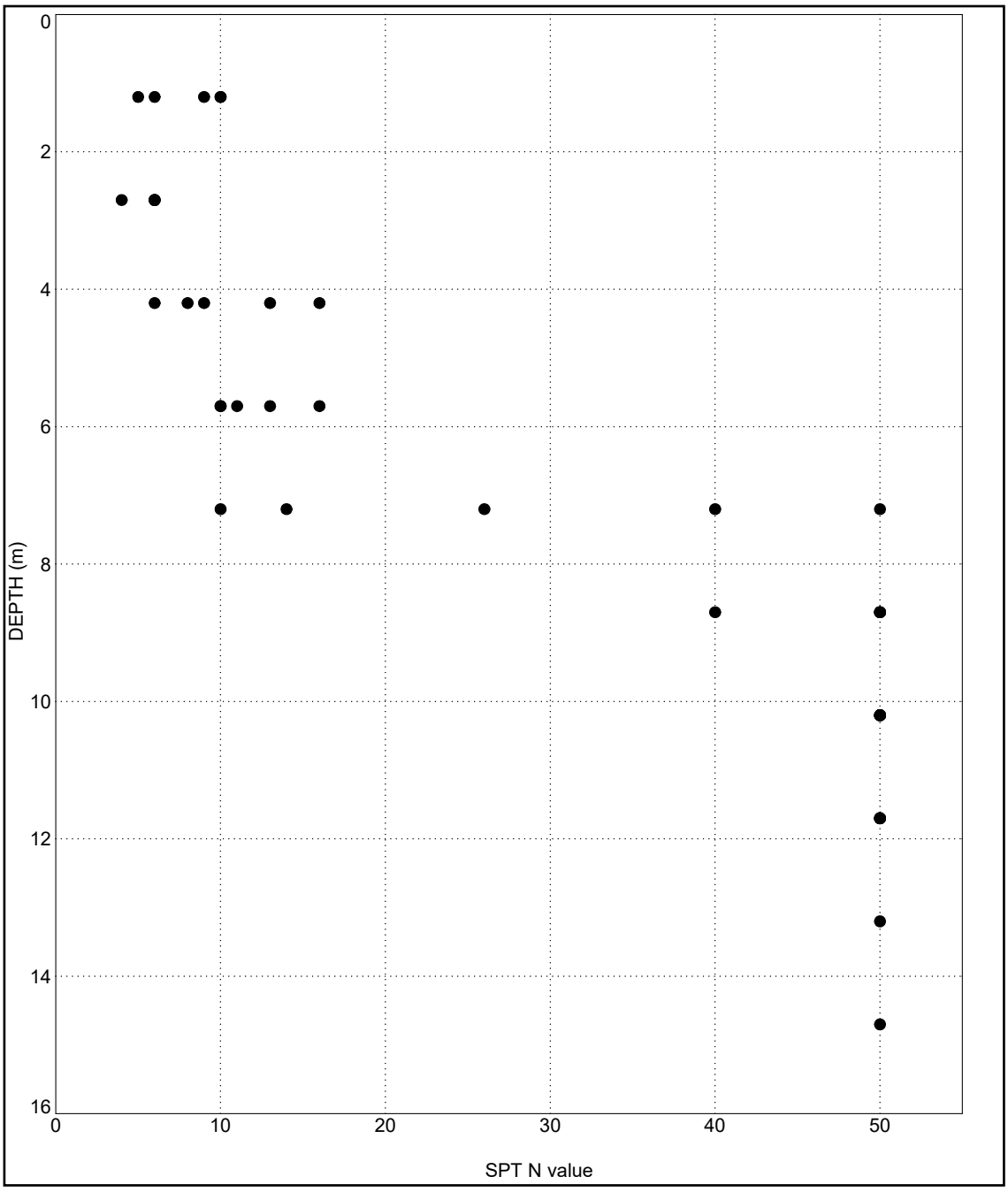

FIGURE 8B - N VALUE VS DEPTH GRAPH (IN OPENCAST)

10.3. Shallow Mine Workings

The SYMAS report indicates that historic shallow mine workings in the Shafton Coal were encountered during the opencast workings, and the workings were fully excavated during the opencast operations.

Coal seams were encountered in all seven of the boreholes located north of the opencast area. OH1 found up to 4.00m of intact coal. However, voids were encountered in OH4 and OH5, 1.50m thick between 12.00m and 13.50m bgl in OH4 and 1.40m thick in OH5 from 9.00m to 10.40m bgl. Coal was recorded beneath the voids in both of these exploratory holes.

To maintain a sufficient thickness of rock cover above the recorded shallow mine workings to mitigate the potential impact from any future collapse, a minimum rock cover of 40.00m would be required at OH4 and 14.00m at OH5; 10 x the recorded working thickness. Actual rock cover thickness were only recorded to be 8.00m and 5.40m respectively in OH4 and OH5 when accounting for the recorded rockhead levels. OH12 carried out to the north of the existing highway encountered a 0.95m thick coal seam at 19.25m bgl, with a rock cover of 17.50m.

It is therefore deemed that the shallow workings identified in OH4 and OH5 have the potential to adversely affect the surface stability of the existing highway and proposed new roundabout, should a collapse of the workings occur, with a **very high** resultant risk. Any shallow mine workings will need to treated by drilling and grouting to substantially fill any remaining voids in the shallow mine workings prior to construction of the new roundabout.

The potential for encountering unrecorded bell pits/shafts in the wooded area between the existing A635 highway and the area of infilled opencast mining cannot be ruled out at this stage.

10.4. New Embankments or Retaining Structures

The proposed layout included an embankment on the southern side of the roundabout, to accommodate the difference in ground levels. Consideration should be given to ensure the internal stability of any embankments with a gradient steeper than 1(v) in 3 (h).

10.5. Highways & Hardstanding

Highways and hardstanding will need to be constructed on re-engineered material. At this stage a minimum CBR of 2.5% can be assumed provided that the formation is proof rolled and any soft spots are removed.

To assess the sensitivity of the opencast backfill to changes in moisture content, compaction tests were carried out on two samples of the cohesive opencast backfill; the results are summarised graphically on the summary sheets in Appendix B. The results highlighted that maximum dry densities of between 1.79Mg/m^3 and 1.87Mg/m^3 can be achieved at the optimum moisture contents of 14% to 17%, with CBR values at optimum moisture content above 10%. Natural moisture contents of the samples were noted to be 4% to 5% wet of the optimum values in the samples tested.

For earthworks classification purposes the opencast backfill soils would classify as cohesive fill (Class 2) due to the percentage of fine particles being

greater than the 15% cutoff for granular fill (Class 1), based on the particle size distribution tests undertaken on samples of the opencast backfill.

To provide regulation of the opencast backfill under the highway footprint it would be recommended to excavate the upper 2.00m of the made ground, proof roll the formation and place the soils back in compacted layers, in accordance with Specification for Highways Works (SHW) Series 600. Any soft spots at formation level should either be locally excavated and recompacted, or single sized stone rolled in to stiffen the formation.

Compaction tests on a sample of the natural cohesive soil from TP7, to the north-west of the opencast area, show that a CBR of 10% can be achieved provided that the moisture content remains below 19%. The average moisture content of the natural cohesive soil was 16.3%, ranging from 8.0% to 31.0%. The maximum dry density of 1.78Mg/m^3 was achieved at the optimum moisture content of 15% if the natural soils were reused as general cohesive fill as part of the proposed works.

10.6. Drainage & Excavatability

Some difficulties in excavation of trenches for drains in the made ground and bedrock should be anticipated. Consideration should be given to providing safe temporary support of excavations within made ground or where greater than 1.2m depth.

Any excavations should be benched at no greater than 1(v) in 2(h) to provide a suitable key into the surrounding strata and to maintain temporary stability of the excavations.

10.7. Chemical Precautions

To assess the potential for chemical attack of any buried concrete substructures by the existing soils, sulphate and pH testing was undertaken on thirteen samples of the made ground and natural soil as part of the chemical analysis suite indicate that Class DS-1 (ACEC Class AC-1s) can be used on this site in accordance with BRE Special Digest 1:2005.

11. ENVIRONMENTAL CONSIDERATIONS

11.1. Proposed Site Use

We understand that the current development proposal is for the construction of a new roundabout. A proposed layout plan is included in Appendix A.

The majority of the site will be covered by hardstanding, which will therefore break potential pathways between any underlying contaminants and future site users. However a 2.00m wide grassed verge will be provided around most of the highway area, as well as within the centre of the proposed roundabout. In these areas there is the potential for users of the footways to potentially come into contact with any shallow depth soils.

There is also a lesser potential for construction workers to come into contact with existing soils, and standard precautionary measures should be employed to reduce the potential for dermal contact and/or inhalation of dust or vapours. Good hygiene practises and facilities should also be provided as a standard precautionary measure.

Based on the proposed end use of the site any chemical testing should be compared against current Soil Guideline Values for a commercial land use scenario when carrying out a Generic Quantitative Risk Assessment (GQRA), due to the limited potential exposure to the underlying shallow depth soils.

11.2. On Site Contamination

Part of the site is known to have been previously been an opencast mine, with a subsequent **medium** risk of potential contamination resulting from this.

No obvious visual or olfactory signs of potential contamination were identified during the intrusive investigation undertaken. Although no obvious evidence of potential contamination was noted during the intrusive Ground Investigation works, the made ground was highlighted as the most likely source of any contamination. Chemical testing therefore focused on these soils, to determine the chemically suitability of the made ground for reuse.

Although the proposed end use for the site is not residential, after the chemical results were compared to guideline values for commercial/industrial there were no elevations, so the results were compared against a more sensitive land use, residential with the potential for homegrown produce guideline.

Soils chemical testing, summarised on Tables 2A to 2C, indicate that all values of heavy metals, semi-metals, Polcyclic Aromatic Hydrocarbons (PAH) and Total Petroleum Hydrocarbons (TPH) are below current GQRA threshold values, even for a residential end use with the potential for homegrown produce.

Soil leachate testing (see Table 2D) indicate that all levels are below the either Environmental Quality Standards (EQS) or UK Drinking Water Standards (DWS).

11.3. Ground Gases

The southern edge of the site consists of an infilled opencast mine. In addition, shallow mine workings were found during the investigation, which could potentially be a source of gas generation.

Post-investigation ground gas monitoring was undertaken on six visits since installation of the monitoring standpipes, as summarised on Table 3 in Appendix B. Trace amounts of methane (CH_4) were recorded throughout the monitoring, to a maximum of 0.2%, with a peak carbon dioxide (CO_2) concentration of 3.9%. Flow rates were generally low, with a maximum rate of -5.4 l/h across all of the monitoring locations and visits undertaken.

Unless any buildings or confined spaces are proposed the risk of ground gases is considered to be **negligible** as gases will be able to naturally vent to the

atmosphere and won't have the potential to accumulate in any enclosed spaces.

As a standard health and safety precaution the appointed contractor should ensure that any excavations requiring personnel-entry should be monitored for the presence of any hazardous ground gases prior to entry, and throughout the time that personnel are present within the excavation.

11.4. Invasive Species

The vegetation in and around the site has been examined. No obvious signs of potential invasive plant species were noted during the site walkover undertaken. However, because weedkiller could have been applied prior to carrying out our walkover survey, not seeing any signs of invasive plants during our brief time on site cannot be a guarantee that they are not present on or around the site.

Vigilance should be maintained throughout the development process for any signs of potential invasive plant species.

11.5. Remediation Requirements

The chemical testing undertaken has confirmed that the existing soils are suitable for retention or reuse close to the surface in any proposed soft landscaping areas.

Unless any buildings are proposed a ground gas risk assessment is not required as there are no areas where ground gases could accumulate and cause a potential risk to future receptors. However, any excavations that require personnel access should be monitored for ground gas emissions before access is granted, as a standard precautionary measure.

11.6. Imported Soils

If any imported soils are required to be brought to site to facilitate the proposed grassed verges, they will need to be validated to confirm their chemical suitability, and that they do not pose a risk to future receptors. The soils should be validated in accordance with Yorkshire And Lincolnshire Pollution Advisory Group (YALPAG) guidance *"Verification Requirements for Cover Systems"* version 4.1, dated June 2021.

The scope and frequency of analysis required to validate any imported soils will be dependent on the source and/or historical setting of the source site and the volume of soils imported to site.

12. WASTE DISPOSAL

Any waste arising from development of the site, such as excess soil or material deemed unsuitable for retention on site, should be disposed of in accordance with the Duty of Care Regulations. If any soils are being disposed directly to a landfill site Waste Acceptance Criteria (WAC) analysis may be required in addition to the basic

environmental screen testing undertaken, to determine the most appropriate disposal facility for the waste in accordance with the requirements of the current Landfill Directive.

The chemical testing results undertaken as part of the ground investigation works should be forwarded to any prospective waste handler to determine their formal waste classification for any soils requiring off-site disposal.

13. REGULATORY APPROVAL

The conclusions and recommendations in this report are based on a review of available information and observations made during the site walkover survey undertaken. The conclusions cannot be guaranteed to gain regulatory approval if this report is required as part of a planning application. If it is required as such it should be passed to the relevant regulatory bodies for their comment and approval.

14. FURTHER INVESTIGATION

A programme of treatment works for shallow mine workings will need to be compiled to substantially fill any voids where shallow mining has occurred and has the potential to adversely affect the surface stability of the site.

To determine the location of the highwall within the wooded area to the south of A635 Barnsley Road, a series of trial pits could be excavated across this area once access to the wooded area is available. If made ground extends beyond the achievable depth of the excavator, or if natural ground is not encountered, then a series of window sample holes / dynamic probe holes could be undertaken to assess the geometry of the former opencast highwall under the area of the new roundabout.

APPENDIX A - PROPOSED LAYOUT DRAWINGS

DO NOT SCALE

NOTES

GENERAL NOTES

a. THE TOPOGRAPHICAL SURVEY IS BASED ON INFORMATION PRODUCED BY HH SURVEYS, DRAWING NO. BAB/589/GP, DATED 16 SEPTEMBER 2021. THE INFORMATION USED IN PREPARATION OF THIS AND ALL OTHER TOPOGRAPHICAL INFORMATION SHOWN ON DRAWINGS IS NOT WARRANTED TO BE CORRECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL SURVEY INFORMATION PROVIDED AND REPORT ANY ANOMALIES TO FORE CONSULTING.

DESIGN NOTES

1. ALL DESIGN AND WORKS TO COMPLY WITH CURRENT VERSION OF THE FOLLOWING DOCUMENTS:
   - DESIGN MANUAL FOR ROADS AND BRIDGES (DMRB);
   - SPECIFICATION FOR HIGHWAY WORKS (SHW);
   - MANUAL FOR STREETS (MFS); AND
   - BARNSLEY METROPOLITAN BOROUGH COUNCIL (BMBC) DESIGN GUIDE AND SPECIFICATION.
2. FOOTPATH GRADIENT AT TACTILE PAVING TO BE A MAXIMUM OF 1:12.
3. EXISTING FENCES, VERGES/SHUBBERY, FOOTWAY, AND OTHER PHYSICAL FEATURES TO BE REMOVED WITHIN THE AREA OF WORKS.
4. ALL KERBS TO BE HB2, EXCEPT DROPPED KERBS AT PEDESTRIAN CROSSING.
5. ALL IRONWORK WITHIN EXTENT OF WORKS TO BE LOWERED / RAISED AS REQUIRED.
6. ALL PROPOSED ROAD MARKINGS TO BE IN ACCORDANCE WITH THE FOLLOWING:
   - TRAFFIC SIGNS REGULATIONS AND GENERAL DIRECTIONS (TSRGD);AND
   - TRAFFIC SIGNS MANUALS CHAPTER 5 - ROAD MARKINGS.
7. A635 DESIGN SPEED: 60mph
8. EARTHWORKS SLOPES TO BE MAXIMUM 1:3.
9. CHANNEL BLOCKS TO BE INSTALLED ALONG ALL THE NEW KERBS.

KEY

- CARRIAGEWAY
- FOOT/CYCLEWAY
- TACTILE PAVING (UNCONTROLLED CROSSING)
- BLOCK PAVING
- GRASS VERGE
- EARTHWORKS/LANDSCAPING

REV	DESCRIPTION	DATE	BY
E	CHANGES FOLLOWING COMMENTS	12.10.21	ML
D	TOPO SURVEY UPDATED	28.09.21	ML
C	CHANGES FOLLOWING COMMENTS	31.08.21	ML
B	CHANGES FOLLOWING COMMENTS	22.07.21	ML
A	CHANGES FOLLOWING COMMENTS	19.07.21	ML

Client:
BARNSLEY METROPOLITAN BOROUGH COUNCIL

Project
PROPOSED ROUNDABOUT A635 GOLDTHORPE

Drawing Title
GENERAL ARRANGEMENT

PRELIMINARY

Fore Consulting Limited
1st Floor, 15 St Paul's Street
Leeds
LS1 2JG
0113 2460204
enquiries@foreconsulting.co.uk
www.foreconsulting.co.uk

Drawn by	Checked by	Issue Date	Scale	Format
ML	PI	01.07.2021	1:500	A0

Job Number	Drawing Number	Revision
3465	100-SK-001	E

File name: E:\3465 Goldthorpe\3465-100-SK-001-E GENERAL ARRANGEMENT.dwg Plot date: 18 October 2021 08:42:54

APPENDIX B - TESTING SUMMARY TABLES

Exploratory Hole	Depth (m bgl)	Water Content (%)	Liquid Limit - LL (%)	Plastic Limit - PL (%)	Plasticity Index - IP (%)	Passing 0.425mm (%)	Modified Plasticity - IP' (%)	PSD D_{60}	PSD D_{15}	Dry Density (Mg/m^3)	Soil Ref.
OH1	0.10	25									
OH1	0.50	27									
OH1	1.00	17	37	20	17	86	14.62				
OH10	0.10	24									
OH10	0.50	24									
OH10	1.00	31									
OH10	1.20	22									
OH10	2.70	11									
OH10	4.20	19									
OH10	5.70	20									
OH10	7.20	16									
OH10	8.70	7.2									
OH10	10.20	9									
OH10	11.70	6.6									
OH2	0.10	28									
OH2	0.50	22									
OH2	1.00	19	41	24	17	85	14.45				
OH4	1.00	23	43	23	20	90	18				
OH6	0.10	24									
OH6	0.50	23	50	24	26	89	23.14				
OH6	1.00	16									
OH6	1.20	23									
OH6	2.70	18									
OH6	4.20	13									
OH6	5.70	14									
OH6	7.20	7.9									
OH6	8.70	4.4									
OH6	10.20	7.1									
OH6	11.70	15									
OH7	0.10	25									
OH7	0.50	22									
OH7	1.00	22									
OH7	1.20	15									
OH7	2.70	27									
OH7	4.20	11									
OH7	5.70	13									
OH7	7.20	14									
OH7	8.70	10									
OH7	10.20	6.6									
OH7	11.70	11									
OH7	13.20	5.6									
OH7	14.70	5.7									
OH8	0.10	29									
OH8	0.50	19									

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GEOTECHNICAL RESULTS SUMMARY

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 1

Exploratory Hole	Depth (m bgl)	Water Content (%)	Liquid Limit - LL (%)	Plastic Limit - PL (%)	Plasticity Index - IP (%)	Passing 0.425mm (%)	Modified Plasticity - IP' (%)	PSD D_{60}	PSD D_{15}	Dry Density (Mg/m^3)	Soil Ref.
OH8	1.00	18									
OH8	1.20	7.5									
OH8	2.70	9.4									
OH8	4.20	22									
OH8	5.70	17									
OH8	7.20	10									
OH8	8.70	21									
OH8	10.20	7.5									
OH8	11.70	9.4									
OH9	0.10	24									
OH9	0.50	30									
OH9	1.00	21	50	23	27	93	25.11				
OH9	1.20	22									
OH9	2.70	17									
OH9	4.20	10									
OH9	5.70	21									
OH9	7.20	8.1									
OH9	8.70	4.6									
OH9	10.20	13									
TP1	1.50	26						0.2			
TP2	1.50	12						2.725			
TP4	2.50	19									
TP5	2.50	21									
TP7	1.00	20	51	23	28	99	27.72				
TP7	1.50	19									
TP7	3.00	12									
TP9	0.50	20	45	24	21	96	20.16				
TP9	2.50	18						36.517	0.6		
WS01	0.40	11									
WS01	0.70	14	40	20	20	100	20				
WS02	0.20	23									
WS02	0.40	16									
WS02	0.60	14	36	20	16	80	12.8				
WS03	0.20	21									
WS03	0.60	19	48	25	23	100	23				
WS04	0.10	13									
WS04	0.50	8									
WS04	1.00	13									
WS05	0.20	19									
WS05	0.40	19									
WS05	1.00	19									
WS06	0.80	11									
WS06	1.30	18									
WS06	1.90	15									

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GEOTECHNICAL RESULTS SUMMARY

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 1

Exploratory Hole	Depth (m bgl)	Water Content (%)	Liquid Limit - LL (%)	Plastic Limit - PL (%)	Plasticity Index - IP (%)	Passing 0.425mm (%)	Modified Plasticity - IP' (%)	PSD D_{60}	PSD D_{15}	Dry Density (Mg/m^3)	Soil Ref.
WS07	0.15	16									
WS07	0.70	15									
WS07	1.30	18									
WS07	1.80	15	40	21	19	100	19				
WS07	2.20	17									
WS07	2.90	14									
WS07	3.70	12									
WS08	0.20	17									
WS08	0.40	19									
WS08	0.90	17									
WS08	1.80	16	50	26	24	100	24				
WS08	2.50	16									
WS09	0.10	20									
WS09	0.60	12									
WS09	0.90	13	39	20	19	100	19				
WS09	1.50	15									
WS09	1.90	13									
WS10	0.20	19									
WS10	0.90	13	35	19	16	80	12.8				
WS10	1.80	13									
WS11	0.10	20									
WS11	1.80	14									
WS12	0.55	15									
WS12	0.80	16									
WS13	0.20	19									
WS13	0.70	18									
WS13	1.80	13	33	17	16	95	15.2				

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GEOTECHNICAL RESULTS SUMMARY

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 1

Residential With Homegrown Produce (RwHP)

			Toxic										Phytotoxic			Organics		Other			
Exploratory Hole	Depth (m)	Date	Arsenic As	Beryllium Be	Cadmium Cd	Chromium (III) Cr	Chromium (VI) Cr	Lead Pb	Mercury Hg	Selenium Se	Nickel Ni	Vanadium V	Copper Cu	Boron B	Zinc Zn	SOM	Phenols	Cyanide (total) Cn	Asbestos	Sulphate g/l	pH (units)
OH3	0.70	21/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.7
OH4	0.70	21/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.4
TP1	1.00	22/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.1
TP2	0.20	22/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.4
TP4	3.00	23/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.0
TP5	0.50	22/04/2021	-		-	-	-	-	-	-	-		-		-					-	7.3
TP5	3.00	22/04/2021	-		-	-	-	-	-	-	-		-		-					-	6.9
TP7	1.00	22/04/2021	-		-	-	-	-	-	-	-		-		-						7.8
WS01	0.10	27/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	N.D	-	7.8
WS06	0.20	28/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	0.8	-	-	N.D	-	7.8
WS11	0.50	28/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.3	-	-	N.D	-	7.7
WS12	0.20	27/09/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.4	-	-	N.D	-	7.1
Number			12	4	12		12	12	12	12	12	4	12	4	12	4	4	4		11	12
Average			10.91	1.28	0.37		1.00	39.50	0.21	0.97	30.42	36.75	34.00	1.00	117.17	2.73	0.50	1.00		0.05	7.42
Minimum			4	1	0.1		1	16	0.05	0.5	17	29	15	0.8	62	0.8	0.5	1		0.01	6.9
Maximum			22	1.6	2.4		1	153	0.5	1.8	50	42	75	1.4	290	3.4	0.5	1		0.18	7.8
Standard Dev			5.26	0.25	0.65		0.00	37.39	0.22	0.39	11.29	5.56	16.57	0.28	63.40	1.28	0.00	0.00		0.05	0.34
US95			13.6		0.7			58.9	0.3	1.2	36.3		42.6	1.3	150.0		0.5	1.0		0.1	7.6
Source: LQM S4UL 2015			37 CS4L	1.7	11 CS4L	910	6.0 CS4L	200 CS4L	40	250	180	410	2400	290	3700	%	280	50 DUTCH		0.5 BRE	5 to 9

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Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. Soil guideline values are for RwHP.
3. Tested levels below S4UL are shown as -
   For actual result see certificate sheet.

CHEMICAL RESULTS ASSESSMENT

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 2A

Residential With Homegrown Produce (RwHP)

			Probable carcinogens (2)			Possible carcinogens (2)													
Exploratory Hole	Depth (m)	Soil Organic Matter (%)	Benzo (a) Anthracene	Dibenzo (a,h) Anthracene	Benzo (a) Pyrene	Chrysene	Benzo (b&k) Fluoranthene	Indeno (1,2,3-cd) Pyrene	Fluorene	Phen-anthrene	Pyrene	Acenaph-thylene	Benzo (g,h,i) Perylene	Acenaphthene	Anthracene	Naphthalene	Fluoranthene	Carcinogenic PAH Total	PAH 16 Total
OH3	0.70		-	0.4	-	-	-	-	-	-	-	-	-	-	-	-	-	2.20	4
OH4	0.70		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP1	1.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP2	0.20		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP4	3.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP5	0.50		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP5	3.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
TP7	1.00		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.70	1.6
WS01	0.10	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.34	0.79
WS06	0.20	0.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.20	0.34
WS11	0.50	3.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.16	0.34
WS12	0.20	3.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.42	0.84
Number			12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		12
Average				0.10	0.10	0.10	0.20	0.10	0.08	0.09	0.11	0.07	0.12	0.07	0.08	0.07	0.12		1.46
Minimum			0.02	0.02	0.02	0.03	0.05	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02		0.34
Maximum			0.2	0.4	0.3	0.3	0.6	0.4	0.2	0.2	0.3	0.1	0.6	0.1	0.2	0.1	0.3		4
Standard Dev			0.05	0.10	0.07	0.07	0.14	0.10	0.05	0.04	0.07	0.04	0.16	0.04	0.05	0.04	0.07		0.95
US95				0.2	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2		2.0
Source: LQM S4UL 2015			7.2	0.24	2.2 5.0	15	2.6	27	170	95	620	170	320	210	2400	2.3	280		

Notes:

1. Levels expressed as mg/kg (ppm) unless stated.
2. International Agency for Research on Cancer (IARC) classifications
3. Soil guideline values are for RwHP.
4. Tested levels below S4UL are shown as -
   For actual result see certificate sheet.
5. Levels presented for SOM 1% -
   Higher concentrations may be permissible

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PAH RESULTS ASSESSMENT

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 2B

Residential With Homegrown Produce (RWHP)

			Aliphatic							Aromatic						
Exploratory Hole	Depth (m)	Date	Aliphatic C5-C6 mg/kg	Aliphatic C6-C8 mg/kg	Aliphatic C8-C10 mg/kg	Aliphatic C10-C12 mg/kg	Aliphatic C12-C16 mg/kg	Aliphatic C16-C21 mg/kg	Aliphatic C21-C35 mg/kg	Aromatic C6-C7 mg/kg	Aromatic C7-C8 mg/kg	Aromatic C8-C10 mg/kg	Aromatic C10-C12 mg/kg	Aromatic C12-C16 mg/kg	Aromatic C16-C21 mg/kg	Aromatic C21-C35 mg/kg
TP1	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-
TP4	2.00			-	-	-	-	-	-	-	-	-	-	-	-	-
TP5	2.00			-	-	-	-	-	-	-	-	-	-	-	-	-
TP8	1.00			-	-	-	-	-	-	-	-	-	-	-	-	-
Number			4	4	4	4	4	4	4	4	4	4	4	4	4	4
Average			0.01	0.01	0.01	1.50	1.20	1.50	3.40	0.01	0.01	0.01	0.90	0.50	0.60	1.40
Minimum			0.01	0.01	0.01	1.5	1.2	1.5	3.4	0.01	0.01	0.01	0.9	0.5	0.6	1.4
Maximum			0.01	0.01	0.01	1.5	1.2	1.5	3.4	0.01	0.01	0.01	0.9		0.6	1.4
Standard Dev			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
US95																
Source: LQM S4UL 2015			42	100	27	130 (48)v	1100 (24)	65000* (8.48)	65000* (8.48)	70	130	34	74	140	260	1100

Notes:
1. Levels expressed as mg/kg (ppm) unless stated.
2. Soil guideline values are for RwHP.
3. Tested levels below S4UL are shown as -
   For actual result see certificate sheet.
4. Levels presented for SOM 1% -
   Higher concentrations may be permissible
5. * Combined analysis for C16 to C35 < 65000 mg/kg

TPH RESULTS ASSESSMENT

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 2C

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Exploratory Hole	Depth (m)	Date	Class	Arsenic As	Beryllium Be	Boron B	Cadmium Cd	Chromium (total) Cr	Copper Cu	Lead Pb	Mercury Hg	Nickel Ni	Selenium Se	Vanadium V	Zinc Zn	Cyanide (tot) Cn **(mg/l)**	Phenols **(mg/l)**	Sulphate **(mg/l)**	pH **(units)**	PAH (Total)
TP4	2.00	23/04/2021		-		-	-	-	-	-	-	-	-		-			-	5.60	
TP5	2.00	22/04/2021		-		-	-	-	-	-	-	-	-		-				5.50	
Number				2	0	2	2	2	2	2	2	2	2	0	2	0	0	1	2	0
Average				0.2		12.00	0.030	1.025	2.15	0.6	0.0	9.50	0.9		9.7			2	5.6	
Minimum				0.16		12	0.03	0.25	0.9	0.55	0.01	1	0.54		3.3			2.1	5.5	
Maximum				0.32		12	0.03	1.8	3.4	0.55	0.02	18	1.3		16			2.1	5.6	
Standard Dev				0.1		0.00	0.000	1.096	1.77	0.0	0.0	12.02	0.5		9.0				0.1	
US95				0.7		12.00	0.030	5.918	10.04	0.6	0.0	63.17	3.3		49.7				5.9	
[4]Water Supply Regulations (2000)				10		1000	5	50	2000	25	1	20	10	50	250	50		250		0.1
[4]Environmental Quality Standard				50	12	2000	0.09	4.7	6	7.2	0.05	20	250	20*	50	1000	0.1**	400	6-9	

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Notes:

1. Levels expressed as ug/l (ppb) unless stated.
2. * Assuming <100mg CaCO3/1
3. ** 0.1 = LOD, EQS limits = 0.03 mg/l
4. Elevations assessed against WSR and EQS whichever is lowest limit value. Concentrations below limit values given as -.

LEACHATE RESULTS ASSESSMENT

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 2D

Exploratory Hole	Date/Time	Flow Rate l/h	Methane Peak CH_4 %	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H_2S (%)	Carbon Dioxide CO_2 (%)	Oxygen O_2 (%)	VOCs ppm	Water Level / mBGL	Pressure (mbars)	Pressure Rise/Fall /Steady	Remarks
OH1	10/05/2021	-0.6	0.0	0.0	0.0	3.6	13.5	1.0	2.9	994	S	Overcast, dry, 13^{0}C.
OH1	14/05/2021	-2.2	0.2	0.0	0.0	0.4	17.7	1.0	2.95	1009	F	Cloudy, dry, 11^{0}C.
OH1	21/05/2021	0.0	0.0	0.0	0.0	0.3	20.1	1.0	2.85	985	S	Cloudy, drizzly, 12^{0}C.
OH1	04/06/2021	0.0	0.0	0.0	0.0	0.9	19.7	1.0	3.02	1026	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH1	11/06/2021	-2.7	0.0	0.0	0.0	1.0	20.0	1.0	3	1015	S	Cloudy, dry, windy, 18^{0}C.
OH1	17/06/2021	0.0	0.0	0.0	0.0	1.2	19.7	1.0	3.05	1010	S	Overcast, dry, slight breeze, 16^{0}C.
OH10	10/05/2021	-5.4	0.1	0.0	0.0	0.2	16.7	1.0	0.98	994	S	Overcast, dry, 13^{0}C.
OH10	14/05/2021	0.0	0.2	0.0	0.0	2.0	15.7	1.0	1.05	1010	S	Cloudy, dry, 11^{0}C.
OH10	21/05/2021	-3.3	0.0	0.0	0.0	2.1	10.7	1.0	0.68	986	S	Cloudy, drizzly, 12^{0}C.
OH10	04/06/2021	4.0	0.0	0.0	0.0	3.1	18.5	1.0	1.13	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH10	11/06/2021	-0.1	0.0	0.0	0.0	2.7	18.6	1.0	1.1	1015	F	Cloudy, dry, windy, 18^{0}C.
OH10	17/06/2021	0.0	0.0	0.0	0.0	3.1	19.6	1.0	1.11	1010	F	Overcast, dry, slight breeze, 16^{0}C.
OH11	10/05/2021	0.0	0.0	0.0	0.0	2.3	8.9	1.0	2.95	994	S	Overcast, dry, 13^{0}C.
OH11	14/05/2021	0.0	0.2	0.0	0.0	1.6	8.0	1.0	2.92	1011	S	Cloudy, dry, 11^{0}C.
OH11	21/05/2021	0.0	0.0	0.0	0.0	1.7	10.4	1.0	2.68	985	F	Cloudy, drizzly, 12^{0}C.
OH11	04/06/2021	0.4	0.0	0.0	0.0	3.1	3.0	1.0	3.09	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH11	11/06/2021	0.0	0.0	0.0	0.0	3.9	2.2	1.0	3.15	1017	S	Cloudy, dry, windy, 18^{0}C.
OH11	17/06/2021	0.0	0.0	0.0	0.0	3.3	3.9	1.0	3.25	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH2	10/05/2021	0.0	0.1	0.0	0.0	0.9	14.7	1.0	2.7	994	S	Overcast, dry, 13^{0}C.
OH2	14/05/2021	0.0	0.2	0.0	0.0	1.5	13.4	1.0	2.75	1011	S	Cloudy, dry, 11^{0}C.
OH2	21/05/2021	0.0	0.0	0.0	0.0	2.0	12.0	1.0	2.66	986	R	Cloudy, drizzly, 12^{0}C.
OH2	04/06/2021	0.2	0.0	0.0	0.0	0.7	19.0	1.0	2.85	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.

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GAS MONITORING RESULTS

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 3

Exploratory Hole	Date/Time	Flow Rate l/h	Methane Peak CH_4 %	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H_2S (%)	Carbon Dioxide CO_2 (%)	Oxygen O_2 (%)	VOCs ppm	Water Level / mBGL	Pressure (mbars)	Pressure Rise/Fall /Steady	Remarks
OH2	11/06/2021	0.0	0.0	0.0	0.0	1.7	17.9	1.0	2.85	1016	F	Cloudy, dry, windy, 18^{0}C.
OH2	17/06/2021	0.0	0.0	0.0	0.0	2.3	17.1	1.0	2.83	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH3	10/05/2021	0.0	0.0	0.0	0.0	0.8	14.4	1.0	2.85	994	S	Overcast, dry, 13^{0}C.
OH3	14/05/2021	0.0	0.2	0.0	0.0	0.9	13.8	1.0	3.16	1011	S	Cloudy, dry, 11^{0}C.
OH3	21/05/2021	0.0	0.0	0.0	0.0	0.9	14.3	1.0	3.19	986	S	Cloudy, drizzly, 12^{0}C.
OH3	04/06/2021	0.2	0.0	0.0	0.0	1.3	13.4	1.0	4.05	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH3	11/06/2021	0.3	0.0	0.0	0.0	2.0	13.2	1.0	4.48	1017	S	Cloudy, dry, windy, 18^{0}C.
OH3	17/06/2021	0.0	0.0	0.0	0.0	3.4	11.6	1.0	4.72	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH4	10/05/2021	0.0	0.0	0.0	0.0	1.4	10.6	1.0	1.3	994	S	Overcast, dry, 13^{0}C.
OH4	14/05/2021	0.0	0.1	0.0	0.0	0.1	16.8	1.0	1.35	1011	S	Cloudy, dry, 11^{0}C.
OH4	21/05/2021	0.7	0.0	0.0	0.0	1.8	9.8	1.0	1.25	986	S	Cloudy, drizzly, 12^{0}C.
OH4	04/06/2021	0.0	0.0	0.0	0.0	0.7	18.1	1.0	1.74	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH4	11/06/2021	0.1	0.0	0.0	0.0	2.3	14.2	1.0	1.86	1017	S	Cloudy, dry, windy, 18^{0}C.
OH4	17/06/2021	0.0	0.0	0.0	0.0	2.2	14.7	1.0	1.9	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH5	10/05/2021	0.0	0.0	0.0	0.0	0.2	16.9	1.0	3.35	994	S	Overcast, dry, 13^{0}C.
OH5	14/05/2021	-3.0	0.2	0.0	0.0	0.2	17.6	1.0	3.37	1011	S	Cloudy, dry, 11^{0}C.
OH5	21/05/2021	0.0	0.0	0.0	0.0	0.1	18.6	1.0	3.22	986	S	Cloudy, drizzly, 12^{0}C.
OH5	04/06/2021	0.3	0.0	0.0	0.0	0.2	18.0	1.0	3.44	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH5	11/06/2021	0.0	0.0	0.0	0.0	0.3	19.2	1.0	3.4	1017	S	Cloudy, dry, windy, 18^{0}C.
OH5	17/06/2021	0.0	0.0	0.0	0.0	0.4	19.1	1.0	3.42	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH6	10/05/2021	0.0	0.1	0.0	0.0	0.2	17.7	1.0	1.08	994	S	Overcast, dry, 13^{0}C.
OH6	14/05/2021	0.0	0.2	0.0	0.0	0.4	17.8	1.0	1.13	1011	S	Cloudy, dry, 11^{0}C.

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GAS MONITORING RESULTS

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 3

Exploratory Hole	Date/Time	Flow Rate l/h	Methane Peak CH_4 %	Carbon Monoxide CO (ppm)	Hydrogen Sulphide H_2S (%)	Carbon Dioxide CO_2 (%)	Oxygen O_2 (%)	VOCs ppm	Water Level / mBGL	Pressure (mbars)	Pressure Rise/Fall /Steady	Remarks
OH6	21/05/2021	0.0	0.0	0.0	0.0	0.4	19.9	1.0	0.97	986	S	Cloudy, drizzly, 12^{0}C.
OH6	04/06/2021	0.0	0.0	0.0	0.0	0.4	20.3	1.0	1.2	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH6	11/06/2021	0.4	0.0	0.0	0.0	0.5	20.0	1.0	1.06	1016	S	Cloudy, dry, windy, 18^{0}C.
OH6	17/06/2021	0.0	0.0	0.0	0.0	0.6	20.2	1.0	1.18	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH7	10/05/2021	0.0	0.1	0.0	0.0	0.3	16.9	1.0	1.16	994	S	Overcast, dry, 13^{0}C.
OH7	14/05/2021	-2.0	0.2	0.0	0.0	0.4	16.6	1.0	1.18	1011	S	Cloudy, dry, 11^{0}C.
OH7	21/05/2021	0.0	0.0	0.0	0.0	0.4	16.6	1.0	1.05	986	S	Cloudy, drizzly, 12^{0}C.
OH7	04/06/2021	0.2	0.0	0.0	0.0	0.4	19.8	1.0	1.25	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH7	11/06/2021	0.0	0.0	0.0	0.0	1.6	18.6	1.0	1.23	1016	S	Cloudy, dry, windy, 18^{0}C.
OH7	17/06/2021	0.0	0.0	0.0	0.0	0.8	19.9	1.0	1.25	1011	S	Overcast, dry, slight breeze, 16^{0}C.
OH8	10/05/2021	0.0	0.1	0.0	0.0	1.1	17.3	1.0	1.12	994	S	Overcast, dry, 13^{0}C.
OH8	14/05/2021	0.0	0.2	0.0	0.0	0.2	17.7	1.0	1.26	1010	S	Cloudy, dry, 11^{0}C.
OH8	21/05/2021	0.0	0.0	0.0	0.0	0.1	19.0	1.0	1.1	985	F	Cloudy, drizzly, 12^{0}C.
OH8	04/06/2021	0.0	0.0	0.0	0.0	0.0	20.7	1.0	1.34	1026	R	Hot, sunny, dry, slight breeze, 17^{0}C.
OH8	11/06/2021	0.6	0.0	0.0	0.0	0.1	20.7	1.0	1.3	1016	F	Cloudy, dry, windy, 18^{0}C.
OH8	17/06/2021	0.0	0.0	0.0	0.0	0.3	20.4	1.0	1.3	1010	S	Overcast, dry, slight breeze, 16^{0}C.
OH9	10/05/2021	0.0	0.0	0.0	0.0	0.9	15.7	1.0	0.95	994	S	Overcast, dry, 13^{0}C.
OH9	14/05/2021	0.0	0.2	0.0	0.0	0.3	17.9	1.0	1	1010	F	Cloudy, dry, 11^{0}C.
OH9	21/05/2021	0.0	0.0	0.0	0.0	0.2	20.0	1.0	0.89	986	S	Cloudy, drizzly, 12^{0}C.
OH9	04/06/2021	0.0	0.0	0.0	0.0	0.6	20.0	1.0	1.08	1025	S	Hot, sunny, dry, slight breeze, 17^{0}C.
OH9	11/06/2021	2.1	0.0	0.0	0.0	0.6	20.4	1.0	1.05	1016	S	Cloudy, dry, windy, 18^{0}C.
OH9	17/06/2021	0.0	0.0	0.0	0.0	0.5	20.4	1.0	1.05	1011	S	Overcast, dry, slight breeze, 16^{0}C.

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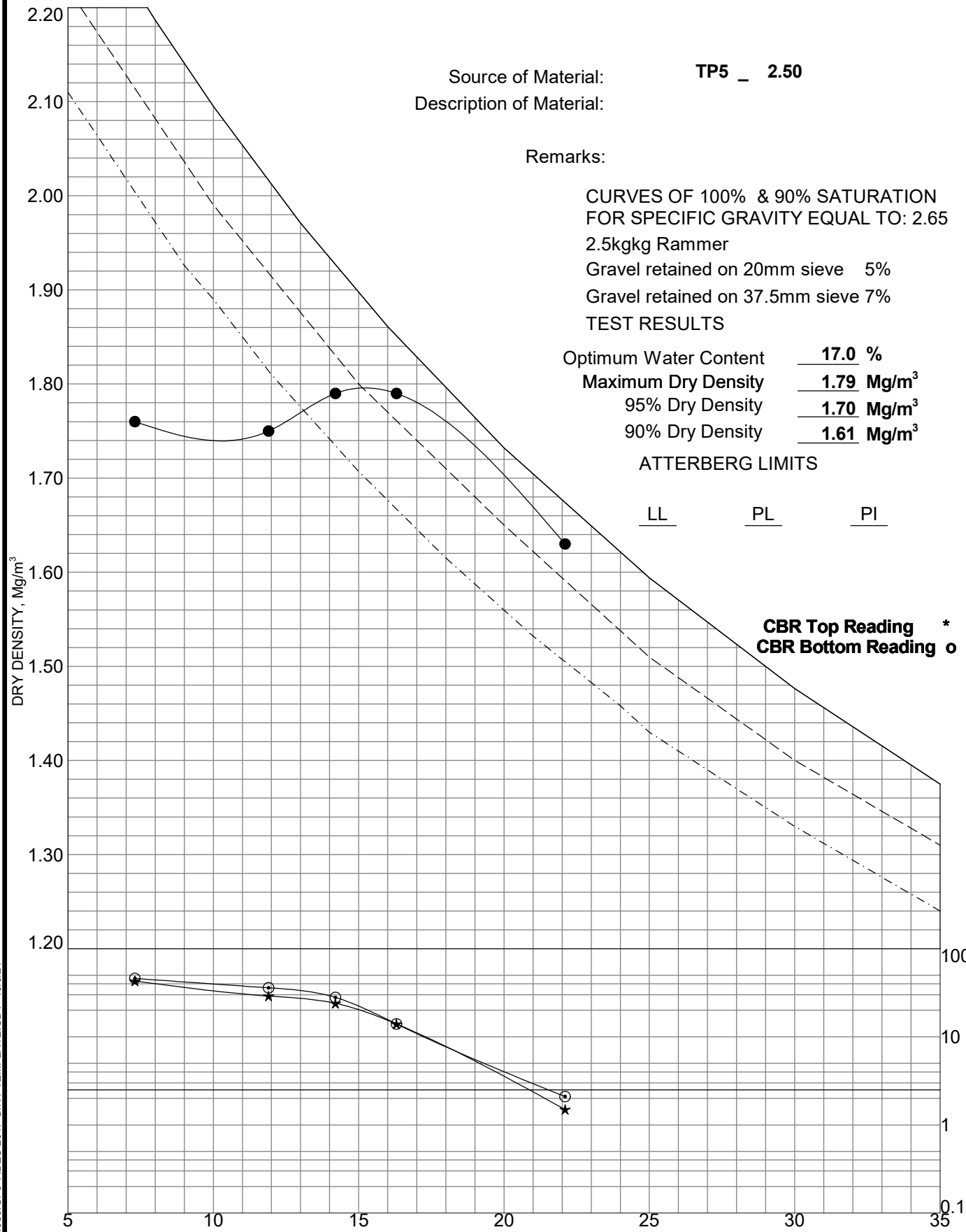
GAS MONITORING RESULTS

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TABLE 3



Source of Material: **TP5 _ 2.50**

Description of Material:

Remarks:

CURVES OF 100% & 90% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO: 2.65
2.5kgkg Rammer
Gravel retained on 20mm sieve 5%
Gravel retained on 37.5mm sieve 7%
TEST RESULTS

Optimum Water Content	**17.0**	**%**
Maximum Dry Density	**1.79**	**Mg/m^3**
95% Dry Density	**1.70**	**Mg/m^3**
90% Dry Density	**1.61**	**Mg/m^3**

ATTERBERG LIMITS

LL	PL	PI

CBR Top Reading *
CBR Bottom Reading o

Abbeydale
Building Environment Consultants
4 Neville Street, Wakefield, WF1 5EF | Tel: 01924 376622 | info@abbeydalebec.com

MOISTURE-DENSITY RELATIONSHIP

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TP5 / 2.5m

Source of Material: **TP7 _ 1.50**

Description of Material:

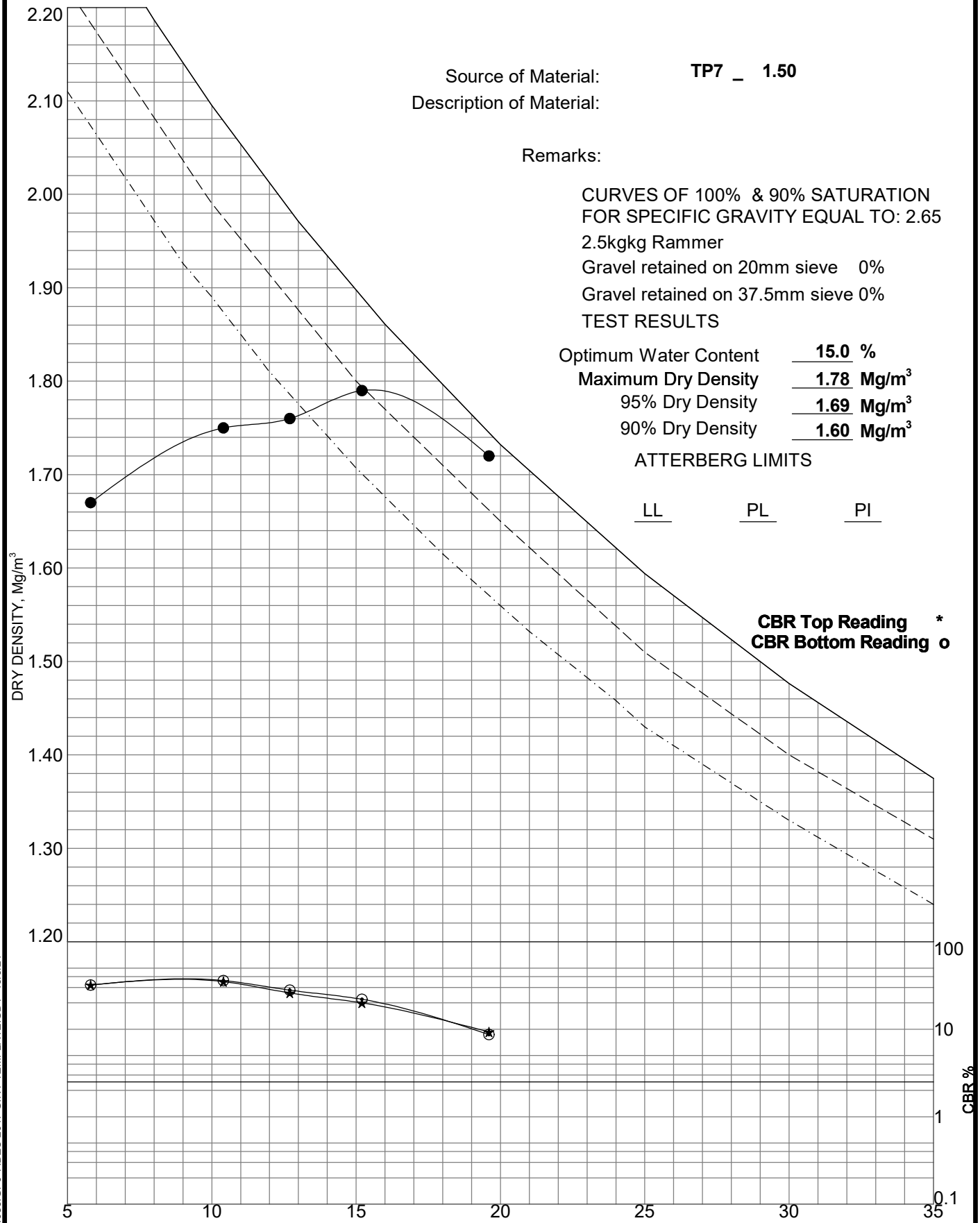
Remarks:

CURVES OF 100% & 90% SATURATION
FOR SPECIFIC GRAVITY EQUAL TO: 2.65
2.5kgkg Rammer
Gravel retained on 20mm sieve 0%
Gravel retained on 37.5mm sieve 0%
TEST RESULTS

Optimum Water Content	**15.0**	**%**
Maximum Dry Density	**1.78**	**Mg/m³**
95% Dry Density	**1.69**	**Mg/m³**
90% Dry Density	**1.60**	**Mg/m³**

ATTERBERG LIMITS

LL	PL	PI



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MOISTURE-DENSITY RELATIONSHIP

Client: BMBC

Project: A635 Barnsley Road, Goldthorpe

Number: 151089

TP7 / 1.5m

APPENDIX C - SYMAS REPORT

MINERAL REPORT

Date: 28th May 2019

My Ref: M108A/13

CONFIDENTIAL

NEW ROUNDABOUT PROPOSAL- A635 BARNSLEY ROAD GOLDTHORPE APPROACH

SITUATION

A new roundabout is proposed on the A635 in order to access adjacent employment land. The location of the proposed roundabout is illustrated on the attached drawing M108A/13A.
This report provides a review of the mining and geological history of the site and makes recommendations with regard to mining legacy risks the requirement for site investigation and remediation.

GEOLOGY

Geological records show that the site is located on shales, mudstones and sandstones of the Middle Coal Measures.

The Shafton Coal Seam (approx. 1400mm thick) is conjectured to outcrop to the south and dips gently to the north at approximately 3 to 5 degrees.

There are no geological faults or fissuring recorded in the immediate area.

MINING

Opencast

The Shafton Coal Seam was opencast in this vicinity in the early to mid-1990's. The approximate position of the opencast extraction is detailed on the attached drawing M108A/13A as reproduced from British Geological survey sheet SE40SW. SYMAS does not have a copy of the opencast abandonment plan. (if one exists)

It is estimated that the excavation depth ranged from between 0m near the outcrop position to around 15m in the north.

The opencast high wall is likely to be positioned just to the north of the extraction area through the proposed roundabout position.

Shallow Mining

Shallow historic mine workings in the Shafton Coal Seam were encountered during the opencast works. The opencast excavation removed the remnant coal and mining voids and the entire excavation was then backfilled. Two mine entries were encountered and removed in the approximate positions illustrated on the attached drawing. Further unrecorded mine workings may be present beneath the roundabout position to the north of the opencast area.

Tel: (01226)772689
Fax: (01226)772688
E-mail: symas@barnsley.gov.uk
Website: www.barnsley.gov.uk/symas

Deep Mining

The site has been affected by deep coal mining operations in the past but will not be affected by deep mining subsidence for the foreseeable future.

FORMER LAND USE

Other than the former opencast site there are no other records of any industrial activities within the vicinity of this site.

LANDFILL

According to the Borough Landfill Register the site does not lie within 250 m of a landfill operation.

CONCLUSIONS

1. The site is stable from the deep mining subsidence aspect and it should remain so for the foreseeable future.

2. For planning permission purposes the site is located in a High Risk Coal Authority coal mining referral area due to the presence of opencast backfill, the opencast highwall and the potential for unrecorded shallow coal mine workings to the north of the opencast extraction area.

   The site is therefore at risk from a number of shallow mining legacy risks including creep settlement of opencast backfill, differential settlement across the highwall and ground instability due to the potential presence of shallow coal mine workings.

   A coal mining risk assessment will therefore be required to accompany the planning application.

3. A geotechnical site investigation and appraisal of the site will be required to
   - confirm the position of the opencast highwall
   - investigate the suitability and level of compaction of the opencast backfill
   - confirm the depth and condition of the Shafton Coal seam to the north of the highwall.
   - provide recommendations regarding the need for any ground remediation or design mitigation to ensure the ongoing stability and sustainability of the proposed roundabout and highway.

4. Precautions with regard to potential fugitive gases should be employed during site investigation works and where site operatives are required to work in deep/confined excavations.

THIS REPORT IS BASED ON AND LIMITED TO THE RECORDS IN THE POSSESSION OF SYMAS AT THE TIME THE ENQUIRY IS ANSWERED.

This report was prepared by Paul James on the 28th May, 2019.

P. James,
Principal Mining Engineer.

APPENDIX D - DUNELM FACTUAL REPORT

DUNELM GEOTECHNICAL & ENVIRONMENTAL

CONTRACT NO: D10371

FACTUAL REPORT ON SITE INVESTIGATION FOR LAND AT

A635 BARNSLEY ROAD, GOLDTHORPE

PREPARED FOR:

BARNSLEY METROPOLITAN BOROUGH COUNCIL




● FOUNDATION HOUSE ● ST. JOHN'S ROAD ● MEADOWFIELD ● DURHAM ● DH7 8TZ
● TEL: 0191 378 3151 ● FAX: 0191 378 3157

OHS 623618 FS586808 EMS 586809

Contract No.	D10371
Job Name	A635 BARNSLEY ROAD, GOLDTHORPE

REPORT REVISIONS

Revision No.	Issue Date	Details
D10371/00	03.06.2021	Draft report for approval

VERIFICATION

Revision No.	Issue Date		Written By	Checked By	Verified By
D10371/00	03.06.2021	**Initials**	SH	BL	JH
		Signature			

CONTENTS

LIST OF APPENDICES

1 INTRODUCTION

1.1 SCOPE OF WORKS

Dunelm Geotechnical and Environmental Ltd (Dunelm) were commissioned by Barnsley Metropolitan Borough Council (BMBC), to carry out a site investigation of land at A635 Barnsley Road, Goldthorpe with Abbeydale Building Environment Consultants (ABEC) acting as geotechnical consulting engineers.

The objectives of the investigation were as follows:

- To determine the typical nature, thickness and engineering parameters of the made ground and natural strata.
- To determine the nature and extent of potential contamination within the site.
- To recover samples of made ground and natural strata for chemical and geotechnical laboratory testing.

Fieldwork was undertaken generally as specified in the contract documents provided by BMBC. The fieldwork was carried out between 12th April and 28th April 2021.

Following the completion of the fieldwork selected soil samples were submitted for a range of geotechnical and chemical testing.

This report presents the factual information obtained during the investigation; interpretation of this data was outside the remit of this report.

1.2 GENERAL

Guidance contained in the following Standards has been followed during the investigation work as appropriate: BS5930:2015+A1:2020, BS10175:2011+A2:2017; BS1377-1:2016; BS EN ISO 14688-2:2018 and BS EN ISO 14689:2018.

The information contained in this report is as indicated on the site plan shown in Appendix A, and the areas accessible during the ground investigation.

This report is for the exclusive use of BMBC and their agents. No third party may rely upon, or reproduce, the contents of this report without the written approval of Dunelm.

This report is based on the data obtained from the exploratory holes and from the subsequent tests carried out. There is always a possibility of variation in the ground conditions between boreholes. Responsibility cannot be accepted for conditions not revealed by the investigation. Any diagram or opinion of the possible configuration of the findings is conjectural and given for guidance only, and confirmation of intermediate ground conditions should be considered if deemed necessary. Dunelm's Notes on Limitations are included in Appendix F.

2 SITE LOCATION & FEATURES

The site is located 20km north east Sheffield city centre. The approximate centre of the site is at National Grid Reference 444421, 404022.

A site location plan is presented as Drawing No. D10371/01 in Appendix A to this report.

The site is a proposed highway junction on an existing section of the A635 Barnsley Road near Goldthorpe, in South Yorkshire. The site is currently a farmers field, with the existing Barnsley Road highway running roughly east west through the northern portion of the site. A cluster of trees

separates the highway from the field, with a track through the trees granting access into the field. The ground slopes gently towards the south.

3 FIELDWORK

3.1 INTRODUCTION

The fieldwork comprised the following:

Number	Exploratory Hole Label	Method
12	OH1, OH1A, OH2, OH3, OH4, OH5, OH6, OH7, OH8, OH9, OH10, OH11	Rotary Open Hole Drilling
7	TP1, TP2, TP4, TP5, TP7, TP8, TP9	Machine Excavated Trial Pit

Termination reasons are listed in the table below:

Number	Exploratory Hole Label	Termination reason
6	TP1, TP2, TP4, TP5, TP8, TP9	Due to pit instability

On completion all exploratory positions were backfilled immediately in accordance with instructions from BMBC.

Photographs of the above mentioned trial pits are presented in Appendix C.

3.2 EXPLORATORY HOLE LOCATIONS

The locations of each of the above exploratory holes were provided by BMBC prior to mobilisation to site. The approximate locations are shown on Drawing No's. D10371/02 & D10371/03 in Appendix A.

3.3 STRATA DESCRIPTIONS

Descriptions of the strata encountered in each of the exploratory holes are presented on the exploratory hole record sheets in Appendix B to this report. Strata descriptions are based on an examination of the strata, together with consideration of the in-situ testing results and laboratory test data.

Strata descriptions have been completed in accordance with BS5930:2015+A1:2020, BS EN ISO 14688-2:2018 and BS EN ISO 14689:2018 as appropriate.

3.4 SAMPLING

Samples were recovered during the investigation works in general accordance with the contract specification.

Samples of soil for chemical analysis were placed into suitable sample containers as specified by the chemical testing laboratory. Samples of soil for geotechnical testing were recovered in accordance with the principles of BS EN ISO 22475-1:2006 and BS5930:2015+A1:2020.

3.5 IN-SITU TESTING

In-situ Standard Penetration Tests (SPTs) were carried out in the rotary boreholes at a frequency in general accordance with the contract specification.

SPT tests were carried out in accordance with BS EN ISO 22476-3 2005 + A1:2011 in order to determine the relative density of the granular soils and an indication of the undrained shear strength of cohesive soils. The results of these tests are shown as 'N' values on the exploratory hole records, with the blow counts for each increment shown in brackets.

In situ hand shear vane tests were carried out at various locations. The results are presented at the relevant depth of the borehole logs included in Appendix B.

3.6 MONITORING WELLS

On completion of drilling, monitoring wells were installed in selected boreholes to enable BMBC to carry out subsequent gas and groundwater monitoring. The construction of the wells was as specified during the works by ABEC. Details of the installations are shown on the exploratory hole records and summarised in Table B1 in Appendix B.

Each well consisted of a lower slotted section of 50mm diameter HDPE standpipe surrounded by single size non-calcareous gravel, with an upper section of plain HDPE pipe surrounded by a bentonite cement seal.

Each of the wells was fitted with a suitable bung and gas tap to allow for gas and groundwater monitoring, and a protective steel cover to prevent damage to the installation.

Boreholes not fitted with a monitoring installation were backfilled in general accordance with the specification or subsequent instruction from ABEC.

4 LABORATORY TESTING

4.1 GEOTECHNICAL

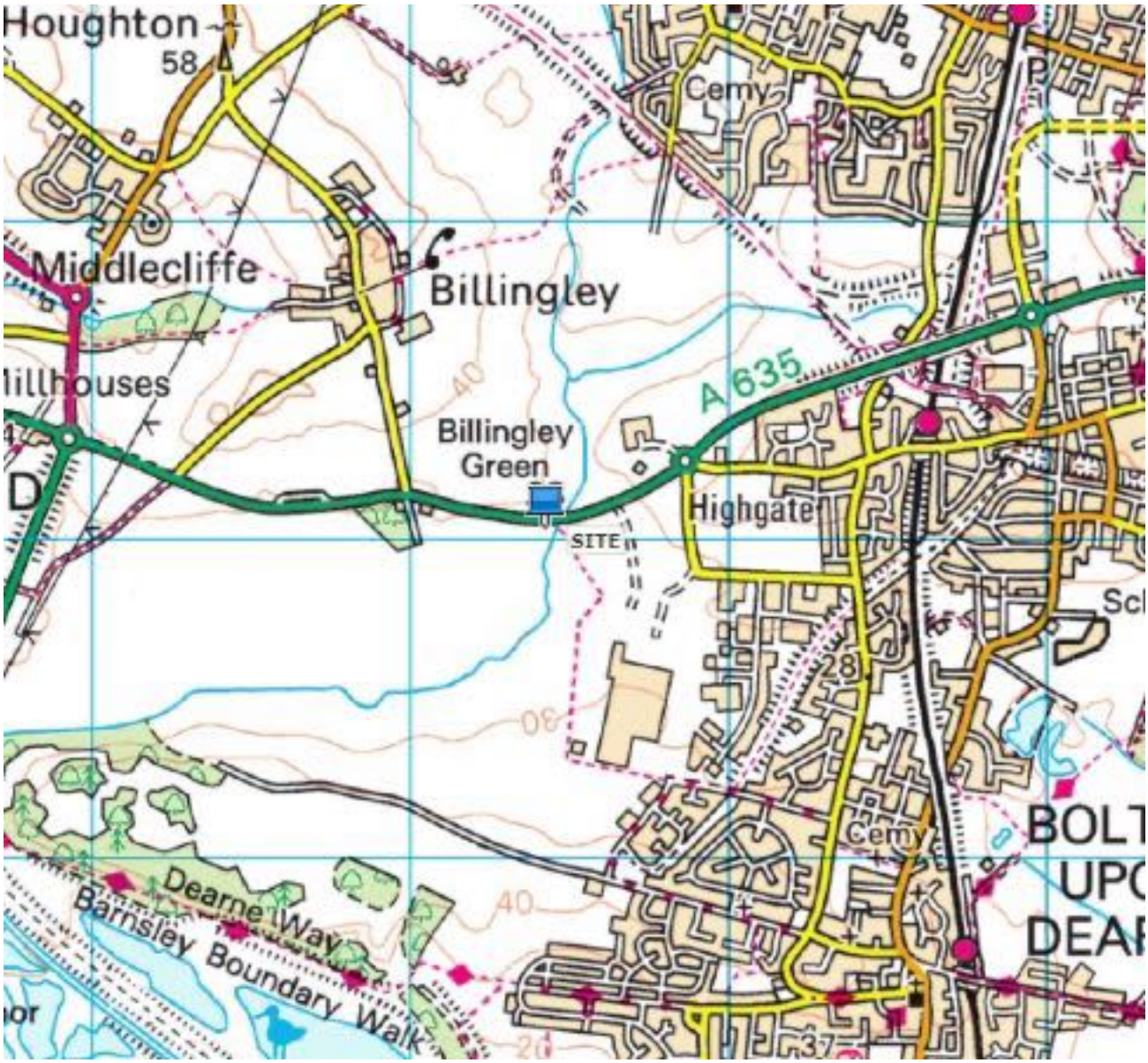
Geotechnical laboratory testing, as scheduled by ABEC, was carried out on selected samples in accordance with techniques in BS 1377-1:2016 and BRE SD1 : 2005. The testing was undertaken by a UKAS accredited laboratory and the results are presented in Appendix D.

4.2 CHEMICAL

Samples as scheduled by ABEC were tested for a range of contaminants by an MCERTS accredited laboratory. The results of these tests are presented in Appendix E.

APPENDIX A

Drawings

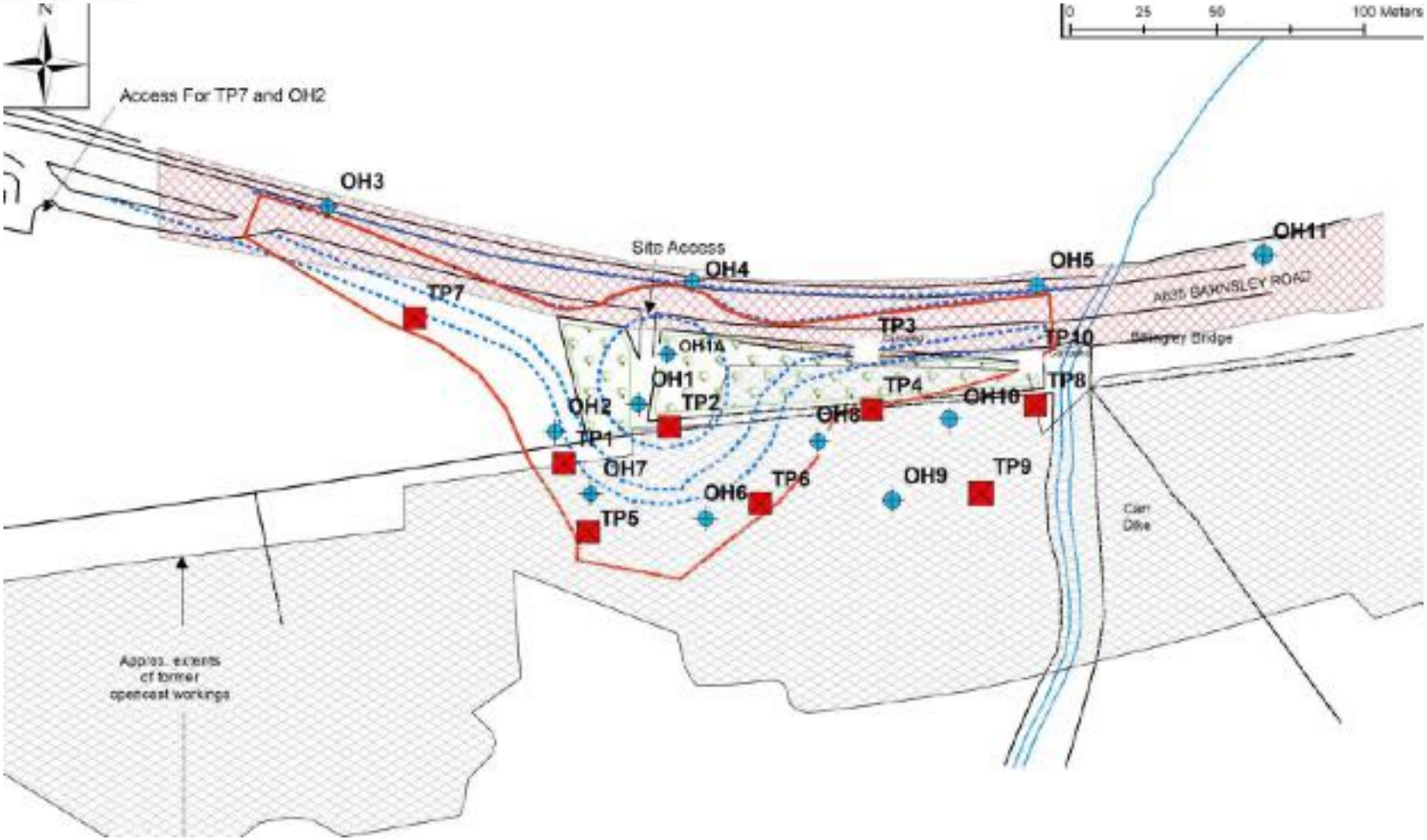


DUNELM GEOTECHNICAL & ENVIRONMENTAL	**Contract: A635 Barnsley Road, Goldthorpe**			**Contract No: D10371**
	Client: Barnsley Metropolitan Borough Council			
TEL: 0191 378 3151	**Drawing Title: Site Location Plan**			
Drawing & Revision No: D10371/01 - 00	**Date: May 2021**	**Scale: NTS**	**Status: Final**	**Drawn by: SH**

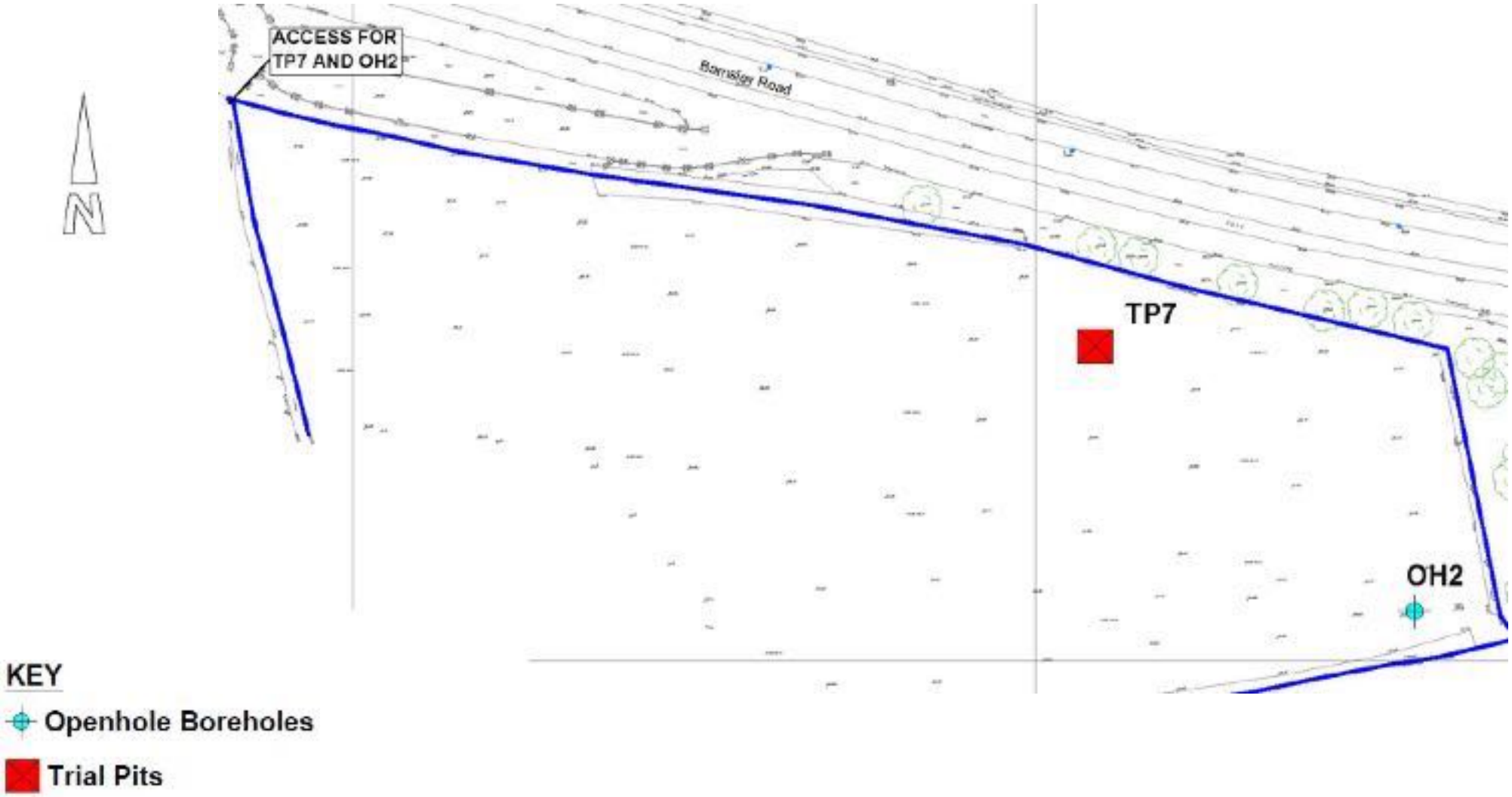
KEY

Openhole Boreholes

Trial Pits



DUNELM GEOTECHNICAL & ENVIRONMENTAL	Contract: A635 Barnsley Road, Goldthorpe				Contract No.: D10371
TEL: 0191 378 3151	Drawing Title: Exploratory Hole Location Plan				Client: Barnsley Metropolitan Borough Council
Drawing & Revision No: D10371/02 - 00	Date: June 2021	Scale: NTS	Drawn by: SH	Drawing Provided by: Barnsley Metropolitan Borough Council	Barnsley Metropolitan Borough Council Drawing No.: HD/A635.69/S289



DUNELM	Contract: A635 Barnsley Road, Goldthorpe				Contract No.: D10371
TEL: 0191 378 3151	Drawing Title: Exploratory Hole Location Plan				Client: Barnsley Metropolitan Borough Council
Drawing & Revision No: D10371/03 - 00	Date: May 2021	Scale: NTS	Drawn by: SH	Drawing Provided by: Barnsley Metropolitan Borough Council	Barnsley Metropolitan Borough Council Drawing No.: HD/A635.69/S289

APPENDIX B

Exploratory Hole Records

INFORMATION GENERALLY RELATING TO ALL EXPLORATORY HOLE RECORDS

GENERAL

Borehole/Trial Pit No
The exploratory hole identity number used throughout the report.

Site
The ground investigation project name.

Client
Client's name responsible for funding the ground investigation project.

Ground Level and Location
The precise ground level in meters above Ordnance Datum at the exploratory hole location from which the reduced level for each stratigraphic boundary is calculated. The exploratory hole position is given as either national grid-coordinates or local grid as specified.

ABBREVIATIONS

Samples

B Bulk disturbed sample generally representative of the soil type for cohesive and fine granular soils.

BRE Sample taken for electrochemical testing

C Core soil samples

D Small disturbed tub sample normally taken at intermediate depth between other sampling or testing operations. The sample is stored in an airtight container.

ES Sample of potentially contaminated materials.

P Piston Sample

PF An attempted but failed piston sample

U 100mm diameter undisturbed thick-walled sample (OS-TK/W)

UT 100mm diameter undisturbed thin walled sample (OS-T/W)

UF/UTF An attempted but failed 100mm undisturbed sample.

W Water sample.

EW Water sample for contamination testing

In-situ Testing

CBR California Bearing Ratio mould sample or test.

SPT Standard Penetration Test (SPT) using the split barrel sampler (S) or solid cone (C). The corresponding 'N' value is given in the test result column.

SWPen Self-Weight Penetration

PID On Site Volatile Headspace Testing by Photo Ionisation Detector

HVP Hand Shear Vane test

Rock Quality and Core Recovery

TCR Total core recovery - The length of the recovered core expressed as a percentage of the length of core run.

SCR Solid Core Recovery - The sum length of all core pieces (measured along the centre of the core), expressed as a percentage of the length core run.

RQD Rock Quality Designation- The sum length of all core pieces that are 100mm or longer (measured along the centre of the core), expressed as a percentage of the length of core run.

FI Fracture Index- The number of fractures per 1000mm length of solid core.

NI Non-intact- The material recovered in a non-intact state.

NR No recovery from the core run.

AZCL Assessed Zone of Core Loss.

Cobble Content

Low <10%, medium 10 – 20%, high >20%

Exploratory Hole Log Legend

BOREHOLE LEGEND:

TOPSOIL

MADE GROUND

SILT

CLAY

SAND

GRAVEL

PEAT

MUDSTONE

SILTSTONE

SANDSTONE

LIMESTONE

COAL

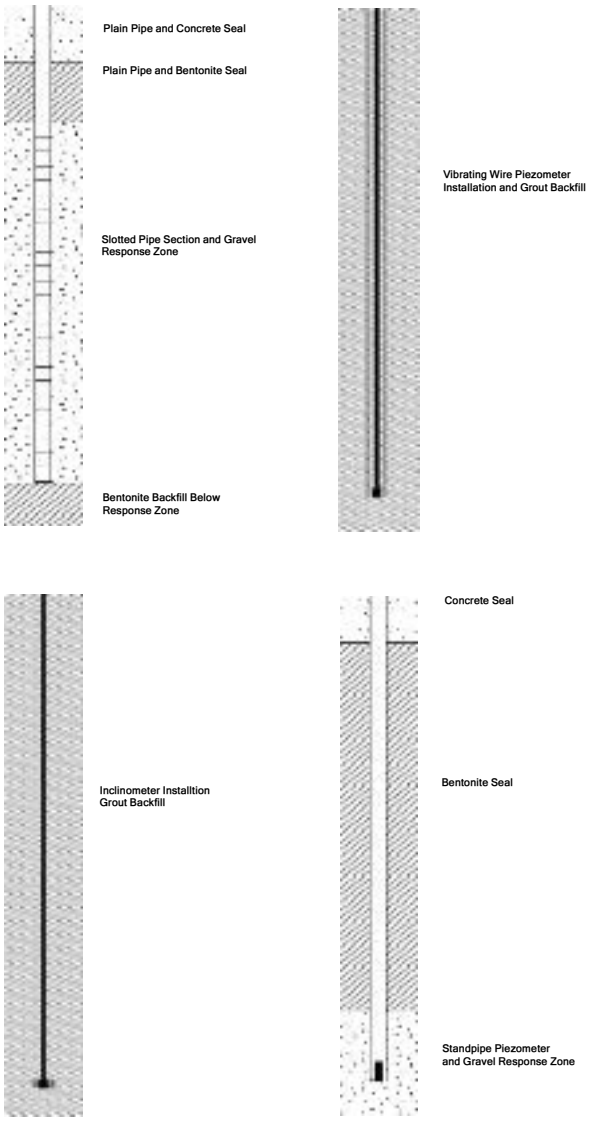
CHALK

BENTONITE

GROUT

ARISINGS

Monitoring Installation Legend:



NB Where strata consists of material of more than one soil or rock type the legends are appropriately combined.

Dunelm Geotechnical & Environmental Ltd
Foundation House, St John's Road, Meadowfield
Durham, DH78TZ
Tel: 0191 378 3151
Fax: 0191 378 3157
e-mail: admin@dunelm.co.uk
web: www.dunelm.co.uk

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

SPT Hammer Ref:	CD1
Test Date:	04/12/2020
Report Date:	04/12/2020
File Name:	CD1.spt
Test Operator:	SP

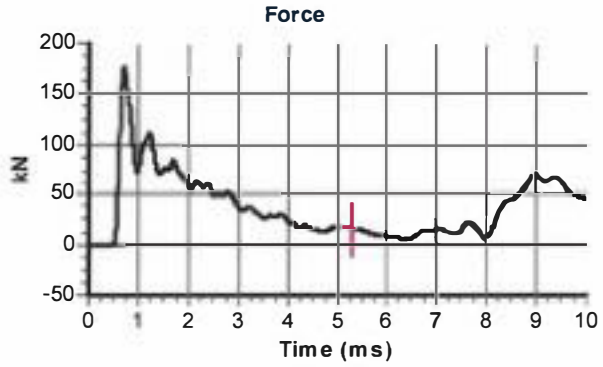
Instrumented Rod Data

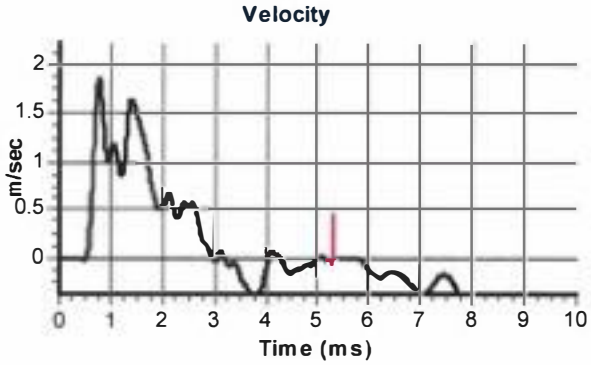
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.5
Rod Length l_r (m):	1.0
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	6178
Accelerometer No.2:	5843

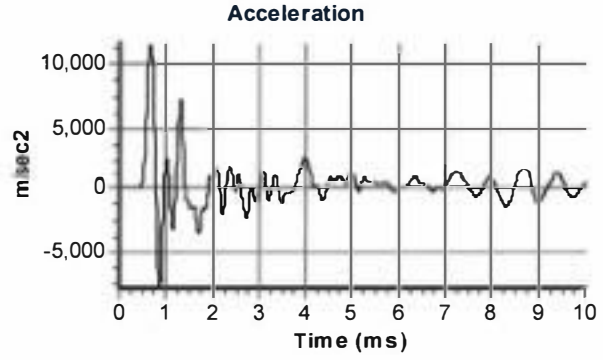
SPT Hammer Information

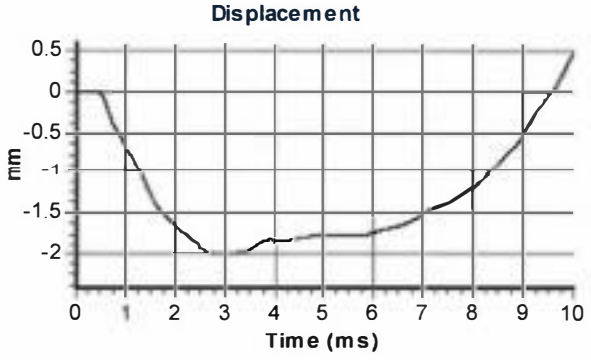
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.0

Comments / Location









Calculations

Area of Rod A (mm2):	970
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	282

Energy Ratio E_r (%): 60

Signed: Scott Pincher

Title: Director

	Contract: A635 Barnsley Road, Goldthorpe		**Contract No: D10371**
	Client: Barnsley Metropolitan Borough Council		
	Drawing: Instrumentation Summary		
Table No. B1	**Date:** 20/05/2021	**Status:**	Final

BH No.	Instrument Type	Instrument Dia. (mm)	Response Zone		Surface Protection
			Top (m)	Base (m)	
OH1A	SP	50	0.50	6.00	Flush Cover.
OH2	SP	50	0.50	6.00	Flush Cover.
OH4	SP	50	0.50	6.00	Flush Cover.
OH5	SP	50	0.50	6.00	Flush Cover.
OH6	SP	50	0.50	6.00	Flush Cover.
OH8	SP	50	0.50	6.00	Flush Cover.
OH9	SP	50	0.50	6.00	Flush Cover.
OH10	SP	50	0.50	6.00	Flush Cover.
OH11	SP	50	0.50	6.00	Flush Cover.

	Contract: **A635 Barnsley Road, Goldthorpe**			**Contract No:** **D10371**
	Client: **Barnsley Metropolitan Borough Council**			
TEL: 0191 378 3151	**Table Title:** **Installation Summary Sheet**			
Table & Revision No: **B1 - 0**	**Date:** **May 2021**	**Scale:** **NA**	**Status:** **Final**	**Drawn by:** **SH**

DUNELM GEOTECHNICAL & ENVIRONMENTAL — BRITISH DRILLING ASSOCIATION

BOREHOLE RECORD

Borehole OH01

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 1

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.40) 0.40			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY of intermediate plasticity. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.80)			
D	1.00						1 12/04/2021 1700 (0.00) Dry	End of Borehole at 1.20 m	1.20			
							2					
							3					
							4					
							5					
							6					
							7					
							8					
							9					

Ground Water (m)					Chiselling / Hard Strata			Casing Depths		Hole Diameter		General Remarks
Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)	From (m)	To (m)	Time (hr)	Diameter (mm)	Depth (m)	Diameter (mm)	Depth (m)	1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH01A

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council

Driller: LP | Logged By: RJ

Sheet 1 of 4

Method: Rotary Open Hole Drilling

Checked By: BL

Dates: 26/04/2021 - 27/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							MADE GROUND: Dark brown clayey gravelly topsoil. Gravel is angular to subangular, fine to coarse of sandstone and mudstone. Frequent rootlets noted.	(0.20) 0.20			
B D ES	0.50 0.50 0.50							MADE GROUND: Light greyish brown, clayey sandy gravel. Gravel is angular to subangular, fine to coarse of brick, sandstone, mudstone and concrete. Rare ceramic fragments noted.	(0.50) 0.70			
D	1.00						1	Stiff, light brown to light grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.50) 1.20			
							26/04/2021 1700 (0.00) Dry 27/04/2021 0800 (0.00) Dry 1.20 - 9.00 100 % Water	Brown CLAY. Rare ceramic fragments noted. Drillers description logged from flush returns.				
							2					
							3		(2.60)			
							4	Grey MUDSTONE. Drillers description logged from flush returns.	3.80			
							5					
							6					
							7		(5.20)			
							8					
							9		9.00			
							9.00 - 18.00 90 % Water	Black COAL. Drillers description logged from flush returns.				

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	6.50

Hole Diameter

Diameter (mm)	Depth (m)
150	6.50
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH01A

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 26/04/2021 - 27/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							10	Black COAL. Drillers description logged from flush returns.				
							11		(4.10)			
							12					
							13		13.10			
								Grey MUDSTONE. Drillers description logged from flush returns.				
							14					
							15		(3.90)			
							16					
							17		17.00			
								Dark grey COAL. Drillers description logged from flush returns.	(1.00)			
							18	18.00 - 30.00 80 % Water	18.00			
								Grey MUDSTONE. Drillers description logged from flush returns.				
							19					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	6.50

Hole Diameter

Diameter (mm)	Depth (m)
150	6.50
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH01A

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 26/04/2021 - 27/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							20	Grey MUDSTONE. Drillers description logged from flush returns.				
							21					
							22					
							23					
							24		(12.00)			
							25					
							26					
							27					
							28					
							29					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	6.50

Hole Diameter

Diameter (mm)	Depth (m)
150	6.50
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH01A

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 4 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 26/04/2021 - 27/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							27/04/2021 1715 (6.50) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	30.00			
								End of Borehole at 30.00 m				
									31			
									32			
									33			
									34			
									35			
									36			
									37			
									38			
									39			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	6.50

Hole Diameter

Diameter (mm)	Depth (m)
150	6.50
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH02

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council

Driller: LP | Logged By: RJ

Sheet 1 of 4

Method: Rotary Open Hole Drilling

Checked By: BL

Dates: 12/04/2021 - 13/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.20) 0.20			
B D ES	0.50 - 0.90 0.50 0.50							MADE GROUND: Soft, dark to light brown, slightly sandy gravelly clay. Gravel is angular to subangular, fine to coarse of brick, sandstone, mudstone and clinker.	(0.50) 0.70			
D	1.00						1 12/04/2021 0800 (0.00) Dry 13/04/2021 0800 (0.00) Dry 1.20 - 2.20 100 % Water	Firm, light brown to light grey, slightly sandy gravelly CLAY of intermediate plasticity. Gravel is angular to subangular, fine to coarse of sandstone and mudstone.	(1.50)			
							2 2.20 - 11.10 90 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	2.20			
							3					
							4					
							5					
							6					
									(8.90)			
							7					
							8					
							9					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	2.60

Hole Diameter

Diameter (mm)	Depth (m)
150	2.60
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH02

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 13/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							10	Grey MUDSTONE. Drillers description logged from flush returns.				
							11	11.10 - 30.00 80 % Water				
								COAL. Drillers description logged from flush returns.	11.10			
									(0.70)			
								Grey MUDSTONE. Drillers description logged from flush returns.	11.80			
							12					
							13					
							14					
							15					
							16					
							17					
							18					
							19					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	2.60

Hole Diameter

Diameter (mm)	Depth (m)
150	2.60
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH02

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 13/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							20 21 22 23 24 25 26 27 28 29	Grey MUDSTONE. Drillers description logged from flush returns.	(18.20)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	2.60

Hole Diameter

Diameter (mm)	Depth (m)
150	2.60
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH02

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 4 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 13/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							3013/04/2021 1700 (2.60) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	30.00			
								End of Borehole at 30.00 m				
									31			
									32			
									33			
									34			
									35			
									36			
									37			
									38			
									39			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	2.60

Hole Diameter

Diameter (mm)	Depth (m)
150	2.60
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH03

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 3

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 21/04/2021 - 22/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D	0.20							MADE GROUND: Black macadam.	(0.10)			
ES	0.20							MADE GROUND: Dark grey to black, slightly sandy gravel. Gravel is angular to subangular, fine to coarse of macadam and brick.	0.10 (0.17) 0.27			
D	0.40							MADE GROUND: Reddish brown, slightly sandy, gravel. Gravel is angular to subangular, fine to coarse of brick, macadam, sandstone and mudstone.	(0.05) 0.32 (0.28) 0.60			
ES	0.40							MADE GROUND: Soft, dark to light brown, slightly sandy gravelly clay. Gravel is angular to subangular, fine to coarse of brick, sandstone, mudstone and coal. Occasional rootlets noted.	(0.60) 1.20			
B	0.70 - 0.80						21/04/2021 1700 (0.00) Dry 22/04/2021 0800 (0.00) Dry 1.20 - 11.00 100 % Water	Firm, light brown to light mottled grey, sandy gravelly CLAY. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone.				
D	0.70							Brown CLAY. Drillers description logged from flush returns.	(4.10)			
ES	0.70											
D	1.00							Grey MUDSTONE. Drillers description logged from flush returns.	5.30 (5.70)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	6.50

Hole Diameter

Diameter (mm)	Depth (m)
139	6.50
122	29.60

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH03

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 3

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 21/04/2021 - 22/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
								Grey MUDSTONE. Drillers description logged from flush returns.				
							11.00 - 15.40 90 % Water	Black COAL. Drillers description logged from flush returns.	11.00 (0.70) 11.70			
								Grey MUDSTONE. Drillers description logged from flush returns.	(2.50) 14.20			
								Black COAL Drillers description logged from flush returns.	(0.50) 14.70			
								Grey MUDSTONE. Drillers description logged from flush returns.	(0.70) 15.40			
							15.40 - 29.60 80 % Water	Black COAL. Drillers description logged from flush returns.	(1.10) 16.50			
								Grey MUDSTONE. Drillers description logged from flush returns.	(0.80) 17.30			
								Black COAL. Drillers description logged from flush returns.	(2.70)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	6.50

Hole Diameter

Diameter (mm)	Depth (m)
139	6.50
122	29.60

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH03

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 3

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 21/04/2021 - 22/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
								Black COAL. Drillers description logged from flush returns.	20.00			
								Grey MUDSTONE. Drillers description logged from flush returns.	(8.80)			
								Black COAL. Drillers description logged from flush returns.	28.80			
							22/04/2021 1600 (6.50) Dry	End of Borehole at 29.60 m	(0.80) 29.60			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	6.50

Hole Diameter

Diameter (mm)	Depth (m)
139	6.50
122	29.60

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH04

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 20/04/2021 - 21/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D 0.20 ES 0.20 B 0.45 D 0.45 ES 0.45 D 0.70 ES 0.70 D 1.00								MADE GROUND: Black macadam.	(0.10) 0.10			
								MADE GROUND: Dark grey to black, slightly sandy gravel. Gravel is angular to subangular, fine to coarse of macadam.	(0.30) 0.40			
								MADE GROUND: Reddish brown, slightly sandy, gravel. Gravel is angular to subangular, fine to coarse of brick, macadam, sandstone and mudstone.	(0.07) 0.47			
								Firm, light to dark brown, sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of sandstone, mudstone and coal.	(0.73) 1.20			
							20/04/2021 1800 (0.00) Dry 21/04/2021 0800 (0.00) Dry 1.20 - 4.00 100 % Water	Brown CLAY. Drillers description logged from flush returns.	(2.80) 4.00			
							4.00 - 8.30 90 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	(4.30) 8.30			
							8.30 - 12.00 80 % Water	Black COAL. Drillers description logged from flush returns.	(0.50) 8.80			
								Grey MUDSTONE. Drillers description logged from flush returns.				

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.00

Hole Diameter

Diameter (mm)	Depth (m)
139	5.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH04

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 20/04/2021 - 21/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
								Grey MUDSTONE. Drillers description logged from flush returns.	(3.20)			
							12.00 - 14.40 0 % Water	VOID.	12.00 (1.50)			
								COAL. Drillers description logged from flush returns.	13.50 (0.90)			
							14.40 - 30.00 70 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	14.40 (6.30)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.00

Hole Diameter

Diameter (mm)	Depth (m)
139	5.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH04

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 20/04/2021 - 21/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							20	Grey MUDSTONE. Drillers description logged from flush returns.				
									20.70			
							21	Black COAL. Drillers description logged from flush returns.	(0.80)			
									21.50			
								Grey MUDSTONE. Drillers description logged from flush returns.				
							22					
							23					
							24					
							25					
									(8.50)			
							26					
							27					
							28					
							29					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.00

Hole Diameter

Diameter (mm)	Depth (m)
139	5.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH04

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 4 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 20/04/2021 - 21/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							30 21/04/2021 1600 (5.00) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	30.00			
								End of Borehole at 30.00 m				
							31					
							32					
							33					
							34					
							35					
							36					
							37					
							38					
							39					

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.00

Hole Diameter

Diameter (mm)	Depth (m)
139	5.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH05

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 22/04/2021 - 23/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D 0.20 ES 0.20								GRAVEL fill. (Drillers Description).	(0.70) 0.70			
B 0.70 D 0.70 ES 0.70 D 1.00 ES 1.00							1	MADE GROUND: Basalt. (Drillers Description).	(0.50) 1.20			
							22/04/2021 1700 (0.00) Dry 23/04/2021 0800 (0.00) Dry 1.20 - 8.50 100 % Water	MADE GROUND. Drillers description logged from flush returns.	(0.30) 1.50			
							2	Brown CLAY. Drillers description logged from flush returns.	(2.30) 3.80			
							3	Grey MUDSTONE. Drillers description logged from flush returns.	(4.70) 8.50			
							4					
							5					
							6					
							7					
							8					
							8.50 - 9.00 80 % Water	Black COAL. Drillers description logged from flush returns.	(0.50) 9.00			
							9 9.00 - 10.40 0 % Water	VOID.	(1.40)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	12.00

Hole Diameter

Diameter (mm)	Depth (m)
139	12.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH05

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 22/04/2021 - 23/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							10	VOID.				
							10.40 - 19.50 90 % Water	Black COAL. Drillers description logged from flush returns.	10.40 (0.40) 10.80			
							11	Grey MUDSTONE. Drillers description logged from flush returns.				
							12					
							13					
							14					
							15		(8.20)			
							16					
							17					
							18					
							19	Black COAL. Drillers description logged from flush returns.	19.00 (0.50)			
							19.50 - 30.00 80 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	19.50			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	12.00

Hole Diameter

Diameter (mm)	Depth (m)
139	12.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH05

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 22/04/2021 - 23/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							20	Grey MUDSTONE. Drillers description logged from flush returns.				
							21					
							22					
							23					
							24					
									(10.50)			
							25					
							26					
							27					
							28					
							29					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	12.00

Hole Diameter

Diameter (mm)	Depth (m)
139	12.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH05

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 4 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 22/04/2021 - 23/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							23/04/2021 1700 (12.00) Dry	Grey MUDSTONE. Drillers description logged from flush returns.				
								End of Borehole at 30.00 m	30.00			
									31			
									32			
									33			
									34			
									35			
									36			
									37			
									38			
									39			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	12.00

Hole Diameter

Diameter (mm)	Depth (m)
139	12.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH06

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 15/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							Dark brown sandy clayey TOPSOIL. Frequent rootlets noted.	(0.30) 0.30			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY of high plasticity. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.50) 0.80			
D	1.00						1	Stiff, dark grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.40)			
D SPT (S)	1.20 1.20 - 1.65	N=10 (1,1/2,2,3 ,3)					12/04/2021 1700 (0.00) Dry 15/04/2021 0800 (0.00) Dry (0.00) Dry 1.20 - 4.20 100 % Water	Brown CLAY. Drillers description logged from flush returns.	1.20			
							2					
D SPT (S)	2.70 2.70 - 3.15	N=6 (1,1/1,1,2 ,2)					(2.70) Dry		(3.00)			
							3					
							4					
D SPT (S)	4.20 4.20 - 4.65	N=8 (2,2/2,2,2 ,2)					(4.20) Dry 4.20 - 11.70 90 % Water	Grey MUDSTONE. Weathered. Drillers description logged from flush returns.	4.20			
							5					
D SPT (S)	5.70 5.70 - 6.15	N=10 (2,2/2,2,3 ,3)					(4.20) Dry		(3.00)			
							6					
							7					
D SPT (S)	7.20 7.20 - 7.62	N=40 (4,8/12,5, 16,7)					(5.70) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	7.20			
							8					
D SPT (S)	8.70 8.70 - 8.90	N=50+ (10,15 for 65mm/50 for 65mm)					(5.70) Dry					
							9		(4.84)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	5.70

Hole Diameter

Diameter (mm)	Depth (m)
150	5.70
122	12.04

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH06

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 15/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D SPT (S)	10.20 10.20 - 10.36	N=50+ (25/40,10 for 15mm)					(5.70) Dry	Grey MUDSTONE. Drillers description logged from flush returns.				
D SPT (S)	11.70 11.70 - 12.04	N=50+ (9,11/14, 21,15 for 40mm)					(5.70) Dry					
							15/04/2021 1700 (5.70) Dry	End of Borehole at 12.04 m	12.04			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Log last updated 02/06/2021

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	5.70

Hole Diameter

Diameter (mm)	Depth (m)
150	5.70
122	12.04

General Remarks

1. Hand dug inspection pit to 1.20m.

BOREHOLE RECORD

Borehole OH07

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 14/04/2021 - 15/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							Dark brown sandy clayey TOPSOIL. Frequent rootlets noted.	(0.30) 0.30			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.50) 0.80			
D	1.00						1	Stiff, dark mottled grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.40)			
D SPT (S)	1.20 1.20 - 1.65	N=5 (1,1/1,1,1 ,2)					(1.20) Dry	CLAY. Drillers description logged from flush returns.	1.20			
							2					
D SPT (S)	2.70 2.70 - 3.15	N=6 (1,1/1,1,2 ,2)					(2.70) Dry		(3.00)			
							3					
							4					
D SPT (S)	4.20 4.20 - 4.65	N=6 (1,1/1,1,2 ,2)					(4.20) Dry 4.20 - 10.20 90 % Water 14/04/2021 1700 (4.20) Dry 15/04/2021 0800	Black COAL. Drillers description logged from flush returns.	4.20			
							5 (4.20) Dry		(1.50)			
D SPT (S)	5.70 5.70 - 6.15	N=10 (2,2/2,2,3 ,3)					(4.20) Dry	Brown CLAY. Drillers description logged from flush returns.	5.70			
							6		(1.50)			
							7					
D SPT (S)	7.20 7.20 - 7.65	N=10 (2,2/2,2,3 ,3)					(4.20) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	7.20			
							8					
D SPT (S)	8.70 8.70 - 9.12	N=50+ (8,11/12, 12,15,11 for 45mm)					(4.20) Dry					
							9					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	4.20

Hole Diameter

Diameter (mm)	Depth (m)
150	4.20
122	15.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

DUNELM GEOTECHNICAL & ENVIRONMENTAL

BRITISH DRILLING ASSOCIATION

BOREHOLE RECORD

Borehole OH07

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council

Driller: LP | Logged By: RJ

Sheet 2 of 2

Method: Rotary Open Hole Drilling

Checked By: BL

Dates: 14/04/2021 - 15/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D SPT (S)	10.20 10.20 - 10.32	N=50+ (10,15 for 25mm/50 for 25mm)					10 (4.20) Dry 10.20 - 15.00 80 % Water	Grey MUDSTONE. Drillers description logged from flush returns.				
							11		(7.80)			
D SPT (S)	11.70 11.70 - 11.74	N=50+ (25 for 25mm/50 for 15mm)					(4.20) Dry 12					
							13					
D SPT (S)	13.20 13.20 - 13.30	N=50+ (25 for 45mm/50 for 53mm)					(4.20) Dry 14					
D SPT (S)	14.70 14.70 - 14.80	N=50+ (25 for 55mm/50 for 40mm)					(4.20) Dry 15 15/04/2021 1600 (4.20) Dry	End of Borehole at 15.00 m	15.00			
							16					
							17					
							18					
							19					

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
150	4.20

Hole Diameter

Diameter (mm)	Depth (m)
150	4.20
122	15.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH08

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council

Driller: LP | Logged By: RJ

Sheet 1 of 2

Method: Rotary Open Hole Drilling

Checked By: BL

Dates: 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							Dark brown sandy clayey TOPSOIL. Frequent rootlets noted.	(0.30) 0.30			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.90)			
D	1.00						1					
SPT (S)	1.20 - 1.65	N=10 (1,2/2,2,3 ,3)					(0.00) Dry 1.20 - 4.20 100 % Water	Brown CLAY. Drillers description logged from flush returns.	1.20			
							2		(1.50)			
SPT (S)	2.70 - 3.15	N=6 (1,2/1,2,1 ,2)					(0.00) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	2.70			
							3					
							4					
SPT (S)	4.20 - 4.65	N=16 (4,3/3,4,4 ,5)					(4.20) Dry 4.20 - 11.70 90 % Water					
							5					
SPT (S)	5.70 - 6.15	N=13 (2,2/3,2,4 ,4)					(5.70) Dry					
							6					
							7					
SPT (S)	7.20 - 7.65	N=14 (3,1/2,2,5 ,5)					(5.70) Dry		(9.07)			
							8					
SPT (S)	8.70 - 9.05	N=40 (6,8/4,21, 15)					(5.70) Dry					
							9					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.70

Hole Diameter

Diameter (mm)	Depth (m)
139	5.70
122	11.77

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

DUNELM GEOTECHNICAL & ENVIRONMENTAL — BRITISH DRILLING ASSOCIATION

BOREHOLE RECORD

Borehole OH08

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
SPT (S)	10.20 - 10.34	N=50+ (25 for 70mm/50 for 65mm)					(5.70) Dry	Grey MUDSTONE. Drillers description logged from flush returns.				
SPT (S)	11.70 - 11.77	N=50+ (25 for 45mm/50 for 27mm)					(5.70) Dry 28/04/2021 1530 (5.70) Dry	End of Borehole at 11.77 m	11.77			

10 11 12 13 14 15 16 17 18 19

Ground Water (m)					Chiselling / Hard Strata			Casing Depths		Hole Diameter		General Remarks
Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)	From (m)	To (m)	Time (hr)	Diameter (mm)	Depth (m)	Diameter (mm)	Depth (m)	1. Hand dug inspection pit to 1.20m.
								139	5.70	139	5.70	
										122	11.77	

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH09

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 26/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							Dark brown sandy clayey TOPSOIL. Frequent rootlets noted	(0.30) 0.30			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.50) 0.80			
D	1.00						1	Stiff, dark mottled grey, slightly sandy gravelly CLAY of high plasticity. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.40)			
D SPT (S)	1.20 1.20 - 1.65	N=6 (1,1/1,1,2 ,2)					12/04/2021 1700 (0.00) Dry 16/04/2021 0800 (0.00) Dry (0.00) Dry 1.20 - 4.20 100 % Water	Brown CLAY. Drillers description logged from flush returns.	1.20			
							2					
D SPT (S)	2.70 2.70 - 3.15	N=6 (1,1/1,1,2 ,2)					(2.70) Dry		(3.00)			
							3					
							4					
D SPT (S)	4.20 4.20 - 4.65	N=13 (2,2/3,4,3 ,3)					(4.20) Dry 4.20 - 10.20 90 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	4.20			
							5					
D SPT (S)	5.70 5.70 - 6.15	N=16 (4,4/5,4,3 ,4)					16/04/2021 1400 (5.70) Dry 26/04/2021 0900 (5.70) Dry (5.70) Dry					
							6					
							7					
SPT (S)	7.20 - 7.60	N=50+ (5,9/12,1 3,20,5 for 23mm)					(5.70) Dry		(6.06)			
							8					
SPT (S)	8.70 - 8.80	N=50+ (25/50 for 28mm)					(5.70) Dry					
							9					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	5.70

Hole Diameter

Diameter (mm)	Depth (m)
139	5.70
122	10.26

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH09

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 26/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
SPT (S)	10.20 - 10.26	N=50+ (25 for 35mm/50 for 20mm)					(5.70) Dry 26/04/2021 1600 (5.70) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	10.26			
								End of Borehole at 10.26 m				

Ground Water (m)					Chiselling / Hard Strata			Casing Depths		Hole Diameter	
Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)	From (m)	To (m)	Time (hr)	Diameter (mm)	Depth (m)	Diameter (mm)	Depth (m)
								139	5.70	139	5.70
										122	10.26

Log last updated 02/06/2021

General Remarks

1. Hand dug inspection pit to 1.20m.

BOREHOLE RECORD

Borehole OH10

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 26/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D ES	0.10 0.10							Dark brown sandy clayey TOPSOIL. Frequent rootlets noted.	(0.30)			
									0.30			
B D ES	0.50 - 0.90 0.50 0.50							Stiff, thinly laminated, light brown to light grey, slightly sandy gravelly CLAY. Gravel is angular to subangular, fine to coarse of mudstone, sandstone and coal.	(0.90)			
D	1.00						1	*1.00-1.20m: Groundwater seepage*				
SPT (S)	1.20 - 1.58	N=9 (1,2/2,2,2 ,3)					12/04/2021 1700 (0.00) Dry 26/04/2021 0900 (0.00) Dry (0.00) Dry 1.20 - 4.20 100 % Water	Brown CLAY. Drillers description logged from flush returns.	1.20			
							2					
SPT (S)	2.70 - 3.15	N=4 (2,1/1,1,1 ,1)					(0.00) Dry					
							3					
							4					
SPT (S)	4.20 - 4.65	N=9 (1,1/1,2,3 ,3)					(4.20) Dry 4.20 - 11.70 90 % Water		(6.00)			
							5					
SPT (S)	5.70 - 6.15	N=11 (2,2/2,3,3 ,3)					(5.70) Dry					
							6					
							7					
SPT (S)	7.20 - 7.65	N=26 (2,1/2,2,1 0,12)					(7.20) Dry	Grey MUDSTONE. Drillers description logged from flush returns.	7.20			
							8					
SPT (S)	8.70 - 8.95	N=50+ (8,17 for 55mm/37 ,50)					(7.20) Dry					
							9					
									(4.61)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)
1.00	7.20	1.20	20	1.20

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	7.20

Hole Diameter

Diameter (mm)	Depth (m)
139	7.20
122	11.81

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

DUNELM GEOTECHNICAL & ENVIRONMENTAL — BRITISH DRILLING ASSOCIATION

BOREHOLE RECORD

Borehole OH10

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 2

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 12/04/2021 - 26/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
SPT (S)	10.20 - 10.30	N=50+ (25 for 48mm/50 for 53mm)					(7.20) Dry	Grey MUDSTONE. Drillers description logged from flush returns.				
SPT (S)	11.70 - 11.81	N=50+ (25/50 for 35mm)					(7.20) Dry 26/04/2021 1600 (7.20) Dry	End of Borehole at 11.81 m	11.81			

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)
1.00	7.20	1.20	20	1.20

Log last updated 02/06/2021

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	7.20

Hole Diameter

Diameter (mm)	Depth (m)
139	7.20
122	11.81

General Remarks

1. Hand dug inspection pit to 1.20m.

BOREHOLE RECORD

Borehole OH11

Scale 1:50

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 1 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 23/04/2021 - 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
D 0.15 ES 0.15								GRAVEL fill. (Drillers Description).	(0.50) 0.50			
D 0.50 ES 0.50 B 0.70								Reddish brown sandy GRAVEL. (Drillers Description).	(0.20) 0.70			
D 1.00 ES 1.00							1	Gravelly CLAY. (Drillers Description).	(0.50)			
							23/04/2021 1700 (0.00) Dry 27/04/2021 0700 (0.00) Dry 1.20 - 9.10 100 % Water	MADE GROUND. Drillers description logged from flush returns.	1.20 (0.60)			
							2	Brown CLAY. Drillers description logged from flush returns.	1.80			
							3		(1.70)			
								Black COAL. Drillers description logged from flush returns.	3.50			
							4		(1.60)			
							5	Grey MUDSTONE. Drillers description logged from flush returns.	5.10			
							6		(3.10)			
							7					
							8	Black COAL. Drillers description logged from flush returns.	8.20			
									(0.90)			
							9		9.10			
							9.10 - 17.60 90 % Water	Grey MUDSTONE. Drillers description logged from flush returns.	(1.40)			

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	9.00

Hole Diameter

Diameter (mm)	Depth (m)
139	9.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH11

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 2 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 23/04/2021 - 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							10	Grey MUDSTONE. Drillers description logged from flush returns.				
									10.50			
								Black COAL. Drillers description logged from flush returns.				
							11		(1.50)			
									12.00			
							12	Grey MUDSTONE. Drillers description logged from flush returns.				
							13		(2.00)			
									14.00			
							14	Black COAL. Drillers description logged from flush returns.	(0.40)			
								Grey MUDSTONE. Drillers description logged from flush returns.	14.40			
							15		(1.80)			
							16		16.20			
								Black COAL. Drillers description logged from flush returns.				
							17		(1.40)			
									17.60			
							18	Grey MUDSTONE. Drillers description logged from flush returns.				
							19					

27/04/2021 1700 (9.00) Dry
28/04/2021 0700 (9.00) Dry
17.60 - 30.00 80 % Water

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	9.00

Hole Diameter

Diameter (mm)	Depth (m)
139	9.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

DUNELM GEOTECHNICAL & ENVIRONMENTAL — BRITISH DRILLING ASSOCIATION

BOREHOLE RECORD

Borehole OH11

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 3 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 23/04/2021 - 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							20	Grey MUDSTONE. Drillers description logged from flush returns.				
							21					
							22					
							23					
									(12.40)			
							24					
							25					
							26					
							27					
							28					
							29					

Continued on next sheet

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	9.00

Hole Diameter

Diameter (mm)	Depth (m)
139	9.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

BOREHOLE RECORD

Borehole OH11

Contract No: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:50

Client: Barnsley Metropolitan Borough Council | Driller: LP | Logged By: RJ | Sheet 4 of 4

Method: Rotary Open Hole Drilling | Checked By: BL | Dates: 23/04/2021 - 28/04/2021

SAMPLE DETAILS							(Casing) Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD)	Legend	Well/ Backfill
Type	Depth From-To (m)	N (cu)	TCR %	SCR %	RQD %	FI						
							28/04/2021 1430 (9.00) Dry	Grey MUDSTONE. Drillers description logged from flush returns.				
								End of Borehole at 30.00 m	30.00			

31 32 33 34 35 36 37 38 39

Ground Water (m)

Depth Struck (m)	Casing Depth (m)	Water Level	Minutes	Water sealed (m)

Chiselling / Hard Strata

From (m)	To (m)	Time (hr)

Casing Depths

Diameter (mm)	Depth (m)
139	9.00

Hole Diameter

Diameter (mm)	Depth (m)
139	9.00
122	30.00

General Remarks

1. Hand dug inspection pit to 1.20m.

Log last updated 02/06/2021

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP01

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 22/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil with a low cobble content. Frequent rootlets noted. Cobbles are angular of brick.	(0.30)			
					0.30			
B D ES	0.50 0.50 0.50			MADE GROUND: Dark brown to black, sandy gravelly clay with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone, brick and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.	(1.00)			
D ES	1.00 1.00		1					
					1.30			
B	1.50			MADE GROUND: Light bluish grey, sandy clayey gravel with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.				
D	2.00		2		(1.70)			
W	2.30							
B	2.50							
D ES	3.00 3.00		3	End of Trial Pit at 3.00 m	3.00			
			4					
			5					

Remarks	Ground Water (m)		Excavation Details	Orientation
1. Trial pit terminated at 3.00m due to instability of Face A and C. 2. Trial pit extended north to attempt to find edge of made ground strata.	Depth Strike	Remarks	Dimensions: 1.10m x 5.50m	A D B C 345°
	1.40		Stability: Face A and C unstable at 3.00m	
			Weather: Dry	
			Remarks: Machine Excavated Trial Pit	

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP02

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 22/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.40)			
					0.40			
B D ES	0.50 0.50 0.50			MADE GROUND: Dark brown to black, sandy gravelly clay with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone, brick and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.	(0.50)			
					0.90			
D ES	1.00 1.00		1	MADE GROUND: Light bluish grey, slightly sandy clayey gravel with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.				
B	1.50				(1.30)			
D W	2.00 2.10		2					
				End of Trial Pit at 2.20 m	2.20			
			3					
			4					
			5					

Remarks

1. Trial pit terminated at 2.20m due to instability of Face A and C.

Ground Water (m)

Depth Strike	Remarks
2.10	

Excavation Details

Dimensions: 1.10m x 3.00m

Stability: Face A and C unstable at 2.20m

Weather: Dry

Remarks: Machine Excavated Trial Pit

Orientation

A
D B
C

351°

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP04

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 23/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.40)			
					0.40			
B D ES	0.50 0.50 0.50			MADE GROUND: Light brown to light mottled grey, sandy gravelly clay. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal.				
D ES	1.00 1.00		1		(1.50)			
B	1.50							
					1.90			
D ES	2.00 2.00		2	MADE GROUND: Light brown to light bluish grey, slightly sandy gravelly clay with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.				
B	2.50				(1.70)			
D ES W	3.00 3.00 3.00		3					
B	3.50		▼					
				MADE GROUND: Light bluish grey, slightly clayey sandy gravel with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.	3.60 (0.30) 3.90			
D ES	3.90 3.90		4	End of Trial Pit at 3.90 m				
			5					

Remarks	Ground Water (m)		Excavation Details	Orientation
1. Trial pit terminated at 3.90m due to instability of Face A and C.	Depth Strike	Remarks	Dimensions: 1.10m x 3.00m	A D B C 350°
	3.50		Stability: Face A and C unstable at 3.90m	
			Weather: Dry	
			Remarks: Machine Excavated Trial Pit	

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP05

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 22/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.30)			
					0.30			
B D ES	0.50 0.50 0.50			MADE GROUND: Firm, light brown to light mottled grey, sandy gravelly clay. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal.				
D ES	1.00 1.00		1		(1.40)			
HVP B	1.40 1.50	HVP: 111kPa						
					1.70			
D ES	2.00 2.00		2 ▼	MADE GROUND: Light brown to light bluish grey, slightly sandy gravelly clay with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.	(1.10)			
W B	2.40 2.50							
					2.80			
D ES	3.00 3.00		3	MADE GROUND: Light bluish grey, slightly sandy clayey gravel with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.				
B	3.50				(1.30)			
D ES	4.00 4.00		4					
				End of Trial Pit at 4.10 m	4.10			
			5					

Remarks

1. Trial pit terminated at 4.10m due to instability of Face A and C.

Ground Water (m)

Depth Strike	Remarks
2.10	

Excavation Details

Dimensions: 1.10m x 3.00m

Stability: Face A and C unstable at 4.10m

Weather: Dry

Remarks: Machine Excavated Trial Pit

Orientation

A
D B
C

345°

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP07

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 22/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.40)			
B D ES	0.50 0.50 0.50			Soft, light brown to light mottled grey, slightly sandy gravelly CLAY of high plasticity. Gravel is subangular to subrounded, fine to coarse of sandstone and mudstone.	0.40			
D ES HVP	1.00 1.00 1.00	HVP: 76kPa	1		(1.65)			
B	1.50							
D	2.00		2	Extremely weak, thinly bedded, light grey to dark brown MUDSTONE. Partially weathered with reddish brown staining. Recovered as slightly sandy clayey gravel.	2.05			
B	2.50							
D	3.00		3 ▼					
B	3.50				(3.05)			
D W	4.00 4.00		4					
B	4.50							
D	5.00		5					
				End of Trial Pit at 5.10 m	5.10			

Remarks

Ground Water (m)	
Depth Strike	Remarks
3.00	Groundwater seepage.

Excavation Details

Dimensions: 1.10m x 3.00m

Stability: Stable to 5.10m

Weather: Dry

Remarks: Machine Excavated Trial Pit

Orientation

A B C D

350°

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP08

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 23/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.20 0.20			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.30)			
					0.30			
B D ES	0.50 0.50 0.50			MADE GROUND: Soft, light brown to light mottled grey, sandy gravelly clay. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal.	(0.80)			
D ES HVP	1.00 1.00 1.00	HVP: 79kPa	1		1.10			
B	1.50			MADE GROUND: Firm, light brown to light bluish grey, slightly sandy gravelly clay with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are angular to subrounded of sandstone, mudstone and siltstone.	(0.50)			
					1.60			
D ES W	2.00 2.00 2.00		2	MADE GROUND: Light bluish grey, slightly sandy clayey gravel with a low cobble content. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are a subangular of mudstone and siltstone.	(0.50)			
				End of Trial Pit at 2.10 m	2.10			
			3					
			4					
			5					

Remarks

1. Trial pit terminated at 2.10m due to instability of Face A and C.

Ground Water (m)

Depth Strike	Remarks
2.00	

Excavation Details

Dimensions: 1.10m x 3.00m

Stability: Face A and C unstable at 2.10m

Weather: Dry

Remarks: Machine Excavated Trial Pit

Orientation

A
D B
C

261°

DUNELM GEOTECHNICAL & ENVIRONMENTAL

TRIAL PIT RECORD

TP No. TP09

Contract No.: D10371

Site: A635 Barnsley Road, Goldthorpe

Scale 1:25

Client: Barnsley Metropolitan Borough Council

Logged By: RJ

Sheet 1 of 1

Method: Machine Excavated Trial Pit

Checked By: BL

Dates: 23/04/2021

SAMPLE DETAILS Type	Depth From-To (m)	Insitu Testing	Groundwater	STRATA RECORD Description	Depth (m)	Level (m AOD) PID (ppm)	Legend	Backfill
D ES	0.10 0.10			MADE GROUND: Dark brown sandy clayey topsoil. Frequent rootlets noted.	(0.20)			
				MADE GROUND: Soft, light brown to light mottled grey, slightly sandy gravelly clay of intermediate plasticity. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal.	0.20			
B D ES	0.50 0.50 0.50				(0.60)			
				MADE GROUND: Firm, light brown to light bluish grey, slightly sandy gravelly clay. Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal.	0.80			
D ES	1.00 1.00		1		(0.80)			
B	1.50				1.60			
				MADE GROUND: Light bluish grey, clayey slightly sandy gravel with cobble content . Gravel is angular to subangular, fine to coarse of mudstone, sandstone, siltstone and coal. Cobbles are a subangular of mudstone and siltstone.				
D ES	2.00 2.00		2		(1.30)			
B W	2.50 2.60		▼					
				End of Trial Pit at 2.90 m	2.90			
			3					
			4					
			5					

Remarks	Ground Water (m)		Excavation Details	Orientation
1. Trial pit terminated at 2.90m due to instability of Face A and C.	Depth Strike	Remarks	Dimensions: 1.10m x 2.50m	A D B C 338°
	2.50		Stability: Face A and C unstable at 2.90m	
			Weather: Dry	
			Remarks: Machine Excavated Trial Pit	

APPENDIX C

Photographs

Photographs

D10371_TP1

D10371_TP1A

DUNELM	Project	A635 Barnsley Road, Goldthorpe	Plate
	Project No.	D10371	1
	Carried out for	Barnsley Metropolitan Borough Council	

Photographs

D10371_TP2

D10371_TP4

DUNELM	Project	A635 Barnsley Road, Goldthorpe	Plate
	Project No.	D10371	2
	Carried out for	Barnsley Metropolitan Borough Council	

Photographs

D10371_TP5

D10371_TP7

DUNELM	Project	A635 Barnsley Road, Goldthorpe	Plate
	Project No.	D10371	3
	Carried out for	Barnsley Metropolitan Borough Council	

Photographs

D10371_TP8

D10371_TP9

DUNELM	Project	A635 Barnsley Road, Goldthorpe	Plate
	Project No.	D10371	4
	Carried out for	Barnsley Metropolitan Borough Council	

APPENDIX D

Geotechnical Laboratory Results

Laboratory Report Front Sheet

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Solmek
12-16 Yarm Road,
Stockton on Tees,
TS18 3NA
01642 607083
lab@solmek.com

UKAS
7607

Client details:

Reference:	D10371
Name:	Dunelm
Address:	Foundation House, St John's Road, Meadowfield, County Durham, DH7 8TZ
Telephone:	0191 3783151
Email:	blaycock@solmek.com
FAO:	B Laycock

Date commenced: 29/04/2021

Date reported: ••/0•/2021

Observations and interpretations are outside of the UKAS Accreditiation

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

Samples will be held at the laboratory for a period of 4 weeks after the report date. After the all samples will be disposed of. Should further testing be required then the office should be informed before the above date.

Signature:	Approved Signitories:
K Watkin	☑ K Watkin (Lab Manager) ☐ T Finnimore (Senior Technician) ☐ J Brischuk (Senior Technician)

Summary of Classification Tests

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Solmek
12-16 Yarm Road,
Stockton on Tees,
TS18 3NA
01642 607083
lab@solmek.com

7607

Hole	Depth Top m	Depth Base m	Type	w %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
OH1	0.10		D	25	105									
OH1	0.50		D	27	105									
OH1	1.00		D	17	105		86	14	37-s	20	17		CI	Tested after >425µm removed by hand
OH10	0.10		D	24	105									
OH10	0.50		D	24	105									
OH10	1.00		D	31	105									
OH10	1.20		SPT (D)	22	105									
OH10	2.70		SPT (D)	11	105									
OH10	4.20		SPT (D)	19	105									
OH10	5.70		SPT (D)	20	105									
OH10	7.20		SPT (D)	16	105									
OH10	8.70		SPT (D)	7.2	105									
OH10	10.20		SPT (D)	9.0	105									
OH10	11.70		SPT (D)	6.6	105									
OH2	0.10		D	28	105									
OH2	0.50		D	22	105									
OH2	1.00		D	19	105		85	15	41-s	24	17		CI	Tested after >425µm removed by hand
OH4	1.00		D	23	105		90	10	43-s	23	20		CI	Tested after >425µm removed by hand
OH6	0.10		D	24	105									
OH6	0.50		D	23	105		89	11	50-s	24	26		CH	Tested after >425µm removed by hand

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description		Category	BS Test Code
w	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve			BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-s	BS 1377:1990 Part 2 Clause 4.4
		Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve			
Pr	Percentage retained 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"		*	

Approved by	KW
Approval date	05/05/2021 13:33
Date report generated	
Report Number	

Summary of Classification Tests

Solmek
12-16 Yarm Road,
Stockton on Tees,
TS18 3NA
01642 607083
lab@solmek.com

7607

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Hole	Depth Top m	Depth Base m	Type	*w* %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
OH6	1.00		D	16	105									
OH6	1.20		SPT (D)	23	105									
OH6	2.70		SPT (D)	18	105									
OH6	4.20		SPT (D)	13	105									
OH6	5.70		SPT (D)	14	105									
OH6	7.20		SPT (D)	7.9	105									
OH6	8.70		SPT (D)	4.4	105									
OH6	10.20		SPT (D)	7.1	105									
OH6	11.70		SPT (D)	15	105									
OH7	0.10		D	25	105									
OH7	0.50		D	22	105									
OH7	1.00		D	22	105									
OH7	1.20		SPT (D)	15	105									
OH7	2.70		SPT (D)	27	105									
OH7	4.20		SPT (D)	11	105									
OH7	5.70		SPT (D)	13	105									
OH7	7.20		SPT (D)	14	105									
OH7	8.70		SPT (D)	10	105									
OH7	10.20		SPT (D)	6.6	105									
OH7	11.70		SPT (D)	11	105									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description		Category	BS Test Code
w	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve			BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-s	BS 1377:1990 Part 2 Clause 4.4
		Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve			
Pr	Percentage retained 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"		*	

Approved by	KW
Approval date	05/05/2021 13:33
Date report generated	02/06/2021 15:01
Report Number	SLMK_21021230

Summary of Classification Tests

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Solmek
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7607

Hole	Depth Top m	Depth Base m	Type	w %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
OH7	13.20		SPT (D)	5.6	105									
OH7	14.70		SPT (D)	5.7	105									
OH8	0.10		D	29	105									
OH8	0.50		D	19	105									
OH8	1.00		D	18	105									
OH8	1.20		SPT (D)	7.5	105									
OH8	2.70		SPT (D)	9.4	105									
OH8	4.20		SPT (D)	22	105									
OH8	5.70		SPT (D)	17	105									
OH8	7.20		SPT (D)	10	105									
OH8	8.70		SPT (D)	21	105									
OH8	10.20		SPT (D)	7.5	105									
OH8	11.70		SPT (D)	9.4	105									
OH9	0.10		D	24	105									
OH9	0.50		D	30	105									
OH9	1.00		D	21	105		93	7	50-s	23	27		CH	Tested after >425µm removed by hand
OH9	1.20		SPT (D)	22	105									
OH9	2.70		SPT (D)	17	105									
OH9	4.20		SPT (D)	10	105									
OH9	5.70		SPT (D)	21	105									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description		Category	BS Test Code
w	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve			BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-s	BS 1377:1990 Part 2 Clause 4.4
		Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve			
Pr	Percentage retained 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"		*	

Approved by	KW
Approval date	26/05/2021 16:12
Date report generated	
Report Number	

Summary of Classification Tests

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Solmek
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7607

Hole	Depth Top m	Depth Base m	Type	w %	Oven temp. oc	wa %	Pa %	Pr %	wL %	wP %	IP %	IL	Plasticity class	Preparation method
OH9	7.20		SPT (D)	8.1	105									
OH9	8.70		SPT (D)	4.6	105									
OH9	10.20		SPT (D)	13	105									
TP01	1.50		B	26	105									
TP02	1.50		B	12	105									
TP04	2.50		B	19	105									
TP05	2.50		B	21	105									
TP07	1.00		D	20	105		99	1	51-s	23	28		CH	Tested after >425µm removed by hand
TP07	1.50		B	19	105									
TP07	3.00		D	12	105									
TP09	0.50		D	20	105		96	4	45-s	24	21		CI	Tested after >425µm removed by hand
TP09	2.50		B	18	105									

All tests found in Solmek UKAS Schedule of Accreditation are tested to standard unless otherwise indicated

Key	Description		Category	BS Test Code
w	Moisture content			BS 1377:1990 Part 2 Clause 3.2
wa	Equivalent moisture content passing 425µm sieve			BS 1377:1990 Part 2 Clause 3.2
wL	Liquid limit	Single point	-s	BS 1377:1990 Part 2 Clause 4.4
		Four point	-f	BS 1377:1990 Part 2 Clause 4.3
wP	Plastic limit			BS 1377:1990 Part 2 Clause 5.2
Pa	Percentage passing 425um sieve			
Pr	Percentage retained 425um sieve			
IP	Plasticity index			BS 1377:1990 Part 2 Clause 5.4
IL	Liquidity index			BS 1377:1990 Part 2 Clause 5.4
	Suffix indicating test is "Not UKAS Accredited"		*	

Approved by	KW
Approval date	26/05/2021 16:19
Date report generated	
Report Number	

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

Solmek
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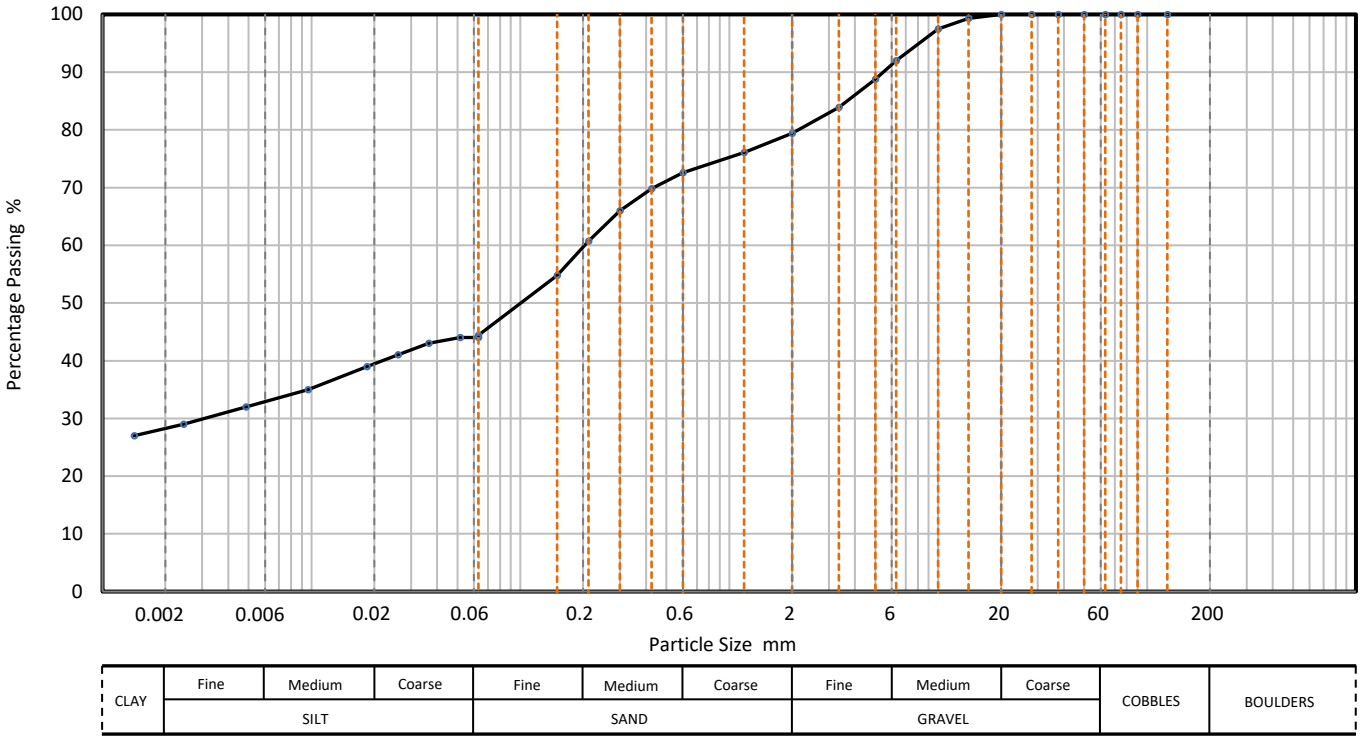
UKAS TESTING 7607

Hole		TP01	Lab sample ID	SLMK2021042830
Depth (Top)	m	1.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base)	m		Soil Description	Brown, Slightly Silty, Slightly Gravelly, Clayey, SAND.
Sample type		B		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	44
90	100	0.0515	44
75	100	0.0365	43
63	100	0.0259	41
50	100	0.0184	39
37.5	100	0.0096	35
28	100	0.0049	32
20	100	0.0024	29
14	99	0.0014	27
10	98		
6.3	92		
5	89		
3.35	84		
2	79		
1.18	76		
0.6	73	Particle density	(assumed)
0.425	70	2.65	Mg/m3
0.3	66		
0.212	61		
0.15	55		
0.063	44		

Dry Mass of sample, g	1144

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	20.6
Sand	35.0
Silt	16.3
Clay	28.1

Grading Analysis		
D100	mm	
D60	mm	0.204
D30	mm	0.00338
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with test method unless noted below

Accreditation status
Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	KW
Approval date	17/05/2021 12:58

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

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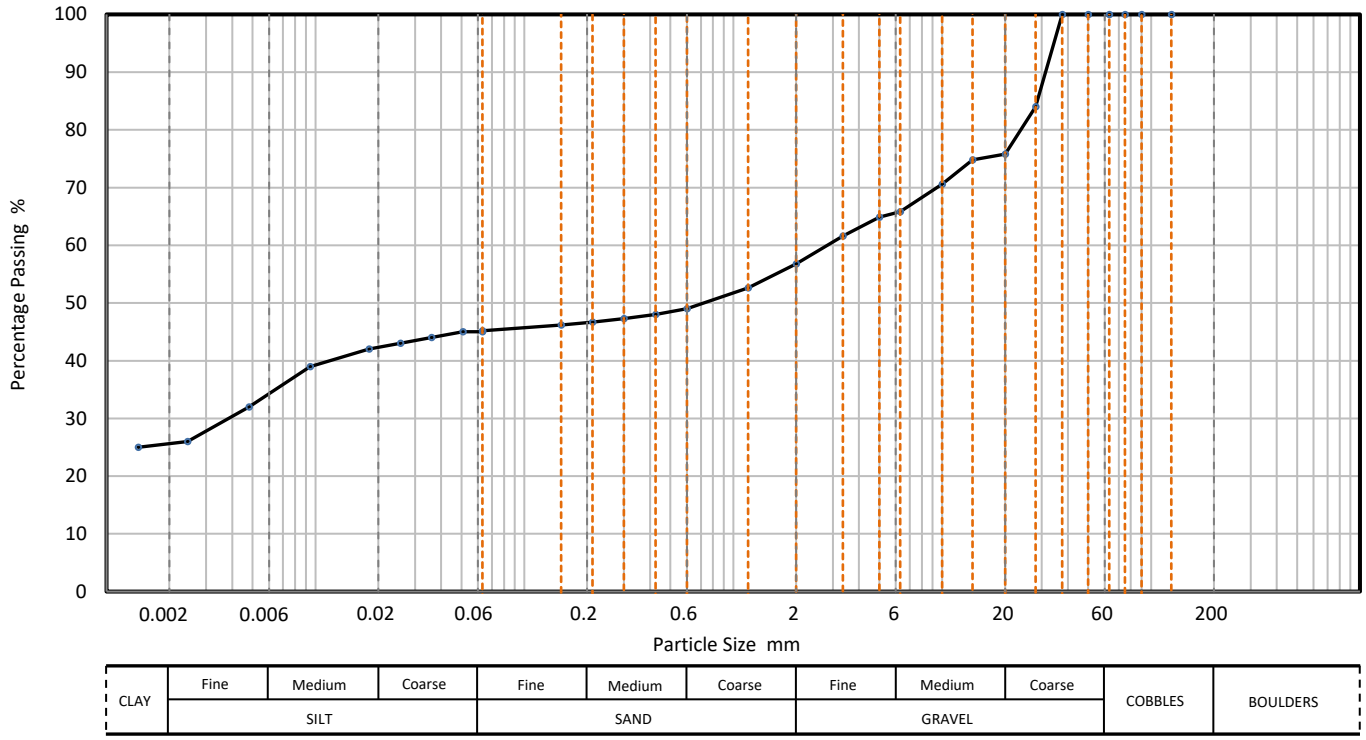
UKAS 7607

Hole	TP02	Lab sample ID	SLMK2021042831
Depth (Top) m	1.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base) m		Soil Description	Brown, slightly sandy, slightly silty, slightly clayey GRAVEL
Sample type	B		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	45
90	100	0.0507	45
75	100	0.0359	44
63	100	0.0255	43
50	100	0.0181	42
37.5	100	0.0094	39
28	84	0.0048	32
20	76	0.0024	26
14	75	0.0014	25
10	71		
6.3	66		
5	65		
3.35	62		
2	57		
1.18	53		
0.6	49	Particle density (assumed)	
0.425	48	2.65	Mg/m3
0.3	47		
0.212	47		
0.15	46		
0.063	45		

Dry Mass of sample, g: 1729

Sample Proportions	% dry mass
Very coarse	0.0
Gravel	43.2
Sand	11.6
Silt	19.6
Clay	25.6

Grading Analysis		
D100	mm	
D60	mm	2.82
D30	mm	0.00384
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with test method unless noted below

Sample tested was deviating in accordance with BS1377 test standard.

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	T.Thompson
Approval date	12/05/2021 11:18

PARTICLE SIZE DISTRIBUTION

Site name	Job number
Barnsley Metropolitan Borough Council	D10371

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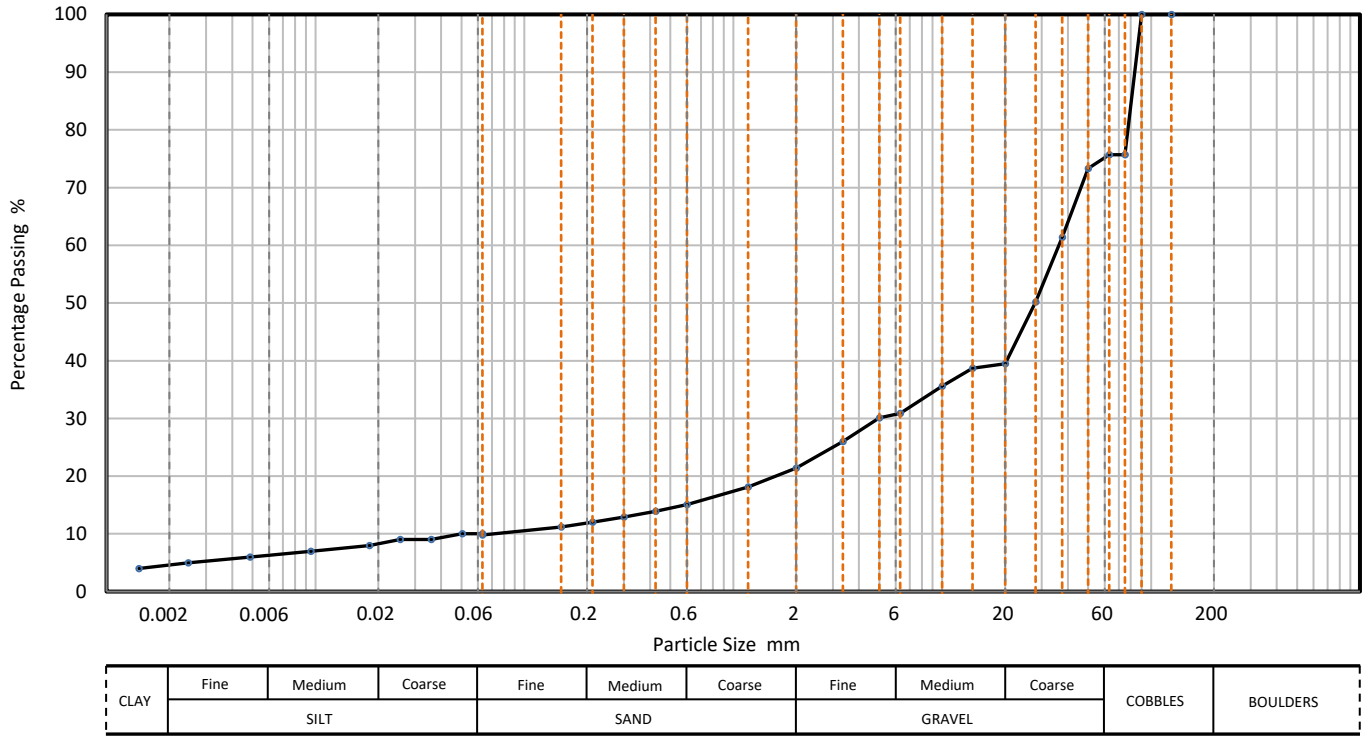
UKAS TESTING
7607

Hole	TP09	Lab sample ID	SLMK2021042838
Depth (Top) m	2.50	Test Method	BS 1377 - 2 : 1990 Clauses 9.2 and 9.5
Depth (Base) m		Soil Description	Brown, Slightly Clayey, Slightly Silty, Sandy, GRAVEL. COBBLES PRESENT.
Sample type	B		



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100	0.0630	10
90	100	0.0504	10
75	76	0.0358	9
63	76	0.0254	9
50	73	0.0181	8
37.5	61	0.0095	7
28	50	0.0049	6
20	40	0.0025	5
14	39	0.0014	4
10	36		
6.3	31		
5	30		
3.35	26		
2	21		
1.18	18		
0.6	15	Particle density	(assumed)
0.425	14	2.65	Mg/m3
0.3	13		
0.212	12		
0.15	11		
0.063	10		

Dry Mass of sample, g	8783

Sample Proportions	% dry mass
Very coarse	24.3
Gravel	54.3
Sand	11.7
Silt	4.9
Clay	4.8

Grading Analysis		
D100	mm	
D60	mm	36.1
D30	mm	4.96
D10	mm	0.0719
Uniformity Coefficient		500
Curvature Coefficient		9.5

Remarks

Preparation and testing in accordance with test method unless noted below

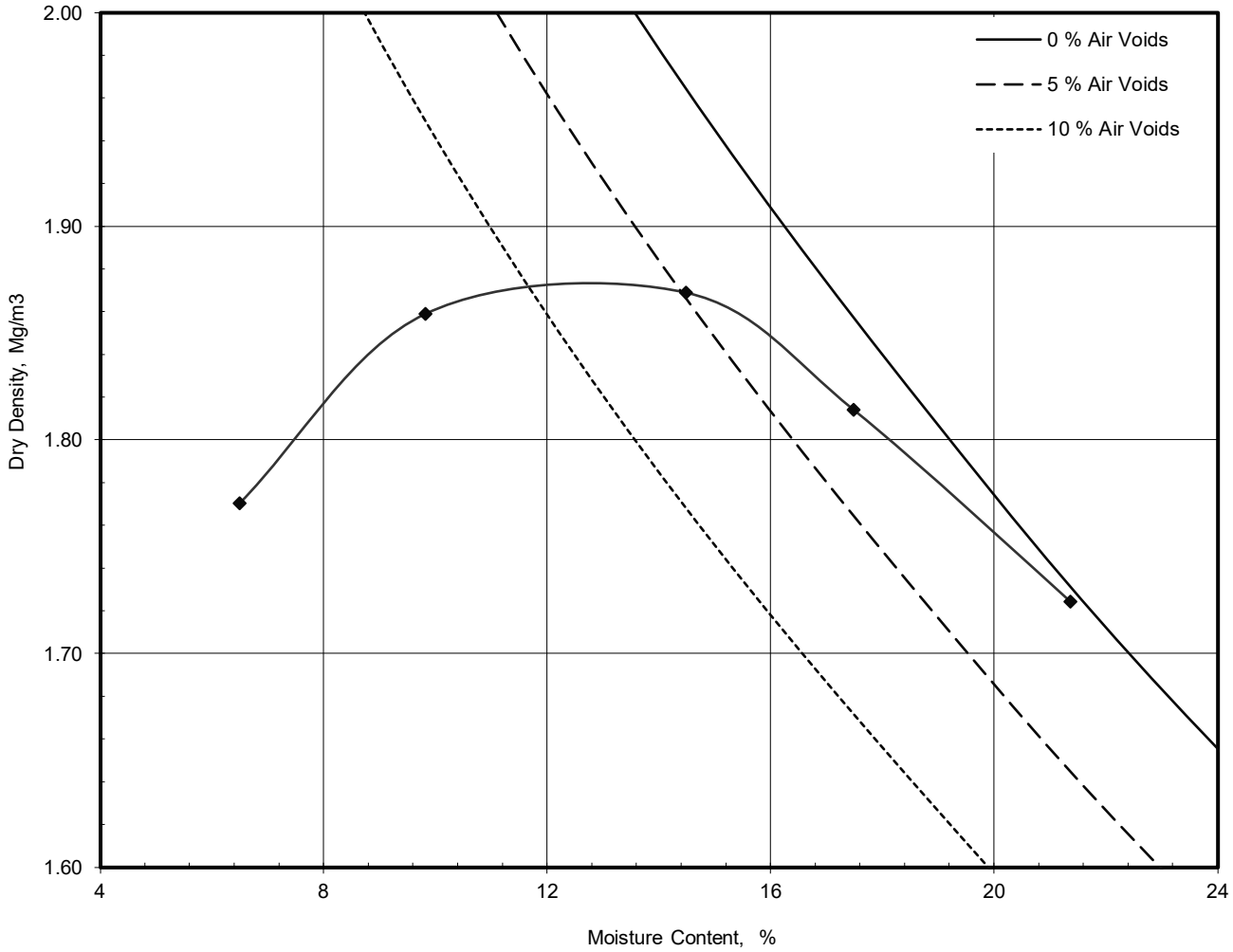
Sample tested was deviating in accordance with BS1377 test standard.

Accreditation status

Hydrometer is the usual Sedimentation method carried out by Solmek and is part of the Solmek UKAS accreditation schedule.

Approved by	T.Thompson
Approval date	12/05/2021 12:25

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	D10371
				Borehole / Pit No	TP04
Site Name	**Barnsley Metropolitan Borough Council**			Sample No	
Soil Description	Brown, gravelly CLAY			Depth	2.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	SLMK2021042832
				Compaction Test Reference/No.	

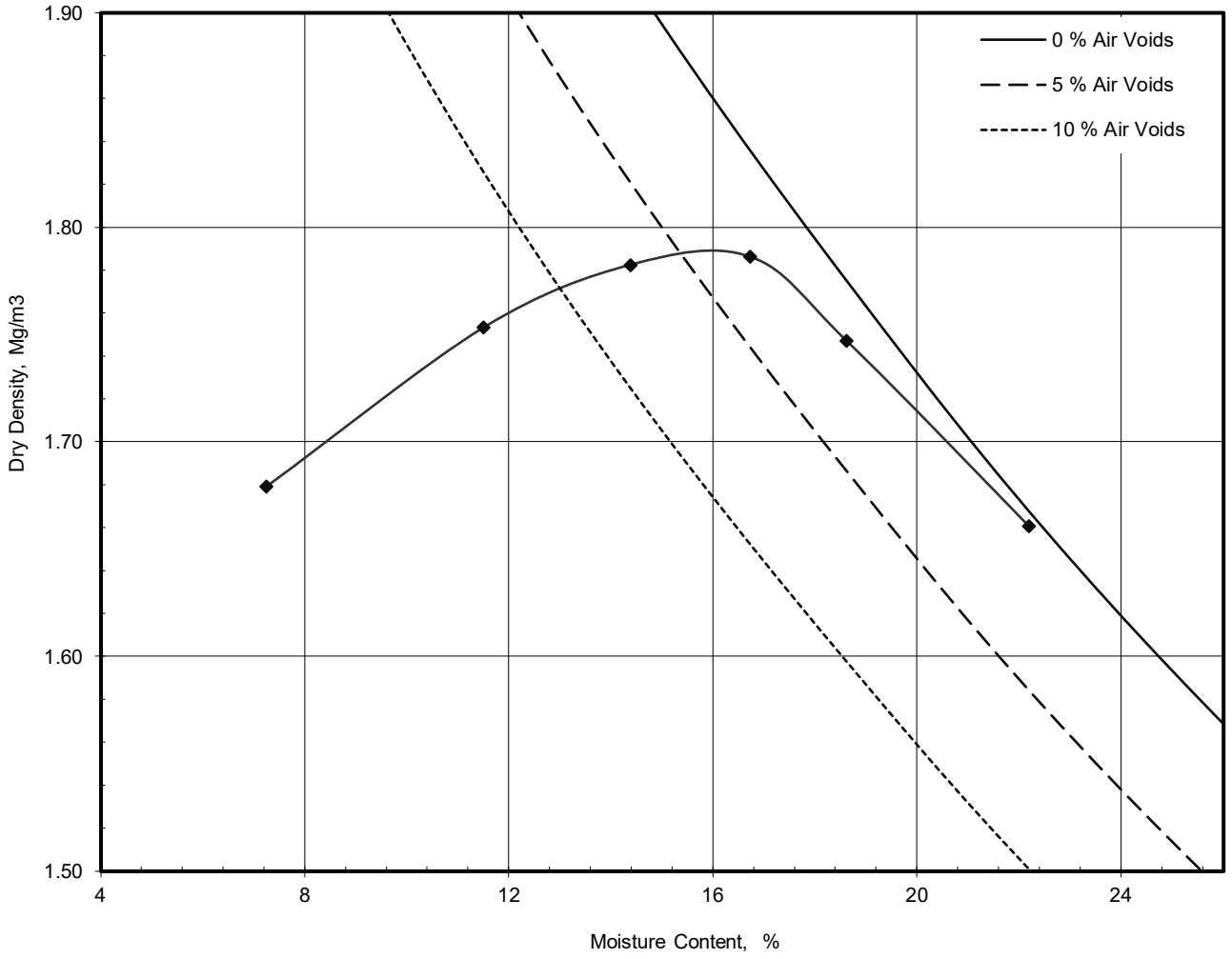


Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	10
Material Retained on 20.0 mm Sieve	%	11
Particle Density - Assumed	Mg/m³	2.75
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.87**

Optimum Moisture Content	%	**14**

Operator	Checked	Approved	Remarks	Fig
MS	KS	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	D10371
				Borehole / Pit No	TP05
Site Name	**Barnsley Metropolitan Borough Council**			Sample No	
Soil Description	Brown, slightly gravelly CLAY			Depth	2.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	SLMK2021042833
				Compaction Test Reference/No.	

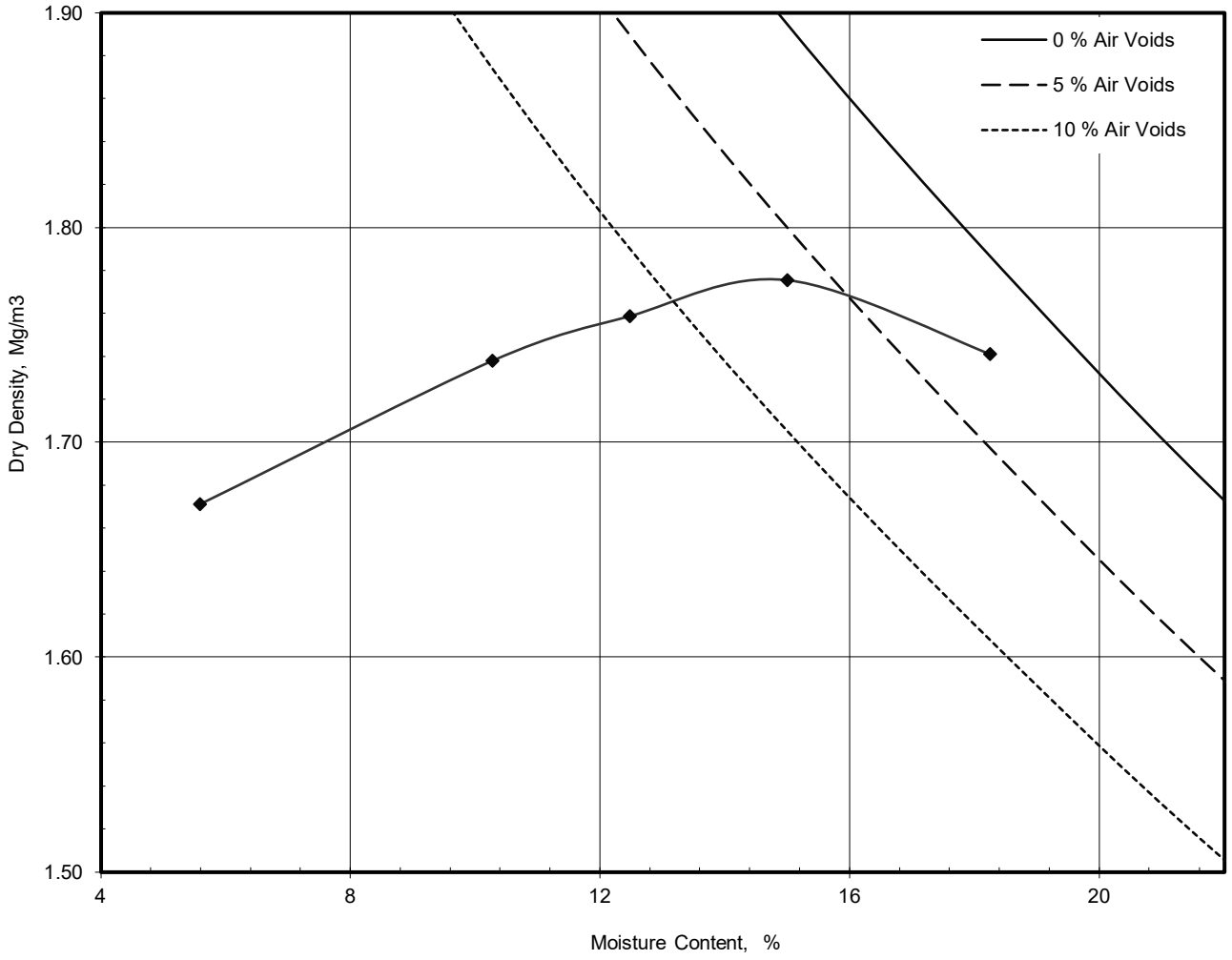


Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	7
Material Retained on 20.0 mm Sieve	%	5
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	21
Maximum Dry Density	Mg/m³	**1.79**

Optimum Moisture Content	%	**17**

Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	Dry Density / Moisture Content Relationship Light Compaction			Job Ref	D10371
				Borehole / Pit No	TP07
Site Name	**Barnsley Metropolitan Borough Council**			Sample No	
Soil Description	Brown, CLAY			Depth	1.50 m
Specimen Ref.	1	Specimen Depth	m	Sample Type	B
Test Method	BS1377:Part 4:1990, clause 3.4, 2.5kg rammer			Keylab ID	SLMK2021042835
				Compaction Test Reference/No.	



Mould Type		CBR
Samples Used		Single sample tested
Material Retained on 37.5 mm Sieve	%	0
Material Retained on 20.0 mm Sieve	%	0
Particle Density - Assumed	Mg/m³	2.65
Natural Moisture Content	%	19
Maximum Dry Density	Mg/m³	**1.78**

Optimum Moisture Content	%	**15**

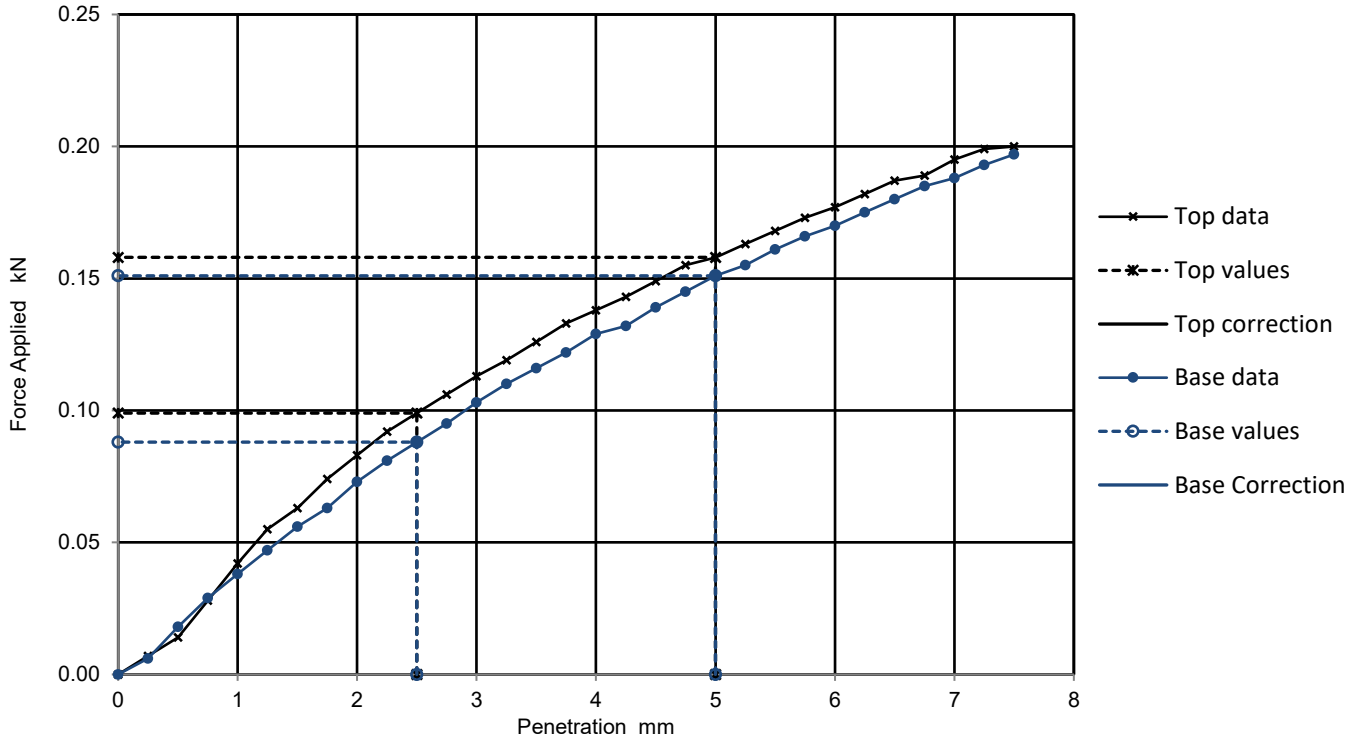
Operator	Checked	Approved	Remarks	Fig
MS	KW	KW		Sheet 1 of 1

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP04
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, gravelly CLAY			KeyLAB ID	SLMK2021042832
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		21	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.62	Mg/m3		1	kPa
	Moisture content	23.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		0.8	0.8	0.8	0.8	23.1
BASE		0.7	0.8	0.8		25.9

General remarks	Test specific remarks	Approved
Tested ta Natural Moisture Content		KW

Fig No.	1
Sheet No	1

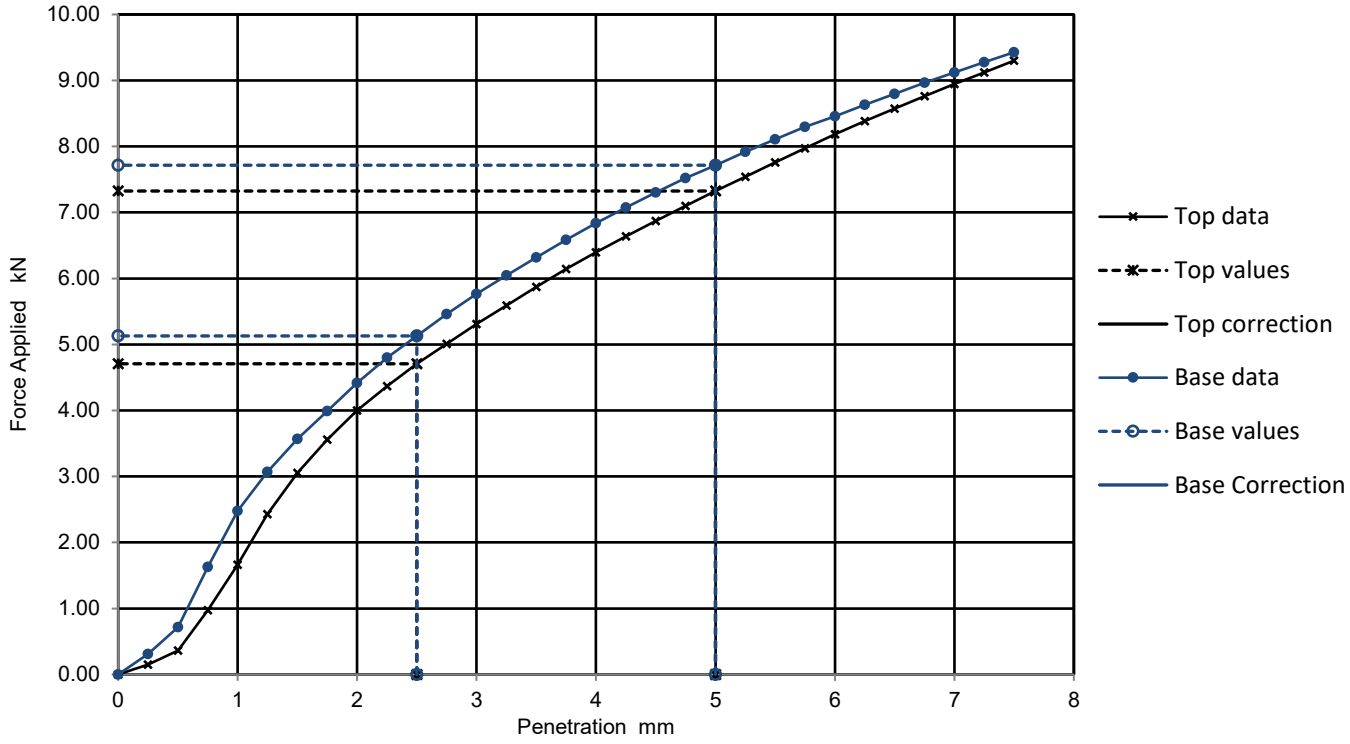
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP04
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, gravelly CLAY			KeyLAB ID	SLMK2021042832
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		21	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.92	Mg/m3	Surcharge applied	2	kg
	Dry density	1.80	Mg/m3		1	kPa
	Moisture content	6.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		36.0	37.0	37.0	38.0	6.9
BASE		39.0	39.0	39.0		7.4

General remarks	Test specific remarks	Approved
Tested at 7% Moisture Content		KW

Fig No.	1
Sheet No	2

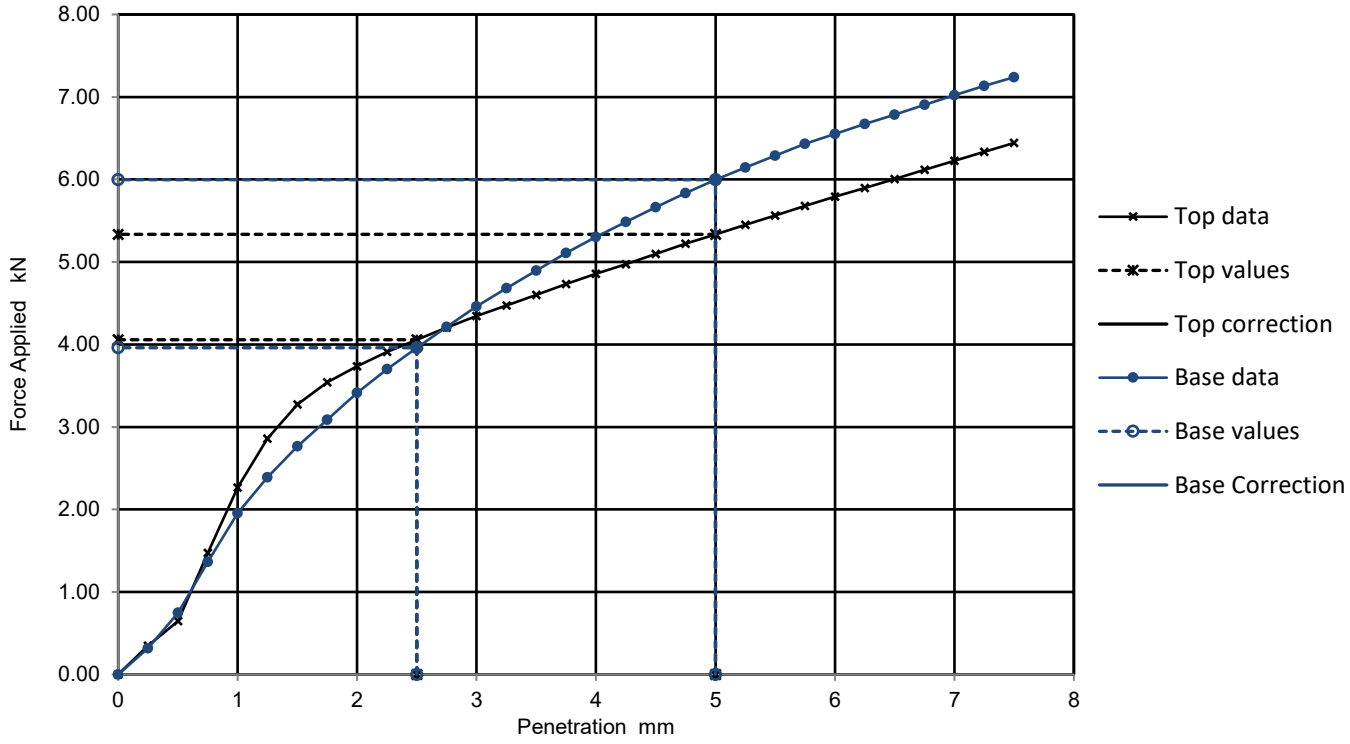
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP04
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	3	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, gravelly CLAY			KeyLAB ID	SLMK2021042832
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		21	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.00	Mg/m3	Surcharge applied	2	kg
	Dry density	1.82	Mg/m3		1	kPa
	Moisture content	9.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		31.0	27.0	31.0	30.0	10.3
BASE		30.0	30.0	30.0		10.3

General remarks	Test specific remarks	Approved
Tested at 10% Moistrure Content		KW

Fig No.	1
Sheet No	3

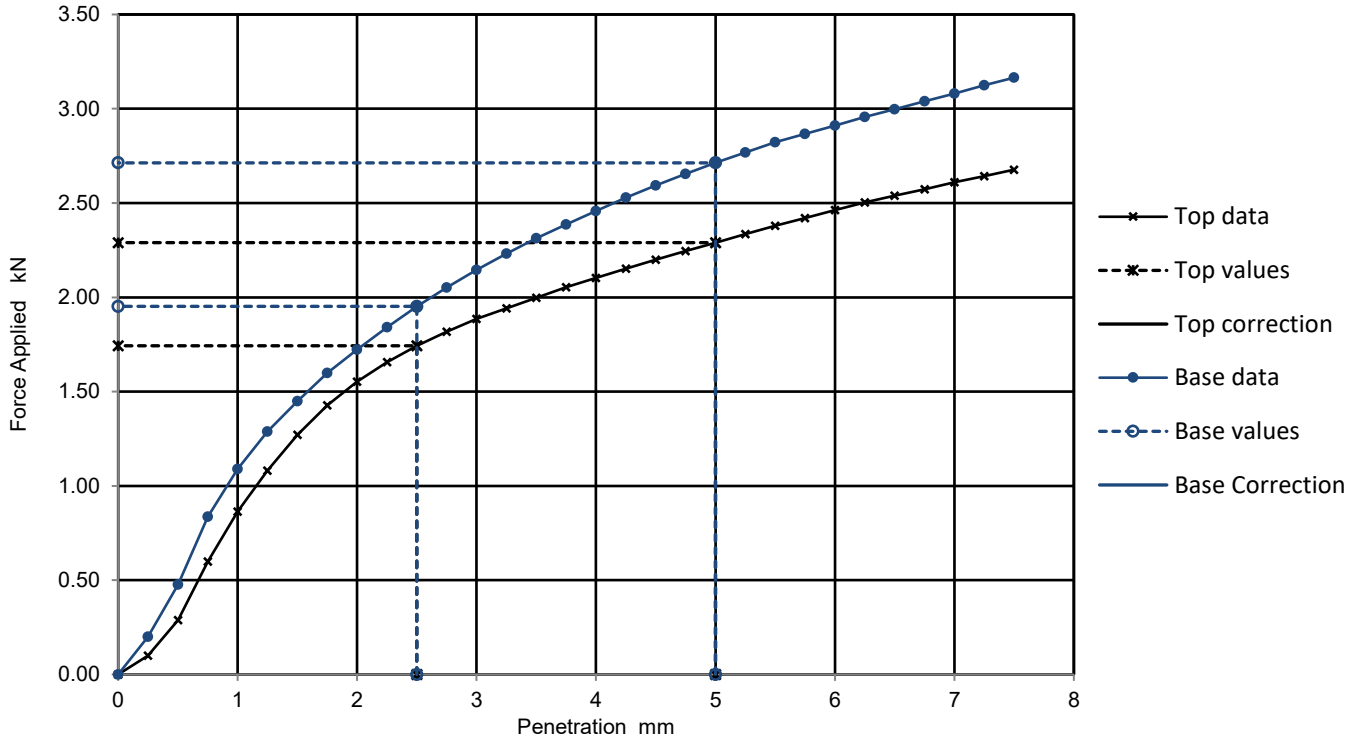
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP04
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	4	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, gravelly CLAY			KeyLAB ID	SLMK2021042832
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		21	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.10	Mg/m3	Surcharge applied	2	kg
	Dry density	1.83	Mg/m3		1	kPa
	Moisture content	14.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, %				Moisture Content %
		2.5mm	5mm	Highest	Average	
TOP		13.0	11.0	13.0	14.0	15.1
BASE		15.0	14.0	15.0		15.2

General remarks	Test specific remarks	Approved
Tested at 15% Moisture Content		KW

Fig No.	1
Sheet No	4

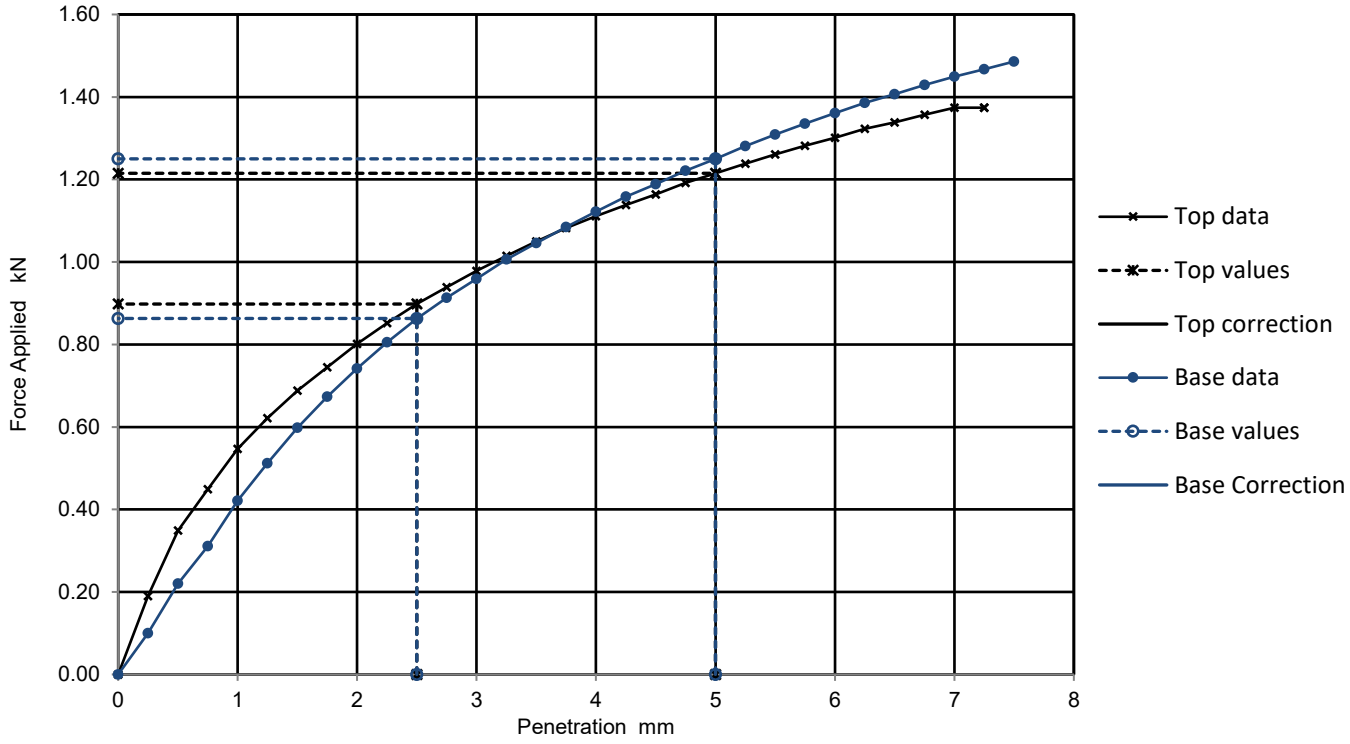
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP04
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	5	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, gravelly CLAY			KeyLAB ID	SLMK2021042832
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		21	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.11	Mg/m3	Surcharge applied	2	kg
	Dry density	1.80	Mg/m3		1	kPa
	Moisture content	17.5	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		6.8	6.1	6.8	6.7	17.9
BASE		6.5	6.3	6.5		17.7

General remarks	Test specific remarks	Approved
Tested at 18% Moisture Content		KW

Fig No.	1
Sheet No	5

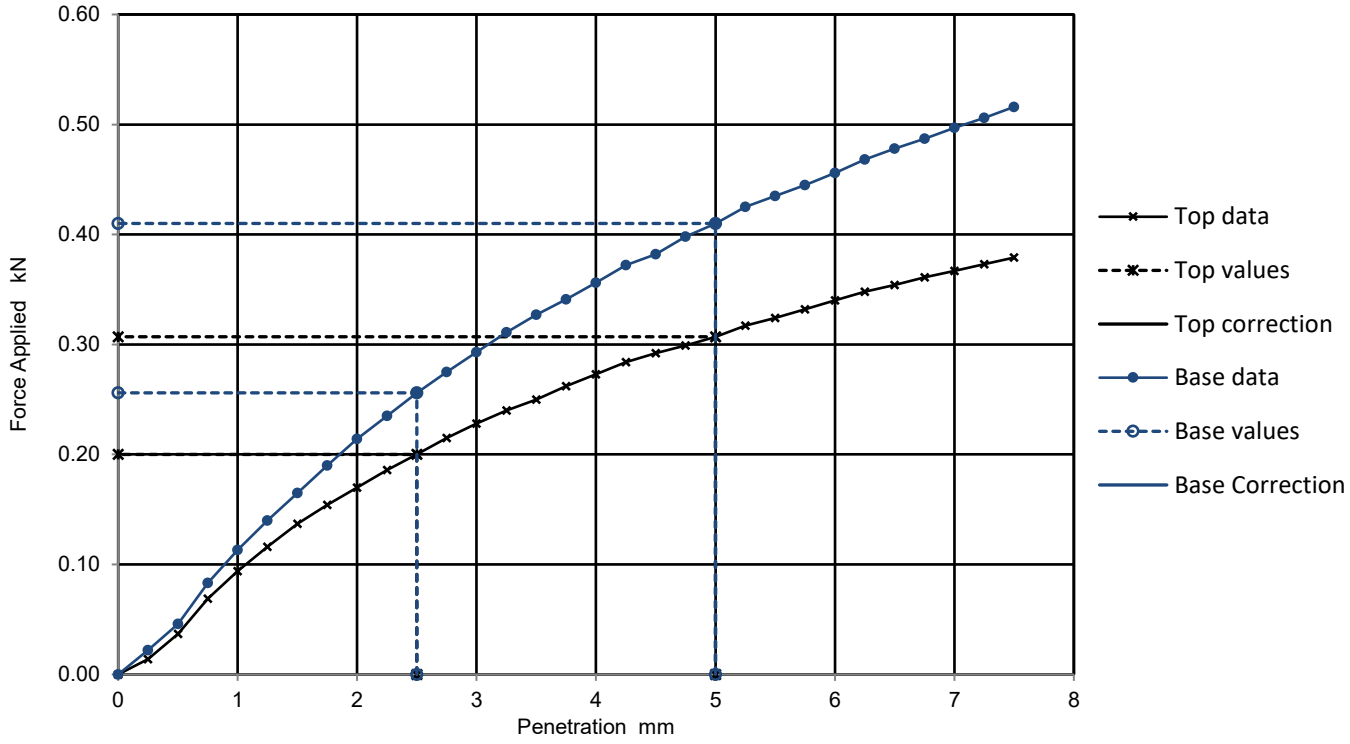
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP05
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly CLAY			KeyLAB ID	SLMK2021042833
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.99	Mg/m3	Surcharge applied	2	kg
	Dry density	1.63	Mg/m3		1	kPa
	Moisture content	22.1	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		1.5	1.5	1.5		21.8
BASE		1.9	2.1	2.1		22.3

General remarks	Test specific remarks	Approved
Tested at Natural Moisture (22%)	Tested at Natural Moisture (22%)	KW

Fig No.	1
Sheet No	6

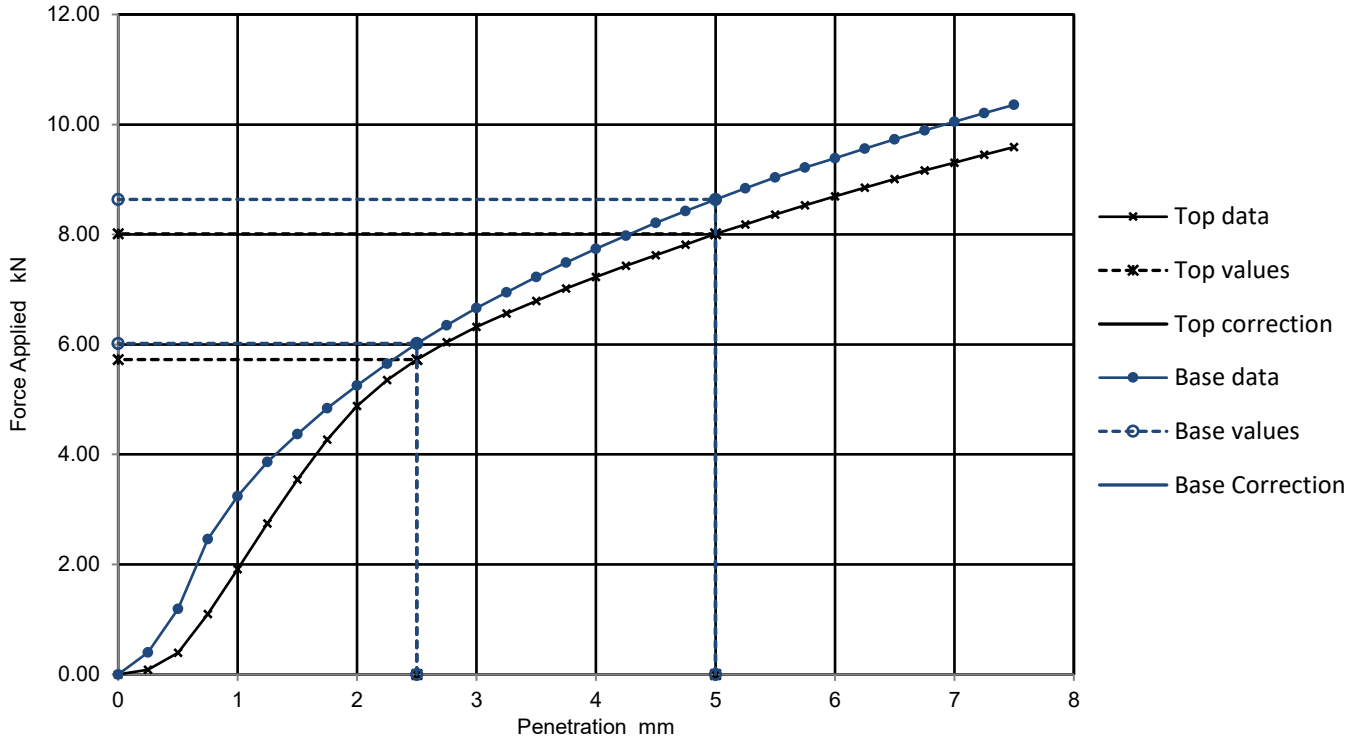
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP05
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly CLAY			KeyLAB ID	SLMK2021042833
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.89	Mg/m3	Surcharge applied	2	kg
	Dry density	1.76	Mg/m3		1	kPa
	Moisture content	7.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		43.0	40.0	43.0	44.0	7.3
BASE		46.0	43.0	46.0		7.1

General remarks	Test specific remarks	Approved
Tested at 7% Moisture Content	Tested at 7% Moisture Content	KW

Fig No.	1
Sheet No	7

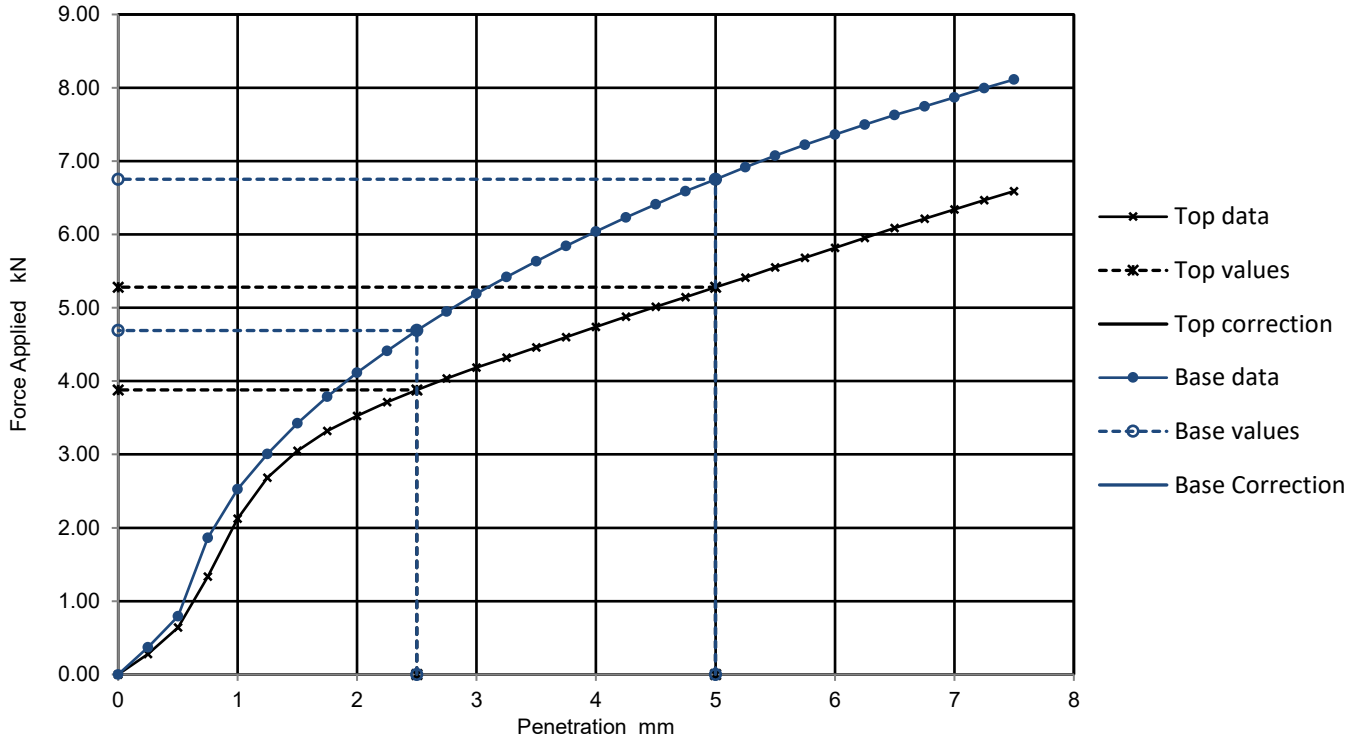
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP05
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	3	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly CLAY			KeyLAB ID	SLMK2021042833
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.96	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	11.9	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		29.0	26.0	29.0	32.0	11.8
BASE		36.0	34.0	36.0		10.7

General remarks	Test specific remarks	Approved
Tested at 12% Moisture Content	Tested at 12% Moisture Content	KW

Fig No.	1
Sheet No	8

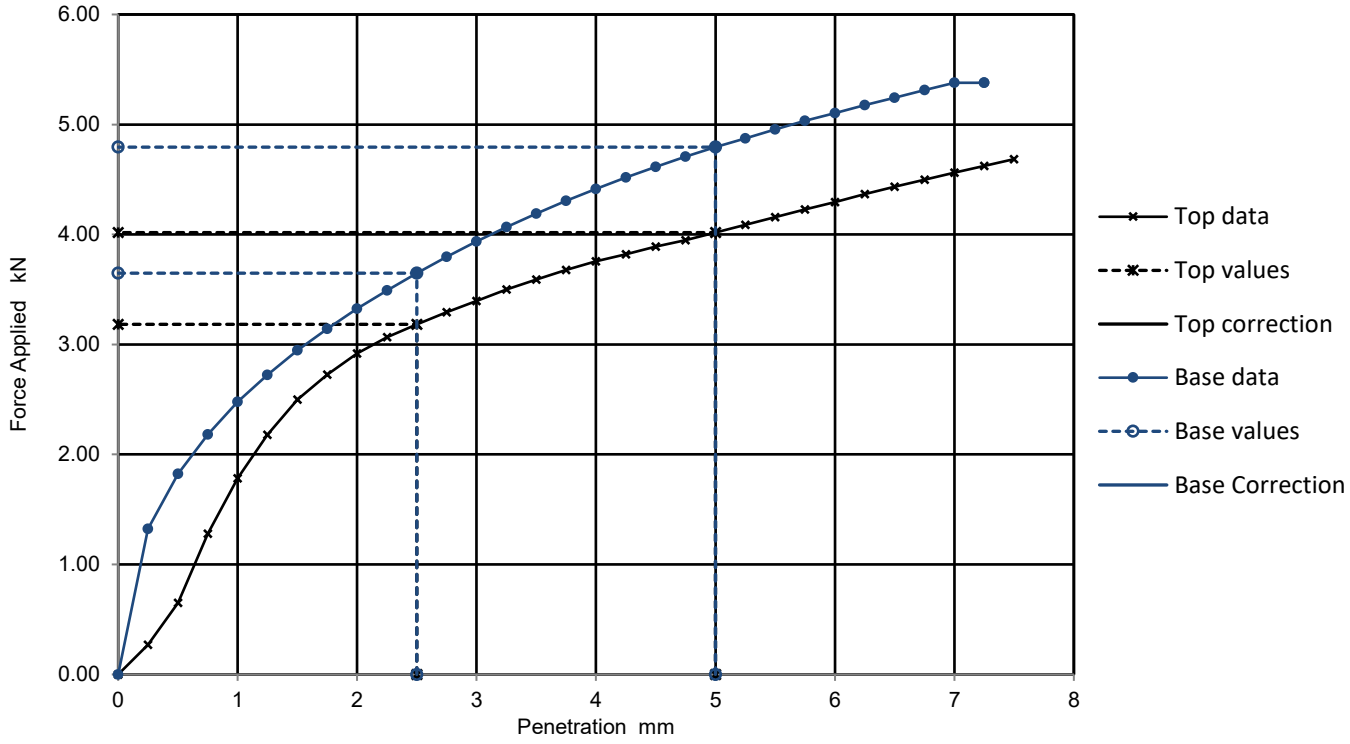
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP05
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	4	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly CLAY			KeyLAB ID	SLMK2021042833
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.04	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	14.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		24.0	20.0	24.0	26.0	14.2
BASE		28.0	24.0	28.0		14.4

General remarks	Test specific remarks	Approved
Tested at 14% Moisture Content	Tested at 14% Moisture Content	KW

Fig No.	1
Sheet No	9

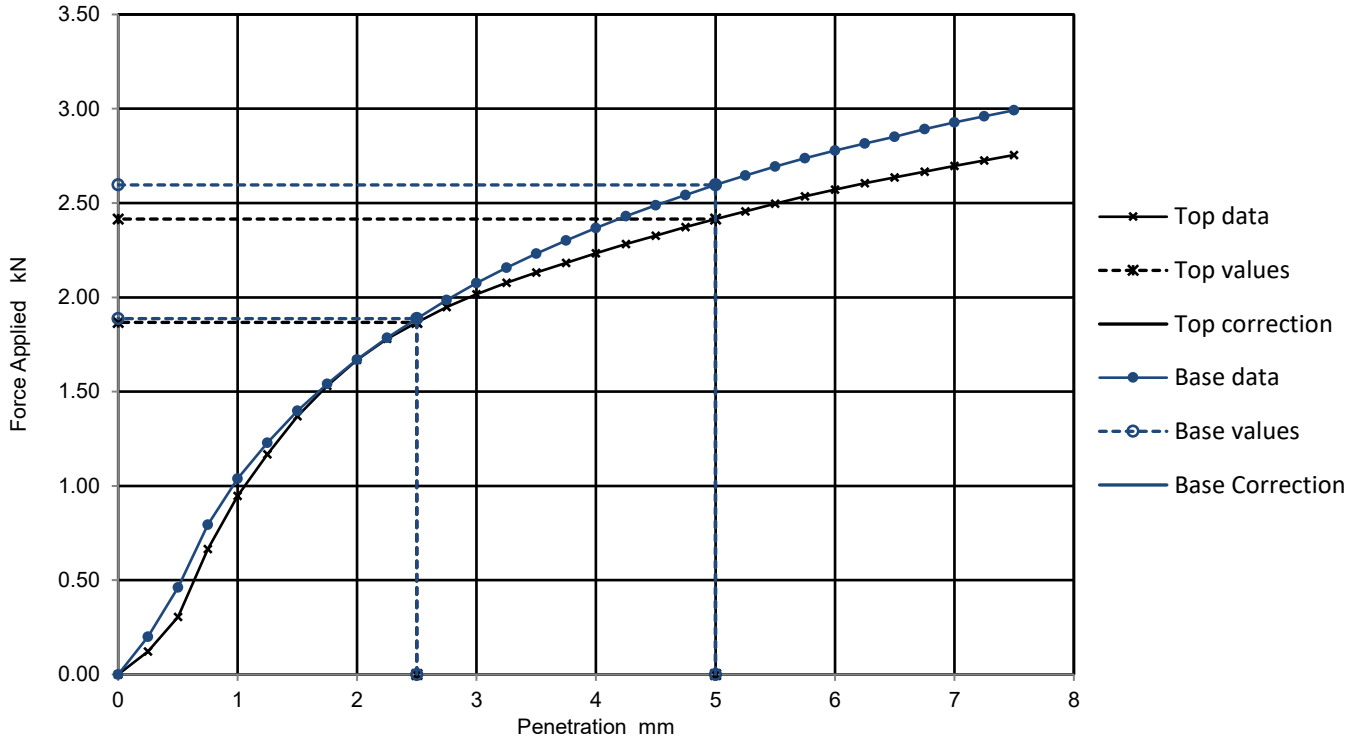
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP05
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	2.50
Specimen Reference	5	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, slightly gravelly CLAY			KeyLAB ID	SLMK2021042833
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		12	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.08	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	16.3	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		14.0	12.0	14.0	14.0	16.5
BASE		14.0	13.0	14.0		17.0

General remarks	Test specific remarks	Approved
Tested at 17% Moisture Content	Tested at 17% Moisture Content	KW

Fig No.	1
Sheet No	10

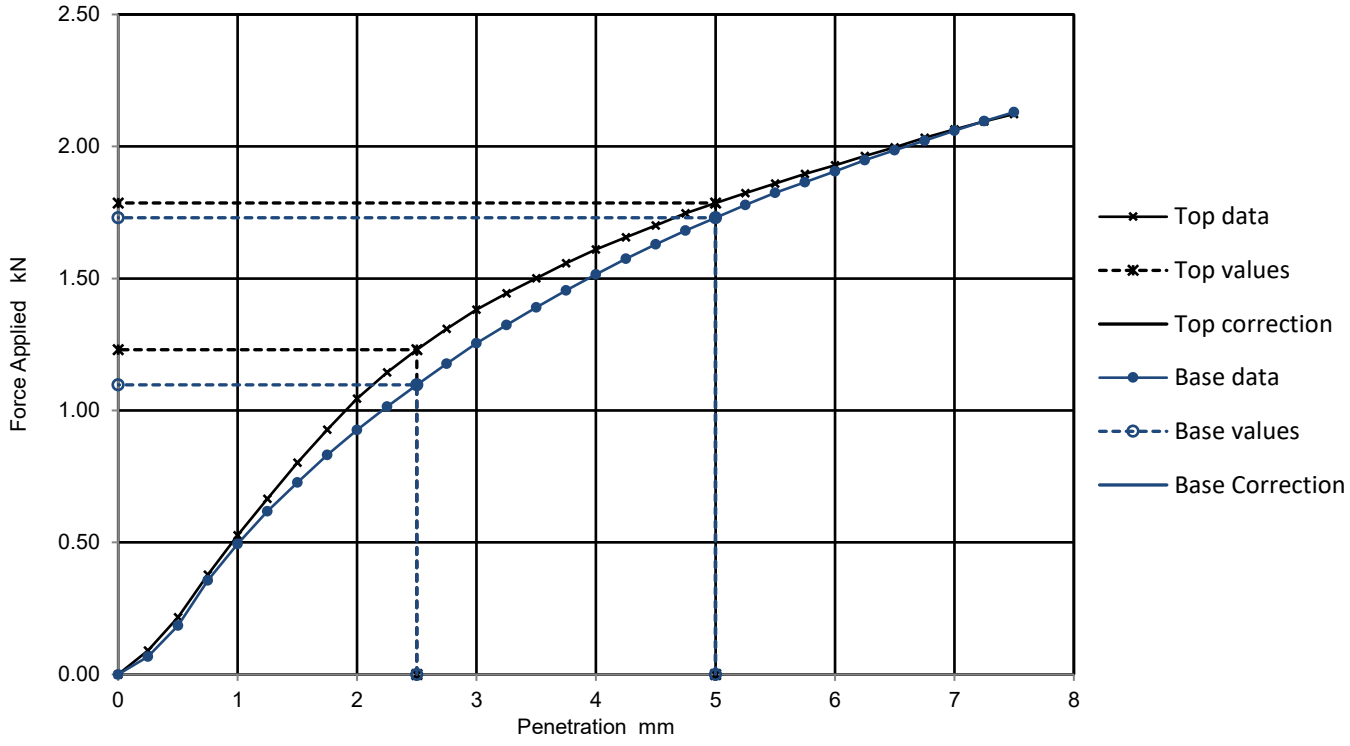
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP07
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	1.50
Specimen Reference	1	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021042835
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking	days
				Time to surface	days
				Amount of swell recorded	mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking	Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2 kg
	Dry density	1.72	Mg/m3		1 kPa
	Moisture content	19.6	%		

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		9.3	8.9	9.3	9.0	18.5
BASE		8.3	8.7	8.7		18.7

General remarks	Test specific remarks	Approved
Tested at Natural Moisture Content	Tested at Natural Moisture Content	KW

Fig No.	1
Sheet No	11

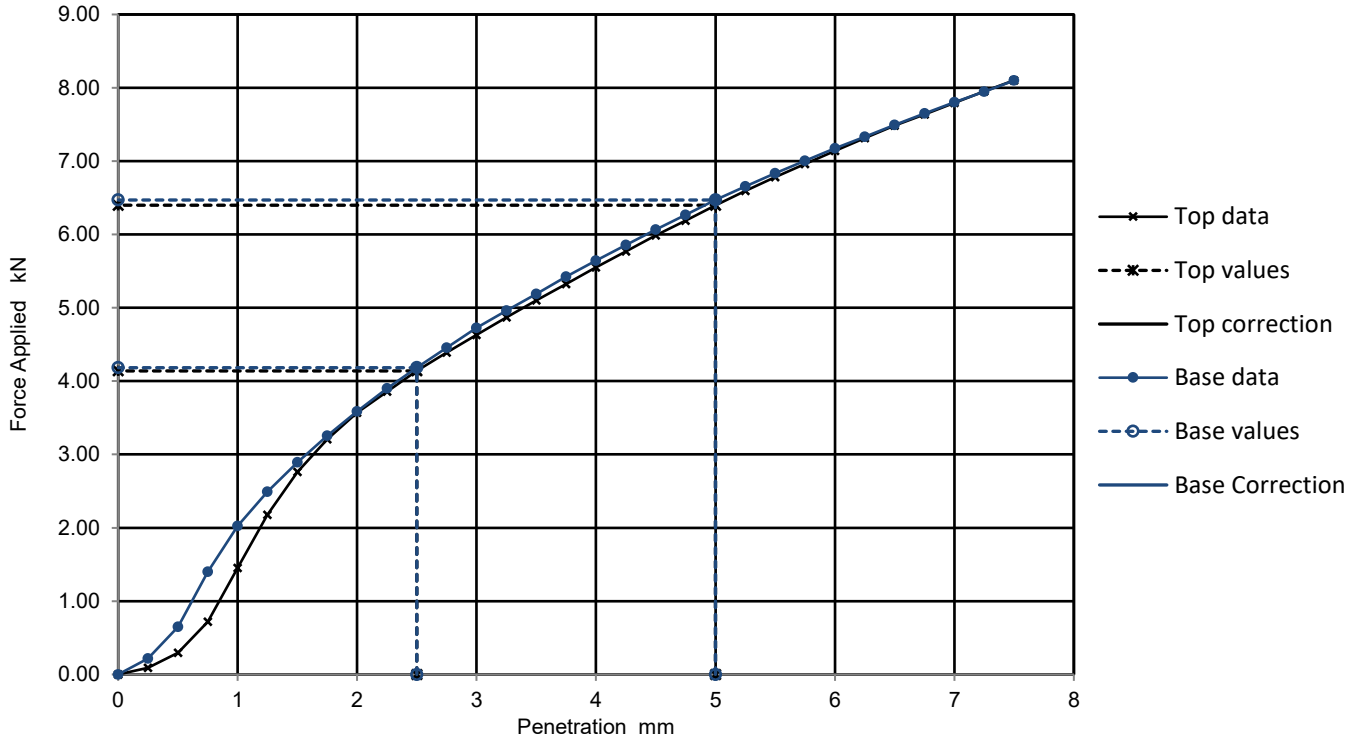
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP07
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	1.50
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021042835
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.77	Mg/m3	Surcharge applied	2	kg
	Dry density	1.67	Mg/m3		1	kPa
	Moisture content	5.8	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		31.0	32.0	32.0	32.0	5.8
BASE		32.0	32.0	32.0		5.5

General remarks	Test specific remarks	Approved
Tested at 6% Moisture Content	Tested at 6% Moisture Content	KW

Fig No.	1
Sheet No	12

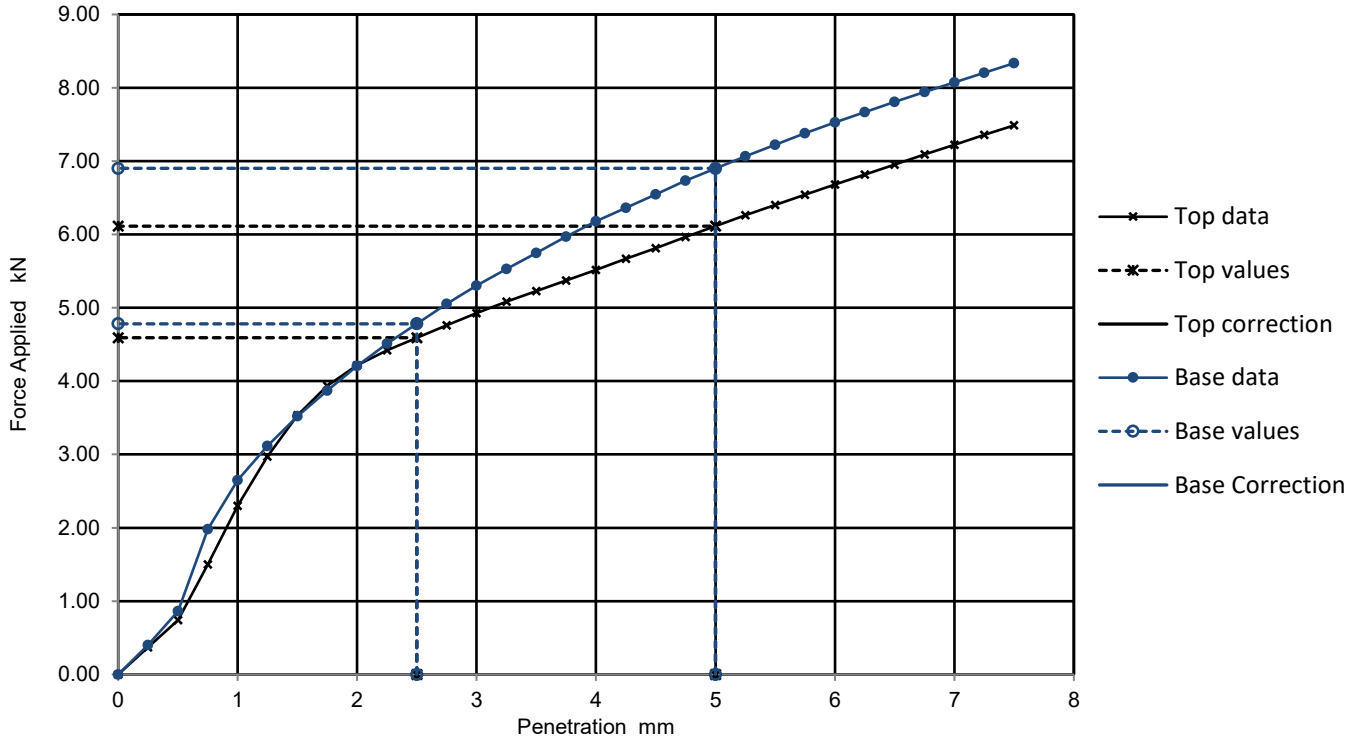
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP07
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	1.50
Specimen Reference	3	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021042835
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.93	Mg/m3	Surcharge applied	2	kg
	Dry density	1.75	Mg/m3		1	kPa
	Moisture content	10.4	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		35.0	31.0	35.0	36.0	10.1
BASE		36.0	35.0	36.0		10.1

General remarks	Test specific remarks	Approved
Tested at 10% Moisture Content	Tested at 10% Moisture Content	KW

Fig No.	1
Sheet No	13

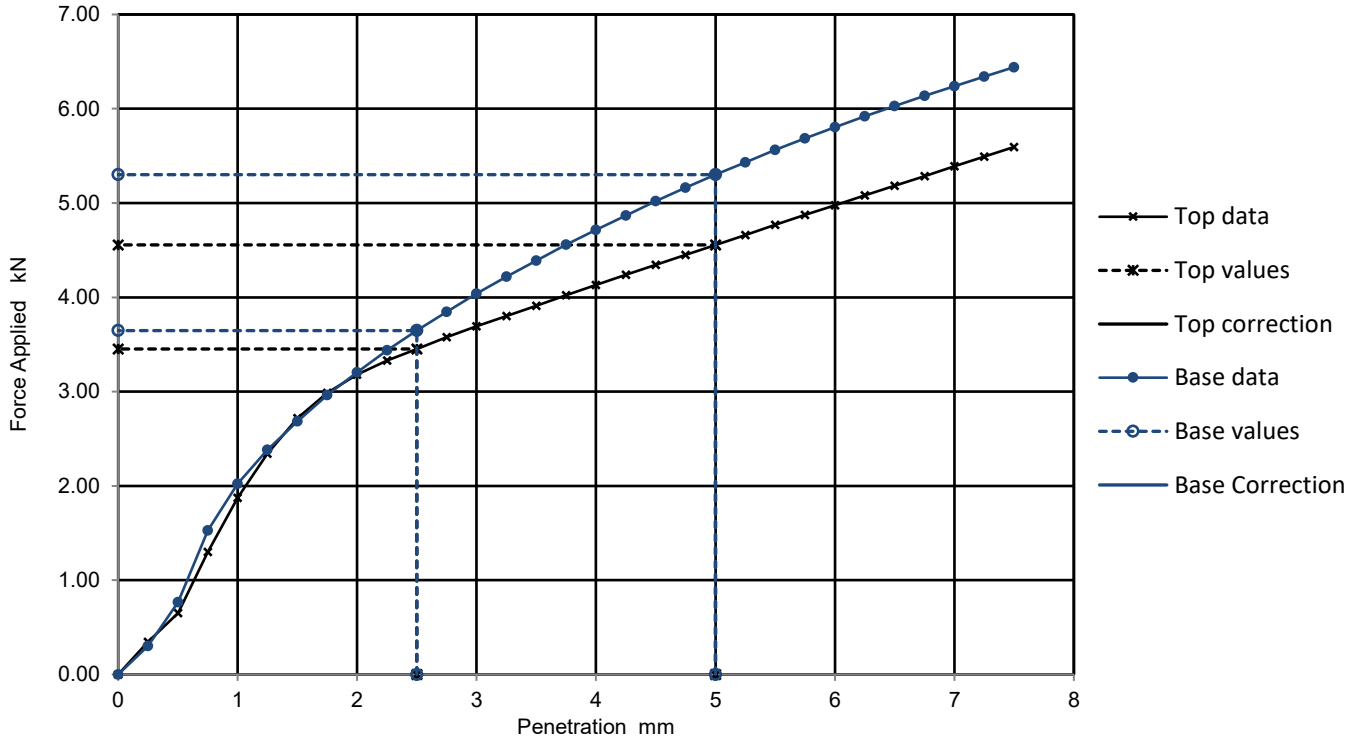
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP07
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	1.50
Specimen Reference	4	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021042835
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition	REMOULDED			Soaking details	Not soaked	
Details	Recompacted with specified standard effort using 2.5kg rammer			Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	1.98	Mg/m3	Surcharge applied	2	kg
	Dry density	1.76	Mg/m3		1	kPa
	Moisture content	12.7	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		26.0	23.0	26.0	27.0	12.5
BASE		28.0	27.0	28.0		12.2

General remarks	Test specific remarks	Approved
Tested at 13% Moisture Content	Tested at 13% Moisture Content	KW

Fig No.	1
Sheet No	14

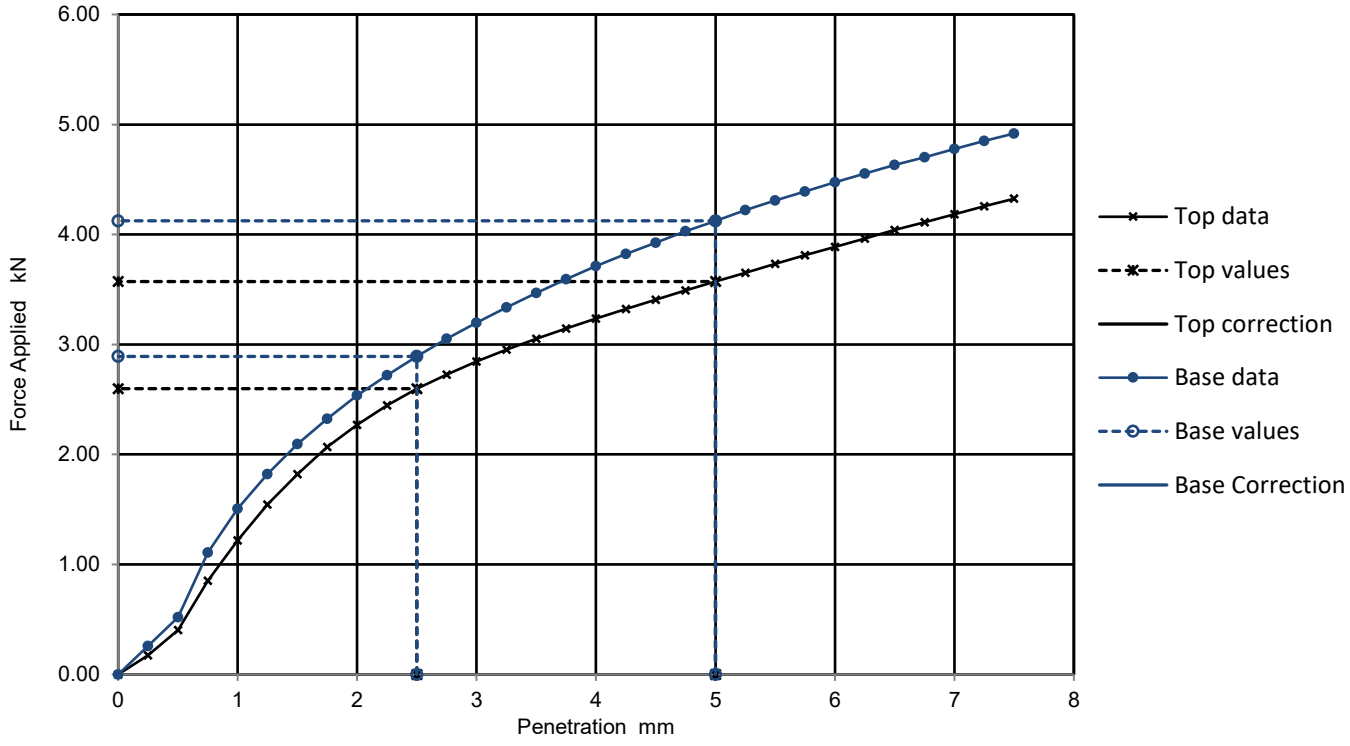
Lab Sheet Reference :

	California Bearing Ratio (CBR)			Job Ref	D10371
				Borehole/Pit No.	TP07
Site Name	Barnsley Metropolitan Borough Council			Sample No.	
Soil Description				Depth m	1.50
Specimen Reference	5	Specimen Depth	m	Sample Type	B
Specimen Description	Brown, CLAY			KeyLAB ID	SLMK2021042835
Test Method	BS1377 : Part 4 : 1990, clause 7			CBR Test Number	1

Specimen Preparation

Condition				Soaking details	Not soaked	
Details				Period of soaking		days
				Time to surface		days
				Amount of swell recorded		mm
Material retained on 20mm sieve removed		0	%	Dry density after soaking		Mg/m3
Initial Specimen details	Bulk density	2.06	Mg/m3	Surcharge applied	2	kg
	Dry density	1.79	Mg/m3		1	kPa
	Moisture content	15.2	%			

Force v Penetration Plots



Results

	Curve correction applied	CBR Values, % 2.5mm	5mm	Highest	Average	Moisture Content %
TOP		20.0	18.0	20.0	21.0	15.0
BASE		22.0	21.0	22.0		14.6

General remarks	Test specific remarks	Approved
Tested at 16% Moisture Content	Tested at 16% Moisture Content	KW

Fig No.	1
Sheet No	15

Lab Sheet Reference :

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

Amended Report

Report No.:	21-14540-3		
Initial Date of Issue:	07-May-2021	**Date of Re-Issue:**	19-May-2021
Client	Solmek Ltd		
Client Address:	12 Yarm Road Stockton-on-Tees TS18 3NA		
Contact(s):	Kathryn Watkin		
Project	D10371 Barnsley Metropolitan Borough Council		
Quotation No.:		**Date Received:**	30-Apr-2021
Order No.:	LAB891	**Date Instructed:**	30-Apr-2021
No. of Samples:	8		
Turnaround (Wkdays):	5	**Results Due:**	07-May-2021
Date Approved:	07-May-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: D10371 Barnsley Metropolitan Borough Council

Client: Solmek Ltd		**Chemtest Job No.:**			21-14540	21-14540	21-14540	21-14540	21-14540	21-14540	21-14540	21-14540
Quotation No.:		**Chemtest Sample ID.:**			1192771	1192772	1192773	1192774	1192775	1192776	1192777	1192778
			Sample Location:		OH1	OH10	OH10	OH2	OH6	OH7	OH9	TP7
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.5	0.1	1.0	1.0	1.0	1.0	0.5	0.30
Determinand	**Accred.**	**SOP**	**Units**	**LOD**								
Moisture	N	2030	%	0.020	19	18	21	16	12	18	18	9.9
pH	U	2010		4.0	[A] 8.2	[A] 6.8	[A] 6.3	[A] 7.8	[A] 7.6	[A] 7.6	[A] 8.0	[A] 7.8
Sulphate (2:1 Water Soluble) as SO4	U	2120	mg/l	10	[A] 17	[A] < 10	[A] 65	[A] < 10	[A] < 10	[A] 17	[A] < 10	[A] < 10
Arsenic	U	2450	mg/kg	1.0	15							
Cadmium	U	2450	mg/kg	0.10	< 0.10							
Chromium	U	2450	mg/kg	1.0	21							
Copper	U	2450	mg/kg	0.50	24							
Mercury	U	2450	mg/kg	0.10	0.13							
Nickel	U	2450	mg/kg	0.50	17							
Lead	U	2450	mg/kg	0.50	33							
Selenium	U	2450	mg/kg	0.20	0.71							
Zinc	U	2450	mg/kg	0.50	54							
Naphthalene	U	2700	mg/kg	0.10	[A] < 0.10							
Acenaphthylene	U	2700	mg/kg	0.10	[A] < 0.10							
Acenaphthene	U	2700	mg/kg	0.10	[A] < 0.10							
Fluorene	U	2700	mg/kg	0.10	[A] < 0.10							
Phenanthrene	U	2700	mg/kg	0.10	[A] < 0.10							
Anthracene	U	2700	mg/kg	0.10	[A] < 0.10							
Fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10							
Pyrene	U	2700	mg/kg	0.10	[A] < 0.10							
Benzo[a]anthracene	U	2700	mg/kg	0.10	[A] < 0.10							
Chrysene	U	2700	mg/kg	0.10	[A] < 0.10							
Benzo[b]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10							
Benzo[k]fluoranthene	U	2700	mg/kg	0.10	[A] < 0.10							
Benzo[a]pyrene	U	2700	mg/kg	0.10	[A] < 0.10							
Indeno(1,2,3-c,d)Pyrene	U	2700	mg/kg	0.10	[A] < 0.10							
Dibenz(a,h)Anthracene	U	2700	mg/kg	0.10	[A] < 0.10							
Benzo[g,h,i]perylene	U	2700	mg/kg	0.10	[A] < 0.10							
Total Of 16 PAH's	U	2700	mg/kg	2.0	[A] < 2.0							

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1192771			OH1		A	Plastic Tub 1000g
1192772			OH10		A	Plastic Tub 1000g
1192773			OH10		A	Plastic Tub 1000g
1192774			OH2		A	Plastic Tub 1000g
1192775			OH6		A	Plastic Tub 1000g
1192776			OH7		A	Plastic Tub 1000g
1192777			OH9		A	Plastic Tub 1000g
1192778			TP7		A	Plastic Tub 1000g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2450	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.
2700	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-FID	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Dichloromethane extraction / GC-FID (GC-FID detection is non-selective and can be subject to interference from co-eluting compounds)

Report Information

Key

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

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

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

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

Sample Deviation Codes

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

Sample Retention and Disposal

All soil samples will be retained for a period of 45 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

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

APPENDIX E

Chemical Laboratory Results

Certificate of Analysis

Certificate Number	21-08778	*Issued:*	11-May-21

Client Dunelm Geotechnical & Environmental Ltd
Foundation House
St. John's Road
Meadowfield
Durham
DH7 8TZ

Our Reference	21-08778
Client Reference	D10371
Order No	PO23299/BL/D10371
Contract Title	Barnsley Metropolitan Borough Council
Description	6 Soil samples.
Date Received	27-Apr-21
Date Started	27-Apr-21
Date Completed	11-May-21
Test Procedures	Identified by prefix DETSn (details on request).

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

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 21-08778
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

Sample ID	Depth	Lab No	Completed	Matrix Description
OH03	0.2	1838280	11/05/2021	Dark brown gravelly SAND
OH03	0.4	1838281	11/05/2021	Brown sandy CLAY
OH03	0.7	1838282	11/05/2021	Brown sandy CLAY
OH04	0.2	1838283	11/05/2021	Dark brown GRAVEL (sample matrix outside MCERTS scope of accreditation)
OH04	0.45	1838284	11/05/2021	Brown gravelly SAND
OH04	0.7	1838285	11/05/2021	Brown sandy CLAY

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08778
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

	Lab No	1838280	1838281	1838282	1838283	1838284	1838285
	.Sample ID	OH03	OH03	OH03	OH04	OH04	OH04
	Depth	0.20	0.40	0.70	0.20	0.45	0.70
	Other ID						
	Sample Type	ES	ES	ES	ES	ES	ES
	Sampling Date	21/04/2021	21/04/2021	21/04/2021	21/04/2021	21/04/2021	21/04/2021
	Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**				
Preparation							
Moisture Content	DETSC 1004	0.1	%	0.99	16	13	1.2	7.1	18
Metals							
Arsenic	DETSC 2301#	0.2	mg/kg			4.0			9.6
Cadmium	DETSC 2301#	0.1	mg/kg			0.1			0.2
Chromium	DETSC 2301#	0.15	mg/kg			25			19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0			< 1.0
Copper	DETSC 2301#	0.2	mg/kg			30			25
Lead	DETSC 2301#	0.3	mg/kg			20			25
Mercury	DETSC 2325#	0.05	mg/kg			0.05			0.07
Nickel	DETSC 2301#	1	mg/kg			30			23
Selenium	DETSC 2301#	0.5	mg/kg			< 0.5			< 0.5
Zinc	DETSC 2301#	1	mg/kg			82			66
Inorganics									
pH	DETSC 2008#		pH			7.7			7.4
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l			31			22
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Fluorene	DETSC 3301	0.1	mg/kg			0.2			< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg			0.2			< 0.1
Anthracene	DETSC 3301	0.1	mg/kg			0.2			< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Pyrene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			0.2			< 0.1
Chrysene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			0.3			< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			0.4			< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg			0.4			< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg			0.6			< 0.1
PAH Total	DETSC 3301	1.6	mg/kg			4.0			< 1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 21-08778
Client Ref D10371
Contract Barnsley Metropolitan Borough Council

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1838280	OH03 0.20 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838281	OH03 0.40 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838282	OH03 0.70 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838283	OH04 0.20 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838284	OH04 0.45 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838285	OH04 0.70 SOIL	21/04/21	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

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

Soil Analysis Notes

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

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

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

Disposal

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

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

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

Certificate of Analysis

Certificate Number	21-08798-1	*Issued:*	10-May-21

Client Dunelm Geotechnical & Environmental Ltd
Foundation House
St. John's Road
Meadowfield
Durham
DH7 8TZ

Our Reference	21-08798-1
Client Reference	D10371
Order No	PO23300/BL/D10371
Contract Title	Barnsley Metropolitan Borough Council
Description	30 Soil samples, 3 Leachate samples.
Date Received	27-Apr-21
Date Started	27-Apr-21
Date Completed	10-May-21
Test Procedures	Identified by prefix DETSn (details on request).

Notes **This report supersedes 21-08798, extra testing added.**

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

Approved By

Adam Fenwick
Contracts Manager

UKAS TESTING
2139

Summary of Chemical Analysis
Matrix Descriptions

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

Sample ID	Depth	Lab No	Completed	Matrix Description
TP01	0.2	1838415	04/05/2021	Brown sandy CLAY
TP01	0.5	1838416	04/05/2021	Brown sandy CLAY
TP01	1	1838417	04/05/2021	Brown sandy CLAY
TP01	3	1838418	04/05/2021	Grey gravelly, sandy CLAY
TP02	0.2	1838419	04/05/2021	Brown sandy CLAY
TP02	0.5	1838420	04/05/2021	Brown sandy CLAY
TP02	1	1838421	04/05/2021	Brown sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP04	0.2	1838422	04/05/2021	Brown sandy CLAY including some rootlets
TP04	0.5	1838423	04/05/2021	Brown sandy CLAY
TP04	1	1838424	04/05/2021	Brown sandy CLAY
TP04	2	1838425	04/05/2021	Brown gravelly, sandy CLAY
TP04	3	1838426	04/05/2021	Brown gravelly, sandy CLAY
TP04	3.9	1838427	04/05/2021	Brown gravelly, sandy CLAY
TP05	0.2	1838428	04/05/2021	Brown gravelly, sandy CLAY
TP05	0.5	1838429	04/05/2021	Brown sandy CLAY
TP05	1	1838430	04/05/2021	Brown sandy CLAY
TP05	2	1838431	04/05/2021	Brown sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP05	3	1838432	04/05/2021	Brown gravelly, sandy CLAY
TP05	4	1838433	04/05/2021	Dark brown sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP07	0.2	1838434	04/05/2021	Dark brown gravelly, very sandy CLAY
TP07	0.5	1838435	04/05/2021	Brown sandy CLAY
TP07	1	1838436	04/05/2021	Brown sandy CLAY
TP08	0.2	1838437	04/05/2021	Dark brown sandy CLAY
TP08	0.5	1838438	04/05/2021	Brown sandy CLAY
TP08	1	1838439	04/05/2021	Brown sandy CLAY
TP08	2	1838440	04/05/2021	Brown sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)
TP09	0.1	1838441	04/05/2021	Brown sandy CLAY including some rootlets
TP09	0.5	1838442	04/05/2021	Brown sandy CLAY
TP09	1	1838443	04/05/2021	Dark brown sandy CLAY
TP09	2	1838444	04/05/2021	Brown sandy, clayey GRAVEL (sample matrix outside MCERTS scope of accreditation)

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

			Lab No	1838415	1838416	1838417	1838418	1838419	1838420
			.Sample ID	TP01	TP01	TP01	TP01	TP02	TP02
			Depth	0.20	0.50	1.00	3.00	0.20	0.50
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
Preparation									
Moisture Content	DETSC 1004	0.1	%	18	17	19	19	18	17
Metals									
Arsenic	DETSC 2301#	0.2	mg/kg			15		22	
Cadmium	DETSC 2301#	0.1	mg/kg			< 0.1		0.3	
Chromium	DETSC 2301#	0.15	mg/kg			24		33	
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0		< 1.0	
Copper	DETSC 2301#	0.2	mg/kg			37		45	
Lead	DETSC 2301#	0.3	mg/kg			20		55	
Mercury	DETSC 2325#	0.05	mg/kg			< 0.05		< 0.05	
Nickel	DETSC 2301#	1	mg/kg			17		44	
Selenium	DETSC 2301#	0.5	mg/kg			0.7		1.0	
Zinc	DETSC 2301#	1	mg/kg			62		160	
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%				6.8		
pH	DETSC 2008#		pH			7.1		7.4	
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l			180		35	
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg			< 0.01			
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg			< 0.01			
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01			
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg			< 1.5			
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg			< 1.2			
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg			< 1.5			
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg			< 3.4			
Aliphatic C5-C35	DETSC 3072*	10	mg/kg			< 10			
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg			< 0.01			
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg			< 0.01			
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg			< 0.01			
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg			< 0.9			
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg			< 0.5			
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg			< 0.6			
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg			< 1.4			
Aromatic C5-C35	DETSC 3072*	10	mg/kg			< 10			
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg			< 10			

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838415	1838416	1838417	1838418	1838419	1838420
				.Sample ID	TP01	TP01	TP01	TP01	TP02	TP02
				Depth	0.20	0.50	1.00	3.00	0.20	0.50
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Acenaphthylene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Fluorene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Phenanthrene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Anthracene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Pyrene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Chrysene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg			< 0.1		< 0.1	
PAH Total	DETSC 3301	1.6	mg/kg			< 1.6		< 1.6	

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838421	1838422	1838423	1838424	1838425	1838426
				.Sample ID	TP02	TP04	TP04	TP04	TP04	TP04
				Depth	1.00	0.20	0.50	1.00	2.00	3.00
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	10	21	16	15	15	16
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg						16
Cadmium	DETSC 2301#	0.1	mg/kg						< 0.1
Chromium	DETSC 2301#	0.15	mg/kg						22
Chromium, Hexavalent	DETSC 2204*	1	mg/kg						< 1.0
Copper	DETSC 2301#	0.2	mg/kg						37
Lead	DETSC 2301#	0.3	mg/kg						31
Mercury	DETSC 2325#	0.05	mg/kg						0.06
Nickel	DETSC 2301#	1	mg/kg						45
Selenium	DETSC 2301#	0.5	mg/kg						1.8
Zinc	DETSC 2301#	1	mg/kg						290
Inorganics										
Loss on Ignition at 440oC	DETSC 2003#	0.01	%	4.2			7.8		
pH	DETSC 2008#		pH						7.0
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l						88
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg					< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg					< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg					< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg					< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg					< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg					< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg					< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg					< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg					< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg					< 10	
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg					< 10	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838421	1838422	1838423	1838424	1838425	1838426
				.Sample ID	TP02	TP04	TP04	TP04	TP04	TP04
				Depth	1.00	0.20	0.50	1.00	2.00	3.00
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg						< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg						< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg						< 0.1
Fluorene	DETSC 3301	0.1	mg/kg						< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg						< 0.1
Anthracene	DETSC 3301	0.1	mg/kg						< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg						< 0.1
Pyrene	DETSC 3301	0.1	mg/kg						< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg						< 0.1
Chrysene	DETSC 3301	0.1	mg/kg						< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg						< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg						< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg						< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg						< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg						< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg						< 0.1
PAH Total	DETSC 3301	1.6	mg/kg						< 1.6

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Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838427	1838428	1838429	1838430	1838431	1838432
				.Sample ID	TP04	TP05	TP05	TP05	TP05	TP05
				Depth	3.90	0.20	0.50	1.00	2.00	3.00
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	23/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	16	15	18	20	16	19
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg			13			11
Cadmium	DETSC 2301#	0.1	mg/kg			< 0.1			< 0.1
Chromium	DETSC 2301#	0.15	mg/kg			25			24
Chromium, Hexavalent	DETSC 2204*	1	mg/kg			< 1.0			< 1.0
Copper	DETSC 2301#	0.2	mg/kg			31			49
Lead	DETSC 2301#	0.3	mg/kg			26			27
Mercury	DETSC 2325#	0.05	mg/kg			0.12			< 0.05
Nickel	DETSC 2301#	1	mg/kg			37			50
Selenium	DETSC 2301#	0.5	mg/kg			1.5			0.9
Zinc	DETSC 2301#	1	mg/kg			130			110
Inorganics									
Loss on Ignition at 440oC	DETSC 2003#	0.01	%						
pH	DETSC 2008#		pH	6.9		7.3			6.9
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	100		43			120
Petroleum Hydrocarbons									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg					< 1.5	
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg					< 1.2	
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg					< 1.5	
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg					< 3.4	
Aliphatic C5-C35	DETSC 3072*	10	mg/kg					< 10	
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg					< 0.9	
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg					< 0.5	
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg					< 0.6	
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg					< 1.4	
Aromatic C5-C35	DETSC 3072*	10	mg/kg					< 10	
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg					< 10	

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838427	1838428	1838429	1838430	1838431	1838432
				.Sample ID	TP04	TP05	TP05	TP05	TP05	TP05
				Depth	3.90	0.20	0.50	1.00	2.00	3.00
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	23/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021	22/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Acenaphthylene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Acenaphthene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Fluorene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Phenanthrene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Anthracene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Pyrene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Chrysene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg			< 0.1			< 0.1
PAH Total	DETSC 3301	1.6	mg/kg			< 1.6			< 1.6

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838433	1838434	1838435	1838436	1838437	1838438
				.Sample ID	TP05	TP07	TP07	TP07	TP08	TP08
				Depth	4.00	0.20	0.50	1.00	0.20	0.50
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/04/2021	22/04/2021	22/04/2021	22/04/2021	23/04/2021	23/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	15	16	15	18	16	18
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg				4.5		
Cadmium	DETSC 2301#	0.1	mg/kg				< 0.1		
Chromium	DETSC 2301#	0.15	mg/kg				26		
Chromium, Hexavalent	DETSC 2204*	1	mg/kg				< 1.0		
Copper	DETSC 2301#	0.2	mg/kg				15		
Lead	DETSC 2301#	0.3	mg/kg				16		
Mercury	DETSC 2325#	0.05	mg/kg				< 0.05		
Nickel	DETSC 2301#	1	mg/kg				19		
Selenium	DETSC 2301#	0.5	mg/kg				0.6		
Zinc	DETSC 2301#	1	mg/kg				74		
Inorganics										
Loss on Ignition at 440oC	DETSC 2003#	0.01	%						
pH	DETSC 2008#		pH	7.5			7.8		7.6
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l	150			60		62
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg						
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg						
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg						
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg						
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg						
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg						
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg						
Aliphatic C5-C35	DETSC 3072*	10	mg/kg						
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg						
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg						
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg						
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg						
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg						
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg						
Aromatic C5-C35	DETSC 3072*	10	mg/kg						
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg						

Key: * -not accredited. # -MCERTS (accreditation only applies if report carries the MCERTS logo). n/s -not supplied.

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838433	1838434	1838435	1838436	1838437	1838438
				.Sample ID	TP05	TP07	TP07	TP07	TP08	TP08
				Depth	4.00	0.20	0.50	1.00	0.20	0.50
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	22/04/2021	22/04/2021	22/04/2021	22/04/2021	23/04/2021	23/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
PAHs										
Naphthalene	DETSC 3301	0.1	mg/kg				< 0.1		
Acenaphthylene	DETSC 3301	0.1	mg/kg				< 0.1		
Acenaphthene	DETSC 3301	0.1	mg/kg				< 0.1		
Fluorene	DETSC 3301	0.1	mg/kg				< 0.1		
Phenanthrene	DETSC 3301	0.1	mg/kg				< 0.1		
Anthracene	DETSC 3301	0.1	mg/kg				< 0.1		
Fluoranthene	DETSC 3301	0.1	mg/kg				< 0.1		
Pyrene	DETSC 3301	0.1	mg/kg				< 0.1		
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg				< 0.1		
Chrysene	DETSC 3301	0.1	mg/kg				< 0.1		
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg				< 0.1		
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg				< 0.1		
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg				< 0.1		
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg				< 0.1		
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg				< 0.1		
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg				< 0.1		
PAH Total	DETSC 3301	1.6	mg/kg				< 1.6		

Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

				Lab No	1838439	1838440	1838441	1838442	1838443	1838444
				.Sample ID	TP08	TP08	TP09	TP09	TP09	TP09
				Depth	1.00	2.00	0.10	0.50	1.00	2.00
				Other ID						
				Sample Type	ES	ES	ES	ES	ES	ES
				Sampling Date	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
				Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**							
Preparation										
Moisture Content	DETSC 1004	0.1	%	19	19	16	15	19	12
Metals										
Arsenic	DETSC 2301#	0.2	mg/kg						
Cadmium	DETSC 2301#	0.1	mg/kg						
Chromium	DETSC 2301#	0.15	mg/kg						
Chromium, Hexavalent	DETSC 2204*	1	mg/kg						
Copper	DETSC 2301#	0.2	mg/kg						
Lead	DETSC 2301#	0.3	mg/kg						
Mercury	DETSC 2325#	0.05	mg/kg						
Nickel	DETSC 2301#	1	mg/kg						
Selenium	DETSC 2301#	0.5	mg/kg						
Zinc	DETSC 2301#	1	mg/kg						
Inorganics										
Loss on Ignition at 440oC	DETSC 2003#	0.01	%		21			11	
pH	DETSC 2008#		pH				7.2		
Sulphate Aqueous Extract as SO4	DETSC 2076#	10	mg/l				42		
Petroleum Hydrocarbons										
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg	< 1.5					< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg	< 1.2					< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg	< 1.5					< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg	< 3.4					< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg	< 10					< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg	< 0.01					< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg	< 0.9					< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg	< 0.5					< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg	< 0.6					< 0.6
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg	< 1.4					< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg	< 10					< 10
TPH Ali/Aro Total C5-C35	DETSC 3072*	10	mg/kg	< 10					< 10

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Summary of Chemical Analysis
Soil Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

			Lab No	1838439	1838440	1838441	1838442	1838443	1838444
			.Sample ID	TP08	TP08	TP09	TP09	TP09	TP09
			Depth	1.00	2.00	0.10	0.50	1.00	2.00
			Other ID						
			Sample Type	ES	ES	ES	ES	ES	ES
			Sampling Date	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021	23/04/2021
			Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**						
PAHs									
Naphthalene	DETSC 3301	0.1	mg/kg						
Acenaphthylene	DETSC 3301	0.1	mg/kg						
Acenaphthene	DETSC 3301	0.1	mg/kg						
Fluorene	DETSC 3301	0.1	mg/kg						
Phenanthrene	DETSC 3301	0.1	mg/kg						
Anthracene	DETSC 3301	0.1	mg/kg						
Fluoranthene	DETSC 3301	0.1	mg/kg						
Pyrene	DETSC 3301	0.1	mg/kg						
Benzo(a)anthracene	DETSC 3301	0.1	mg/kg						
Chrysene	DETSC 3301	0.1	mg/kg						
Benzo(b)fluoranthene	DETSC 3301	0.1	mg/kg						
Benzo(k)fluoranthene	DETSC 3301	0.1	mg/kg						
Benzo(a)pyrene	DETSC 3301	0.1	mg/kg						
Indeno(1,2,3-c,d)pyrene	DETSC 3301	0.1	mg/kg						
Dibenzo(a,h)anthracene	DETSC 3301	0.1	mg/kg						
Benzo(g,h,i)perylene	DETSC 3301	0.1	mg/kg						
PAH Total	DETSC 3301	1.6	mg/kg						

Summary of Chemical Analysis
Leachate Samples

Our Ref 21-08798-1
Client Ref D10371
Contract Title Barnsley Metropolitan Borough Council

			Lab No	1838445	1838446	1838447
			.Sample ID	TP04	TP05	TP08
			Depth	2.00	2.00	2.00
			Other ID			
			Sample Type	ES	ES	ES
			Sampling Date	23/04/2021	22/04/2021	23/04/2021
			Sampling Time	n/s	n/s	n/s
Test	**Method**	**LOD**	**Units**			
Preparation						
BS EN 12457 10:1	DETSC 1009*			Y	Y	Y
Metals						
Arsenic, Dissolved	DETSC 2306	0.16	ug/l	0.32	< 0.16	0.21
Boron, Dissolved	DETSC 2306*	12	ug/l	< 12	< 12	< 12
Cadmium, Dissolved	DETSC 2306	0.03	ug/l	< 0.03	< 0.03	< 0.03
Chromium, Dissolved	DETSC 2306	0.25	ug/l	1.8	< 0.25	< 0.25
Copper, Dissolved	DETSC 2306	0.4	ug/l	3.4	0.9	1.6
Lead, Dissolved	DETSC 2306	0.09	ug/l	0.55	< 0.09	0.12
Mercury, Dissolved	DETSC 2306	0.01	ug/l	0.02	< 0.01	< 0.01
Nickel, Dissolved	DETSC 2306	0.5	ug/l	18	1.0	< 0.5
Selenium, Dissolved	DETSC 2306	0.25	ug/l	1.3	0.54	0.34
Zinc, Dissolved	DETSC 2306	1.3	ug/l	16	3.3	4.0
Inorganics						
pH	DETSC 2008		pH	5.6	5.5	5.6
Sulphate as SO4	DETSC 2055	0.1	mg/l	2.1	2.3	4.0

Key: * -not accredited. n/s -not supplied.

Information in Support of the Analytical Results

Our Ref 21-08798-1
Client Ref D10371
Contract Barnsley Metropolitan Borough Council

Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
1838415	TP01 0.20 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838416	TP01 0.50 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838417	TP01 1.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838418	TP01 3.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838419	TP02 0.20 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838420	TP02 0.50 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838421	TP02 1.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838422	TP04 0.20 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838423	TP04 0.50 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838424	TP04 1.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838425	TP04 2.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838426	TP04 3.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838427	TP04 3.90 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838428	TP05 0.20 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838429	TP05 0.50 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838430	TP05 1.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838431	TP05 2.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838432	TP05 3.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838433	TP05 4.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838434	TP07 0.20 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838435	TP07 0.50 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838436	TP07 1.00 SOIL	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838437	TP08 0.20 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838438	TP08 0.50 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838439	TP08 1.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838440	TP08 2.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838441	TP09 0.10 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838442	TP09 0.50 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838443	TP09 1.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838444	TP09 2.00 SOIL	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838445	TP04 2.00 LEACHATE	23/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838446	TP05 2.00 LEACHATE	22/04/21	GJ 250ml, GJ 60ml, PT 1L		
1838447	TP08 2.00 LEACHATE	23/04/21	GJ 250ml, GJ 60ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub

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

Information in Support of the Analytical Results

Our Ref 21-08798-1
Client Ref D10371
Contract Barnsley Metropolitan Borough Council

Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.
Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.
The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-
Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETSC 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETSC 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETSC 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETSC 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETSC 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETSC 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETSC 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETSC 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETSC 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETSC2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETSC2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETSC2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETSC2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETSC2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETSC2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETSC2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETSC2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETSC2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETSC2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETSC2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETSC 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETSC 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETSC 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETSC 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETSC 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes

Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETSC 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETSC 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETSC 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

End of Report

APPENDIX F

Dunelm Notes On Limitations

Dunelm Conditions of Offer and Notes on Limitations of Investigation

Site investigation is a process of sampling. The scope and size of an investigation may be considered proportional to levels of confidence regarding the ground and groundwater conditions. The exploratory holes undertaken investigate only a small volume of the ground in relation to the overall size of the site, and can only provide a general indication of site conditions. The opinions provided and recommendations given in this report are based on the ground conditions as encountered within each of the exploratory holes. There may be different ground conditions elsewhere on the site which have not been identified by this investigation and which therefore have not been taken into account in this report. Reports are generally subject to the comments of the local authority and Environment Agency. The comments made on groundwater conditions are based on observations made at the time that site work was carried out. It should be noted that mobile contamination, soil gas levels and groundwater levels may vary owing to seasonal, tidal and/or weather related effects. Unrecorded ancient mining may occur anywhere where seams that have been worked and influence the rock and soil above. Dissolution cavities can occur where gypsum or chalk is present. Rotary drilling is the recommended technique to prove the integrity of the rock.

Where the scope of the investigation is limited via access to information, time constraints, equipment limitations, testing, interpretation or by the client or his agents budgetary constraints, elements not set out in the proposal and excluded from the report are deemed to be omitted from the scope of the investigation.

The firm cannot be held liable and do not warrant, or otherwise guarantee the validity of information provided by third parties and subsequently used in our reports. The firm are not responsible for the action negligent or otherwise of subcontractors or third parties.

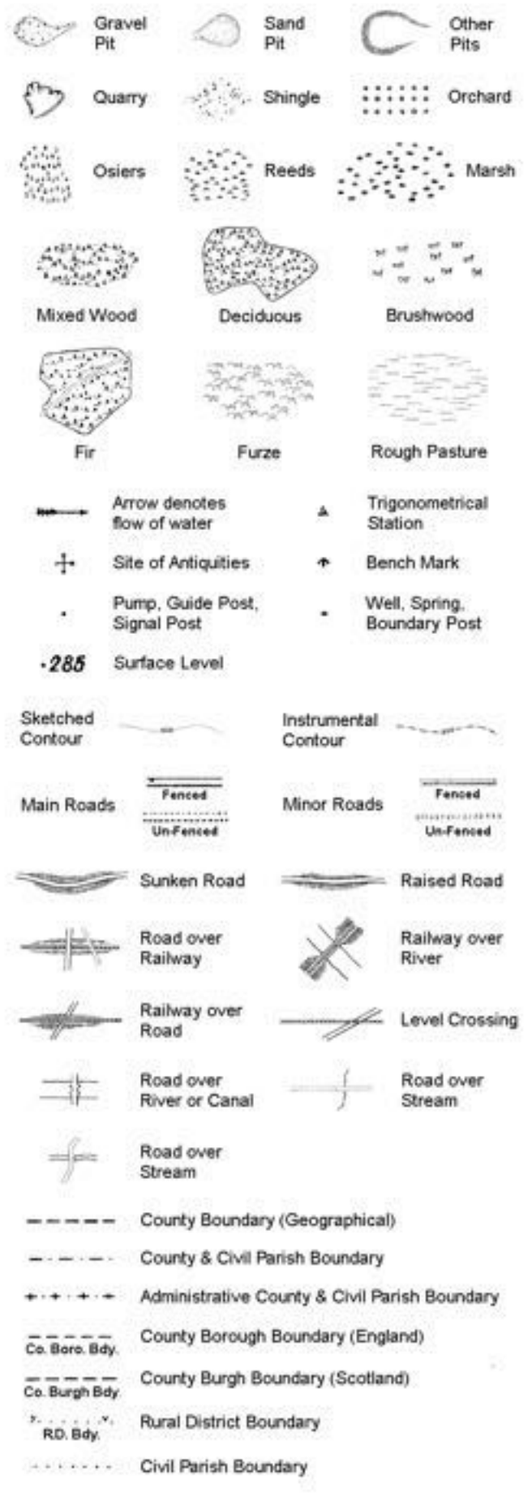
Desk studies are generally prepared in accordance with RICS guidelines. Environmental site investigations are generally undertaken as ‘exploratory investigations’ in accordance with the definitions provided in paragraph 5.2.7 of *BS 10175*:2011 +A2:2017 in order to confirm the conceptual assumptions, and in accordance with BS5930:2015. You are advised to familiarize yourself with the typical scope of such an investigation. No pumping of water will be undertaken unless a licence or facilities/equipment have been arranged by others.

Where the type, number or/and depth of exploratory hole is specified by others, the firm cannot and will not be responsible for any subsequent shortfall or inadequacy in data, and any consequent shortfall in interpretation of environmental and geotechnical aspects which may be required at a later date in order to facilitate the design of permanent or temporary works.

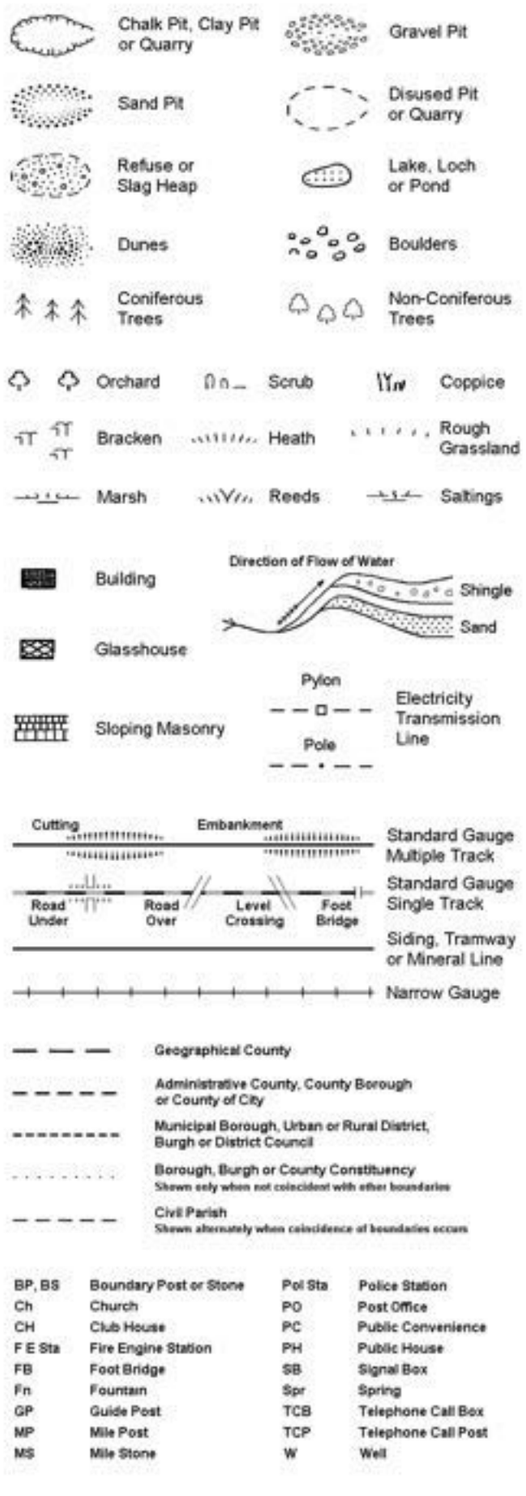
APPENDIX E - HISTORIC MAPS

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

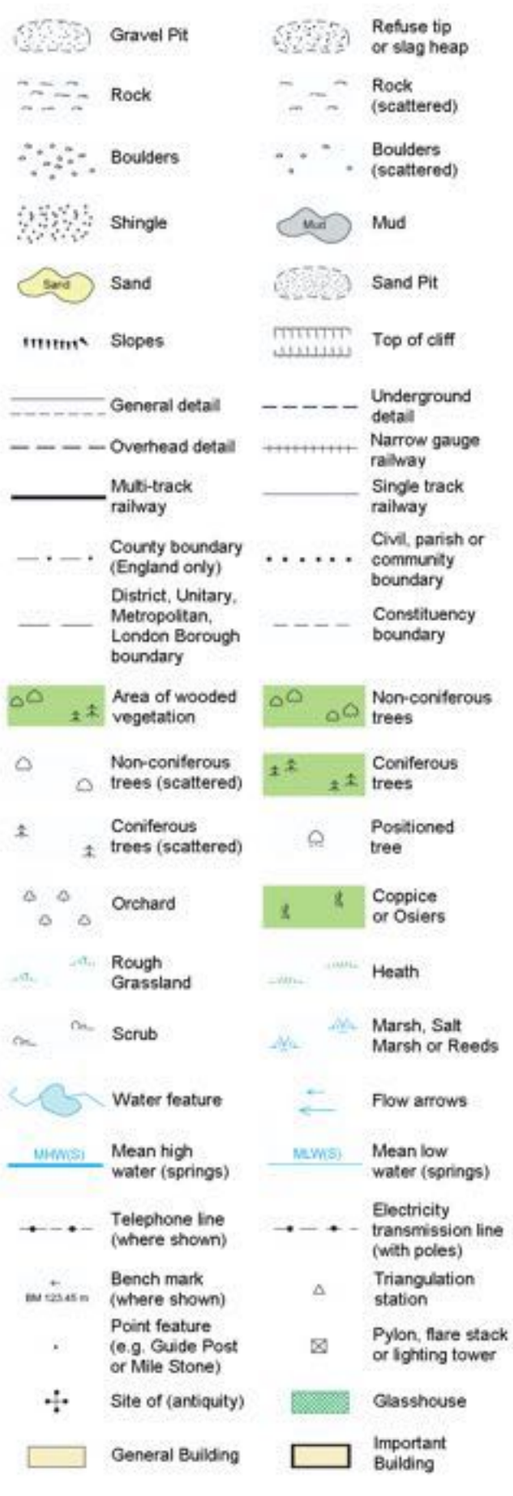


Ordnance Survey Plan 1:10,000



BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping



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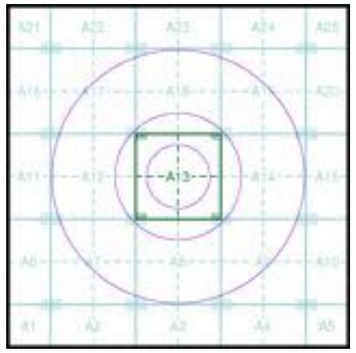
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:10,560	1854 - 1855	2
Yorkshire	1:10,560	1893	3
Yorkshire	1:10,560	1894	4
Yorkshire	1:10,560	1905 - 1906	5
Yorkshire	1:10,560	1931 - 1932	6
Yorkshire	1:10,560	1938	7
Yorkshire	1:10,560	1948 - 1950	8
Ordnance Survey Plan	1:10,000	1955 - 1956	9
Ordnance Survey Plan	1:10,000	1966 - 1967	10
Ordnance Survey Plan	1:10,000	1976	11
Ordnance Survey Plan	1:10,000	1980 - 1988	12
Ordnance Survey Plan	1:10,000	1989	13
Ordnance Survey Plan	1:10,000	1991	14
10K Raster Mapping	1:10,000	2000	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2019	17

Historical Map - Slice A



Order Details

Order Number: 207258952_1_1
Customer Ref: 151089
National Grid Reference: 444290, 404020
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

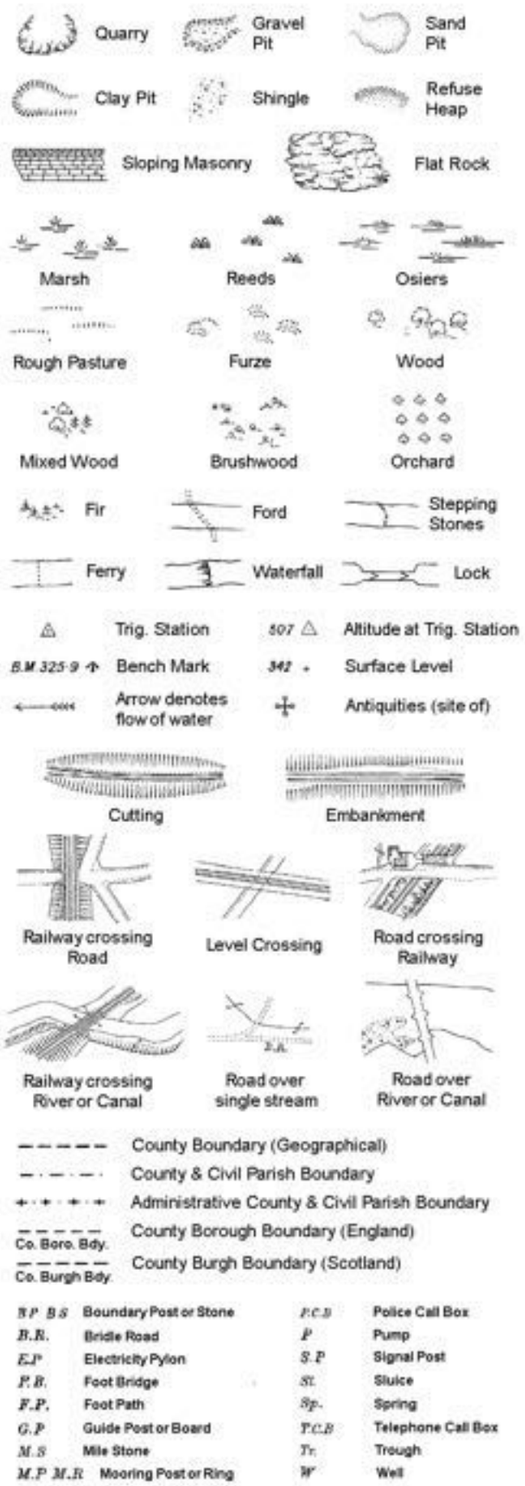
Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

Landmark® INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

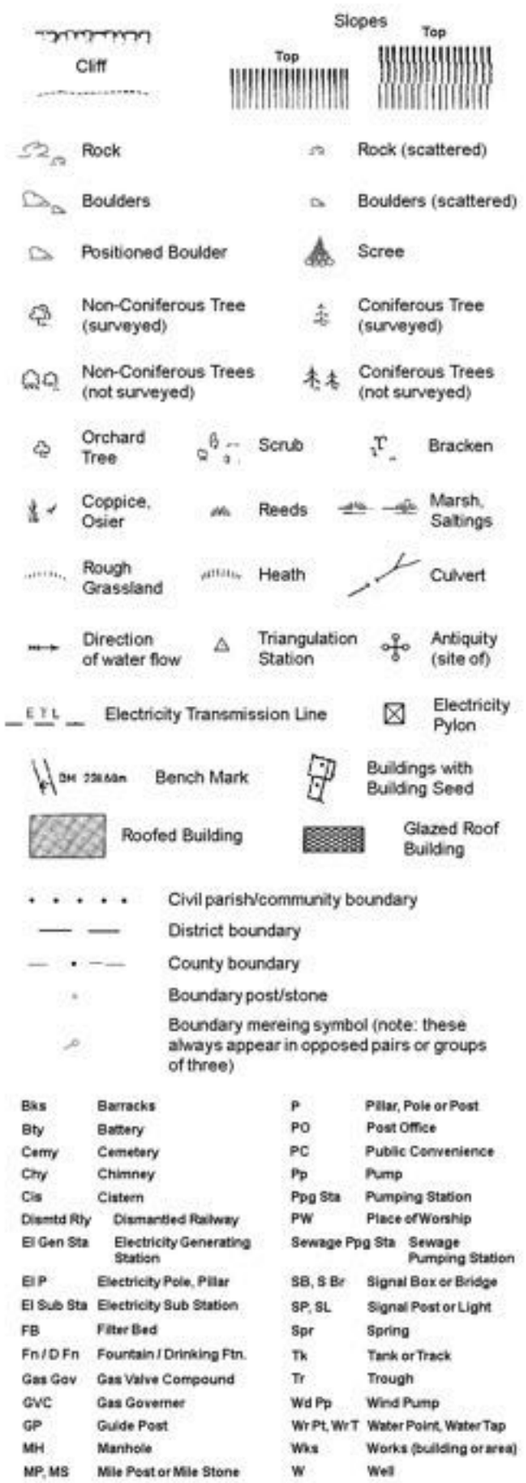


B.P B.S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250



Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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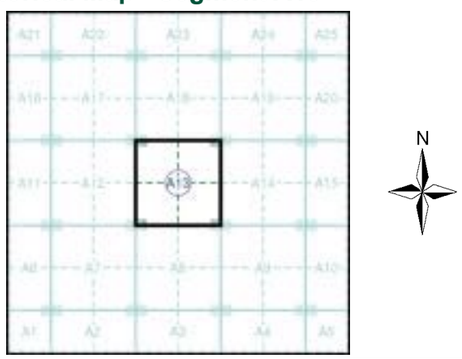
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Yorkshire	1:2,500	1892	2
Yorkshire	1:2,500	1906	3
Yorkshire	1:2,500	1930	4
Ordnance Survey Plan	1:2,500	1962	5
Additional SIMs	1:2,500	1962	6
Additional SIMs	1:2,500	1978 - 1988	7
Ordnance Survey Plan	1:2,500	1984	8
Additional SIMs	1:2,500	1988	9
Large-Scale National Grid Data	1:2,500	1993	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:2,500	1995	12
Historical Aerial Photography	1:2,500	1999	13

Historical Map - Segment A13



Order Details

Order Number: 207258952_1_1
Customer Ref: 151089
National Grid Reference: 444290, 404020
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

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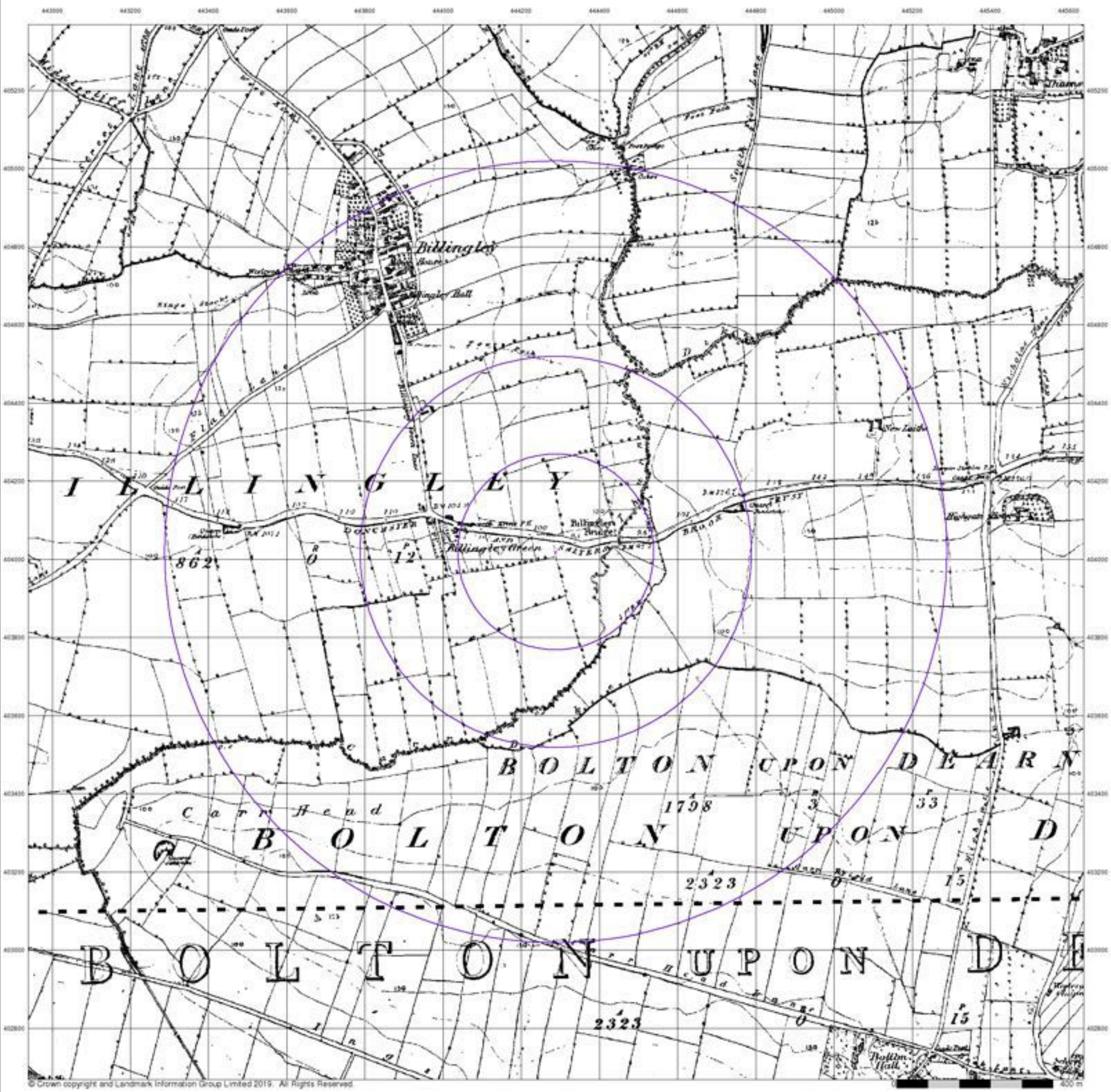
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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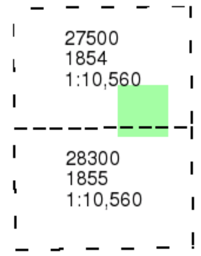
Yorkshire

Published 1854 - 1855

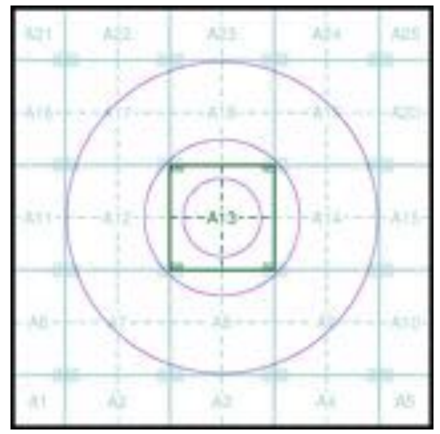
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

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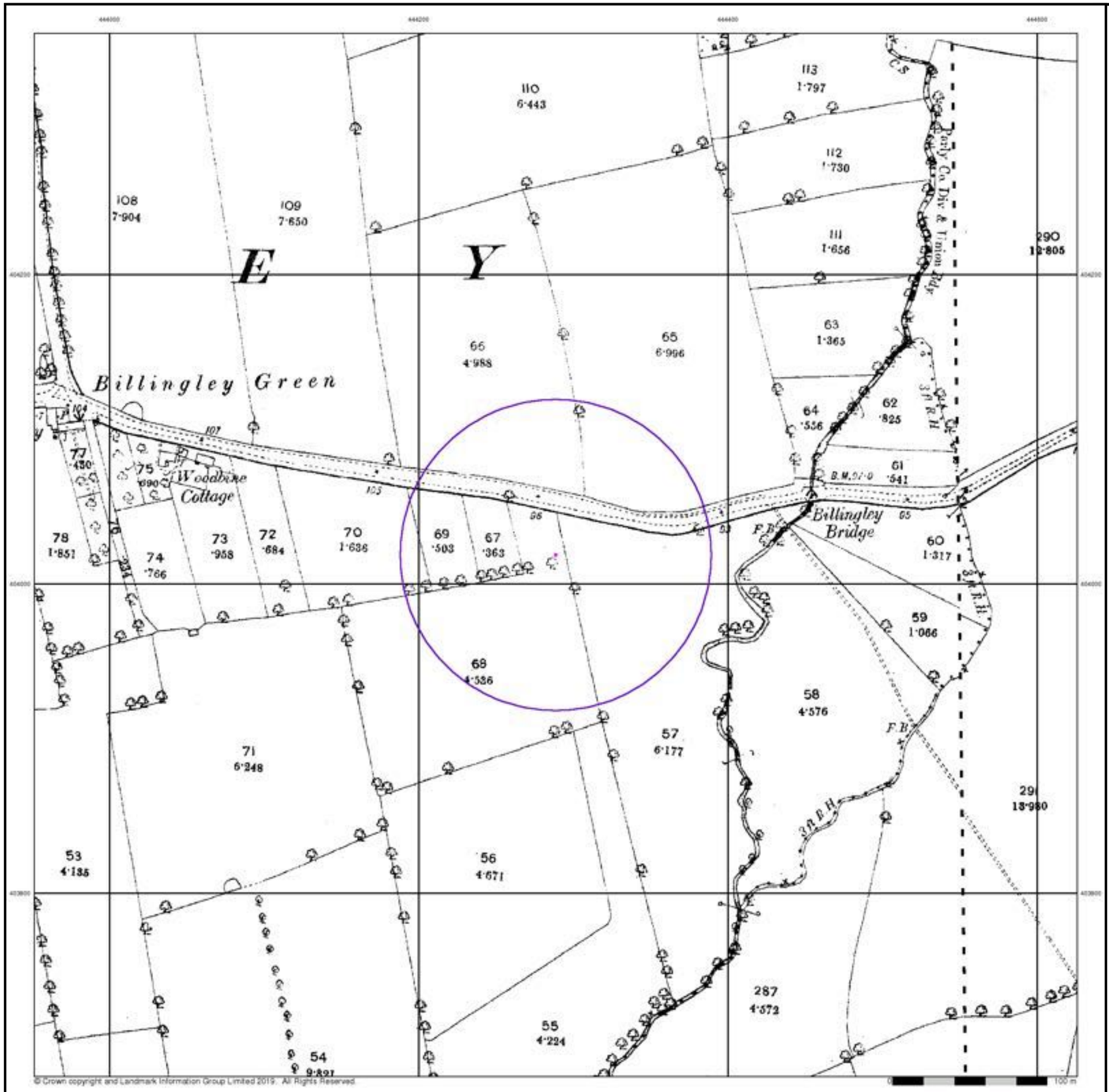

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LANDMARK INFORMATION GROUP

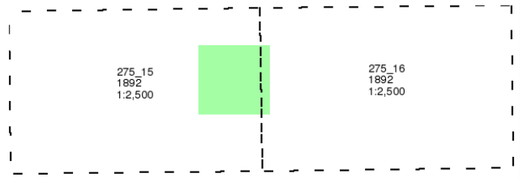
Yorkshire

Published 1892

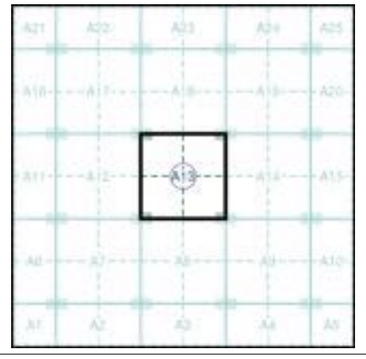
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

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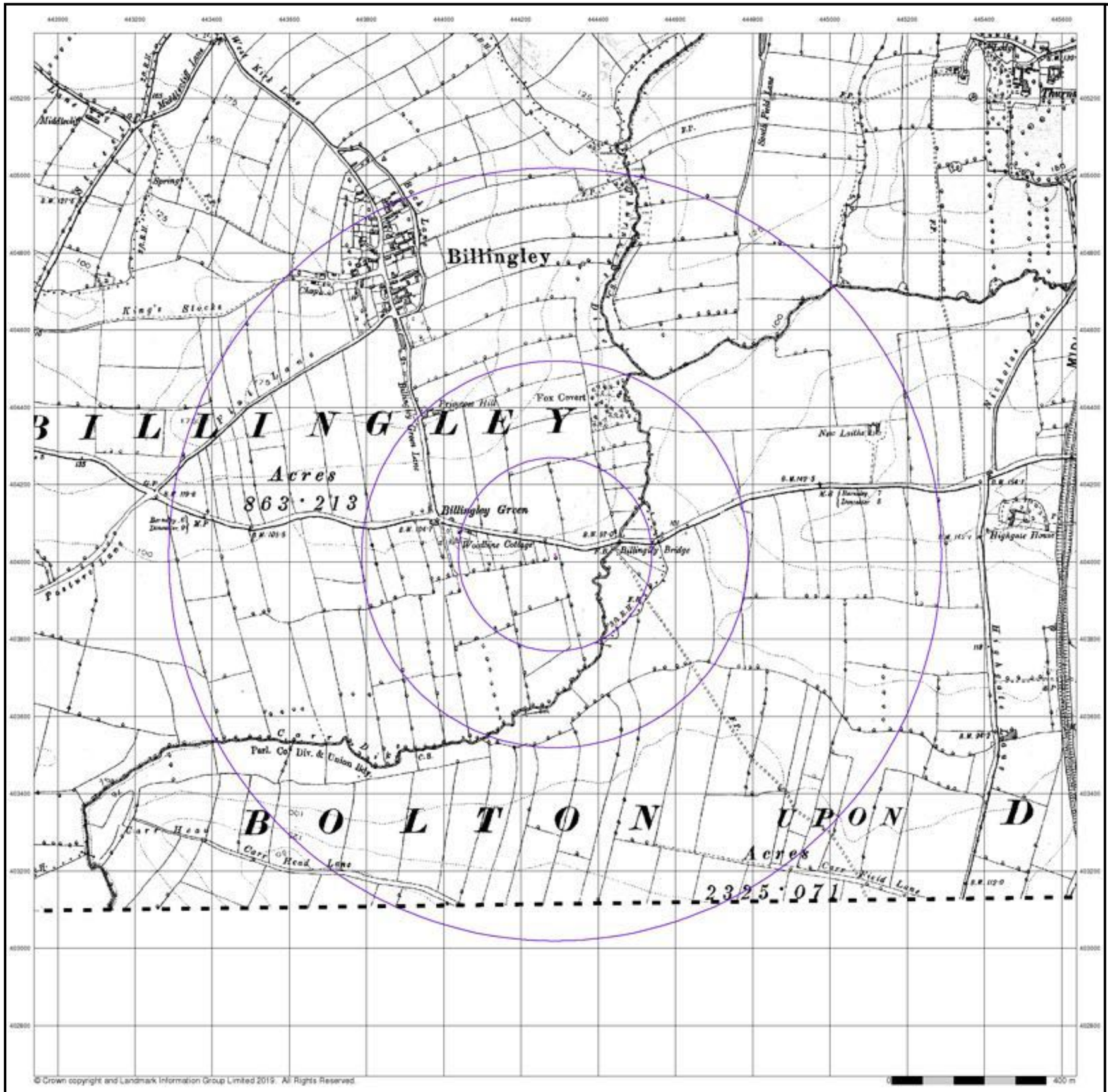

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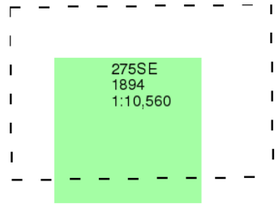
Yorkshire

Published 1894

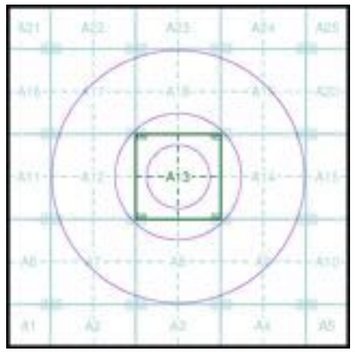
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	207258952_1_1
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National Grid Reference:	444290, 404020
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Search Buffer (m):	1000

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Yorkshire

Published 1905 - 1906

Source map scale - 1:10,560

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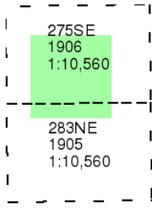
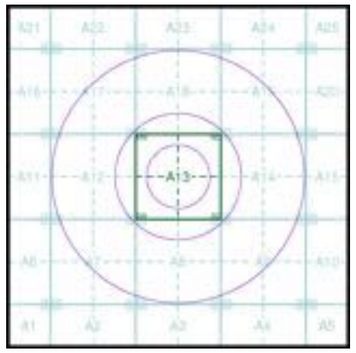
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

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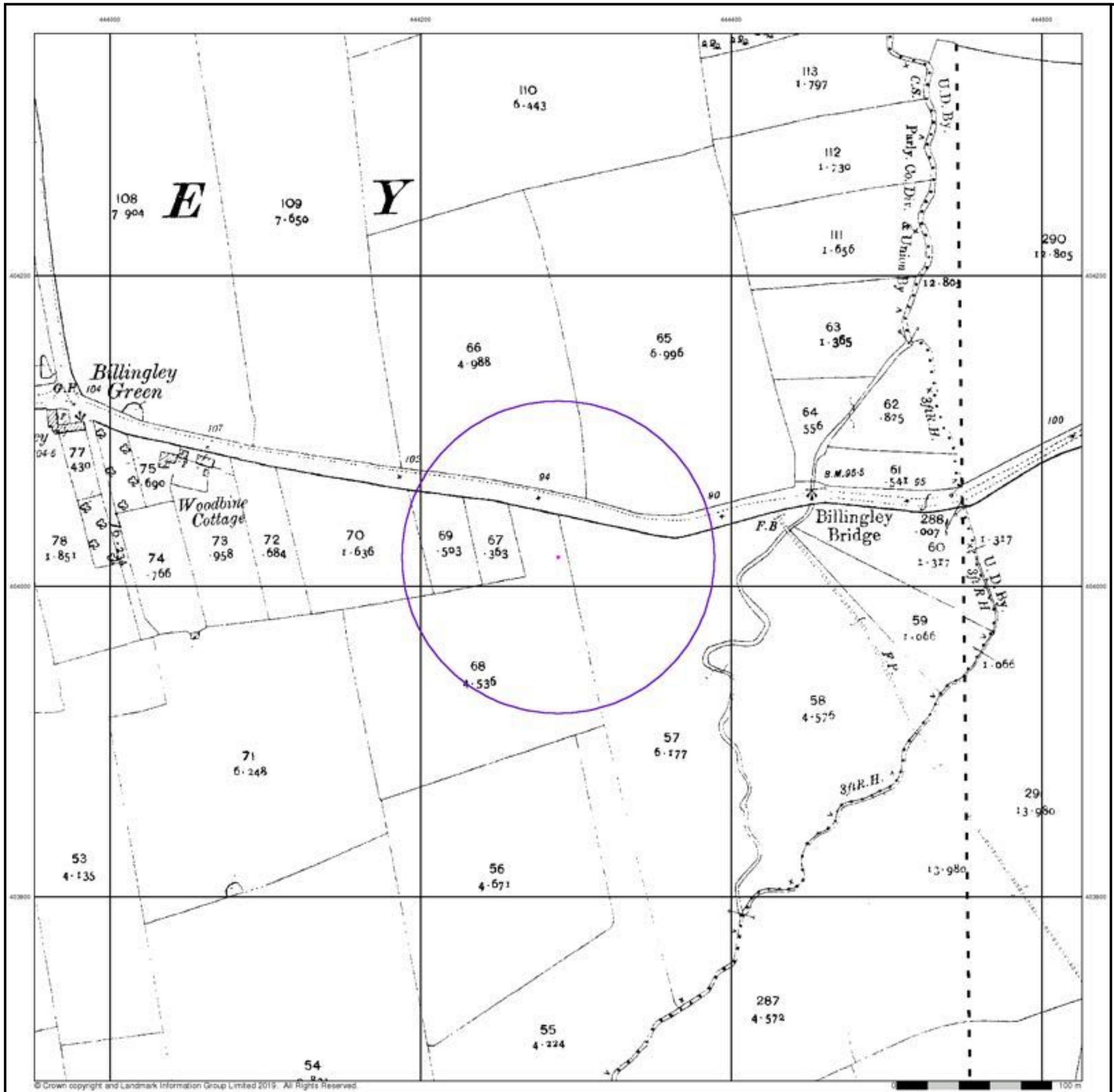

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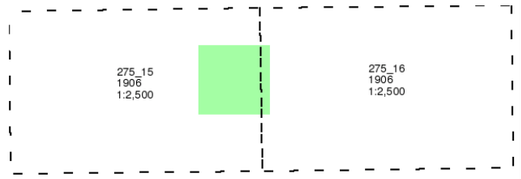
Published 1906

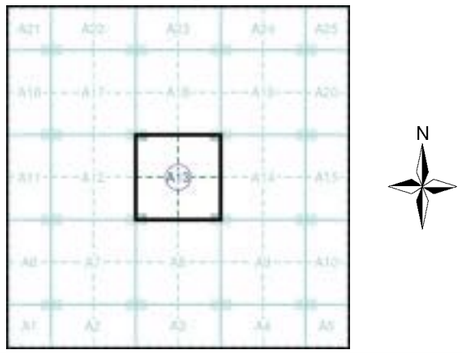
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
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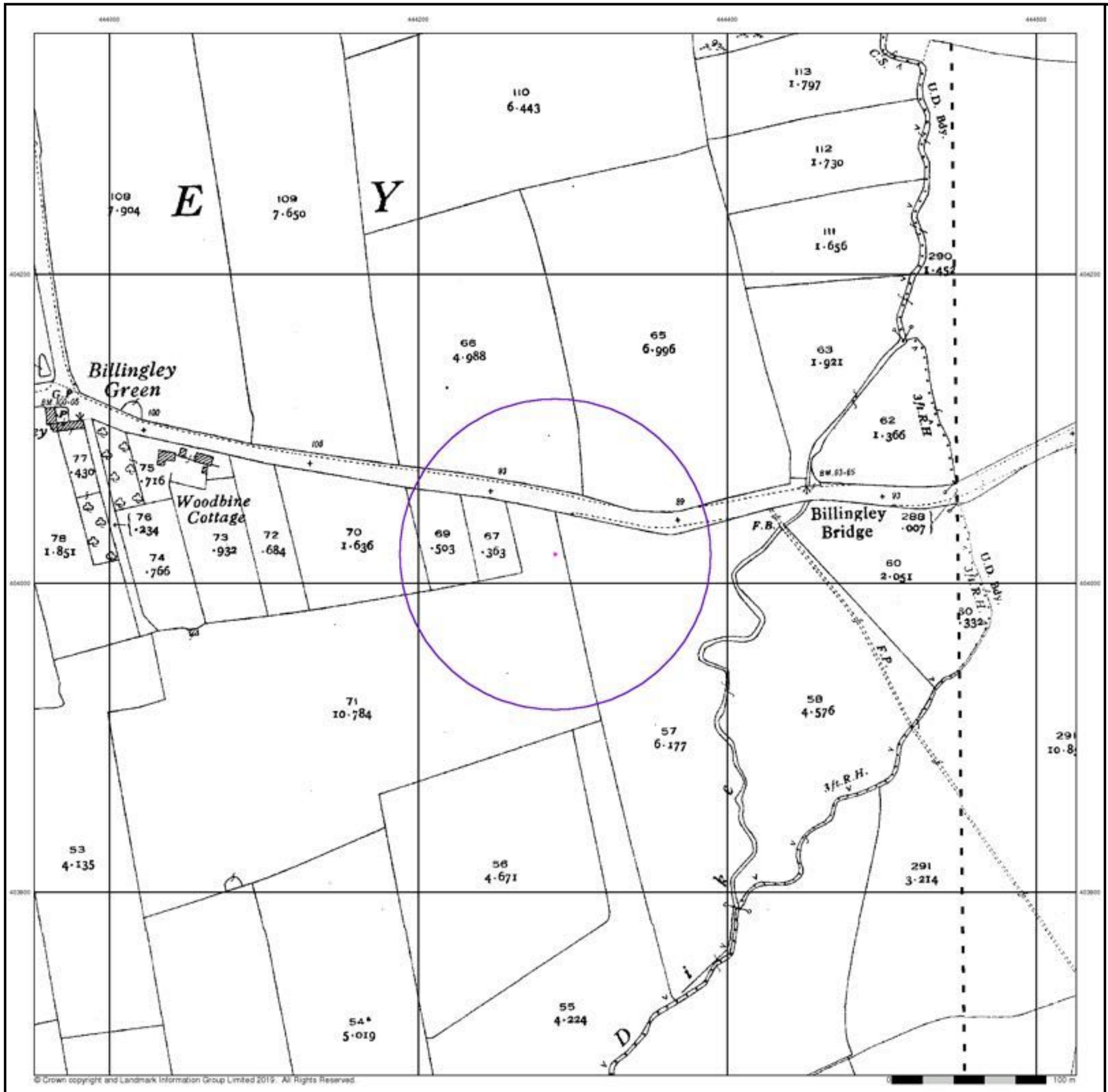

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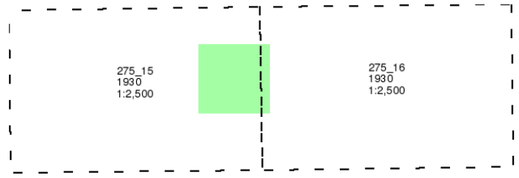
Yorkshire

Published 1930

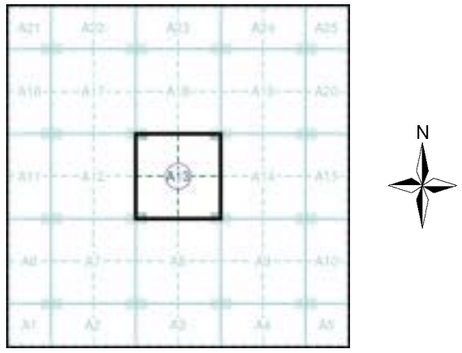
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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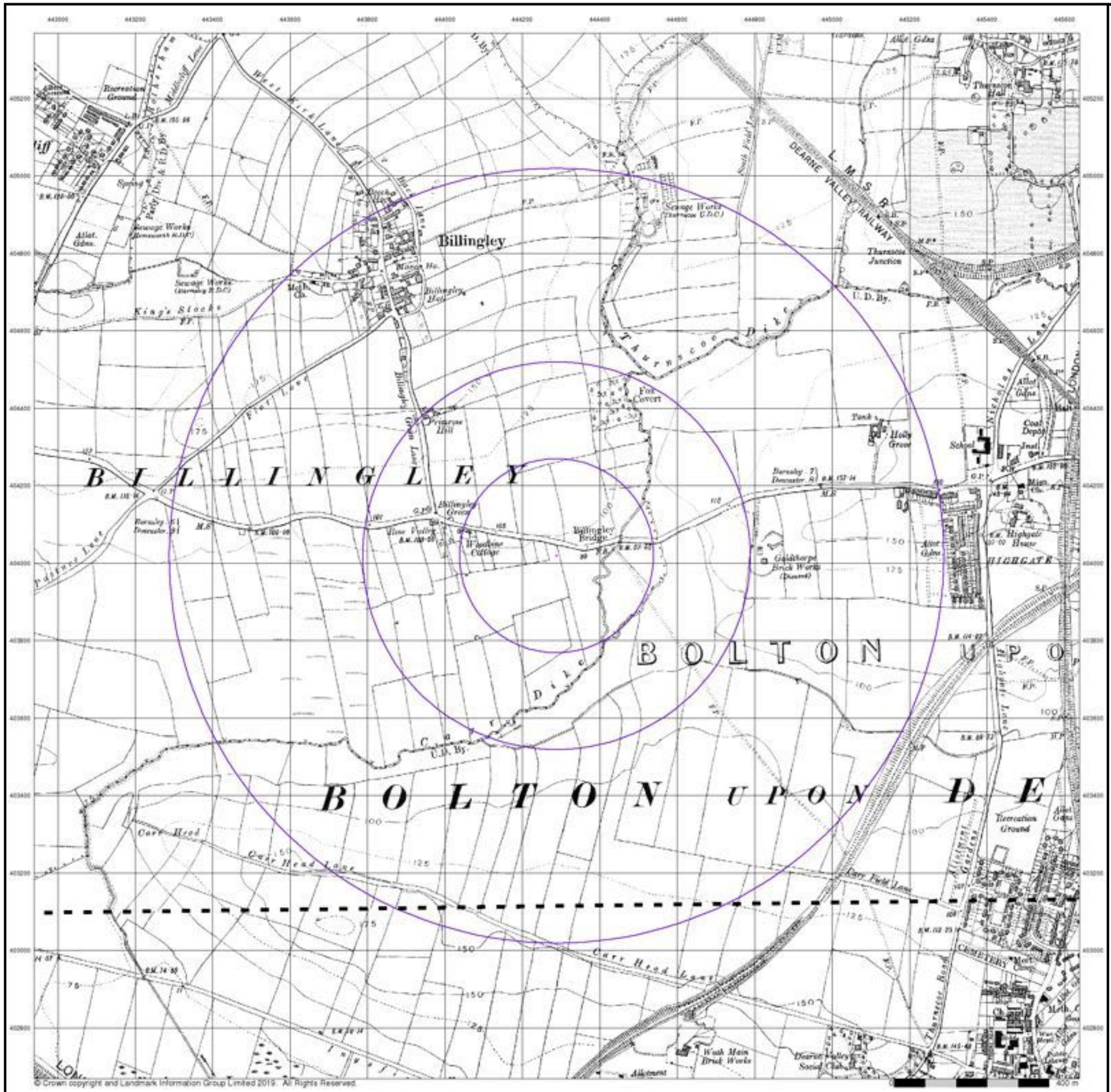

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LANDMARK INFORMATION GROUP®

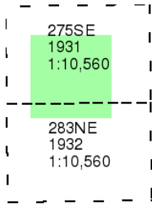
Yorkshire

Published 1931 - 1932

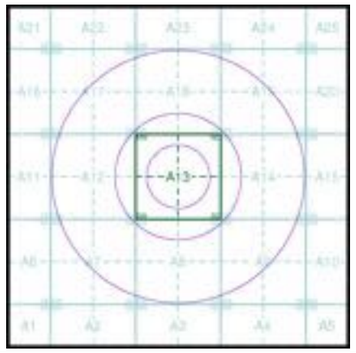
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	207258952_1_1
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Yorkshire

Published 1938

Source map scale - 1:10,560

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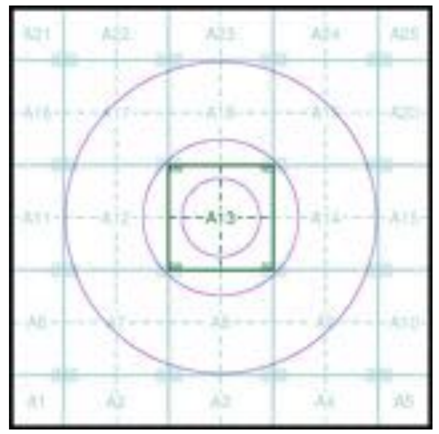
Map Name(s) and Date(s)

275SE
1938
1:10,560

283NE
1938
1:10,560

Historical Map - Slice A



N

Order Details

Order Number: 207258952_1_1
Customer Ref: 151089
National Grid Reference: 444290, 404020
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

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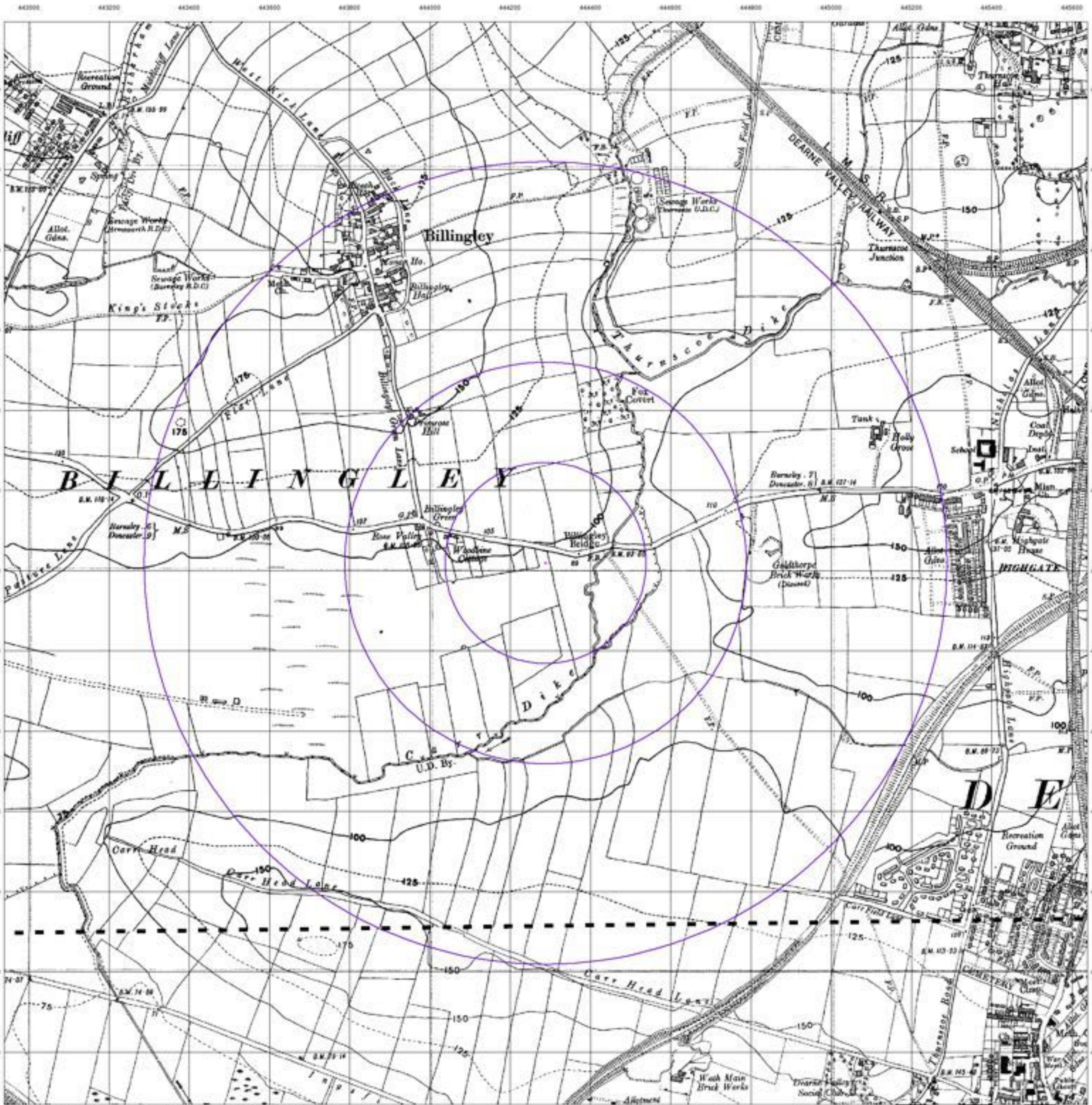

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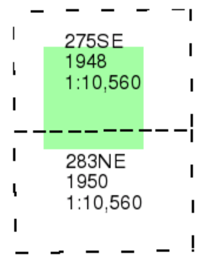
Yorkshire

Published 1948 - 1950

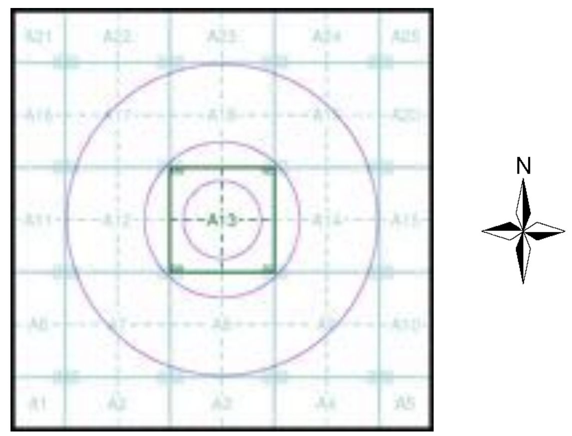
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 207258952_1_1
Customer Ref: 151089
National Grid Reference: 444290, 404020
Slice: A
Site Area (Ha): 0.01
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Site Details

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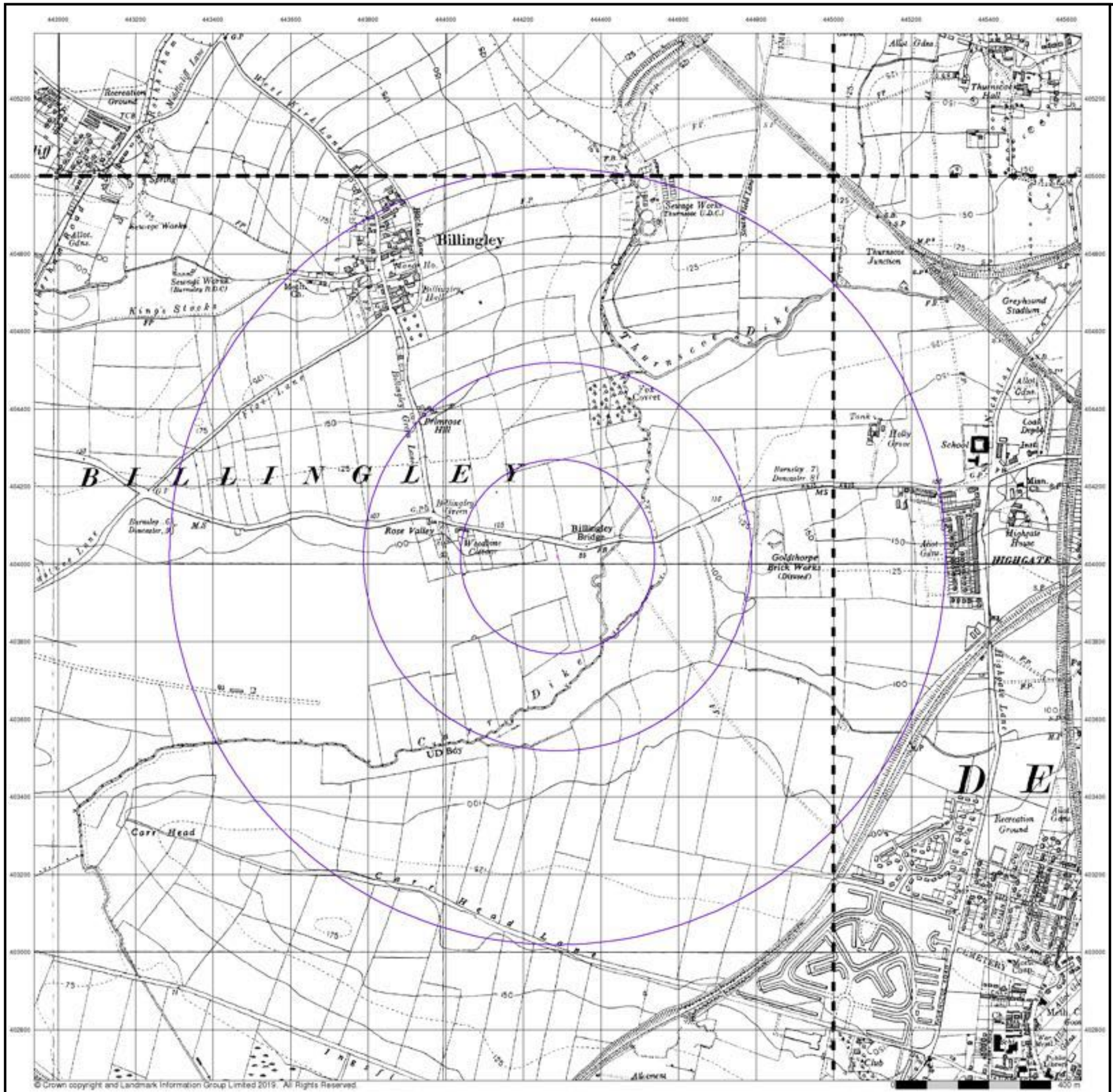

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LANDMARK INFORMATION GROUP

Ordnance Survey Plan

Published 1955 - 1956

Source map scale - 1:10,000

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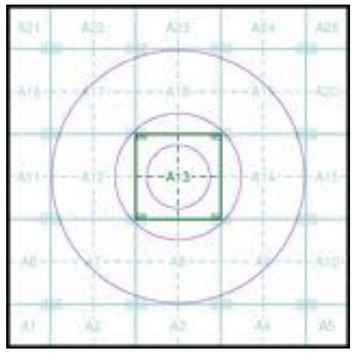
Map Name(s) and Date(s)

SE40NW 1955 1:10,560	SE40NE 1956 1:10,560
SE40SW 1956 1:10,560	SE40SE 1956 1:10,560

Historical Map - Slice A



Order Details

Order Number:	207258952_1_1
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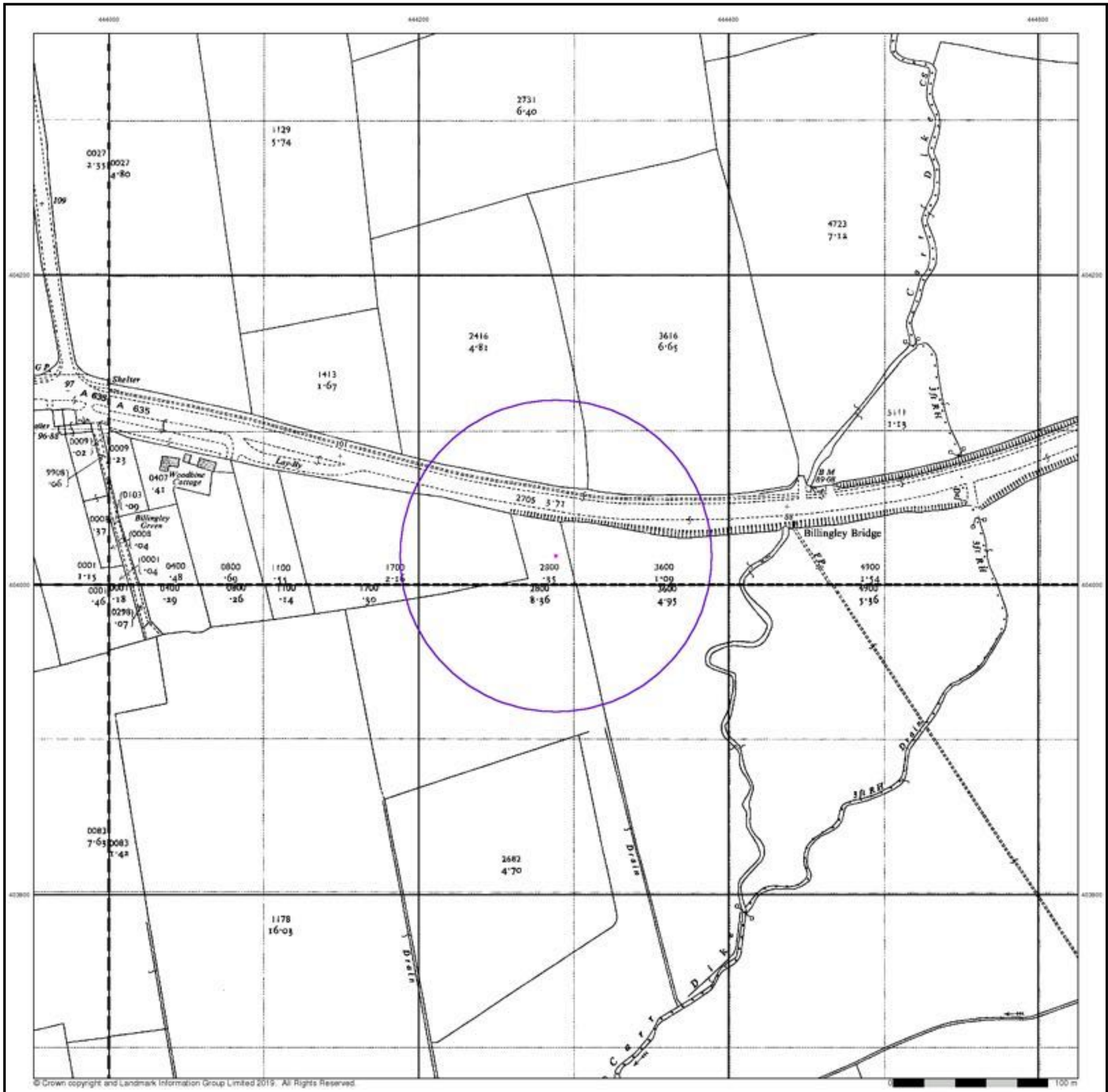

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Ordnance Survey Plan

Published 1962

Source map scale - 1:2,500

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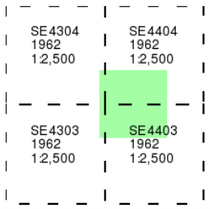
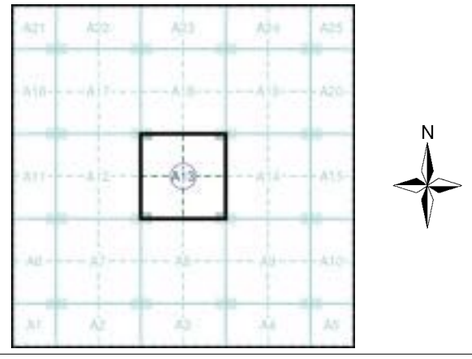
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
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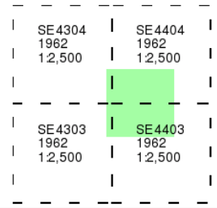
Additional SIMs

Published 1962

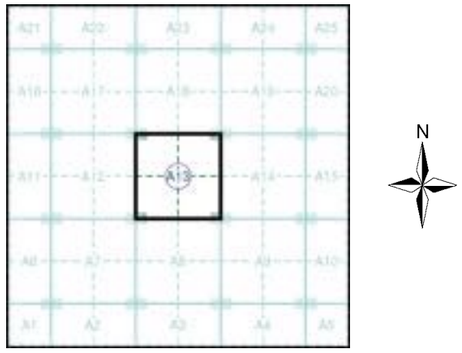
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's `Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
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Ordnance Survey Plan

Published 1966 - 1967

Source map scale - 1:10,000

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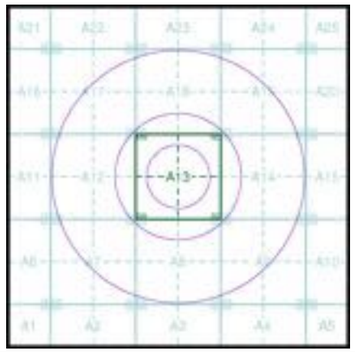
Map Name(s) and Date(s)

SE40NW 1967 1:10,560	SE40NE 1966 1:10,560
SE40SW 1967 1:10,560	SE40SE 1966 1:10,560

Historical Map - Slice A



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Ordnance Survey Plan

Published 1980 - 1988

Source map scale - 1:10,000

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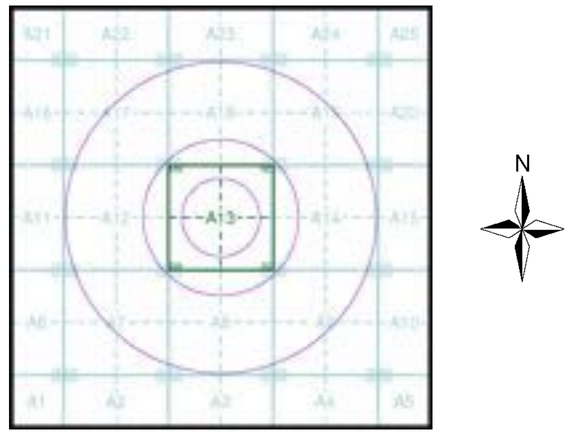
Map Name(s) and Date(s)

SE40NW 1983 1:10,000	SE40NE 1983 1:10,000
SE40SW 1980 1:10,000	SE40SE 1988 1:10,000

Historical Map - Slice A



Order Details

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Published 1989

Source map scale - 1:10,000

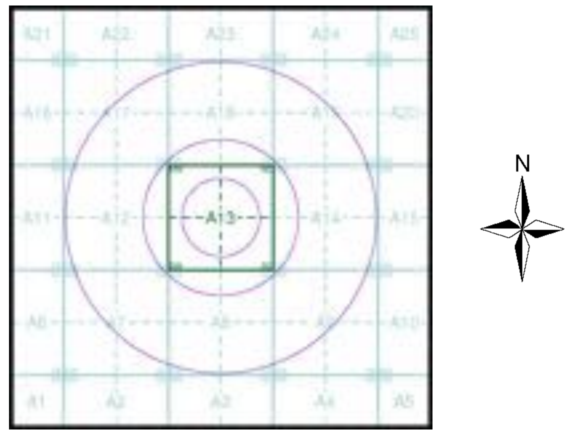
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

SE40NW
1989
1:10,000

SE40SW
1989
1:10,000

Historical Map - Slice A



Order Details

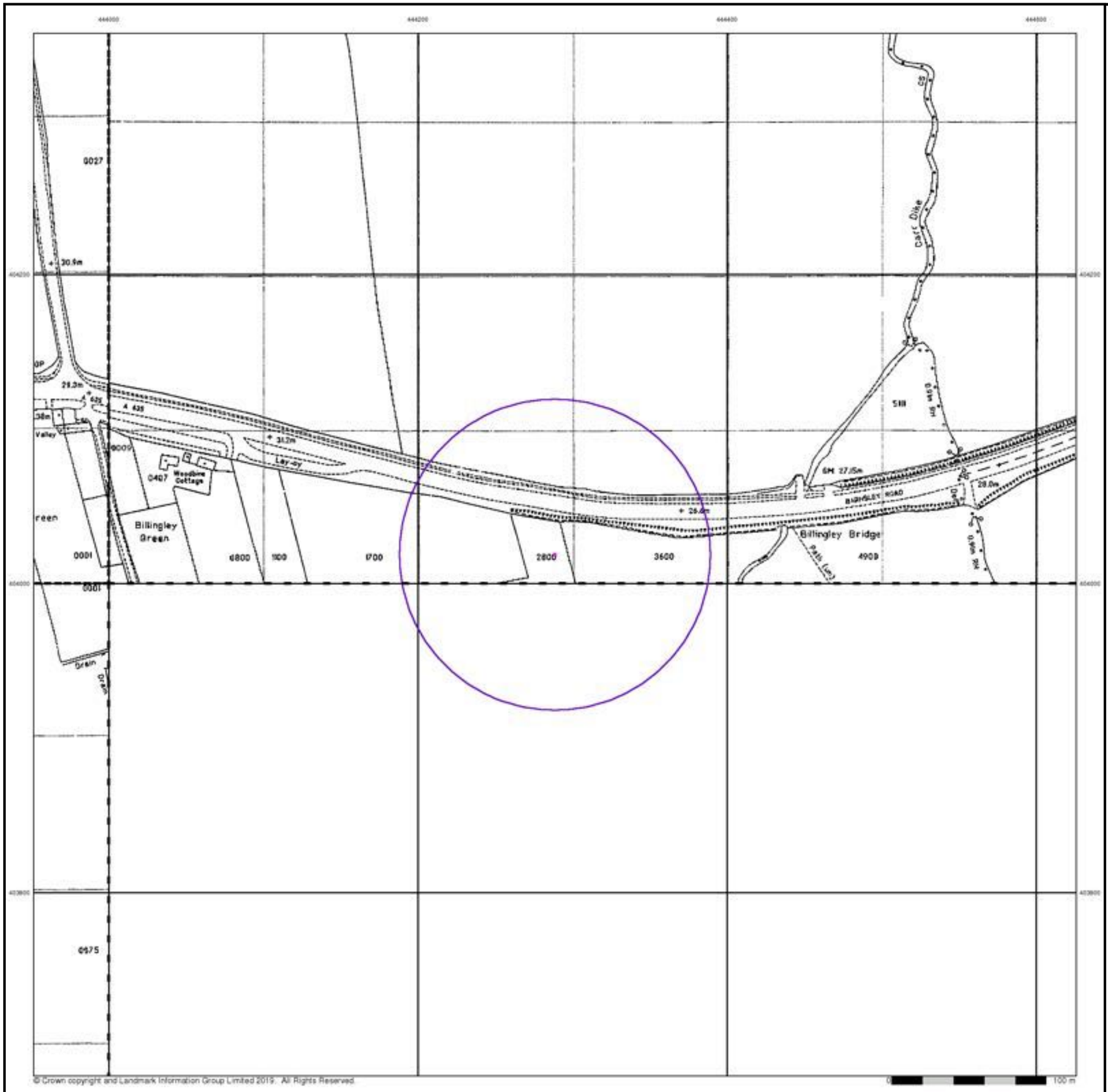
Order Number: 207258952_1_1
Customer Ref: 151089
National Grid Reference: 444290, 404020
Slice: A
Site Area (Ha): 0.01
Search Buffer (m): 1000

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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LANDMARK INFORMATION GROUP®

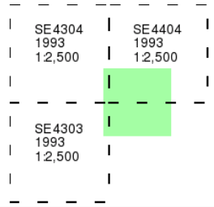
Large-Scale National Grid Data

Published 1993

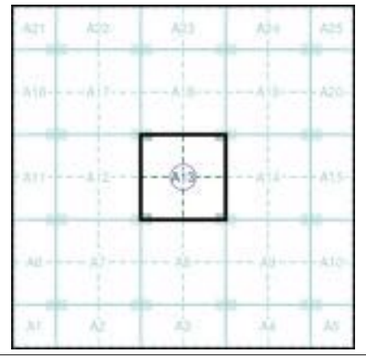
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

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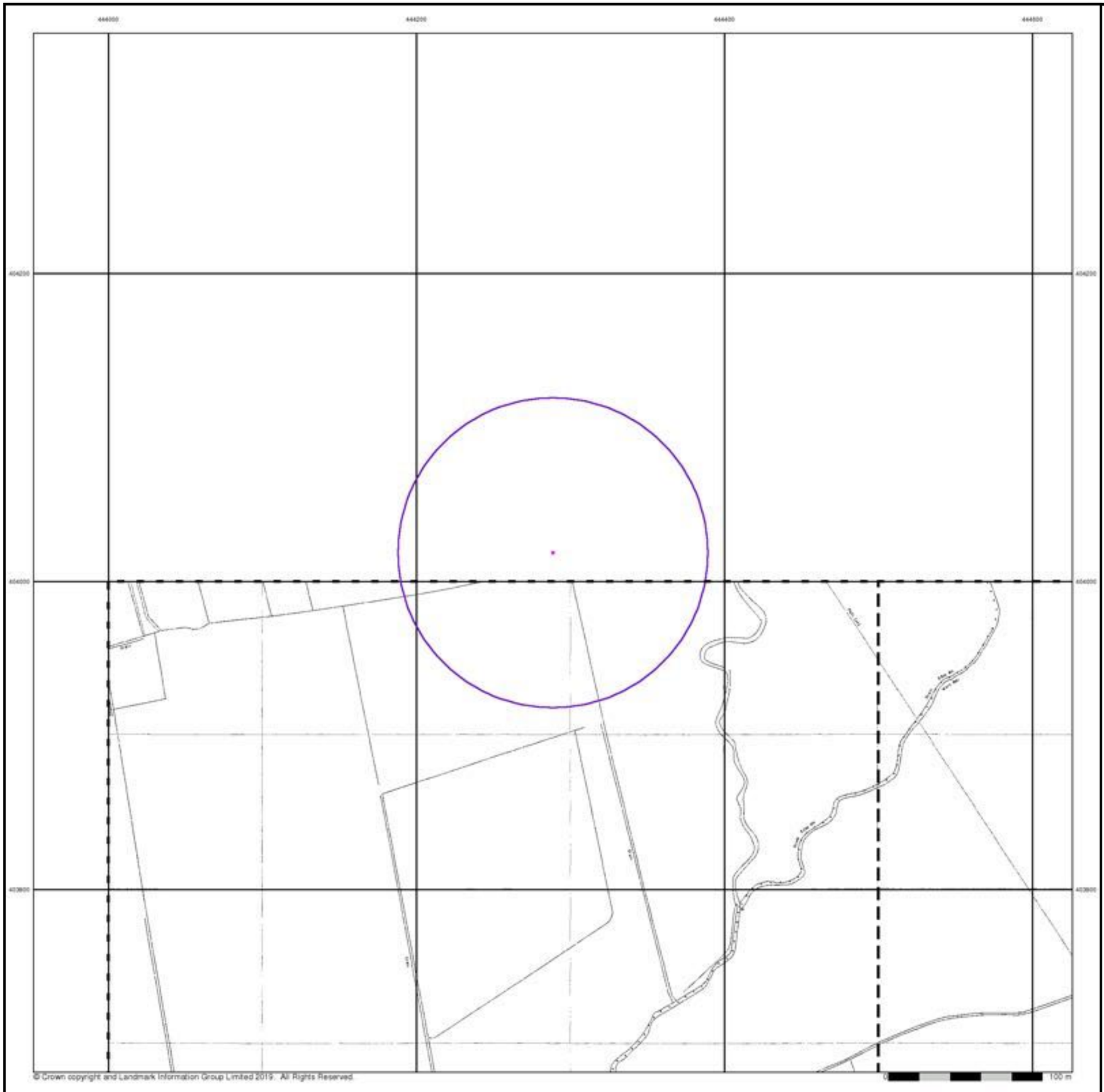

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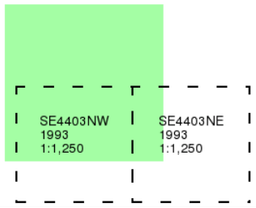
Large-Scale National Grid Data

Published 1993

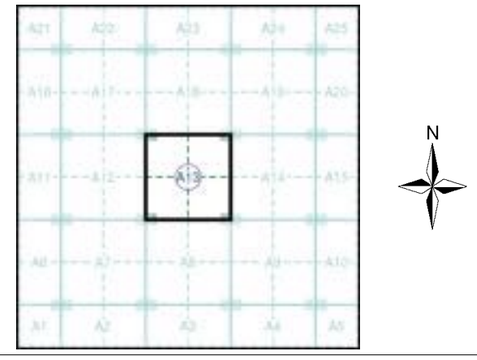
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

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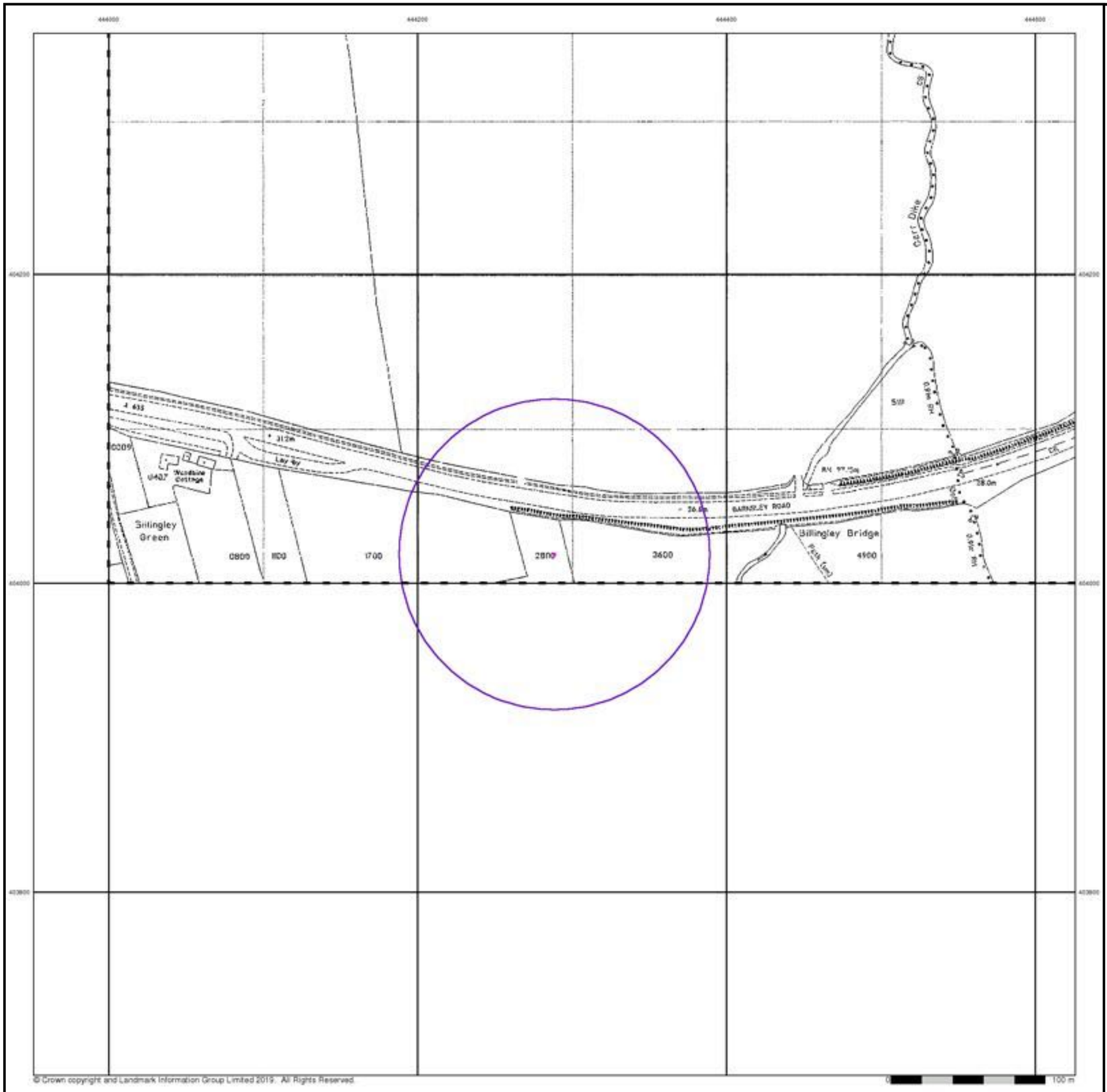

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LANDMARK INFORMATION GROUP®

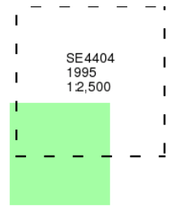
Large-Scale National Grid Data

Published 1995

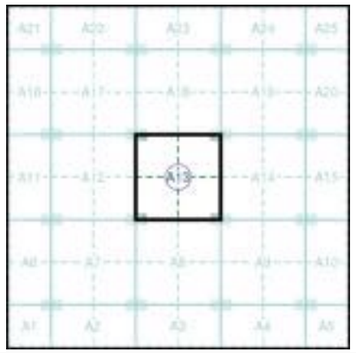
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

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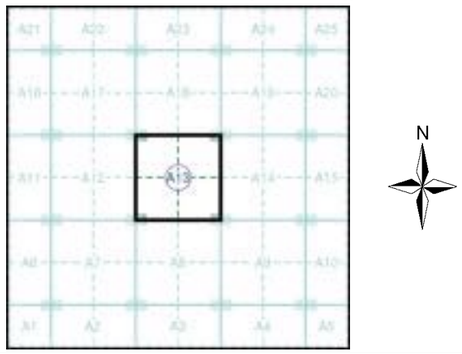
Historical Aerial Photography

Published 1999

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13

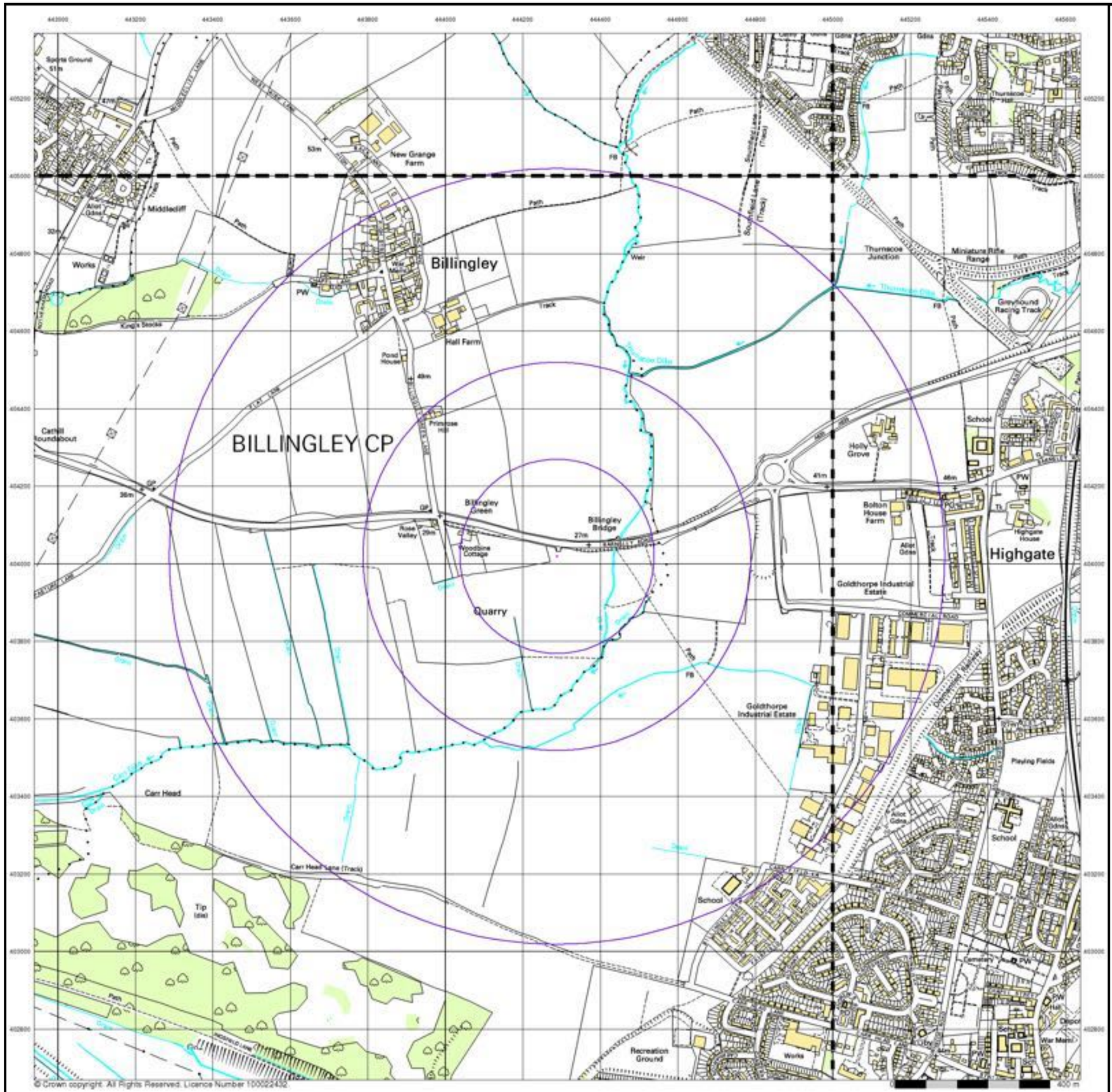


Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	100

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY



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10k Raster Mapping

Published 2000

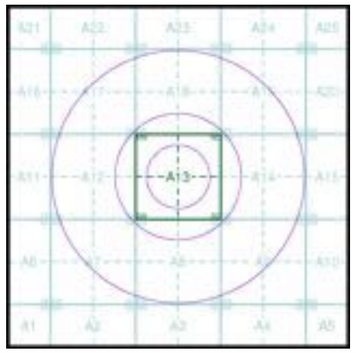
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SE40NW 2000 1:10,000	SE40NE 2000 1:10,000
SE40SW 2000 1:10,000	SE40SE 2000 1:10,000

Historical Map - Slice A



Order Details

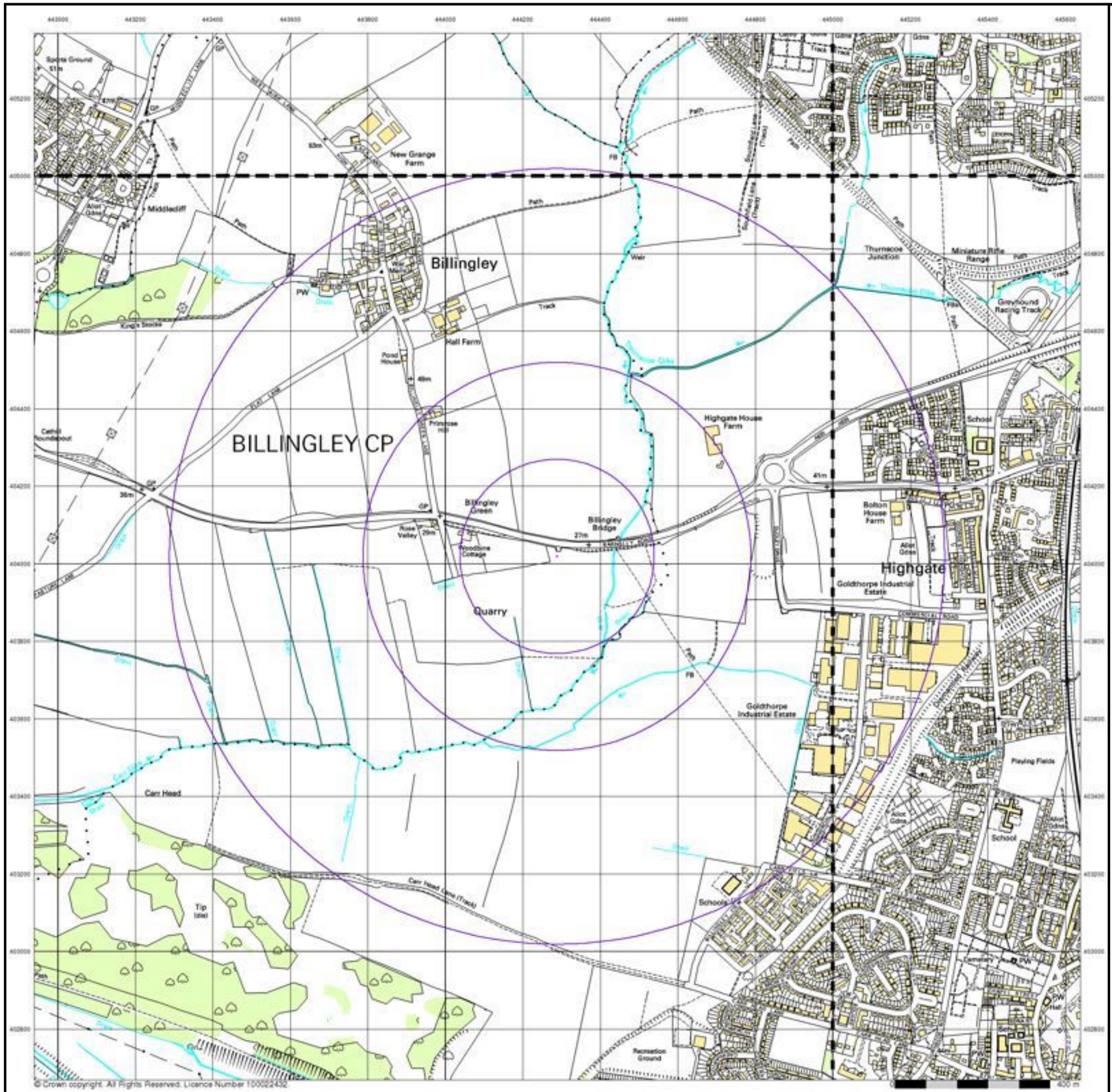
Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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10k Raster Mapping

Published 2006

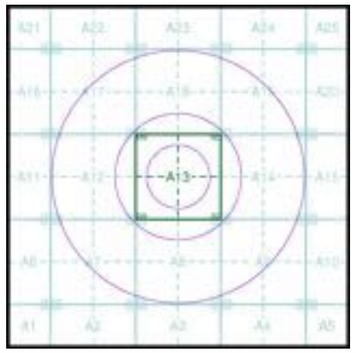
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey`s 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)

SE40NW 2006 1:10,000	SE40NE 2006 1:10,000
SE40SW 2006 1:10,000	SE40SE 2006 1:10,000

Historical Map - Slice A



Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

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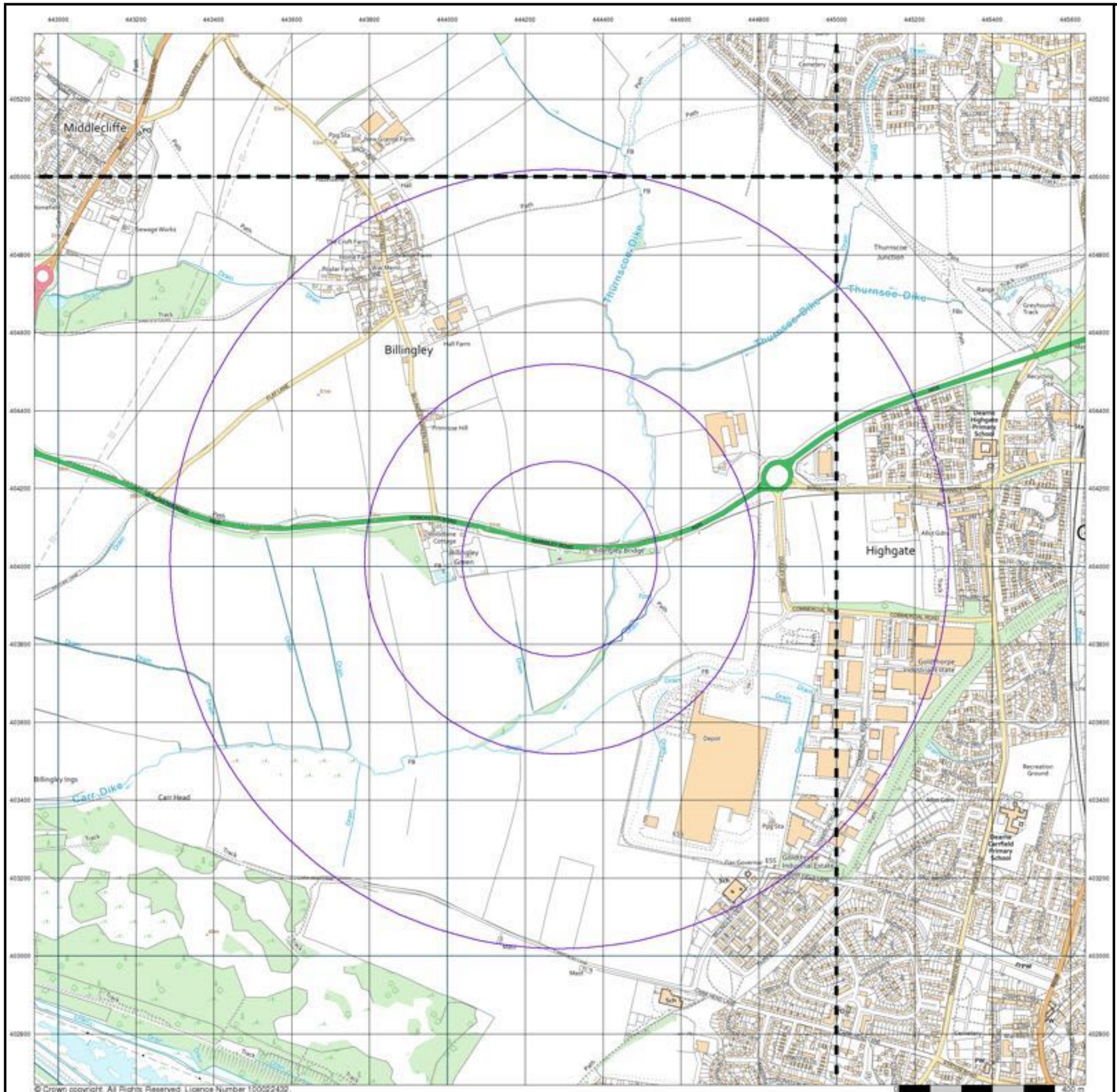

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VectorMap Local

Published 2019

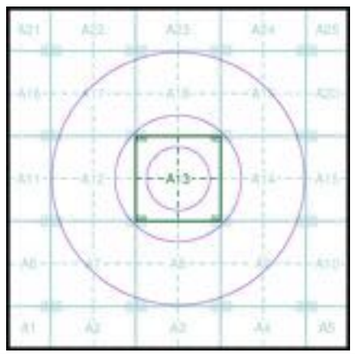
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)

SE40NW 2019 Variable	SE40NE 2019 Variable
SE40SW 2019 Variable	SE40SE 2019 Variable

Historical Map - Slice A



N

Order Details

Order Number:	207258952_1_1
Customer Ref:	151089
National Grid Reference:	444290, 404020
Slice:	A
Site Area (Ha):	0.01
Search Buffer (m):	1000

Site Details

Proposed roundabout off A635 Barnsley Road, Goldthorpe, BARNSLEY

Landmark INFORMATION GROUP

Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

APPENDIX F - EXPLORATORY LOGS

4 Neville Street
WAKEFIELD
WF1 5EF
Tel: 01924 376622
www.abbeydalebec.com

WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS01**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	28.00	E 444,321.0 N 404,096.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	D			27.70		(0.30) 0.30	Brown clayey SAND. (Topsoil).		
0.40	D			27.40		(0.30) 0.60	Brown very clayey gravelly SAND. Gravel is fine to coarse subangular of siltstone.		
0.70	D						Very stiff brown and grey very gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
1.00	SPT	N50 (5,6/7,10,15,18 for 50mm)				(0.83)			
				26.58		1.43	Window sample hole refused at 1.43m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: GH

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

4 Neville Street
WAKEFIELD
WF1 5EF
Tel: 01924 376622
www.abbeydalebec.com

WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS02**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	27.50	E 444,304.0 N 404,083.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			27.20		(0.30) 0.30	Brown clayey SAND. (Topsoil).		
0.40	D			27.00		(0.20) 0.50	Brown very clayey gravelly SAND. Gravel is fine to coarse subangular of siltstone.		
0.60	D						Very stiff brown and grey very gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
1.00	SPT	N50 (6,8/11,15,24 for 70mm)				(0.87)			
				26.13		1.37	Window sample hole refused at 1.37m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: GH

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WF1 5EF
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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS03**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	27.50	E 444,285.0 N 404,098.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			27.20		(0.30) 0.30	Brown clayey SAND. (Topsoil).		
0.60	D					(1.10)	Very stiff brown and grey very gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
1.00	SPT	N50 (4,5/7,12,21,10 for 20mm)		26.11		1.40			
							Window sample hole refused at 1.40m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: GH

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS04**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	28.00	E 444,320.0 N 404,119.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	D			27.70		(0.30) 0.30	Brown clayey SAND. (Topsoil).		
0.50	D			27.10		(0.60) 0.90	Yellow brown very sandy GRAVEL. Gravel is fine to coarse subangular of siltstone.		
1.00 1.00	D SPT	N50 (8,8/8,8,16,18 for 30mm)		26.60		(0.51) 1.41	Very dense grey sandy GRAVEL. Gravel is fine to coarse subangular of siltstone.		
							Window sample hole refused at 1.41m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: GH

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WF1 5EF
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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS05**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	27.50	E 444,352.0 N 404,102.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				27.20		(0.30) 0.30	Brown clayey SAND. (Topsoil).		
0.20	D			26.60		(0.60) 0.90	Grey mottled brown very clayey SAND.		
0.40	D			26.10		(0.51) 1.41	Grey mottled brown gravelly CLAY. Gravel is fine to coarse subangular of mudstone and siltstone.		
1.00	D								
1.00	SPT	N50 (3,4/8,14,18,10 for 30mm)					Window sample hole refused at 1.41m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: GH

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				WS06
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	26.50	E 444,378.0 N 404,077.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			26.20		(0.30) 0.30	Brown slightly clayey slightly gravelly SAND. Gravel is fine subrounded sandstone.		
0.80	D						Dense grey mottled brown slightly clayey SAND.		
1.00	SPT	N32 (4,6/7,7,7,11)				(1.40)			
1.30	D			24.80		1.70			
1.90	D						Very weak grey mottled brown SILTSTONE. Recovered as sandy gravel. Gravel is fine to coarse subangular of siltstone.		
2.00	SPT	N50 (12,12/15,17,18 for 60mm)				(0.66)			
				24.14		2.36			
							Window sample hole refused at 2.36m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WF1 5EF
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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS07**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	26.00	E 444,395.0 N 404,060.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.15	D			25.75		(0.25) 0.25	Dark brown clayey slightly gravelly SAND. Gravel is fine subrounded of sandstone, brick and coal.		
0.70	D			25.00		(0.75) 1.00	Medium dense grey mottled brown clayey SAND.		
1.00	SPT	N27 (4,4/5,6,8,8)		24.50		(0.50) 1.50	Medium dense grey mottled brown very clayey SAND.		
1.30	D								
1.80	D			23.50		(1.00) 2.50	Firm grey mottled brown sandy slightly gravelly CLAY. Gravel is fine to coarse subangular of siltstone.		
2.00	SPT	N21 (4,4/5,5,5,6)							
2.20	D								
2.90	D			22.90		(0.60) 3.10	Very weak brown SILTSTONE. Recovered as sandy gravel. Gravel is fine to coarse subangular of siltstone.		
3.00	SPT	N29 (5,6/7,7,7,8)							
3.70	D					(1.30)	Very weak grey SILTSTONE. Recovered as sandy gravel. Gravel is fine to coarse subangular of siltstone.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

4 Neville Street
WAKEFIELD
WF1 5EF
Tel: 01924 376622
www.abbeydalebec.com

WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS07**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	26.00	E 444,395.0 N 404,060.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 2 of 2

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
4.00	SPT	N50 (7,7/10,13,17,10 for 20mm)		21.61		4.40	Very weak grey SILTSTONE. Recovered as sandy gravel. Gravel is fine to coarse subangular of siltstone. *(continued)*		
							Window sample hole refused at 4.40m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS08**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	26.50	E 444,358.0 N 404,059.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			26.20		(0.30) 0.30	Dark brown slightly clayey slightly gravelly SAND. Gravel is fine to medium subrounded of sandstone and fine subangular of coal.		
0.40	D			25.85		(0.35) 0.65	Brown slightly clayey SAND.		
0.90	D			25.50		(0.35) 1.00	Medium dense grey mottled orange/brown very clayey SAND.		
1.00	SPT	N20 (3,3/4,4,6,6)					Stiff brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is fine to medium subangular of siltstone.		
1.80	D					(1.10)			
2.00	SPT	N22 (4,4/5,5,6,6)		24.40		2.10			
2.50	D						Very weak brown SILTSTONE. Recovered as slightly clayey sandy gravel. Gravel is fine to coarse subangular of siltstone.		
3.00	SPT	N50 (7,8/14,17,17,2 for 5mm)				(1.28)			
				23.12		3.38			
							Window sample hole refused at 3.38m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS09**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	27-09-21	26.50	E 444,326.0 N 404,061.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	D			26.25		(0.25) 0.25	Dark brown slightly clayey slightly gravelly SAND. Gravel is fine to medium subangular to subrounded of sandstone, brick and coal.		
0.60	D			25.70		(0.55) 0.80	Light brown clayey slightly gravelly SAND. Gravel is fine subrounded of sandstone.		
0.90	D						Stiff mottled grey and orange sandy CLAY.		
1.00	SPT	N22 (5,4/5,5,6,6)							
1.50	D			24.70		(1.00) 1.80			
1.90	D						Stiff mottled grey and orange sandy gravelly CLAY. Gravel is fine to medium subangular of siltstone.		
2.00	SPT	N50 (7,8/16,22,12 for 40mm)		24.16		(0.54) 2.34			
							Window sample hole refused at 2.34m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				WS10
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	28-09-21	27.00	E 444,352.0 N 404,075.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
				26.70		(0.30) 0.30	Dark brown slightly gravelly clayey SAND. Gravel is fine to medium subrounded of sandstone.		
0.20	D								
							Medium dense mottled orange and grey very clayey slightly gravelly SAND. Gravel is fine to medium subrounded of sandstone.		
0.90	D								
1.00	SPT	N20 (3,3/4,4,5,7)		25.30		(1.40) 1.70			
1.80	D						Very dense mottled orange and grey very clayey slightly gravelly SAND. Gravel is fine to medium subangular of siltstone.		
2.00	SPT	N50 (8,11/18,32 for 60mm)		24.72		(0.59) 2.29			
							Window sample hole refused at 2.29m bgl.		

Boring Progress and Water Observations					
Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				WS11
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	28-09-21	26.50	E 444,286.0 N 404,067.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.10	D			26.30		(0.20) 0.20	Dark brown slightly gravelly clayey SAND. Gravel is fine to medium subrounded of sandstone.		
0.50	D			25.85		(0.45) 0.65	Light brown slightly clayey slightly gravelly SAND. Gravel is fine to medium subrounded of sandstone and fine subangular of coal.		
1.00	SPT	N21 (3,3/4,5,5,7)				(1.70)	Medium dense becoming very dense mottled grey and orange clayey SAND.		
1.80	D								
2.00	SPT	N50 (7,10/16,19,15 for 50mm)		24.15		2.35			
							Window sample hole refused at 2.35m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS12**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	28-09-21	27.00	E 444,269.0 N 404,079.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			26.70		(0.30) 0.30	Dark brown slightly gravelly clayey SAND. Gravel is fine to medium subrounded of sandstone and fine subangular of coal.		
0.55	D			26.25		(0.45) 0.75	Orangey brown slightly clayey slightly gravelly SAND. Gravel is fine to medium subangular to subrounded of sandstone, coal and siltstone.		
0.80	D								
1.00	SPT	N50 (6,8,14,18,18 for 50mm)		25.65		(0.60) 1.35	Very dense orange mottled brown clayey SAND.		
							Window sample hole refused at 1.35m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

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WINDOW SAMPLE LOG

Abbeydale
Building Environment Consultants

Project				HOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				**WS13**
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	28-09-21	26.50	E 444,249.0 N 404,073.0	
Method/Plant Used: Global Geo4 Window Sampling Rig				Sheet: 1 of 1

SAMPLES & TESTS			Water	STRATA				Geology	Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION		
0.20	D			26.20		(0.30) 0.30	Dark brown slighlty clayey SAND.		
0.70	D					(0.80)	Medium dense Mottled grey and orange clayey slightly gravelly SAND. Gravel is fine to coarse subrounded of sandstone and fine subangular of coal.		
1.00	SPT	N22 (4,4/5,5,6,6)		25.40		1.10			
1.80	D					(1.23)	Medium dense becoming very dense mottled grey and orange very clayey gravelly SAND. Gravel is fine to coarse subrounded of sandstone and fine to coarse subangular of siltstone.		
2.00	SPT	N50 (7,8/13,22,15 for 30mm)		24.17		2.33			
							Window sample hole refused at 2.33m bgl.		

Boring Progress and Water Observations

Date	Time	Depth	Core/casing Depth	Core/casing Dia. mm	Water Dpth

GENERAL REMARKS

CAT used to check for services prior to boring.
No groundwater encountered. Stable.
Backfilled with arisings.

All dimensions in metres Scale 1:25	Client: BMBC	Contractor: RP Drilling	Logged By: OS

ABEC WINDOW SAMPLE 151089.GPJ ABEC TEMPLATE.GDT 1/10/21

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WAKEFIELD
WF1 5EF
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OPENHOLE LOG

Abbeydale

Project				OPENHOLE No
A635 Barnsley Road, Goldthorpe, South Yorkshire				OH12
Job No	Date	Ground level (m AOD)	Co-Ordinates (National)	
151089	23-09-21	28.00	E 444,330.0 N 404,102.0	
Method/Plant Used Dando				Sheet 1 of 1

RUN DETAILS			STRATA						
Depth / Date	Rate Min/rod	Flush %	Red'cd Level	Legend	Depth (Thick-ness)	DESCRIPTION Flush	Detail	Main	Geology / Instrument/ Backfill
			27.70		0.30			Brown clay [TOPSOIL].	
			26.25		1.75			Brownish yellow sandy GRAVEL.	
					(2.25)			Brownish grey MUDSTONE.	
			24.00		4.00				
								Greyish brown SILTSTONE.	
			23.50		4.50			Orangeish brown SANDSTONE.	
			23.00		(2.50) 5.00			Brownish grey MUDSTONE.	
			20.50		7.50				
					(9.25)			Grey MUDSTONE.	
			11.25		16.75				
								Dark grey MUDSTONE.	
			10.80		17.20			Dark grey / black SHALE.	
			9.90		18.10			Grey MUDSTONE.	
			8.75		19.25				
			7.80		20.20			Black COAL.	
					(2.30)			Black / grey MUDSTONE (Seatearth).	
			5.50		22.50				
					(7.50)			Grey MUDSTONE.	
			-2.00		30.00				
								Bottom of rotary open hole at 30.00m bgl.	

Drilling Progress and Water Observations

Date	Time	Depth	Casing	WL m	Water Strike	Water Standing

GENERAL REMARKS

Hand pit dug. CAT used to scan for services prior to boring.

All dimensions in metres Scale 1:200	Client BMBC	Contractor Ace Drilling	Logged By RS

ABEC OPENHOLE 151089.GPJ ABEC TEMPLATE.GDT 1/11/21

APPENDIX G - LABORATORY TESTING RESULTS

2531

ANALYTICAL TEST REPORT

Contract no: 100946

Contract name: A635 Barnsley Road, Goldthorpe

Client reference: 151089

Clients name: Abbeydale BEC

Clients address: 4 Neville Street
Wakefield
WF1 5EF

Samples received: 30 September 2021

Analysis started: 30 September 2021

Analysis completed: 06 October 2021

Report issued: 06 October 2021

Notes:
Opinions and interpretations expressed herein are outside the UKAS accreditation scope.
Unless otherwise stated, Chemtech Environmental Ltd was not responsible for sampling.
All testing carried out at Unit 6 Parkhead, Stanley, DH9 7YB, except for subcontracted testing.
Methods, procedures and performance data are available on request.
Results reported herein relate only to the material supplied to the laboratory.
This report shall not be reproduced except in full, without prior written approval.
Samples will be disposed of 6 weeks from initial receipt unless otherwise instructed.

Key:
U UKAS accredited test
M MCERTS & UKAS accredited test
$ Test carried out by an approved subcontractor
I/S Insufficient sample to carry out test
N/S Sample not suitable for testing
NAD No Asbestos Detected

Approved by:

Rachael Burton
Customer Support Squad Leader

Chemtech Environmental Limited

SAMPLE INFORMATION

MCERTS (Soils):

Soil descriptions are only intended to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions. MCERTS accreditation applies for sand, clay and loam/topsoil, or combinations of these whether these are derived from naturally occurring soils or from made ground, as long as these materials constitute the major part of the sample. Other materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

All results are reported on a dry basis. Samples dried at no more than 30°C in a drying cabinet.
Analytical results are inclusive of stones.

Lab ref	Sample id	Depth (m)	Sample description	Material removed	% Removed	% Moisture
100946-1	WS1	0.10	Clayey Sand with Gravel & Roots	-	-	14.7
100946-2	WS6	0.20	Clayey Sand with Gravel & Roots	-	-	15.7
100946-3	WS11	0.50	Clayey Sand with Gravel & Roots	-	-	13.5
100946-4	WS12	0.20	Clayey Sand with Gravel & Roots	-	-	14.0

Chemtech Environmental Limited

SOILS

Lab number			100946-1	100946-2	100946-3	100946-4
Sample id			WS1	WS6	WS11	WS12
Depth (m)			0.10	0.20	0.50	0.20
Date sampled			27/09/2021	28/09/2021	28/09/2021	27/09/2021
Test	**Method**	**Units**				
Arsenic (total)	CE127 M	mg/kg As	11	4.5	11	9.3
Beryllium (total)	CE127 U	mg/kg Be	1.3	1.6	1.2	<1
Boron (water soluble)	CE063 M	mg/kg B	1.4	0.8	1.0	0.8
Cadmium (total)	CE127 M	mg/kg Cd	0.3	<0.2	0.4	2.4
Chromium (total)	CE127 M	mg/kg Cr	59	51	64	50
Chromium (III)	CE208	mg/kg CrIII	59	51	64	50
Chromium (VI)	CE146	mg/kg CrVI	<1	<1	<1	<1
Copper (total)	CE127 M	mg/kg Cu	23	17	24	75
Lead (total)	CE127 M	mg/kg Pb	37	22	42	153
Mercury (total)	CE127 M	mg/kg Hg	<0.5	<0.5	<0.5	<0.5
Nickel (total)	CE127 M	mg/kg Ni	26	30	27	17
Selenium (total)	CE127 M	mg/kg Se	1.1	1.0	1.1	0.9
Vanadium (total)	CE127 M	mg/kg V	39	42	37	29
Zinc (total)	CE127 M	mg/kg Zn	83	97	96	156
pH	CE004 M	units	7.8	7.8	7.7	7.1
Sulphate (2:1 water soluble)	CE061 U	mg/l SO_4	<10	11	12	34
Cyanide (free)	CE077	mg/kg CN	<1	<1	<1	<1
Cyanide (total)	CE077	mg/kg CN	<1	<1	<1	<1
Phenols (total)	CE078	mg/kg PhOH	<0.5	<0.5	<0.5	<0.5
Total Organic Carbon (TOC)	CE197	% w/w C	2.0	0.4	1.9	2.0
Estimate of OMC (calculated from TOC)	CE197	% w/w	3.4	0.8	3.3	3.4
PAH						
Naphthalene	CE087 M	mg/kg	0.02	0.02	<0.02	0.03
Acenaphthylene	CE087 M	mg/kg	<0.02	<0.02	<0.02	<0.02
Acenaphthene	CE087 M	mg/kg	<0.02	<0.02	<0.02	<0.02
Fluorene	CE087 U	mg/kg	<0.02	<0.02	<0.02	<0.02
Phenanthrene	CE087 M	mg/kg	0.10	0.03	<0.02	0.08
Anthracene	CE087 U	mg/kg	<0.02	<0.02	<0.02	<0.02
Fluoranthene	CE087 M	mg/kg	0.16	0.07	<0.02	0.16
Pyrene	CE087 M	mg/kg	0.14	0.06	<0.02	0.13
Benzo(a)anthracene	CE087 U	mg/kg	0.06	0.02	<0.02	0.06
Chrysene	CE087 M	mg/kg	0.06	0.03	<0.03	0.07
Benzo(b)fluoranthene	CE087 M	mg/kg	0.08	0.05	<0.02	0.11
Benzo(k)fluoranthene	CE087 M	mg/kg	0.03	<0.03	<0.03	0.04
Benzo(a)pyrene	CE087 U	mg/kg	0.05	0.03	<0.02	0.07
Indeno(123cd)pyrene	CE087 M	mg/kg	0.04	0.02	<0.02	0.05
Dibenz(ah)anthracene	CE087 M	mg/kg	<0.02	<0.02	<0.02	<0.02
Benzo(ghi)perylene	CE087 M	mg/kg	0.03	<0.02	<0.02	0.04
PAH (total of USEPA 16)	CE087	mg/kg	0.79	0.34	<0.34	0.84
Subcontracted analysis						
Asbestos (qualitative)	$	-	NAD	NAD	NAD	NAD

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METHOD DETAILS

METHOD	SOILS	METHOD SUMMARY	SAMPLE	STATUS	LOD	UNITS
CE127	Arsenic (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg As
CE127	Beryllium (total)	Aqua regia digest, ICP-MS	Dry	U	1	mg/kg Be
CE063	Boron (water soluble)	Hot water extract, ICP-OES	Dry	M	0.5	mg/kg B
CE127	Cadmium (total)	Aqua regia digest, ICP-MS	Dry	M	0.2	mg/kg Cd
CE127	Chromium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cr
CE208	Chromium (III)	Calculation: Cr (total) - Cr (VI)	Dry		1	mg/kg CrIII
CE146	Chromium (VI)	Acid extraction, Colorimetry	Dry		1	mg/kg CrVI
CE127	Copper (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Cu
CE127	Lead (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Pb
CE127	Mercury (total)	Aqua regia digest, ICP-MS	Dry	M	0.5	mg/kg Hg
CE127	Nickel (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg Ni
CE127	Selenium (total)	Aqua regia digest, ICP-MS	Dry	M	0.3	mg/kg Se
CE127	Vanadium (total)	Aqua regia digest, ICP-MS	Dry	M	1	mg/kg V
CE127	Zinc (total)	Aqua regia digest, ICP-MS	Dry	M	5	mg/kg Zn
CE004	pH	Based on BS 1377, pH Meter	As received	M	-	units
CE061	Sulphate (2:1 water soluble)	Aqueous extraction, ICP-OES	Dry	U	10	mg/l SO_4
CE077	Cyanide (free)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE077	Cyanide (total)	Extraction, Continuous Flow Colorimetry	As received		1	mg/kg CN
CE078	Phenols (total)	Extraction, Continuous Flow Colorimetry	As received		0.5	mg/kg PhOH
CE197	Total Organic Carbon (TOC)	Carbon Analyser	Dry		0.1	% w/w C
CE197	Estimate of OMC (calculated from TOC)	Calculation from Total Organic Carbon	Dry		0.1	% w/w
CE087	Naphthalene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Acenaphthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Fluorene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Phenanthrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(a)anthracene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Chrysene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(b)fluoranthene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(k)fluoranthene	Solvent extraction, GC-MS	As received	M	0.03	mg/kg
CE087	Benzo(a)pyrene	Solvent extraction, GC-MS	As received	U	0.02	mg/kg
CE087	Indeno(123cd)pyrene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Dibenz(ah)anthracene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	Benzo(ghi)perylene	Solvent extraction, GC-MS	As received	M	0.02	mg/kg
CE087	PAH (total of USEPA 16)	Solvent extraction, GC-MS	As received		0.34	mg/kg
$	Asbestos (qualitative)	HSG 248, Microscopy	Dry	U	-	-

Chemtech Environmental Limited

DEVIATING SAMPLE INFORMATION

Comments
Sample deviation is determined in accordance with the UKAS note "Guidance on Deviating Samples" and based on reference standards and laboratory trials.
For samples identified as deviating, test result(s) may be compromised and may not be representative of the sample at the time of sampling.
Chemtech Environmental Ltd cannot be held responsible for the integrity of sample(s) received if Chemtech Environmental Ltd did not undertake the sampling. Such samples may be deviating.

Key

N	No (not deviating sample)
Y	Yes (deviating sample)
NSD	Sampling date not provided
NST	Sampling time not provided (waters only)
EHT	Sample exceeded holding time(s)
IC	Sample not received in appropriate containers
HP	Headspace present in sample container
NCF	Sample not chemically fixed (where appropriate)
OR	Other (specify)

Lab ref	Sample id	Depth (m)	Deviating	Tests (Reason for deviation)
100946-1	WS1	0.10	N	
100946-2	WS6	0.20	N	
100946-3	WS11	0.50	N	
100946-4	WS12	0.20	N	

LABORATORY REPORT

4043

Contract Number: PSL21/7780

Report Date: 29 October 2021

Client's Reference: 151089-3846

Client Name: Abbeydale BEC
4 Neville Street
Wakefield
WF1 5EF

For the attention of: Glyn Hogg

Contract Title: A635 Barnsley Road, Goldthorpe

Date Received: 29/9/2021
Date Commenced: 29/9/2021
Date Completed: 28/10/2021

Notes: Opinions and Interpretations are outside the UKAS Accreditation

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

Checked and Approved Signatories:

A Watkins (Director)
R Berriman (Quality Manager)
S Royle (Laboratory Manager)

L Knight (Assistant Laboratory Manager)
S Eyre (Senior Technician)
M Fennell (Senior Technician)

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SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS1			0.40		Brown very sandy CLAY.
WS1			0.70		Brown mottled grey sandy CLAY.
WS2			0.20		Brown sandy very silty CLAY.
WS2			0.40		Brown mottled grey sandy very silty CLAY.
WS2			0.60		Brown mottled grey very gravelly sandy very silty CLAY.
WS3			0.20		Brown sandy CLAY.
WS3			0.60		Brown mottled grey sandy very silty CLAY.
WS4			0.10		Brown very sandy CLAY.
WS4			0.50		Brown very sandy CLAY.
WS4			1.00		Brown mottled grey sandy very silty CLAY.
WS5			0.20		Brown slightly gravelly sandy CLAY.
WS5			0.40		Brown mottled grey sandy CLAY.
WS5			1.00		Brown mottled grey sandy CLAY.
WS6			0.80		Brown mottled grey sandy CLAY.
WS6			1.30		Brown mottled grey sandy CLAY.
WS6			1.90		Brown mottled grey very sandy CLAY.
WS7			0.15		Brown sandy CLAY.
WS7			0.70		Brown mottled grey sandy very silty CLAY.
WS7			1.30		Brown mottled grey very silty CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS7			1.80		Brown mottled grey very silty CLAY.
WS7			2.20		Brown mottled grey very silty CLAY.
WS7			2.90		Reddish brown very silty CLAY.
WS7			3.70		Grey very silty CLAY.
WS8			0.20		Brown slightly gravelly sandy very silty CLAY.
WS8			0.40		Brown mottled grey very sandy CLAY.
WS8			0.90		Brown mottled grey very silty CLAY.
WS8			1.80		Brown mottled grey slightly sandy CLAY.
WS8			2.50		Brown mottled grey very silty CLAY.
WS9			0.10		Brown very sandy CLAY.
WS9			0.60		Brown sandy very silty CLAY.
WS9			0.90		Brown mottled grey sandy very silty CLAY.
WS9			1.50		Brown mottled grey sandy very silty CLAY.
WS9			1.90		Brown mottled grey sandy very silty CLAY.
WS10			0.20		Brown sandy CLAY.
WS10			0.90		Brown mottled grey very gravelly very sandy very silty CLAY.
WS10			1.80		Brown mottled grey sandy very silty CLAY.
WS11			0.10		Brown sandy very silty CLAY.
WS11			1.80		Brown mottled grey very silty CLAY.

SUMMARY OF LABORATORY SOIL DESCRIPTIONS

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Description of Sample
WS12			0.55		Brown sandy CLAY.
WS12			0.80		Brown mottled grey very silty CLAY.
WS13			0.20		Brown slightly gravelly sandy very silty CLAY.
WS13			0.70		Brown mottled grey very silty CLAY.
WS13			1.80		Brown mottled grey slightly gravelly very sandy very silty CLAY.

UKAS TESTING 4043	PSL Professional Soils Laboratory	A635 Barnsley Road, Goldthorpe	Contract No: PSL21/7780 Client Ref: 151089-3846

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS1			0.40		11							
WS1			0.70		14			40	20	20	100	Intermediate Plasticity CI
WS2			0.20		23							
WS2			0.40		16							
WS2			0.60		14			36	20	16	80	Intermediate Plasticity CI
WS3			0.20		21							
WS3			0.60		19			48	25	23	100	Intermediate Plasticity CI
WS4			0.10		13							
WS4			0.50		8							
WS4			1.00		13							
WS5			0.20		19							
WS5			0.40		19							
WS5			1.00		19							
WS6			0.80		11							
WS6			1.30		18							
WS6			1.90		15							
WS7			0.15		16							
WS7			0.70		15							
WS7			1.30		18							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A635 Barnsley Road, Goldthorpe

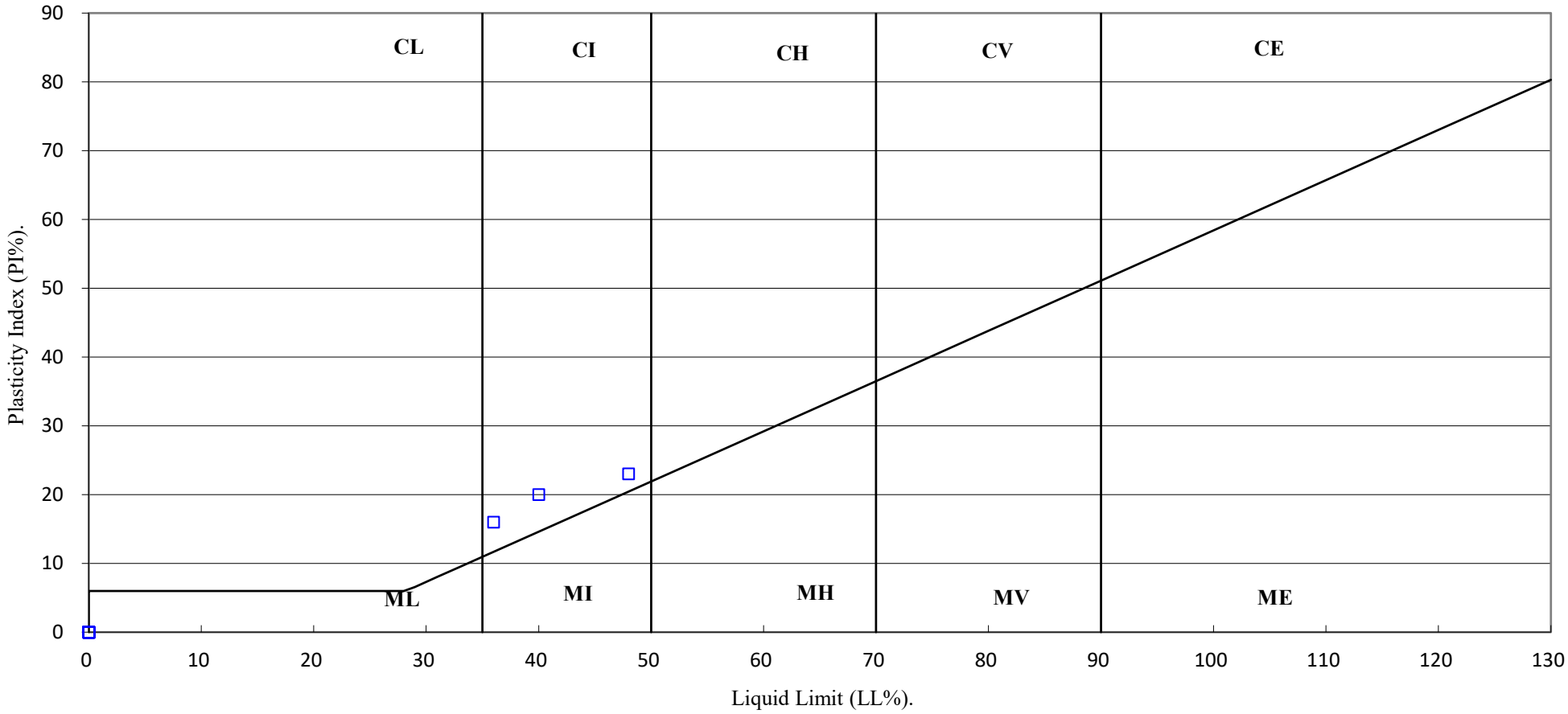
Contract No:

PSL21/7780

Client Ref:

151089-3846

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS 4043	PSL Professional Soils Laboratory	A635 Barnsley Road, Goldthorpe	Contract No: PSL21/7780 Client Ref: 151089-3846

SUMMARY OF SOIL CLASSIFICATION TESTS

(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS7			1.80		15			40	21	19	100	Intermediate Plasticity CI
WS7			2.20		17							
WS7			2.90		14							
WS7			3.70		12							
WS8			0.20		17							
WS8			0.40		19							
WS8			0.90		17							
WS8			1.80		16			50	26	24	100	High Plasticity CH
WS8			2.50		16							
WS9			0.10		20							
WS9			0.60		12							
WS9			0.90		13			39	20	19	100	Intermediate Plasticity CI
WS9			1.50		15							
WS9			1.90		13							
WS10			0.20		19							
WS10			0.90		13			35	19	16	80	Intermediate Plasticity CI
WS10			1.80		13							
WS11			0.10		20							
WS11			1.80		14							

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043

PSL Professional Soils Laboratory

A635 Barnsley Road, Goldthorpe

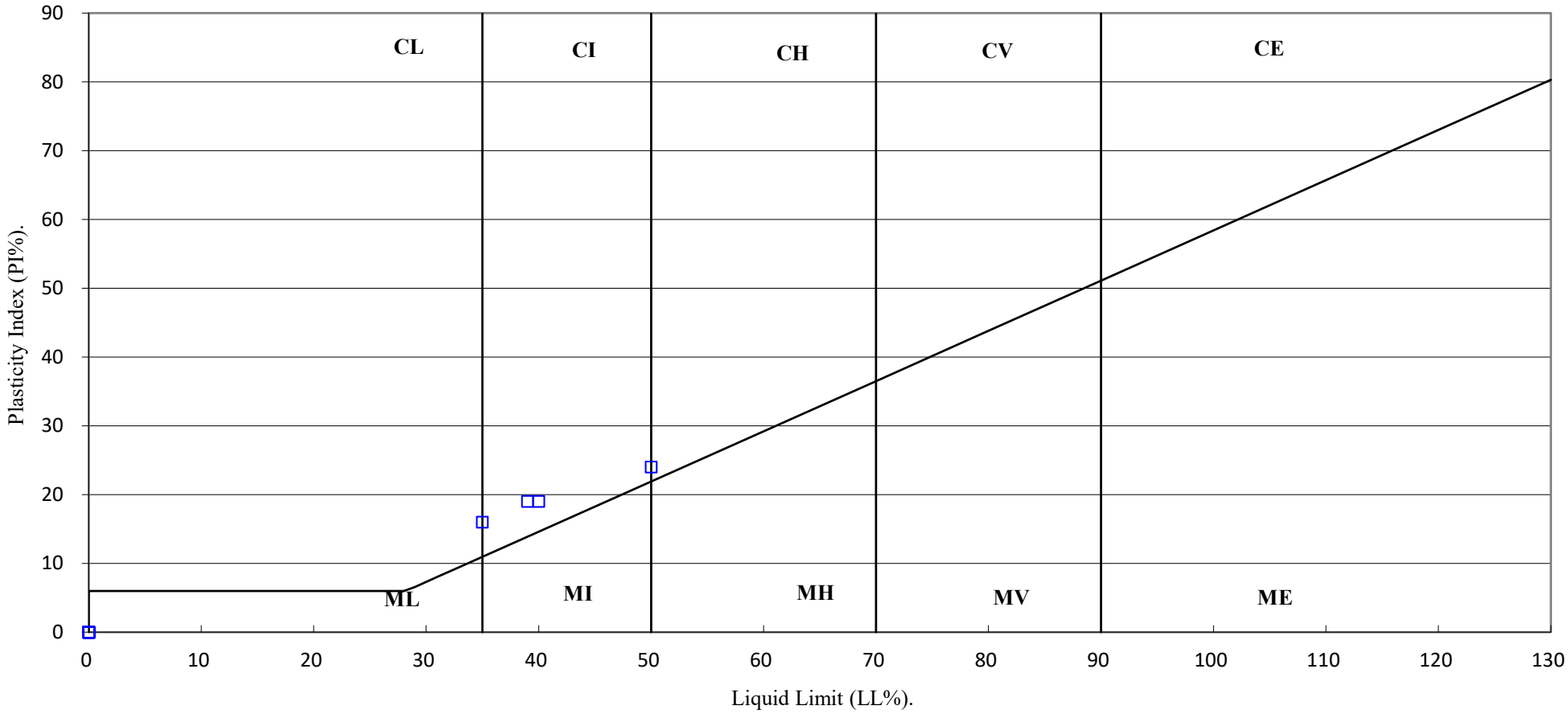
Contract No:

PSL21/7780

Client Ref:

151089-3846

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



UKAS 4043	PSL Professional Soils Laboratory	A635 Barnsley Road, Goldthorpe	Contract No: PSL21/7780 Client Ref: 151089-3846

SUMMARY OF SOIL CLASSIFICATION TESTS

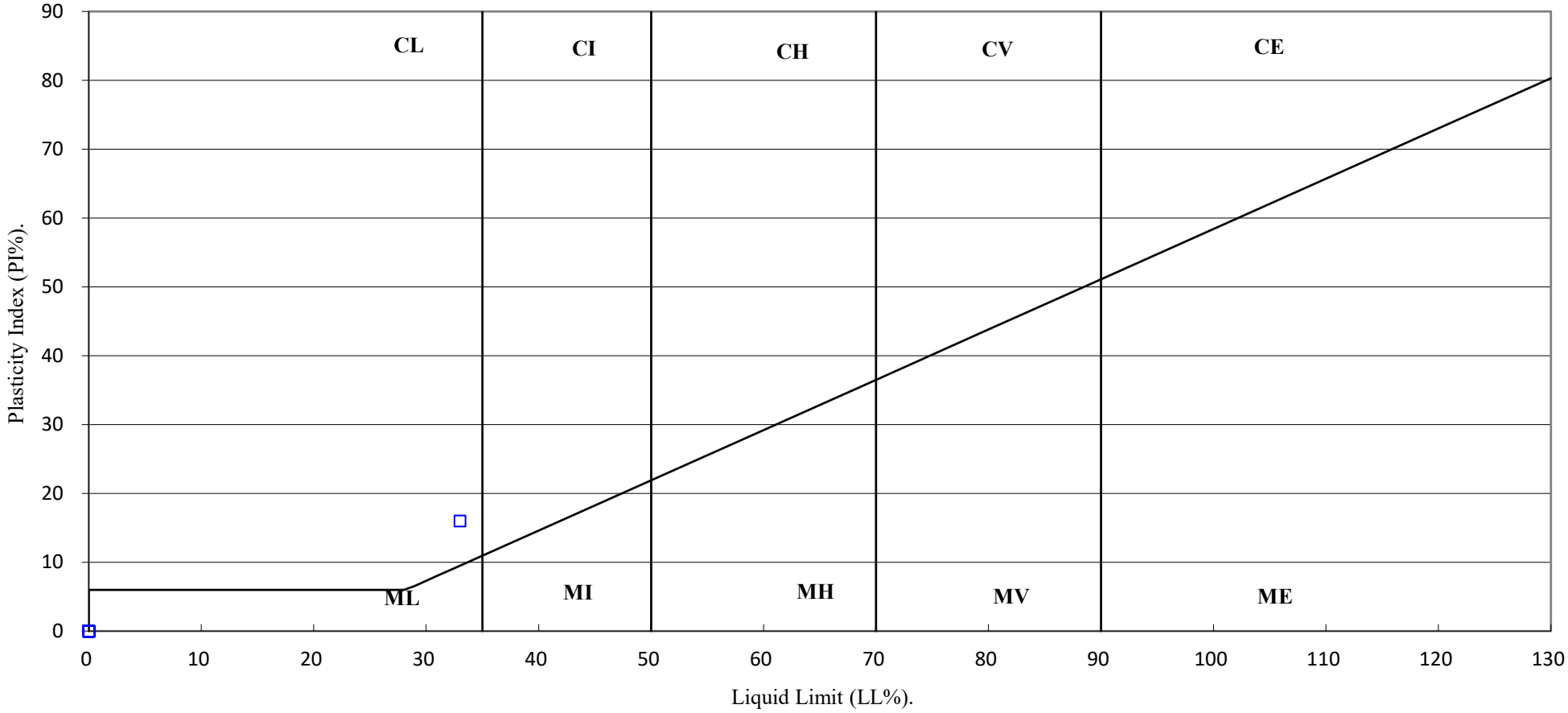
(BS1377 : PART 2 : 1990)

Hole Number	Sample Number	Sample Type	Top Depth m	Base Depth m	Moisture Content % Clause 3.2	Linear Shrinkage % Clause 6.5	Particle Density Mg/m^3 Clause 8.2	Liquid Limit % Clause 4.3/4	Plastic Limit % Clause 5.3	Plasticity Index % Clause 5.4	Passing .425mm %	Remarks
WS12			0.55		15							
WS12			0.80		16							
WS13			0.20		19							
WS13			0.70		18							
WS13			1.80		13			33	17	16	95	Low Plasticity CL

SYMBOLS : **NP : Non Plastic** *** : Liquid Limit and Plastic Limit Wet Sieved.**

UKAS TESTING 4043	PSL Professional Soils Laboratory	**A635 Barnsley Road, Goldthorpe**	**Contract No:** PSL21/7780 **Client Ref:** 151089-3846

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.



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			Client Ref: 151089-3846