Phase I Coal Mining Risk Assessment

Premier Inn, Bradford South, Whitehall Rd, Dyehouse Dr, Cleckheaton BD19 6HG

CRM.1483.062.GE.R.001.A

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Coal Mining Risk Assessment

Project:	Premier Inn, Bradford South, Whitehall Rd, Dyehouse Dr, Cleckheaton BD19 6HG
For:	Whitbread PLC
Ref:	CRM.1483.062.GE.R.001.A
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1.0 INTRODUCTION

1.1 Background

1.1.1 Enzygo Geoenvironmental Limited has been commissioned to prepare a Coal Mining Risk Assessment in support of a planning application at the Premier Inn, Bradford South, Whitehall Rd, Dyehouse Dr, Cleckheaton BD19 6HG.

1.2 Proposed Development

1.2.1 The existing site comprises a Premier Inn Hotel and Hunsworth Restaurant (A Brewers Fayre restaurant) with associated car parking and soft landscaping. The proposed development comprises and remodelling of the restaurant site into hotel rooms within the footprint of the existing restaurant.

1.2.2 The proposed development is shown on Drawing Proposed Site Plan SK301 prepared by Allison Pike Architects. A copy is included within the Drawing Section of this report.

1.3 Objectives

1.3.1 The objectives of the study are to:

- Obtain desk study information, a copy of which is included within Appendix 1;
- Obtain a coal mining report, a copy of which is included in Appendix 2
- Obtain BGS boreholes logs relevant to the site;
- Assess the implications of any potential geotechnical issues is relation to the site and any historically mining; and
- Provide a report relating to the Geotechnical and mining risks.

2.0 SITE SETTING

Table 2.0 Site Description

Item	Description
Site Address	Premier Inn, Bradford South, Whitehall Rd, Dyehouse Dr, Cleckheaton BD19 6HG
National Grid Reference	418456 426730

2.1 Current Site Description

2.1.1 The site of the proposed development site and existing Hunsworth Restaurant (Brewers Fayre Restaurant) is located to the south east of the main Premier Inn building. The existing restaurant is being remodelled into a new smaller restaurant and a number of hotel rooms this will involve a number of alterations to the internal configuration and remodelling the of the walls to accommodate a number of hotel rooms.

2.1.2 The main current restaurant is separated from the main hotel and is located to the south east of the main hotel buildings.

2.1.3 The main hotel building and existing restaurant are surrounded by hardstanding, access roads and car parking to the north west and south east, with the exception of landscaping to the west of the restaurant and south of the Premier Inn.

2.1.4 The landscaping areas includes a semi mature hedge and trees.

2.1.5 Car parking with patio areas are shown to the south and east of the restaurant buildings and an outdoor seating area is shown to the west. The service area and service road are shown to be attached to the northern wall of the restaurant.

2.1.6 The service area is surrounded by a dwarf brick wall and wooden fencing and contains rubbish bins and storage areas and appears to be surfaced with concrete hardstanding with drainage.

2.1.7 The restaurant building appears to be a one storey building with dormer second floor windows on the south and north elevation and provide second floor accommodation.

2.1.8 The site has been regraded to form a level construction plateau.

2.1.9 Trees and open space are shown to the east of the outdoors seating area.

2.1.10 The hotel comprises a two-storey building to the north west of the restaurant and access to the north via Dyehouse Drive.

2.1.11 A further Premier Inn building is sown to the south west of the restaurant which is refenced as a two storey meeting rooms.

2.1.12 No existing tanks or spillages were noted in the area of the proposed extension. A service area for the restaurant were noted on the north.

2.1.13 The entire Premier Inn site grades to the south very gently and is approximately flat.

2.1.14 The majority of the entire Premier Inn site was covered with carparking, hardstanding or building with surrounding landscaping and open ground.

2.2 Surrounding Area

2.2.1 Land uses surrounding the site are summarised as follows:

Table 2.2.1 Land Use Surrounding the Area

Direction	Land Use
North	Access road, culverted watercourse (Hunsworth Beck), Dyehouse Drive, Premier Inn buildings, trees associated with Hanging Wood way and Alliance Healthcare buildings and car parking beyond.
South	Patio area, car parking landscaping site verge with A58 with Sbarro Cleckheaton Drive through restaurant and car parking and Cleckheaton Cricket Club beyond.
West	Outdoor seating area, trees, open grassland and open watercourse (Stubs Beck) and culverted underneath A58.
East	Patio area, car parking landscaping site verge with Stubs Beck Lane, Commercial buildings and watercourse (Hunsworth Beck) and trees beyond.

2.2.2 Small scale earthworks were present on the site in the form of a regrading exercise to create a development platform for the Premier Inn , the restaurant, the adjacent roads the adjacent detached Premier Inn meeting rooms therefore Made Ground is likely to be present.

3.0 SITE HISTORY

3.1 Historical Maps

3.1.1 A review of historical Ordnance Survey maps and information pertinent to the site and within a 1000m radius is summarised below:

Table 3.1.1 Historical Maps

Potentially Contaminative Historical Land Use		
Map Edition	**Site**	**Surrounding Area**
1854-1872	Open fields and Tenters (wooden structures which are used to stretch out cloth to dry).	Hunsworth Beck 50m NE. Pond 60m NW. Watercourse (possible Stubs Beck) 30m N. Hunsworth Mills (Wollen) 50m N to 200m N. Taylors Lift Pumping station 140m NW. Access Road to the Mill 50m E. Road 50m Cricket Ground 150m S. Railway associated with Cleckheaton colliery 260m NE. Shaft 300m E. Reservoir 240m N to 270mN. Wood pit 700m NE. Spen Valley Chemical works 400m W. Old coal pit 500m NW.
195-1908	Open fields. Tenters has been removed	Hunsworth Mills is shown as Dyeing and Finishing mills and has enlarged NW. Earthworks are shown 90m NW associated with the Taylors Lift Pumping Station. Road 50m S is shown as Whitehall Road. Further earthworks 150m and 200m E associated with Cleckheaton Colliery which is shown as disused. Bowling green 140m SW. Cricket ground has a pavilion 240m S. Wood pit 700m NE shown as disused. Spen Valley Chemical works 400m W. Old coal pit 500m NW.
1922-1937	No changes	Hunsworth Mill has moved north for 80m N to 250m N with the olds buildings 50m N to 100m N demolished and shown as rough ground. The mill buildings 200m N to 250m N enlarged NW. Tanks are shown 80m N and 150m N associated with Hunsworth Mill. A chimney and old coal shaft are shown at Taylors Lift pumping engine. Additional Bowling Green 90m S. Wood pit 700m NE shown as old shafts. Spen Valley Chemical works 400m W. Old coal pit 500m NW shown as spoil heaps. Cleckheaton Colliery which is shown as disused and earthworks with an air shaft and old aft.
1955-1958	No changes	Talyor Lift not shown as earthworks including a pond spoil heaps infilled ground and tow old shafts. The former Cleckheaton Colliery site shown as spoil heaps and infilled ground is now shown as infilled materials graded into three benches and 5 ponds and extending to the eastern bank of Hunsworth Beck 80m E. Cleckheaton Foor ground is shown to the SE of the cricket Ground. 200m S.
1967	No changes	No colliery legacies references are shown within 1000m of the site.
1974	No changes	Stubs beck is refenced 20m N together with a weir. This flows into the Hunsworth Beck 50m NE. Earthworks(spoil heaps. Motorway network and roundabout 150m W and to 250m W. Football ground 70m SE regraded to form level ground Scandinavia Mills 130m SE

		to 250m SE. Former Cleckheaton Colliery site is now shown as warehouse and depot with the surrounding area completed regraded.
1995-1990	Site is shown as open space and possible regraded awaiting redevelopment.	Hunsworth Mills Shown as Works. Pond 100m E now 8 number ponds. Gas governor shown 80m SE.
1999-2003	As existing layout Hunsworth Pub	Hunsworth Mills Shown as demolished and replaced with commercial buildings accessed from Stubbs Beck Lane. Current layout comprising Existing Premier Inn road networks and landscaping pockets around the two watercourses Stubs Weir (40m N and Hunsworth Beck 50m to 80m N and NE and E).
2010-2018	No significant changes.	Premier Inn 20m NW. Commercial buildings associated with commercial development 0m N and W to 200m N. Additional Premier Inn buildings 20m SW. (Meeting rooms).
2020-2024	No changes	No significant changes

3.1.2 Historic shafts are identified 140m to 300m north west associated with Taylor Pumping Station. Old shafts are also shown 700m north east associated with Woods Pit. And 2 shafts associated with Cleckheaton Colliery. All the colliery activities are ceased by 1937 and not referenced at all from 1967. The majority of the colliery activities after the coal pits have ceased is associated with the earthworks infilling and regrading of the land to the east of Hunsworth Beck (80m to 250m east) and associated with Stubbs Beck (80m to 200m west), however the earthworks to the west of the site are also related to the motorway and road networks construction around 1974. The majority of the former colliery materials has been spread across the collieries sites and then redeveloped as industrial and commercial units to the west, north and north west and south.

3.1.3 Given the distance to the spoil heaps associated with the colliery activities the resulting spoil heaps/Made Gound do not directly affect the site however the underground workings from these collieries will potential indirectly affect the site. This will be further discussed in Section 5.0 of this report.

3.1.4 The site was historically fields up until its current development with the surrounding road development as part of a commercial industrial site from after 1974. The site was shown as vacant although likely regraded and developed as the Premier Inn and restaurant by 1999. Based on the above Made Ground will be present associated with the regrading of the site as development site for the current Premier Inn and Restaurant.

3.1.5 The coal legacies are shown via shafts and pits up until their closure in the 1930s. Some spoil materials may have been used to regrade the site, however this is likely to be associated with the remodelling and construction of new commercial buildings in the former position of the Hunsworth Mill (800m to 200m north east). Contaminated materials associated with the dyeing and finishing process and from the Mill could be present within the Made Ground, however given the separation from the site to the former mill by the Hunsworth Beck to the north and east and Stubs Beck to the north and west the likelihood of Made Ground associated with the Mill is low as compared to the moderate risk of colliery waste materials being using to regrade the site.

3.1.6 Commercial development including the road network have been subsequently built on top of regraded formation which were infilled and regraded by 1999.

3.1.7 Based on the above backfill/ Made Ground / infilling is noted associated with the development of the road and roundabout to the north west and associated with the collieries activities to the north and east and commercial buildings surrounding the site to the north and north west. The thickness, classification, chemical composition, and compaction characteristics of the regraded Made Ground will need to be confirmed via investigation.

4.0 ENVIRONMENTAL SETTING

4.1 Ground Conditions

4.1.1 The British Geological Survey (BGS) indicates that the site is underlain by the following geological sequence:

Table 4.1.1 Geological Sequence

Geological Unit	Type	Descriptions	Aquifer Classification
Drift	Alluvium (3 m NE)	Clay, silt, sand and gravel.	Secondary A
Solid	Pennine Lower coal Measures Formation,	Mudstone, siltstone and sandstone	Secondary A

4.1.2 The closest fault is 166m south west. Given the distance this is not considered a significant risk.

4.1.3 Coal seams/outcrops have been inferred in the rock at depth 17m north west, 35m north west and 166m east. These will be further assessed in Section 5.0.

4.1.4 BGS records show the site is within an area of published records of Made Ground (Artificial deposit) infilled ground or worked ground or Made Ground. The thickness of these materials is unknown and will need to be confirmed via investigation.

4.1.5 There are no records of landslips on or near to the site.

4.1.6 There is one viewable BGS boreholes logs within the vicinity of the site. However this is still 75m south west. A further three boreholes are located approximately 129m, 141m and 149m west associated with the M62 motorway. Borehole records are available from the BGS, which are included in Appendix 3 and the four closest records are summarised on the table below:

Table 4.1.6 Borehole Records

Reference	Location	Details
42084	75m SW	Superficial materials to 5.00mbgl (Firm and stiff clay) over siltstone. Groundwater and 1.15mbgl. Refusal at 5.79mbgl.
42935	129m W	Made Ground to 2.50mbgl over superficial stiff clays (Glacial till) 7.20mbgl over Bedrock comprising sandstone and siltstone with occasional bands of gravel (weathered sandstone) and Weak coal at 12.30m bgl. Ground water was encountered at 7.00m bgl and 10.55m bgl .Refusal 13.00mbgl.
42075	141m W	Superficial materials to 3.9mbgl (Firm and stiff clay) over siltstone and sandstone. Groundwater and 3.0mbgl. Refusal at 4.88mbgl.
42934	149m W	Made Ground to 2.30m over superficial stiff clays (Glacial till) 7.35 over Bedrock comprising sandstone and siltstone with a band of coal at 10.05mbgl to 10.90mbgl. Ground water was encountered at 7.50m.Refusal 20.00mbgl.

4.1.7 These boreholes were drilled to provide ground conditions information for the motorway and road network.

4.1.8 Superficial materials were noted to depths ranging in excess of 3.9mbgl and up to 5.00mbgl with up to 2.50m of additional made ground recorded in two borehole logs. The bedrock comprised sandstone and siltstone with coal seams recorded at 10.05mbgl to 10.90mbgl and at 12.3mbgl. Groundwater was only encountered as a seepages ranging from 1.15mbgl to 6.50mbgl.

4.1.9 Given the distance to the site these records can only be considered as a guide to the underlying ground conditions. For the purposes of this report the superficial materials are assumed to be 5.00m thick, however local Made Ground may increase this thickness to 7.50mbgl.

4.2 Natural Hazards Finding

4.2.1 BGS information presented within the Groundsure report identified the following ground conditions:

Table 4.2.1 Natural Hazards

Hazard	Risk Designation (Groundsure)
Shrink Swell	Very Low
Landslides	Very Low
Soluble Rocks	Negligible
Compressible Ground	Very low
Collapsible Rocks	Very Low
Running Sands	Very Low

4.2.2 No significant ground hazards are identified.

4.3 Coal Mining

4.3.1 The site is identified as being in a coal mining area and as such a more detailed assessment has been undertaken. The closest coal mine recorded in the Groundsure report are given below:

- 330m east - (Fern House colliery), deep coal.
- 368m south east – (Merchant House), deep coal
- 473m north west – Hunsworth Little Wood), deep coal.

4.3.2 All of the above and from surface workings and are shown to be ceased.

4.3.3 A detailed coal mining assessment is presented in Section 5.

4.4 Non-Coal Mining and Cavities

4.4.1 There are two non-coal mining activities shown within 500m of the site. These non-coal mining activities comprises localised recorded underground workings for iron ore (48m north west and 354m south west, which could result in unknown/unpredictable/difficult ground conditions at depth, however given the age of the workings and potential depth these are not considered to be significant risk to the site and no further assessment is considered necessary.

4.5 Natural Cavities

4.5.1 No natural cavities are identified below or near to the site.

4.6 Ground Workings

4.6.1 There are a number of previous workings surrounding the site, however most of these are associated with the unspecified pits, refuse heaps, unspecified ground workings and ponds. The closest three are referenced as Unspecified pits and ground workings (5m west) and refuse tips 70m east, and refuse tips 80m north west and ponds 112m east. Given the distance of the unspecified pits further investigation will be needed to confirm the presence of Made Ground and backfilled materials. The closest colliery is shown 149m to 158m east and was shown as disused by 1905 and is not considered to be direct risk, however, could be an indirect risk via the potential underground workings and the alos the potential regraded colliery waste. The closest coal related workings are underground workings 492m south west and associated with a colliery. The coal mining legacy risks are detailed further in Coal Authority Mining report and given in section 5.0.

4.6.2 The closest underground workings are recorded as old shafts 141m north west and the colliery 149m east to 158m east with further air shafts 313m east to 318m east. Furthe coal pits are referenced 397m north west and 681m south east.

4.6.3 Two BGS mine plans are referenced 9m west for coal and 13m west for lead, however the position of these plans is considered approximate.

4.7 Radon

4.7.1 The Groundsure report recommends no radon protection measures are required for the site.

4.8 Planning portal information

4.8.1 Based on a search of the Kirklees planning portal a number of historical planning applications have been found for the Premier Inn site and these are listed below.

- 2009/62/92519/E1 – Extension of the Premier Inn in 2009. A copy of which is included in Appendix 4. – The investigation undertaken confirms the thickness of the superficial materials up to 5.00m thick which confirms the BGS data reported in Section 4.1.6 and also confirms the shallow coal mining risk, which was discussed with the coal authority and building control and appropriate designed confirmed which included a shallow piled solution (6-8m pile depth) which does not affect the potential workings underneath and using the skin friction as support for the piles and foundations. Further detailed reported in provided in Appendix 4.

- 2003/62/91637/E3 construction of meeting rooms and business centre south east of the site. No further significant geotechnical or cola related documents to download. - No additional information.

4.8.2 Based on the above search the two significant applications are for the Premier Inn extension and a detached extension. The coal authority has been consulted and recommendations provided in their coal mining report which supports the discussion within this report and the potential final foundation solutions if required.

4.8.3 The remaining applications are for minor alternations including signage and sewage improvement.

5.0 COAL MINING RISK ASSESSMENT

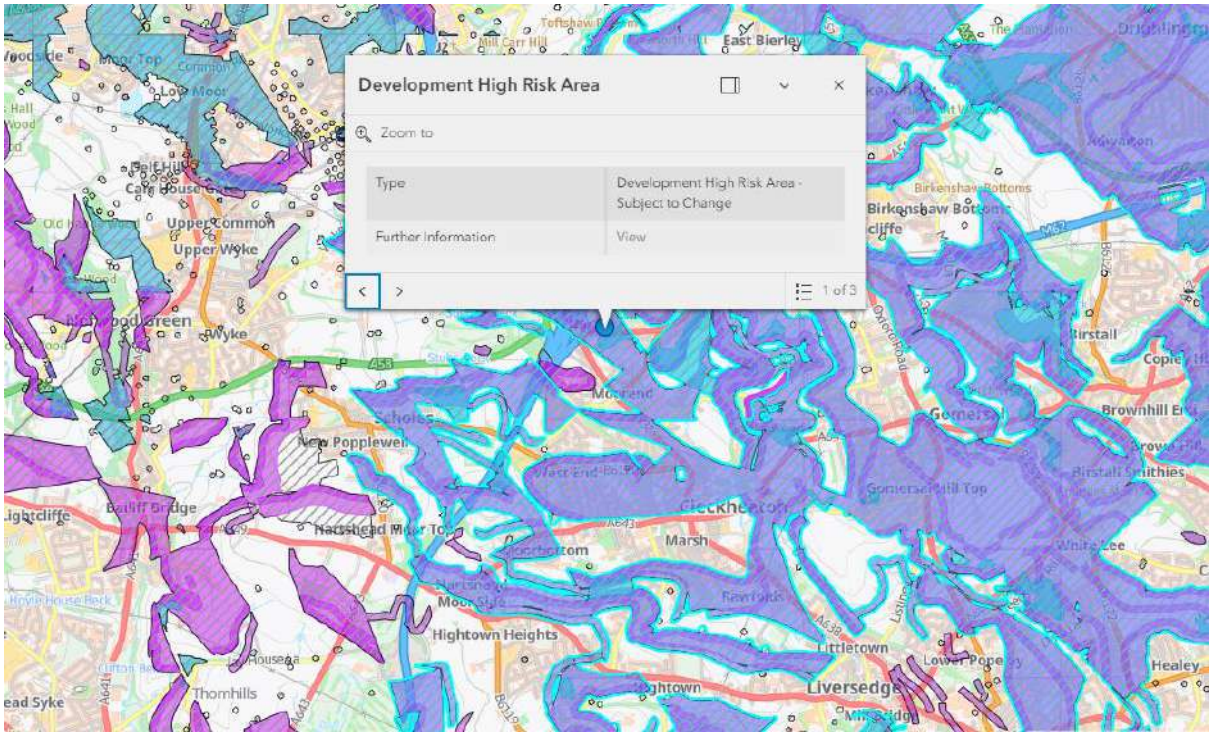
5.1 General

5.1.1 The Groundsure Geo Insight report indicates the site is located within an area of potential coal mining and a detailed coal mining risk assessment has been undertaken.

5.2 Coal Authority Viewer

5.2.1 The Coal Authority Interactive Viewer shows there are probably underground working underneath the site which are associated with the coal outcrops close to the site and the high development zone. All of these are shown for the site. These are shown below

5.2.1 Coal mine shaft, outcrop and high-risk development zone.



5.2.2 The closest mineshaft is located 140m north west and associated with the Taylors Pumping Sation described in the Historical section of this report.

5.2.3 The closest outcrop and high-risk development areas are located on the site and 5m north west of the site. Given these are on site and close to the site they are considered to be a direct risk to the site and further assessment will be required.

5.3 Coal Authority Report

5.3.1 A Coal Authority Report has been obtained for the development site. A copy of this report is included in Appendix 2. Results are summarised below:

5.3.2 The Coal Mining report does identify past mining recorded underneath the development site and as can be seen below are referenced as the black bed and better bed.

5.3.3 The full list of underground workings is given below and within the coal mining report in Appendix 2.

Table 5.3.3 Workings

Past underground mining

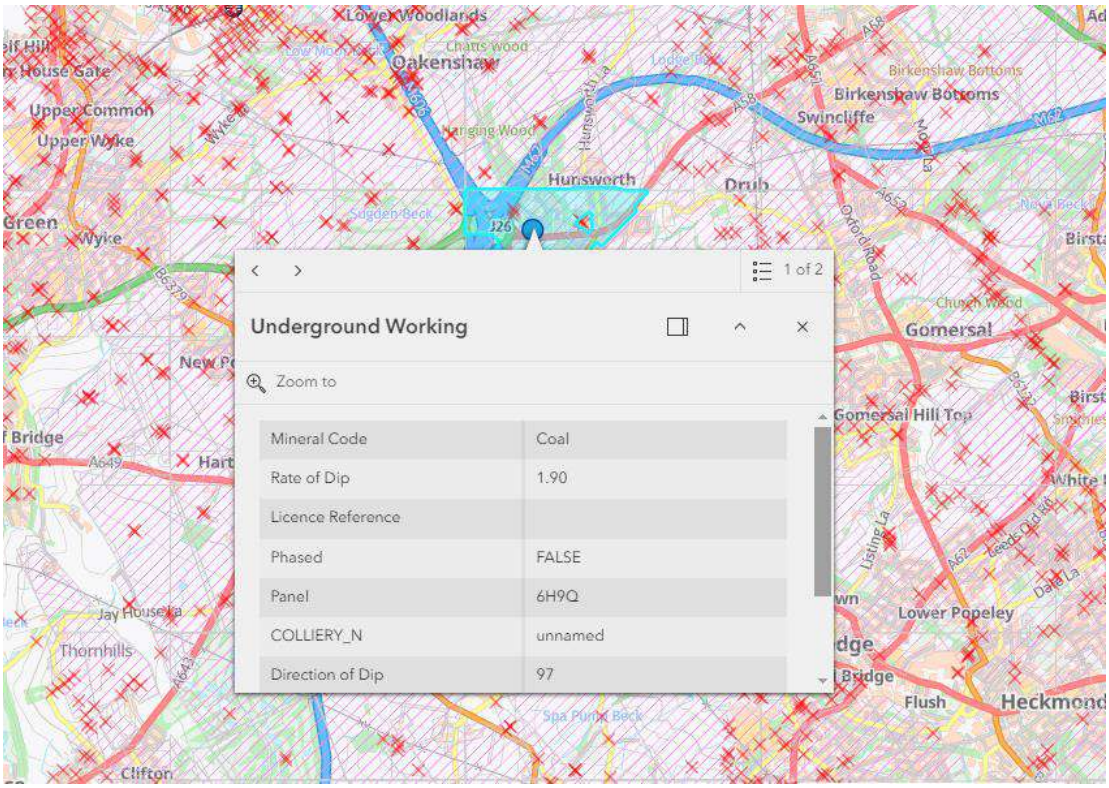
Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	BLACK BED	Coal	6H9Q	81	Beneath Property	1.9	East	170	1859
unnamed	BETTER BED	Coal	6H9T	128	Beneath Property	2.5	South-East	46	1864

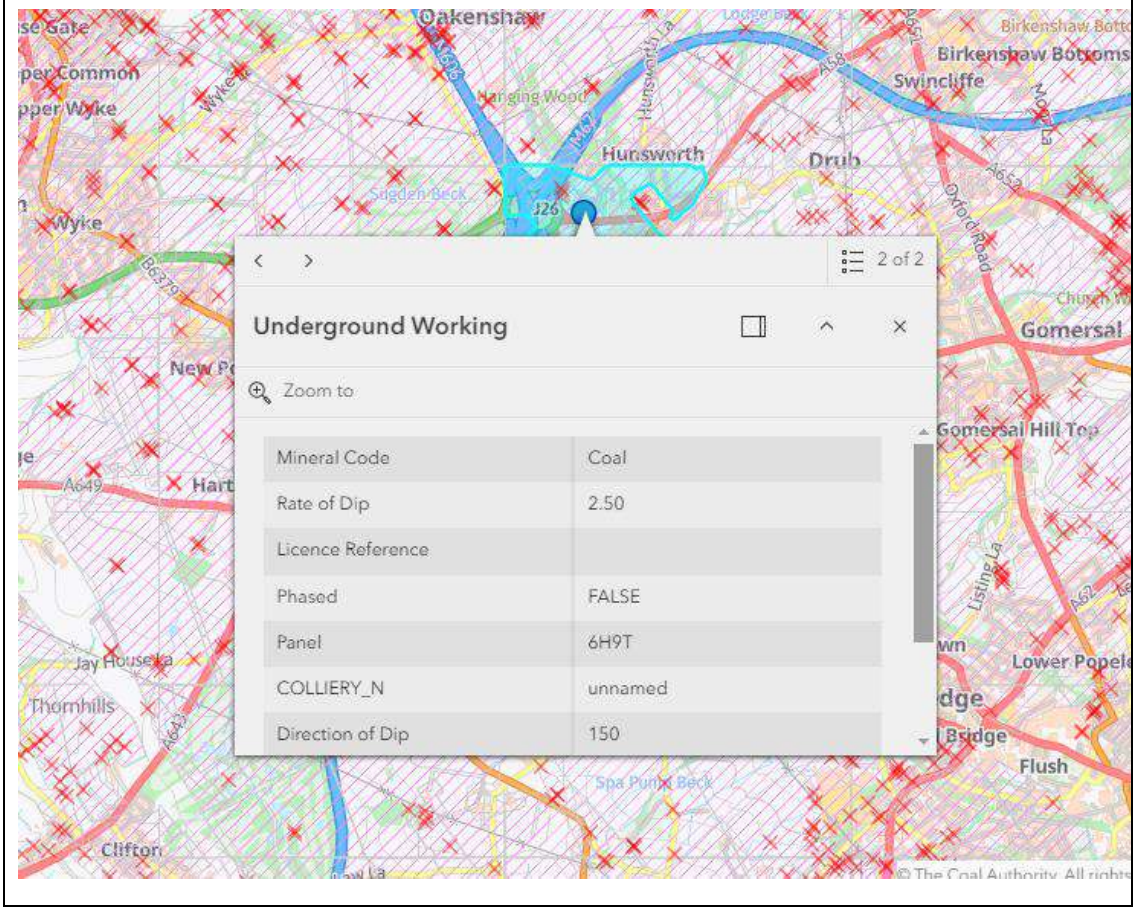
5.3.4 The extent of these workings is within the Coal seams is in two seams (black bed) 81m Depth and the (better bed) 128m depth.

5.3.5 These workings are associated with an unnamed colliery although are likely to be associated with the Cleckheaton Colliery to the east of the site. The extracted thickness of coal ranging from 170cm to 46cm.

5.3.6 The extent of the workings is shown below:

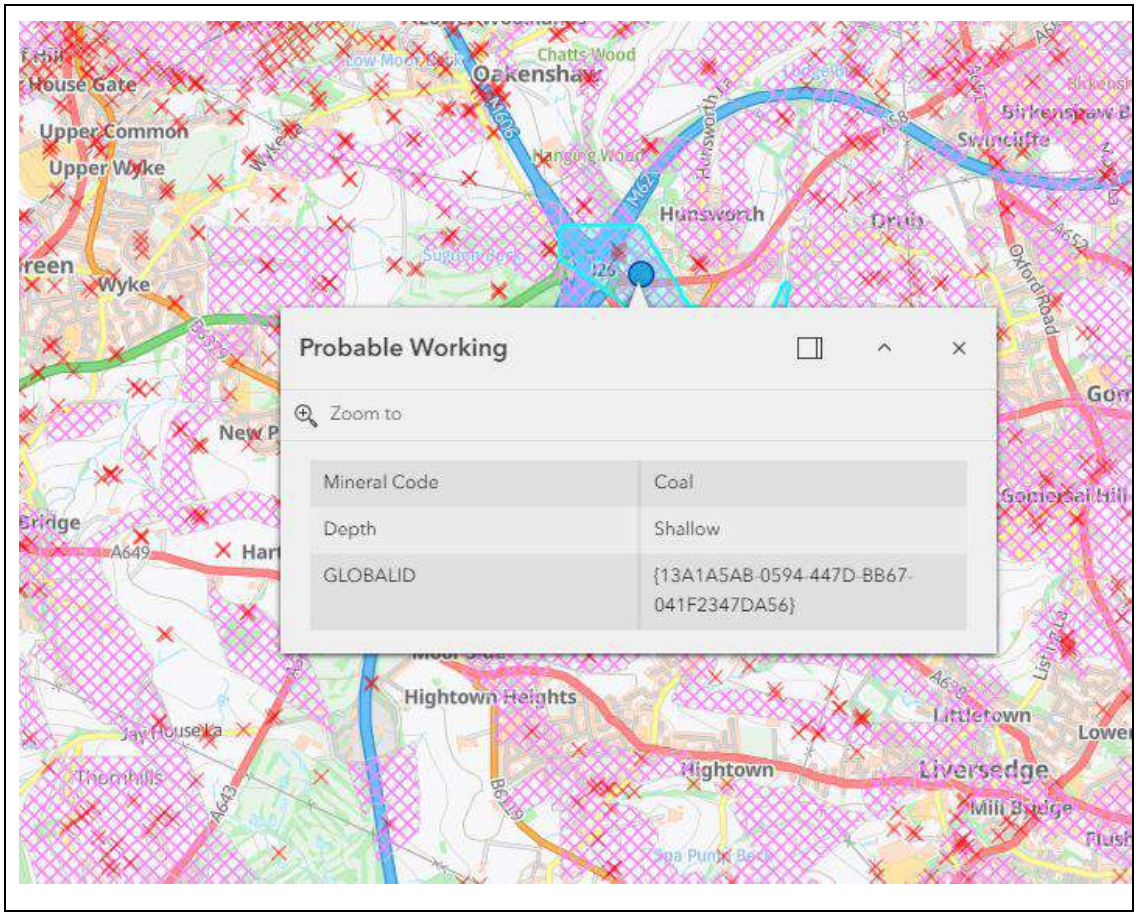
Table 5.3.6 Workings extent





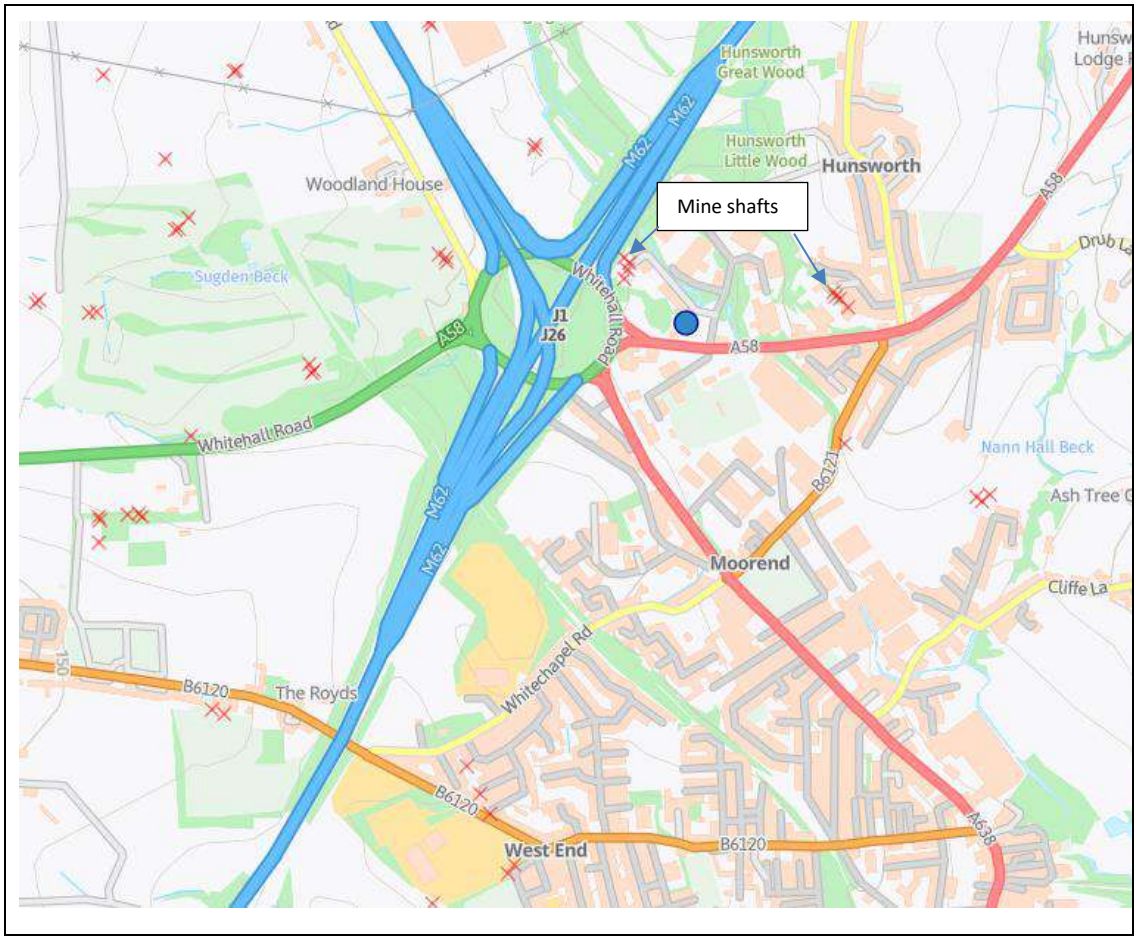
5.3.7 The coal mining report has also recorded probable un-recorded shallow working which agrees with the Coal authority interactive website. The extent of the probable shallow workings is shown below and is likely to be related to the outcrop location 5m north west of the site.

Table 5.3.7 Probable shallow Workings extent



5.3.8 There are no mine shafts within 100m of the site. The closest recorded mine shaft is shown 141m north west in the Coal Authority interactive website and the historical plans which is beyond the search criteria for the mining report. Given the distance to the site of the mine shaft recorded in the interactive website this is not considered a significant risk to the site.

Table 5.3.8 Mine shaft location plan



5.3.9 The coal mining report also references spine roadways at shallow depth.

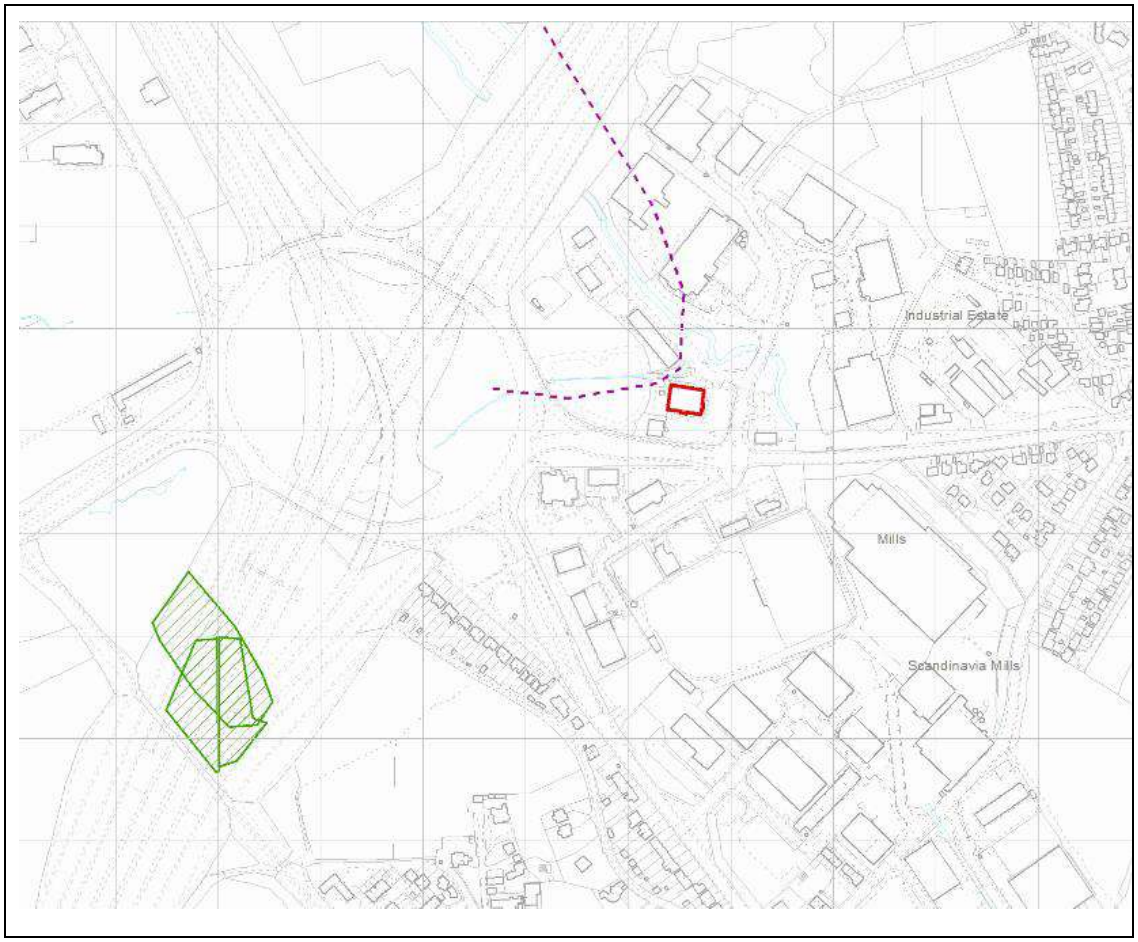
5.3.10 The coal authority confirms the name and distance of the outcrop to be the Little Coal and this is located 8.8m north west and has been worked which confirms the probable shallow workings confirmation and the coal authorities interactive website details.

Table 5.3.10 outcrops

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
LITTLE COAL	Coal	Yes	8.8	North-West	237

Table 5.3.11 Outcrop location and opencast sites



5.3.11 No open cast coal mine sites with 500m of the site with the closest recorded in the coal mining report and the interactive coal authority website is 566m south west. Given the distance these are not considered a risk to the site.

5.3.12 The Coal Authority confirms that it has not received damage notice or claim for the property or within 50m.

5.3.13 There are no records of preventative works having been undertaken.

5.3.14 Mine gas has not been recorded in the area and no reporting of coal related hazards.

5.3.15 No coal mining licenses within 200m of the site.

5.4 Conclusion

5.4.1 Based on the geological maps, the findings of the Coal Authority Report, together with the BGS boreholes there is a risk of underground workings both deep workings and probably shallow workings (less than 30m depth).

5.4.2 The risk of deep coal workings is dismissed given the maximum thickness of the superficial materials (5.0m thick) and the additional 2.50m thick of Made Ground recorded in the BGS boreholes logs and thickness of the coal seams (maximum thickness 1.7m). Therefore the workings are too deep and in excess of 10X seam thickness and the risk is therefore dismissed. A table is given below summarised these seams.

5.4.3 The risk of shallow workings (less than 30m) is moderate given the thickness and depth of the coal recorded in the BGS and the limited rock cover above this seam (less than 10x seam thickness). A coal mining risk summary is summarised below.

Table 5.4.3 Coal seam risk classification – summary table

Coal Seam referenced below the site	Depth of competent bedrock (mbgl)	Depth of seam (mbgl)	Seam thickness (m)	Rock cover thickness (m)	Ratio of competent rock verse seam thickness	More than 10x seam thickness	Risk classification
Unknown shallow seam (Little coal Based on BGS logs)	7.2 - 7.35	10.05 and 12.3	0.85 to 0.7)	3.3 --4.95	4.7X 5.8	N	Assumed thickness of superficial materials. Based on this less than 10X seam thickness. Below potential worked seam. Investigation recommended.
Black Bed	7.35 worst case	81	1.7m	73.65	43X	Y	Assumed thickness of superficial materials. Based on this less than 10X seam thickness. Below potential worked seam. Risk dismissed due to seams being too deep.
Better beds	7.35 worst case	128	0.46	47	102X	Y	Assumed thickness of superficial materials. Based on this less than 10X seam thickness. Below potential worked seam. Risk dismissed due to seams being too deep.

5.4.4 The conclusions also confirms that opencast works are not present within influence zone of the site.

5.4.5 Based on the BGS information ironstone workings may be present underneath the site however these are unlikely to cause a significant issue for foundations and no further investigation is required.

5.4.6 Based on the geological borehole records superficial materials are shown up to 5m deep with an additional Made Ground thickness estimated from the BGS boreholes to be 2.50m thick although could be thicker.

5.4.7 There is greater than 10X seam thickness of solid rock cover above deep coal workings and therefore the deep coal mining legacy has been dismissed , however this cannot be confirmed for the shallow workings which has less than 10x seam thickness.

5.4.8 Given this further investigation is recommended in the form of probe holes to at least 40m depth. This could be combined with the general site investigation to confirm the contamination levels across the site together with foundations parameters and the gas regime across the site. This is likely to be undertaken as part of the appropriately worded planning condition.

6.0 PRELIMINARY GEOTECHNICAL RISK ASSESSMENT

6.1 General

6.1.1 A preliminary geotechnical risk register has been produced for the proposed scheme in order to identify potential hazards, the probability of the hazard occurring, impact and risk rating. This geotechnical register reflects the current situation on site and should be used to confirm where the current risks are. It is a very simple qualitative risk assessment and should not be viewed as definitive. This risk assessment reflects the current level of understanding of the geotechnical aspects of the scheme and will be subject to revision. It is a generalised risk register that covers all of the main risks.

Table 6.1.1 Risk assessment Criteria and rating

Risk rating (R) = Probability (P) x Impact (I).

Risk Assessment Criteria and Rating			
Probability (P)		**Impact (I)**	
Very likely	5	Very high	5
Probable	4	High	4
Possible	3	Medium	3
Unlikely	2	Low	2
Negligible	1	Very Low	1
Risk Rating (R) = Probability X Impact			
Low 1-8	Medium 9-15	High 16-25	

Table 6.1.2 Preliminary Geotechnical risk Register

Table 6.1.2: Geotechnical Risk Register (existing conditions)						
Hazard / Risk	**Cause**	**Consequence(s)**	**Pre-Control**			**Mitigation**
			P	**I**	**R**	
Ground collapse from Coal mining or workings collapse	Potential for shallow coal seams and workings	Local collapse - Damage to proposed property - Potential cost of remedial measures - loss of life - effects on neighbouring properties & infrastructure	4	3	12	Shallow coal mining identified below the site. Investigation works (3 holes to 40m depth recommended)
Ground collapse from Coal mining or workings collapse	Void migration and collapsing of shallow workings	Local collapse - Damage to proposed property - Potential cost of remedial measures - loss of life - effects on neighbouring properties & infrastructure	4	3	12	Shallow coal mining identified below the site. Investigation works (3 holes to 40m depth recommended)

	Foundation collapse		4	3	12	Shallow coal mining identified below the site. Investigation works (3 holes to 40m depth recommended)
Mine shaft(s)	Void migration and collapsing of shallow mine shaft in development area	Local collapse - Damage to proposed property - Potential cost of remedial measures - loss of life - effects on neighbouring properties & infrastructure	1	2	2	No mine shaft within proximity of the site. No risk to site.
Unstable and loose ground conditions (Fault zone)	Foundation collapse	Local collapse - Damage to proposed property - Potential cost of remedial measures - loss of life - effects on neighbouring properties & infrastructure	1	2	2	No fault zone. Risk dismissed. .
Unforeseen Ground Conditions	Unforeseen Ground Conditions (e.g. un identified shallow workings Variability in encountered soils and Made Ground associated with development site.	- potential local collapse via void migration - effects on neighbouring properties & infrastructure - Damage to proposed property - Potential cost of remedial measures	4	3	12	Shallow coal mining identified below the site. Investigation works included (3 holes to 40m depth recommended which could also be used to confirm the foundation assessment and the thickness of the superficial materials and Made Ground to 10m depth

Drawings

PROJECT
PREMIER INN EXTENSION,
BRADFORD SOUTH

TITLE
EXISTING SITE PLAN
STAGE ONE

SCALE
1:500 @ A3

JOB No	DRAWING No	REV
PI1125	SK1	

DRAWN	REVISION	DATE	VER
PHD	DRAWN	10/6/24	

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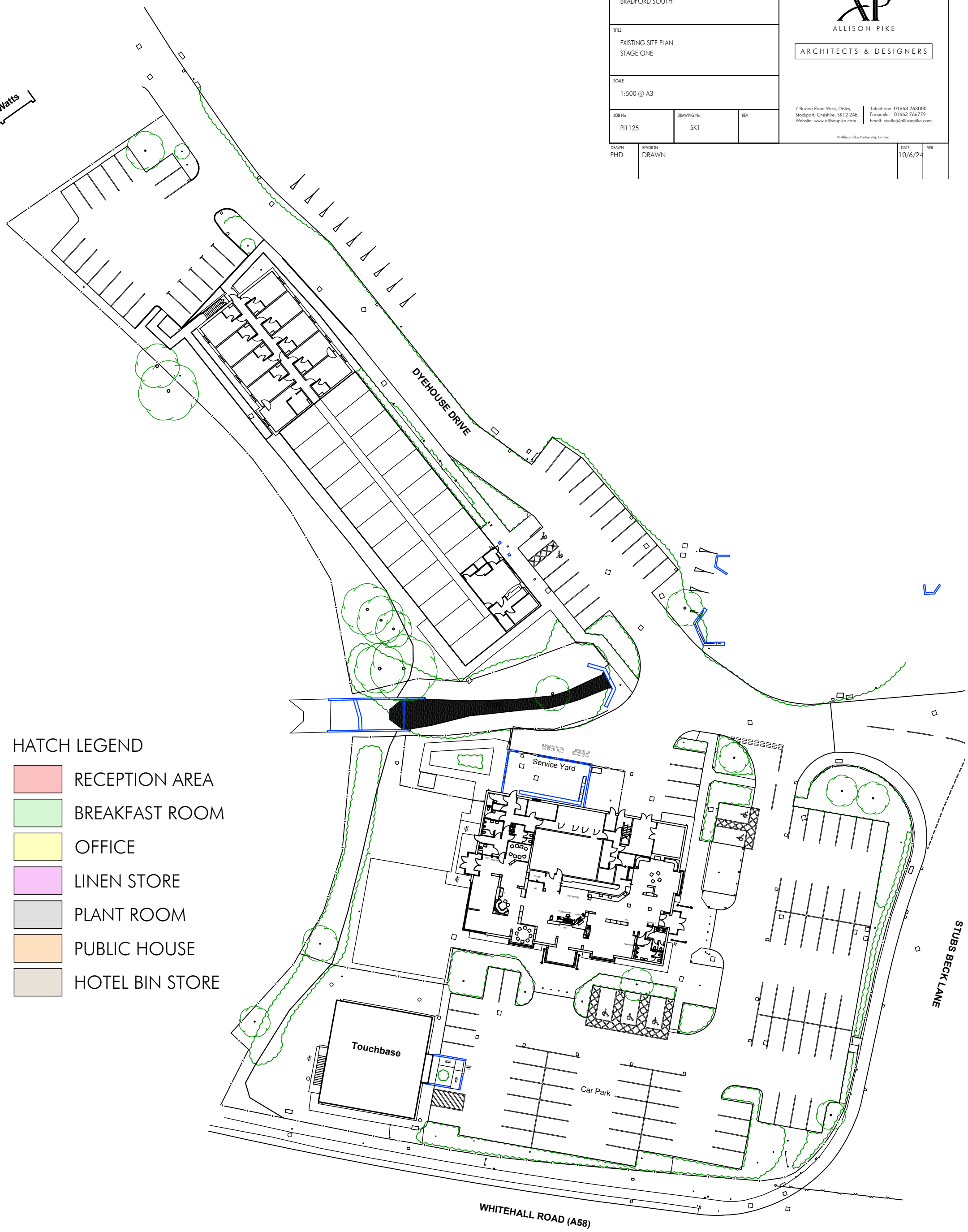

HATCH LEGEND

- RECEPTION AREA
- BREAKFAST ROOM
- OFFICE
- LINEN STORE
- PLANT ROOM
- PUBLIC HOUSE
- HOTEL BIN STORE

PROJECT	PREMIER INN EXTENSION, BRADFORD SOUTH
TITLE	PROPOSED SITE PLAN OPTION C STAGE ONE
SCALE	1:500 @ A3
JOB No	PI1125
DRAWING No	SK301
REV	A

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DRAWN	REVISION	DATE	VER
PHD	DRAWN	11/6/24	
PHD	REV A: DISABLED WC ADDED TO RESTAURANT AS PER PSO COMMENTS	12/8/24	

OPTION C

EXISTING HOTEL
2 Storeys 60 Bedrooms

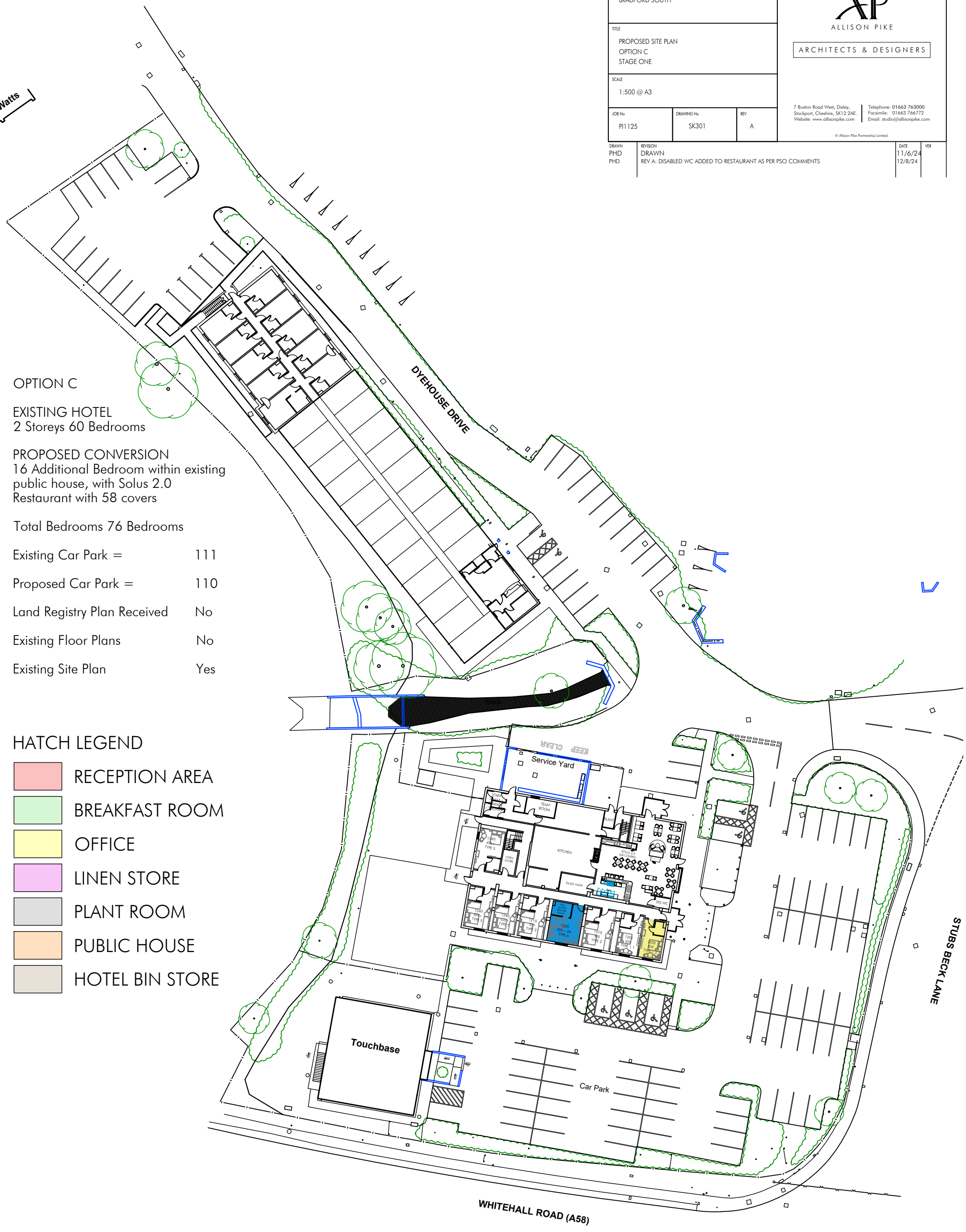
PROPOSED CONVERSION
16 Additional Bedroom within existing public house, with Solus 2.0
Restaurant with 58 covers

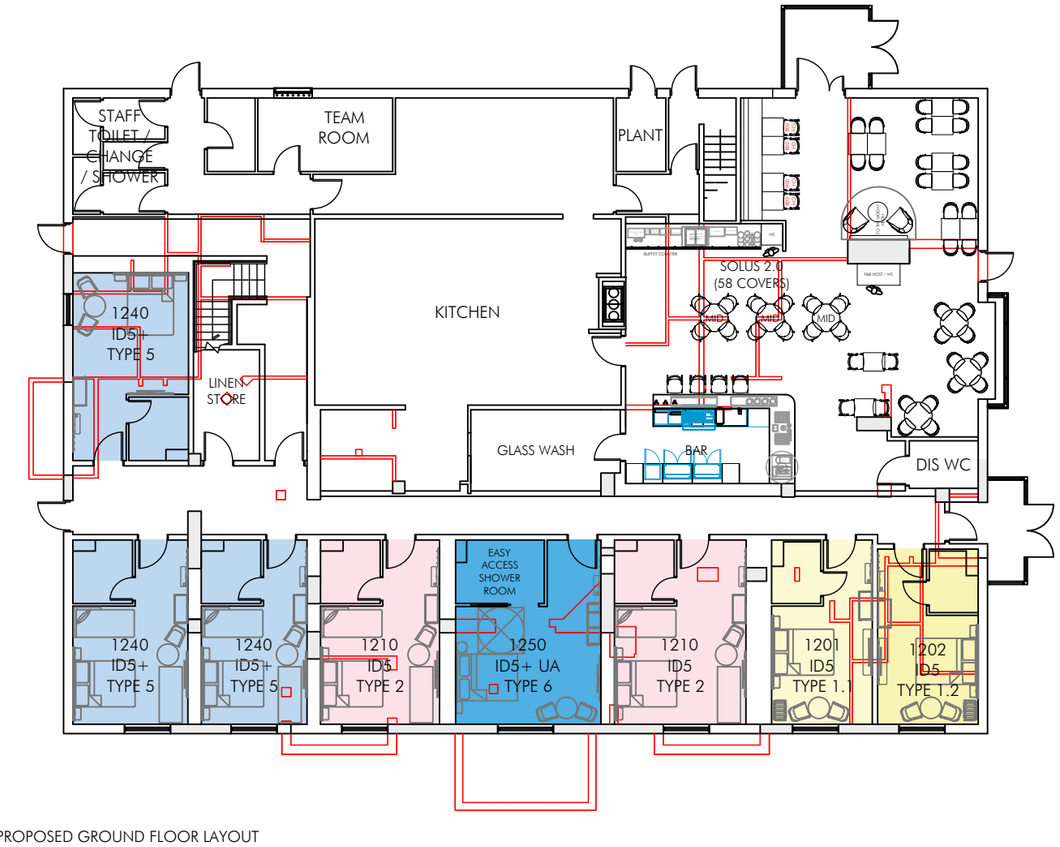
Total Bedrooms 76 Bedrooms

Existing Car Park =	111
Proposed Car Park =	110
Land Registry Plan Received	No
Existing Floor Plans	No
Existing Site Plan	Yes

HATCH LEGEND

- RECEPTION AREA
- BREAKFAST ROOM
- OFFICE
- LINEN STORE
- PLANT ROOM
- PUBLIC HOUSE
- HOTEL BIN STORE

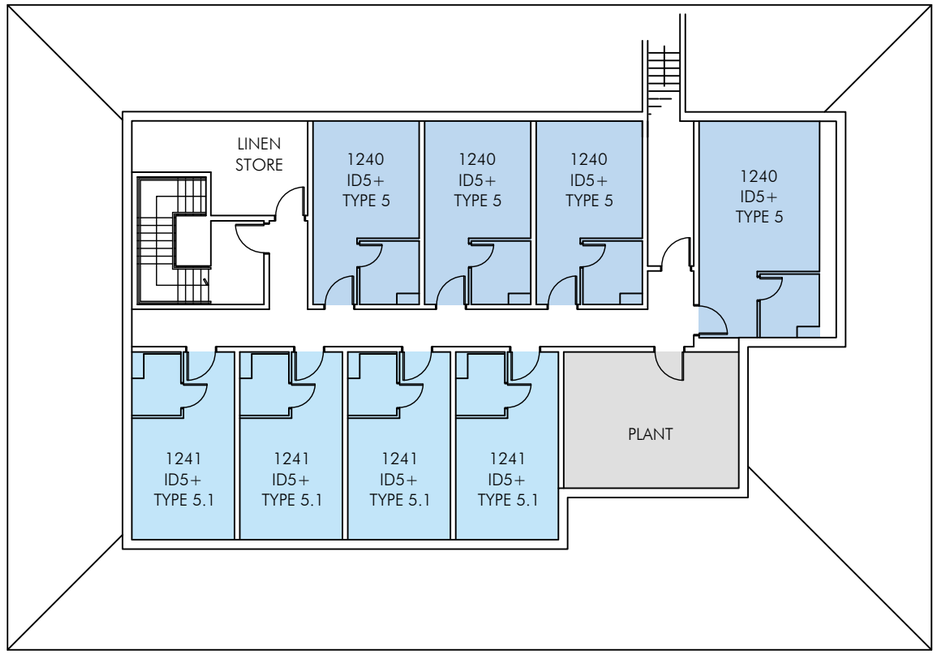




PROPOSED GROUND FLOOR LAYOUT
OPTION C
SCALE 1:200

0 2m 4m 6m 8m 10m 20m

SCALE 1:200 IN METRES



PROPOSED FIRST FLOOR LAYOUT
OPTION C
SCALE 1:200

0 2m 4m 6m 8m 10m 20m

SCALE 1:200 IN METRES

PROPOSED EXTENSION BEDROOM SPLIT												
FLOOR	ID5 TYPE 1 (DOUBLE)	ID5 TYPE 1.1 (DOUBLE)	ID5 TYPE 1.2 (DOUBLE)	ID5 TYPE 2 (QUAD)	ID5 TYPE 2.1 (TRIPLE)	ID5 TYPE 3 (TWIN)	ID5 TYPE 4 UA	ID5 TYPE 5 PREMIER PLUS	ID5 TYPE 5.1 PREMIER PLUS	ID5 TYPE 5.2 PREMIER PLUS	ID5 TYPE 6 PREMIER PLUS UA	FLOOR TOTAL
	21.2m2	18.9m2	17.8m2	21.2m2	21.2m2	21.2m2	26.9m2	21.2m2	18.9m2	17.8m2	26.9m2	
GROUND	0	1	1	2	0	0	0	3	0	0	1	8
fIRST	0	0	0	0	0	0	0	4	4	0	0	8
TOTAL	0	1	1	2	0	0	0	7	4	0	1	16
PERCENTAGE	0.0	6.3	6.3	12.5	0.0	0.0	0.0	43.8	25.0	0.0	6.3	100.0

PHD	REV A: DISABLED WC ADDED TO RESTAURANT AS PER PSO COMMENTS	12/8/24	
PHD	DRAWN	11/6/24	
DRAWN	REVISION	DATE	VER

PROJECT
PREMIER INN EXTENSION,
BRADFORD SOUTH

TITLE
PROPOSED GROUND AND FIRST FLOOR LAYOUTS
OPTION C

SCALE
1:200 @ A3

JOB No	DRAWING No	REV
PI1125	SK302	A

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Appendix 1 – Desk Study Assessment

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Bradford, Premier inn, Bradford, BD196HG

Order Details

Date: 05/09/2024

Your ref: EMS_969388_1204701

Our Ref: EMS-969388_1230125

Site Details

Location: 418456 426730

Area: 0.08 ha

Authority: Kirklees Council ↗

Contact us with any questions at:
info@groundsure.com ↗
01273 257 755

Certified B Corporation

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
14 >	1.1 >	Historical industrial land uses >	2	8	40	66	-
19 >	1.2 >	Historical tanks >	0	1	9	24	-
20 >	1.3 >	Historical energy features >	0	0	6	5	-
21	1.4	Historical petrol stations	0	0	0	0	-
21 >	1.5 >	Historical garages >	0	0	0	1	-
22	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
23 >	2.1 >	Historical industrial land uses >	4	12	49	105	-
30 >	2.2 >	Historical tanks >	0	2	13	41	-
32 >	2.3 >	Historical energy features >	0	0	14	14	-
33	2.4	Historical petrol stations	0	0	0	0	-
33 >	2.5 >	Historical garages >	0	0	0	2	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
35	3.1	Active or recent landfill	0	0	0	0	-
35	3.2	Historical landfill (BGS records)	0	0	0	0	-
36	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
36 >	3.4 >	Historical landfill (EA/NRW records) >	1	0	1	0	-
36	3.5	Historical waste sites	0	0	0	0	-
37	3.6	Licensed waste sites	0	0	0	0	-
37	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
38 >	4.1 >	Recent industrial land uses >	0	1	15	-	-
40	4.2	Current or recent petrol stations	0	0	0	0	-
40	4.3	Electricity cables	0	0	0	0	-
40	4.4	Gas pipelines	0	0	0	0	-
40	4.5	Sites determined as Contaminated Land	0	0	0	0	-

40	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
41	4.7	Regulated explosive sites	0	0	0	0	-
41	4.8	Hazardous substance storage/usage	0	0	0	0	-
41 >	4.9 >	Historical licensed industrial activities (IPC) >	0	0	0	10	-
43	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
43 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	0	2	-
43	4.12	Radioactive Substance Authorisations	0	0	0	0	-
43 >	4.13 >	Licensed Discharges to controlled waters >	0	0	1	22	-
47	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
47	4.15	Pollutant release to public sewer	0	0	0	0	-
47	4.16	List 1 Dangerous Substances	0	0	0	0	-
48 >	4.17 >	List 2 Dangerous Substances >	0	0	2	0	-
48 >	4.18 >	Pollution Incidents (EA/NRW) >	0	1	13	17	-
51	4.19	Pollution inventory substances	0	0	0	0	-
52	4.20	Pollution inventory waste transfers	0	0	0	0	-
52	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
53 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
54 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
55 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
56	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
56	5.5	Groundwater vulnerability- local information	None (within 0m)				
57 >	5.6 >	Groundwater abstractions >	0	0	0	0	7
59	5.7	Surface water abstractions	0	0	0	0	0
59	5.8	Potable abstractions	0	0	0	0	0
60	5.9	Source Protection Zones	0	0	0	0	-
60	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
61 >	6.1 >	Water Network (OS MasterMap) >	0	7	11	-	-

63 >	6.2 >	Surface water features >	0	1	1	-	-
63 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
64 >	6.4 >	WFD Surface water bodies >	0	1	0	-	-
64 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
65 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
66 >	7.2 >	Historical Flood Events >	0	1	0	-	-
66	7.3	Flood Defences	0	0	0	-	-
66	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
67	7.5	Flood Storage Areas	0	0	0	-	-
68 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
69 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
70 >	8.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
72 >	9.1 >	Groundwater flooding >	Low (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
73	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
74	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
74	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
74	10.4	Special Protection Areas (SPA)	0	0	0	0	0
74	10.5	National Nature Reserves (NNR)	0	0	0	0	0
75	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
75 >	10.7 >	Designated Ancient Woodland >	0	0	0	2	2
75	10.8	Biosphere Reserves	0	0	0	0	0
76	10.9	Forest Parks	0	0	0	0	0
76	10.10	Marine Conservation Zones	0	0	0	0	0
76 >	10.11 >	Green Belt >	0	0	1	0	3
76	10.12	Proposed Ramsar sites	0	0	0	0	0

77	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
77	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
77	10.15	Nitrate Sensitive Areas	0	0	0	0	0
77 >	10.16 >	Nitrate Vulnerable Zones >	1	0	0	0	1
79	10.17	SSSI Impact Risk Zones	0	-	-	-	-
79	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
80	11.1	World Heritage Sites	0	0	0	-	-
80	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
80	11.3	National Parks	0	0	0	-	-
80	11.4	Listed Buildings	0	0	0	-	-
81	11.5	Conservation Areas	0	0	0	-	-
81	11.6	Scheduled Ancient Monuments	0	0	0	-	-
81	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
82 >	12.1 >	Agricultural Land Classification >	Grade 3 (within 250m)				
83	12.2	Open Access Land	0	0	0	-	-
83	12.3	Tree Felling Licences	0	0	0	-	-
83	12.4	Environmental Stewardship Schemes	0	0	0	-	-
83	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	13.1 >	Priority Habitat Inventory >	0	1	3	-	-
85	13.2	Habitat Networks	0	0	0	-	-
85 >	13.3 >	Open Mosaic Habitat >	0	0	2	-	-
85	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
86 >	14.1 >	10k Availability >	Identified (within 500m)				
87 >	14.2 >	Artificial and made ground (10k) >	1	0	8	6	-
89 >	14.3 >	Superficial geology (10k) >	0	1	0	0	-

90	14.4	Landslip (10k)	0	0	0	0	-
91 >	14.5 >	Bedrock geology (10k) >	1	0	6	14	-
93 >	14.6 >	Bedrock faults and other linear features (10k) >	0	2	6	10	-
Page	Section	**Geology 1:50,000 scale >**	On site	0-50m	50-250m	250-500m	500-2000m
94 >	15.1 >	50k Availability >	Identified (within 500m)				
95 >	15.2 >	Artificial and made ground (50k) >	1	0	0	0	-
96 >	15.3 >	Artificial ground permeability (50k) >	1	0	-	-	-
97 >	15.4 >	Superficial geology (50k) >	0	1	0	0	-
98 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
98	15.6	Landslip (50k)	0	0	0	0	-
98	15.7	Landslip permeability (50k)	None (within 50m)				
99 >	15.8 >	Bedrock geology (50k) >	1	1	4	14	-
101 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
101 >	15.10 >	Bedrock faults and other linear features (50k) >	0	2	5	8	-
Page	Section	**Boreholes >**	On site	0-50m	50-250m	250-500m	500-2000m
103 >	16.1 >	BGS Boreholes >	0	0	42	-	-
Page	Section	**Natural ground subsidence >**					
106 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
107 >	17.2 >	Running sands >	Very low (within 50m)				
108 >	17.3 >	Compressible deposits >	Very low (within 50m)				
109 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
110 >	17.5 >	Landslides >	Very low (within 50m)				
111 >	17.6 >	Ground dissolution of soluble rocks >	Negligible (within 50m)				
Page	Section	**Mining and ground workings >**	On site	0-50m	50-250m	250-500m	500-2000m
113 >	18.1 >	BritPits >	0	0	0	3	-
114 >	18.2 >	Surface ground workings >	0	3	42	-	-
116 >	18.3 >	Underground workings >	0	0	5	7	9
117	18.4	Underground mining extents	0	0	0	0	-
117	18.5	Historical Mineral Planning Areas	0	0	0	0	-

118 >	18.6 >	Non-coal mining >	0	1	0	1	3
119	18.7	JPB mining areas	None (within 0m)				
119	18.8	The Coal Authority non-coal mining	0	0	0	0	-
119	18.9	Researched mining	0	0	0	0	-
119	18.10	Mining record office plans	0	0	0	0	-
120 >	18.11 >	BGS mine plans >	0	2	0	0	-
120 >	18.12 >	Coal mining >	Identified (within 0m)				
120	18.13	Brine areas	None (within 0m)				
120	18.14	Gypsum areas	None (within 0m)				
121	18.15	Tin mining	None (within 0m)				
121	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
122	19.1	Natural cavities	0	0	0	0	-
122	19.2	Mining cavities	0	0	0	0	0
122	19.3	Reported recent incidents	0	0	0	0	-
122	19.4	Historical incidents	0	0	0	0	-
123	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
124 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
126 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	4	-	-	-
126	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
127	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	On site	0-50m	50-250m	250-500m	500-2000m
128	22.1	Underground railways (London)	0	0	0	-	-
128	22.2	Underground railways (Non-London)	0	0	0	-	-
129	22.3	Railway tunnels	0	0	0	-	-
129 >	22.4 >	Historical railway and tunnel features >	0	0	5	-	-
129	22.5	Royal Mail tunnels	0	0	0	-	-

130	22.6	Historical railways	0	0	0	-	-
130	22.7	Railways	0	0	0	-	-
130	22.8	Crossrail 1	0	0	0	0	-
130	22.9	Crossrail 2	0	0	0	0	-
130	22.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 30/05/2021

Site Area: 0.08ha

Recent site history - 2018 aerial photograph

Capture Date: 02/07/2018

Site Area: 0.08ha

Recent site history - 2012 aerial photograph

Capture Date: 26/03/2012

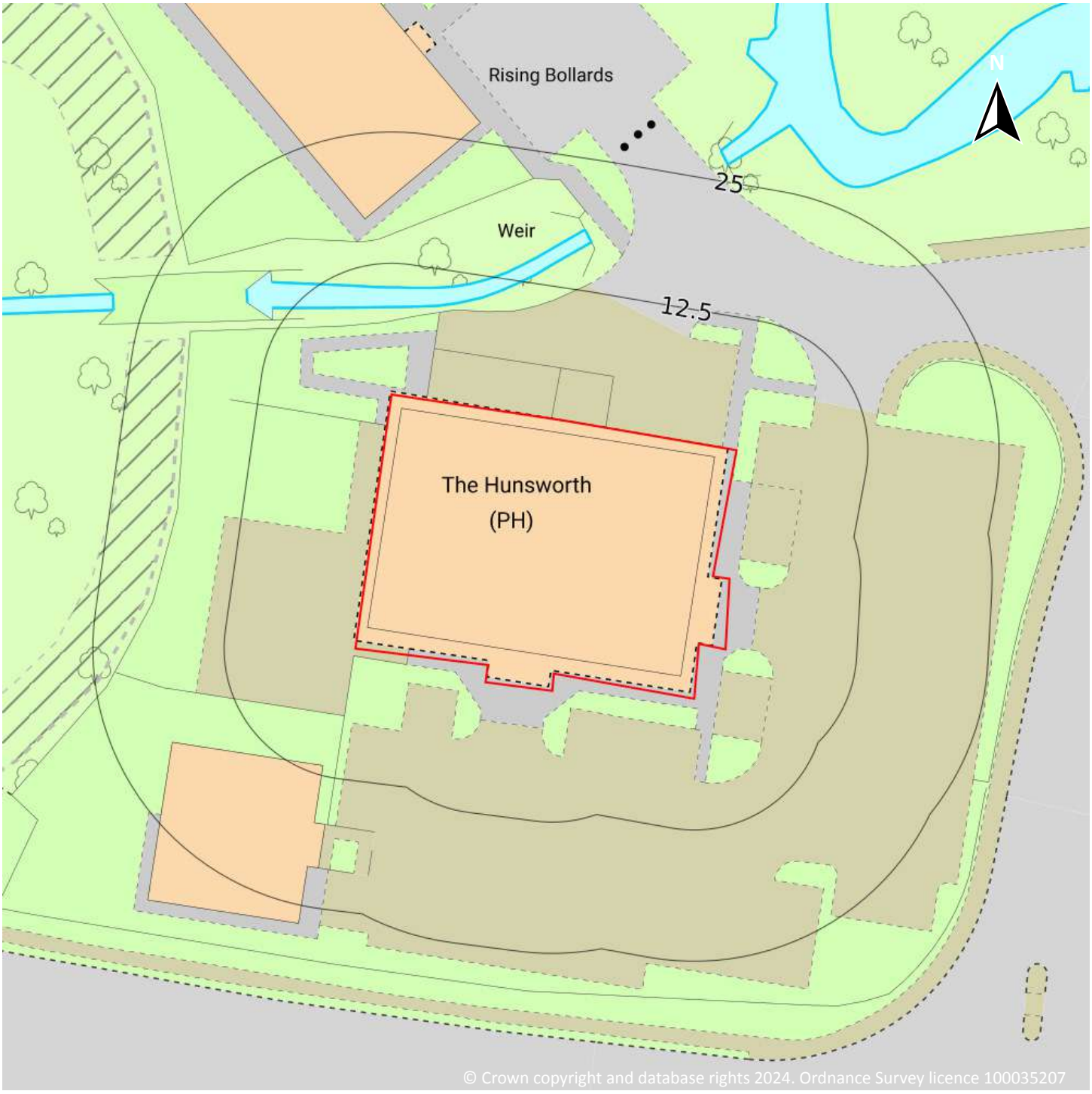
Site Area: 0.08ha

Recent site history - 1999 aerial photograph

Capture Date: 10/07/1999

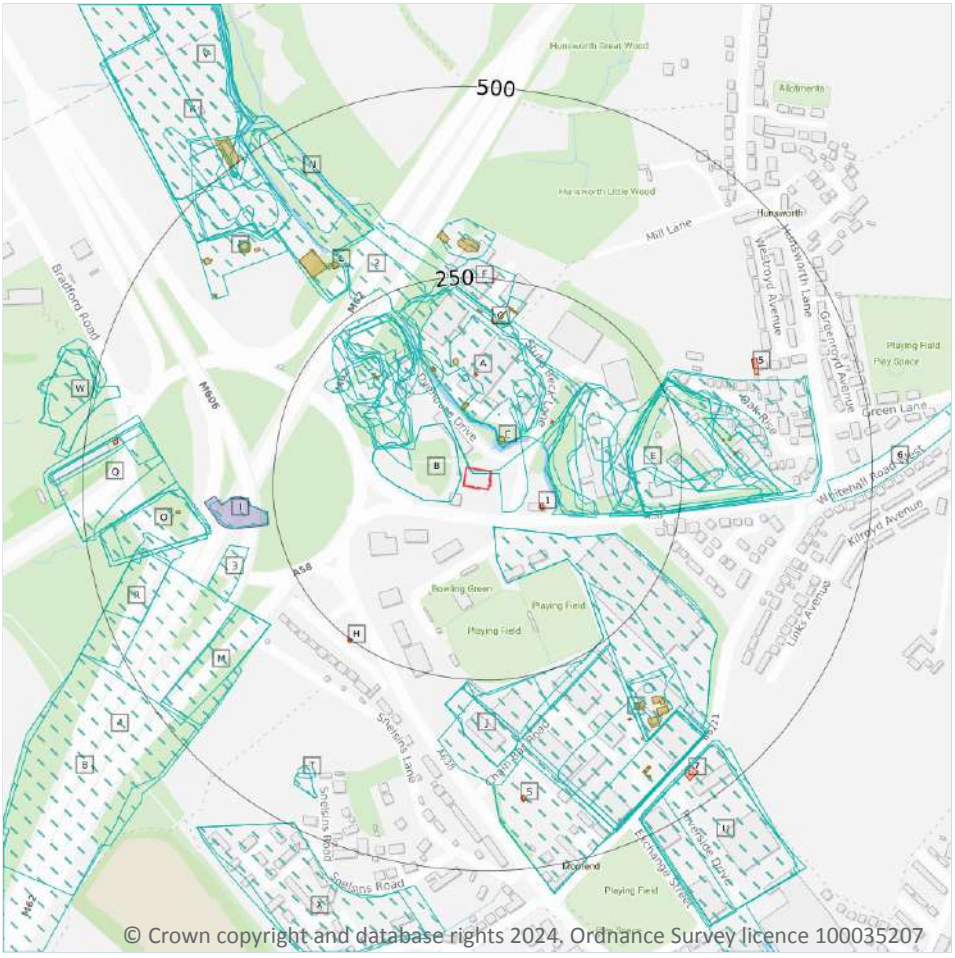
Site Area: 0.08ha

OS MasterMap site plan



Site Area: 0.08ha

1 Past land use



1.1 Historical industrial land uses

Records within 500m	116

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

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

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Works**	**1974 - 1990**	**1570231**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Mills**	**1955**	**1578767**
B	5m W	Unspecified Ground Workings	1974	1440342
B	5m W	Unspecified Pit	1983 - 1990	1496108
A	34m NE	Unspecified Mills	1967	1547314
A	35m NE	Unspecified Mills	1905	1525775
A	35m NE	Unspecified Mills	1938 - 1948	1559607
C	38m NE	Unspecified Tank	1892 - 1905	1502836
D	50m S	Unspecified Mill	1974	1448693
D	50m S	Unspecified Mills	1983 - 1990	1572092
A	58m N	Unspecified Mills	1892	1522828
E	70m E	Refuse Heap	1938 - 1948	1517261
A	70m W	Refuse Heap	1892	1498398
E	73m E	Unspecified Heap	1983 - 1990	1564927
E	75m E	Unspecified Heap	1967	1553211
E	76m E	Unspecified Ground Workings	1974	1576685
A	77m NW	Refuse Heap	1955	1575227
A	80m NW	Refuse Heap	1938 - 1948	1514896
A	82m NW	Refuse Heap	1905	1514154
E	82m E	Unspecified Ground Workings	1955	1484553
A	105m NE	Unspecified Pit	1905	1452002
A	111m NW	Unspecified Tank	1948	1473317
A	113m NW	Pumping Engine	1892	1485859
A	113m N	Chimney	1974 - 1990	1552599
A	123m NW	Unspecified Tanks	1955	1443793
E	134m E	Refuse Heap	1905	1496449
A	140m NW	Unspecified Heap	1967	1542380
A	141m NW	Unspecified Old Shaft	1955	1446655
A	141m NW	Unspecified Old Shafts	1938 - 1948	1527503

ID	Location	Land use	Dates present	Group ID
A	146m NW	Unspecified Heap	1892 - 1905	1517230
A	146m NW	Railway Sidings	1892	1479803
E	146m E	Unspecified Ground Workings	1974	1568331
E	149m E	Disused Colliery	1905	1447205
A	150m NW	Refuse Heap	1892	1582648
E	158m E	Colliery	1892	1469107
A	160m NW	Pumping Engine	1905	1572255
A	165m NW	Pumping Engine	1938	1497052
E	178m E	Unspecified Warehouses	1990	1478777
E	178m E	Unspecified Warehouse	1983	1527796
E	178m E	Refuse Heap	1892 - 1905	1487405
E	180m E	Refuse Heap	1955	1538425
D	180m SE	Unspecified Mills	1967	1541806
E	182m E	Unspecified Heap	1967	1467901
E	185m E	Unspecified Depot	1974	1445421
A	186m NW	Unspecified Heap	1892	1467976
F	188m N	Mill Ponds	1892 - 1905	1486122
2	220m NW	Refuse Heap	1967	1435067
E	230m E	Unspecified Warehouse	1990	1569600
E	241m E	Unspecified Warehouse	1974	1577981
E	248m NE	Railway Sidings	1892	1479802
E	253m NE	Tramway Sidings	1905	1478915
D	257m SE	Unspecified Mills	1955	1568723
I	260m W	Garage	1967	1448992
D	260m SE	Unspecified Mills	1938	1519137
J	262m S	Unspecified Commercial/Industrial	1990	1431931
J	262m S	Unspecified Works	1983	1460572
F	272m N	Unspecified Works	1990	1460471

ID	Location	Land use	Dates present	Group ID
K	280m NW	Sewage Works	1948	1517285
K	281m NW	Sewage Works	1955	1513627
K	281m NW	Sewage Works	1967	1580942
F	287m N	Unspecified Tanks	1938 - 1990	1485152
3	293m W	Cuttings	1983 - 1990	1579743
D	311m SE	Sewage Works	1938 - 1948	1517666
L	312m NW	Unspecified Tank	1955 - 1967	1565282
4	312m SW	Cuttings	1974	1553878
M	312m SW	Cuttings	1974	1545786
M	312m SW	Cuttings	1983 - 1990	1566644
D	316m SE	Sewage Tanks	1938 - 1948	1569329
E	318m E	Unspecified Old Shaft	1938 - 1948	1494450
E	320m E	Unspecified Old Shaft	1955	1446656
E	323m E	Refuse Heap	1948	1435068
D	329m SE	Unspecified Tank	1955	1473535
N	330m NW	Unspecified Ground Workings	1948 - 1955	1540293
D	334m SE	Unspecified Mills	1948	1555525
O	336m W	Unspecified Works	1967	1460573
O	337m W	Chemical Works	1955	1573572
O	343m W	Chemical Works	1892 - 1905	1503833
O	343m W	Chemical Works	1938 - 1948	1512121
N	356m NW	Sludge Bed	1974 - 1990	1582556
P	368m NW	Sewage Works	1938 - 1967	1493969
Q	377m W	Unspecified Works	1967	1460501
R	378m W	Cuttings	1974	1569294
D	382m SE	Unspecified Mills	1892 - 1905	1492008
Q	395m W	Rope Works	1955	1527230
K	396m NW	Refuse Heap	1892	1435114

ID	Location	Land use	Dates present	Group ID
R	396m W	Cuttings	1983 - 1990	1509886
K	397m NW	Old Coal Pit	1905	1465620
Q	402m W	Rope Works	1938 - 1948	1500366
P	404m NW	Unspecified Tank	1955 - 1967	1575699
P	407m NW	Sewage Tank	1948	1471165
P	407m NW	Unspecified Tank	1938	1512511
K	407m NW	Unspecified Heaps	1938	1462371
K	411m NW	Tramway Sidings	1892 - 1905	1580399
T	418m SW	Unspecified Quarry	1955	1464977
Q	426m W	Rope Works	1905	1518705
T	428m SW	Unspecified Pit	1892 - 1905	1555089
T	428m SW	Unspecified Pit	1938 - 1948	1569253
6	441m E	Cuttings	1892 - 1905	1557564
U	442m SE	Unspecified Mills	1955	1566025
U	444m SE	Unspecified Mills	1938 - 1948	1515059
U	445m SE	Unspecified Mills	1967 - 1990	1485591
V	450m NW	Sewage Works	1905	1508067
U	461m SE	Unspecified Mills	1905	1557682
W	463m W	Unspecified Heaps	1974	1462372
W	463m W	Unspecified Ground Workings	1955 - 1967	1576992
V	468m NW	Sewage Works	1938	1502485
8	473m SW	Cuttings	1983 - 1990	1510836
K	479m NW	Tramway Sidings	1955	1509393
K	484m NW	Tramway Sidings	1948	1524278
W	485m W	Tramway Sidings	1892	1478920
V	485m NW	Unspecified Works	1974	1460500
V	485m NW	Water Pollution Control Works	1983 - 1990	1527868
W	495m W	Unspecified Heap	1983 - 1990	1567857

ID	Location	Land use	Dates present	Group ID
X	495m SW	Unspecified Works	1967 - 1983	1502488
X	495m SW	Unspecified Works	1990	1566537
W	498m W	Unspecified Heap	1938 - 1948	1496314

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**34**

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

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

ID	Location	Land use	Dates present	Group ID
C	40m NE	Unspecified Tank	1894 - 1907	256980
A	75m N	Tanks	1922	234274
A	133m N	Unspecified Tank	1922 - 1933	250558
A	135m N	Unspecified Tank	1938	255347
A	136m N	Unspecified Tank	1956 - 1958	253975
A	163m NW	Tanks	1894	234272
G	191m N	Tanks	1933 - 1938	259797
G	199m N	Tanks	1938	234277
G	204m N	Tanks	1938	234278
G	208m N	Tanks	1933 - 1938	253089
F	283m N	Tanks	1933 - 1973	251372
F	296m N	Unspecified Tank	1938	238805
E	306m E	Unspecified Tank	1894	238268
L	312m NW	Unspecified Tank	1957	253816
E	313m E	Unspecified Tank	1994 - 1998	258018

ID	Location	Land use	Dates present	Group ID
L	318m NW	Unspecified Tank	1938	256283
L	319m NW	Humus Tanks	1938	236888
E	319m E	Unspecified Tank	1894	238269
D	342m SE	Humus Tanks	1933 - 1938	252049
D	348m SE	Septic Tanks	1933 - 1938	249920
D	352m SE	Tanks	1933 - 1938	251678
D	363m SE	Sludge Tanks	1933	244152
D	367m SE	Sludge Tanks	1933	244151
O	374m W	Unspecified Tank	1922 - 1933	247512
D	383m SE	Unspecified Tank	1957 - 1958	253932
P	393m NW	Humus Tank	1933 - 1938	260082
P	396m NW	Septic Tank	1933 - 1938	261061
P	402m NW	Unspecified Tank	1957	241813
D	419m SE	Tanks	1992	245556
D	419m SE	Tanks	1972	253320
D	422m SE	Tanks	1992	247839
P	429m NW	Settling Tanks	1933 - 1938	259953
D	430m SE	Unspecified Tank	1957 - 1958	244794
K	499m NW	Tanks	1996	234041

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	11

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

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

ID	Location	Land use	Dates present	Group ID
1	69m E	Gas Governor	1972 - 1994	161423
E	101m NE	Electricity Substation	1995 - 1998	153008
A	119m N	Electricity Substation	1973 - 1992	146710
G	206m N	Electricity Substation	1996	144424
H	249m SW	Electricity Substation	1973	159162
H	249m SW	Electricity Substation	1992 - 1996	160105
5	368m E	Electricity Substation	1994 - 1998	148859
S	403m S	Electricity Substation	1995	149160
S	404m S	Electricity Substation	1972 - 1994	154493
7	448m SE	Electricity Substation	1972	144425
Q	457m W	Electricity Substation	1974 - 1992	153621

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	1

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

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

ID	Location	Land use	Dates present	Group ID
I	260m W	Garage	1956 - 1958	46263

This data is sourced from Ordnance Survey / Groundsure.

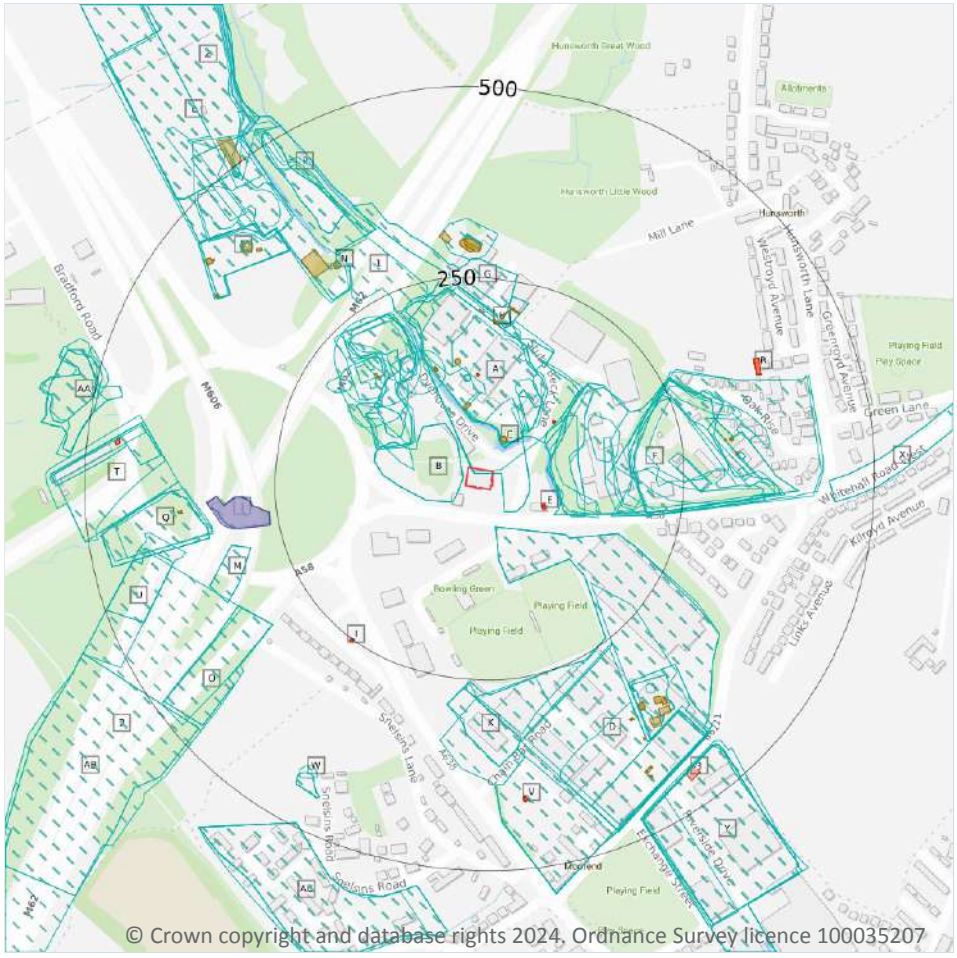
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



2.1 Historical industrial land uses

Records within 500m	170

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

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Mills**	**1955**	**1578767**
A	**On site**	**Unspecified Works**	**1990**	**1570231**
A	**On site**	**Unspecified Works**	**1983**	**1570231**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Works**	**1974**	**1570231**
B	5m W	Unspecified Pit	1990	1496108
B	5m W	Unspecified Pit	1983	1496108
B	5m W	Unspecified Ground Workings	1974	1440342
A	34m NE	Unspecified Mills	1967	1547314
A	35m NE	Unspecified Mills	1905	1525775
A	35m NE	Unspecified Mills	1948	1559607
A	35m NE	Unspecified Mills	1938	1559607
C	38m NE	Unspecified Tank	1892	1502836
C	38m NE	Unspecified Tank	1905	1502836
D	50m S	Unspecified Mills	1990	1572092
D	50m S	Unspecified Mills	1983	1572092
D	50m S	Unspecified Mill	1974	1448693
A	58m N	Unspecified Mills	1892	1522828
F	70m E	Refuse Heap	1948	1517261
F	70m E	Refuse Heap	1938	1517261
A	70m W	Refuse Heap	1892	1498398
F	73m E	Unspecified Heap	1990	1564927
F	73m E	Unspecified Heap	1983	1564927
F	75m E	Unspecified Heap	1967	1553211
F	76m E	Unspecified Ground Workings	1974	1576685
A	77m NW	Refuse Heap	1955	1575227
A	80m NW	Refuse Heap	1948	1514896
A	80m NW	Refuse Heap	1938	1514896
A	82m NW	Refuse Heap	1905	1514154
F	82m E	Unspecified Ground Workings	1955	1484553
A	105m NE	Unspecified Pit	1905	1452002
A	111m NW	Unspecified Tank	1948	1473317

ID	Location	Land Use	Date	Group ID
A	113m NW	Pumping Engine	1892	1485859
A	113m N	Chimney	1990	1552599
A	113m N	Chimney	1983	1552599
A	113m N	Chimney	1974	1552599
A	123m NW	Unspecified Tanks	1955	1443793
F	134m E	Refuse Heap	1905	1496449
A	140m NW	Unspecified Heap	1967	1542380
A	141m NW	Unspecified Old Shaft	1955	1446655
A	141m NW	Unspecified Old Shafts	1948	1527503
A	141m NW	Unspecified Old Shafts	1938	1527503
A	146m NW	Unspecified Heap	1892	1517230
A	146m NW	Unspecified Heap	1905	1517230
A	146m NW	Railway Sidings	1892	1479803
F	146m E	Unspecified Ground Workings	1974	1568331
F	149m E	Disused Colliery	1905	1447205
A	150m NW	Refuse Heap	1892	1582648
F	158m E	Colliery	1892	1469107
A	160m NW	Pumping Engine	1905	1572255
A	165m NW	Pumping Engine	1938	1497052
F	178m E	Unspecified Warehouses	1990	1478777
F	178m E	Unspecified Warehouse	1983	1527796
F	178m E	Refuse Heap	1905	1487405
F	179m E	Refuse Heap	1892	1487405
F	180m E	Refuse Heap	1955	1538425
D	180m SE	Unspecified Mills	1967	1541806
F	182m E	Unspecified Heap	1967	1467901
F	185m E	Unspecified Depot	1974	1445421
A	186m NW	Unspecified Heap	1892	1467976

ID	Location	Land Use	Date	Group ID
G	188m N	Mill Ponds	1892	1486122
G	188m N	Mill Ponds	1905	1486122
1	220m NW	Refuse Heap	1967	1435067
F	230m E	Unspecified Warehouse	1990	1569600
F	241m E	Unspecified Warehouse	1974	1577981
F	248m NE	Railway Sidings	1892	1479802
F	253m NE	Tramway Sidings	1905	1478915
D	257m SE	Unspecified Mills	1955	1568723
J	260m W	Garage	1967	1448992
D	260m SE	Unspecified Mills	1938	1519137
K	262m S	Unspecified Commercial/Industrial	1990	1431931
K	262m S	Unspecified Works	1983	1460572
G	272m N	Unspecified Works	1990	1460471
L	280m NW	Sewage Works	1948	1517285
L	281m NW	Sewage Works	1955	1513627
L	281m NW	Sewage Works	1967	1580942
G	287m N	Unspecified Tanks	1955	1485152
G	287m N	Unspecified Tanks	1990	1485152
G	287m N	Unspecified Tanks	1983	1485152
G	287m N	Unspecified Tanks	1974	1485152
G	287m N	Unspecified Tanks	1967	1485152
G	288m N	Unspecified Tanks	1948	1485152
G	288m N	Unspecified Tanks	1938	1485152
M	293m W	Cuttings	1990	1579743
M	293m W	Cuttings	1983	1579743
D	311m SE	Sewage Works	1948	1517666
D	311m SE	Sewage Works	1938	1517666
N	312m NW	Unspecified Tank	1967	1565282

ID	Location	Land Use	Date	Group ID
2	312m SW	Cuttings	1974	1553878
O	312m SW	Cuttings	1990	1566644
O	312m SW	Cuttings	1983	1566644
O	312m SW	Cuttings	1974	1545786
D	316m SE	Sewage Tanks	1948	1569329
D	316m SE	Sewage Tanks	1938	1569329
N	316m NW	Unspecified Tank	1955	1565282
F	318m E	Unspecified Old Shaft	1948	1494450
F	318m E	Unspecified Old Shaft	1938	1494450
F	320m E	Unspecified Old Shaft	1955	1446656
F	323m E	Refuse Heap	1948	1435068
D	329m SE	Unspecified Tank	1955	1473535
P	330m NW	Unspecified Ground Workings	1948	1540293
D	334m SE	Unspecified Mills	1948	1555525
P	335m NW	Unspecified Ground Workings	1955	1540293
Q	336m W	Unspecified Works	1967	1460573
Q	337m W	Chemical Works	1955	1573572
Q	343m W	Chemical Works	1892	1503833
Q	343m W	Chemical Works	1948	1512121
Q	343m W	Chemical Works	1938	1512121
Q	343m W	Chemical Works	1905	1503833
P	356m NW	Sludge Bed	1990	1582556
P	356m NW	Sludge Bed	1983	1582556
P	356m NW	Sludge Bed	1974	1582556
S	368m NW	Sewage Works	1955	1493969
S	368m NW	Sewage Works	1967	1493969
S	369m NW	Sewage Works	1948	1493969
S	369m NW	Sewage Works	1938	1493969

ID	Location	Land Use	Date	Group ID
T	377m W	Unspecified Works	1967	1460501
U	378m W	Cuttings	1974	1569294
D	382m SE	Unspecified Mills	1892	1492008
D	382m SE	Unspecified Mills	1905	1492008
T	395m W	Rope Works	1955	1527230
L	396m NW	Refuse Heap	1892	1435114
U	396m W	Cuttings	1990	1509886
U	396m W	Cuttings	1983	1509886
L	397m NW	Old Coal Pit	1905	1465620
T	402m W	Rope Works	1948	1500366
T	402m W	Rope Works	1938	1500366
S	404m NW	Unspecified Tank	1955	1575699
S	404m NW	Unspecified Tank	1967	1575699
S	407m NW	Sewage Tank	1948	1471165
S	407m NW	Unspecified Tank	1938	1512511
L	407m NW	Unspecified Heaps	1938	1462371
L	411m NW	Tramway Sidings	1905	1580399
W	418m SW	Unspecified Quarry	1955	1464977
T	426m W	Rope Works	1905	1518705
W	428m SW	Unspecified Pit	1892	1555089
W	428m SW	Unspecified Pit	1948	1569253
W	428m SW	Unspecified Pit	1938	1569253
W	428m SW	Unspecified Pit	1905	1555089
X	441m E	Cuttings	1892	1557564
X	441m E	Cuttings	1905	1557564
Y	442m SE	Unspecified Mills	1955	1566025
L	443m NW	Tramway Sidings	1892	1580399
Y	444m SE	Unspecified Mills	1948	1515059

ID	Location	Land Use	Date	Group ID
Y	444m SE	Unspecified Mills	1938	1515059
Y	445m SE	Unspecified Mills	1990	1485591
Y	445m SE	Unspecified Mills	1983	1485591
Y	445m SE	Unspecified Mills	1974	1485591
Y	445m SE	Unspecified Mills	1967	1485591
Z	450m NW	Sewage Works	1905	1508067
Y	461m SE	Unspecified Mills	1905	1557682
AA	463m W	Unspecified Heaps	1974	1462372
AA	463m W	Unspecified Ground Workings	1967	1576992
Z	468m NW	Sewage Works	1938	1502485
AB	473m SW	Cuttings	1990	1510836
AB	473m SW	Cuttings	1983	1510836
L	479m NW	Tramway Sidings	1955	1509393
AA	482m W	Unspecified Ground Workings	1955	1576992
L	484m NW	Tramway Sidings	1948	1524278
AA	485m W	Tramway Sidings	1892	1478920
Z	485m NW	Water Pollution Control Works	1990	1527868
Z	485m NW	Water Pollution Control Works	1983	1527868
Z	485m NW	Unspecified Works	1974	1460500
AA	495m W	Unspecified Heap	1990	1567857
AA	495m W	Unspecified Heap	1983	1567857
AC	495m SW	Unspecified Works	1990	1566537
AC	495m SW	Unspecified Works	1983	1502488
AC	495m SW	Unspecified Works	1974	1502488
AC	495m SW	Unspecified Works	1967	1502488
AA	498m W	Unspecified Heap	1948	1496314
AA	498m W	Unspecified Heap	1938	1496314

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**56**

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

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
C	40m NE	Unspecified Tank	1894	256980
C	40m NE	Unspecified Tank	1907	256980
A	75m N	Tanks	1922	234274
A	133m N	Unspecified Tank	1922	250558
A	133m N	Unspecified Tank	1933	250558
A	135m N	Unspecified Tank	1938	255347
A	136m N	Unspecified Tank	1956	253975
A	136m N	Unspecified Tank	1958	253975
A	163m NW	Tanks	1894	234272
H	191m N	Tanks	1933	259797
H	191m N	Tanks	1938	259797
H	199m N	Tanks	1938	234277
H	204m N	Tanks	1938	234278
H	208m N	Tanks	1933	253089
H	208m N	Tanks	1938	253089
G	283m N	Tanks	1933	251372
G	283m N	Tanks	1938	251372
G	283m N	Tanks	1973	251372
G	283m N	Tanks	1957	251372
G	296m N	Unspecified Tank	1938	238805
F	306m E	Unspecified Tank	1894	238268
N	312m NW	Unspecified Tank	1957	253816
F	313m E	Unspecified Tank	1994	258018

ID	Location	Land Use	Date	Group ID
F	313m E	Unspecified Tank	1996	258018
F	313m E	Unspecified Tank	1995	258018
F	313m E	Unspecified Tank	1998	258018
F	313m E	Unspecified Tank	1995	258018
F	313m E	Unspecified Tank	1994	258018
N	318m NW	Unspecified Tank	1938	256283
N	319m NW	Humus Tanks	1938	236888
F	319m E	Unspecified Tank	1894	238269
D	342m SE	Humus Tanks	1933	252049
D	342m SE	Humus Tanks	1938	252049
D	348m SE	Septic Tanks	1933	249920
D	348m SE	Septic Tanks	1938	249920
D	352m SE	Tanks	1933	251678
D	352m SE	Tanks	1938	251678
D	363m SE	Sludge Tanks	1933	244152
D	367m SE	Sludge Tanks	1933	244151
Q	374m W	Unspecified Tank	1922	247512
Q	374m W	Unspecified Tank	1933	247512
D	383m SE	Unspecified Tank	1958	253932
D	383m SE	Unspecified Tank	1957	253932
S	393m NW	Humus Tank	1933	260082
S	393m NW	Humus Tank	1938	260082
S	396m NW	Septic Tank	1933	261061
S	396m NW	Septic Tank	1938	261061
S	402m NW	Unspecified Tank	1957	241813
D	419m SE	Tanks	1992	245556
D	419m SE	Tanks	1972	253320
D	422m SE	Tanks	1992	247839

ID	Location	Land Use	Date	Group ID
S	429m NW	Settling Tanks	1933	259953
S	429m NW	Settling Tanks	1938	259953
D	430m SE	Unspecified Tank	1958	244794
D	430m SE	Unspecified Tank	1957	244794
L	499m NW	Tanks	1996	234041

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**28**

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

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
E	69m E	Gas Governor	1994	161423
E	69m E	Gas Governor	1994	161423
E	70m SE	Gas Governor	1972	161423
F	101m NE	Electricity Substation	1996	153008
F	101m NE	Electricity Substation	1995	153008
F	101m NE	Electricity Substation	1998	153008
F	101m NE	Electricity Substation	1995	153008
A	119m N	Electricity Substation	1992	146710
A	121m N	Electricity Substation	1973	146710
H	206m N	Electricity Substation	1996	144424
I	249m SW	Electricity Substation	1973	159162
I	249m SW	Electricity Substation	1996	160105
I	249m SW	Electricity Substation	1995	160105
I	249m SW	Electricity Substation	1992	160105
R	368m E	Electricity Substation	1996	148859

ID	Location	Land Use	Date	Group ID
R	368m E	Electricity Substation	1995	148859
R	368m E	Electricity Substation	1998	148859
R	368m E	Electricity Substation	1995	148859
R	368m E	Electricity Substation	1994	148859
R	368m E	Electricity Substation	1994	148859
V	403m S	Electricity Substation	1995	149160
V	404m S	Electricity Substation	1972	154493
V	406m S	Electricity Substation	1994	154493
V	406m S	Electricity Substation	1992	154493
V	406m S	Electricity Substation	1994	154493
3	448m SE	Electricity Substation	1972	144425
T	457m W	Electricity Substation	1992	153621
T	457m W	Electricity Substation	1974	153621

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m	0

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

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m	2

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

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
J	260m W	Garage	1958	46263
J	260m W	Garage	1956	46263

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	2

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

Features are displayed on the Waste and landfill map on **page 35 >**

ID	Location	Details		
1	**On site**	**Site Address: Land off Whitehall Road, Dyehouse Drive, Cleckheaton Licence Holder Address: Whitehall Road, Cleckheaton**	**Waste Licence: Yes Site Reference: 4700/0222 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 02/04/1980 Licence Surrender: 28/04/1994**	**Operator: - Licence Holder: Hunsworth Dyeing Company Limited First Recorded 30/04/1980 Last Recorded: 31/12/1991**
2	65m NE	Site Address: Land off Whitehall Road, Cleckheaton Licence Holder Address: Whitehall Road, Cleckheaton	Waste Licence: Yes Site Reference: 4700/0043, 4700/0272 Waste Type: Inert, Industrial, Special, Liquid sludge Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 03/05/1977 Licence Surrender: 25/04/1994	Operator: - Licence Holder: Hunsworth Dyeing Company Limited First Recorded 01/01/1919 Last Recorded: 31/03/1994

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

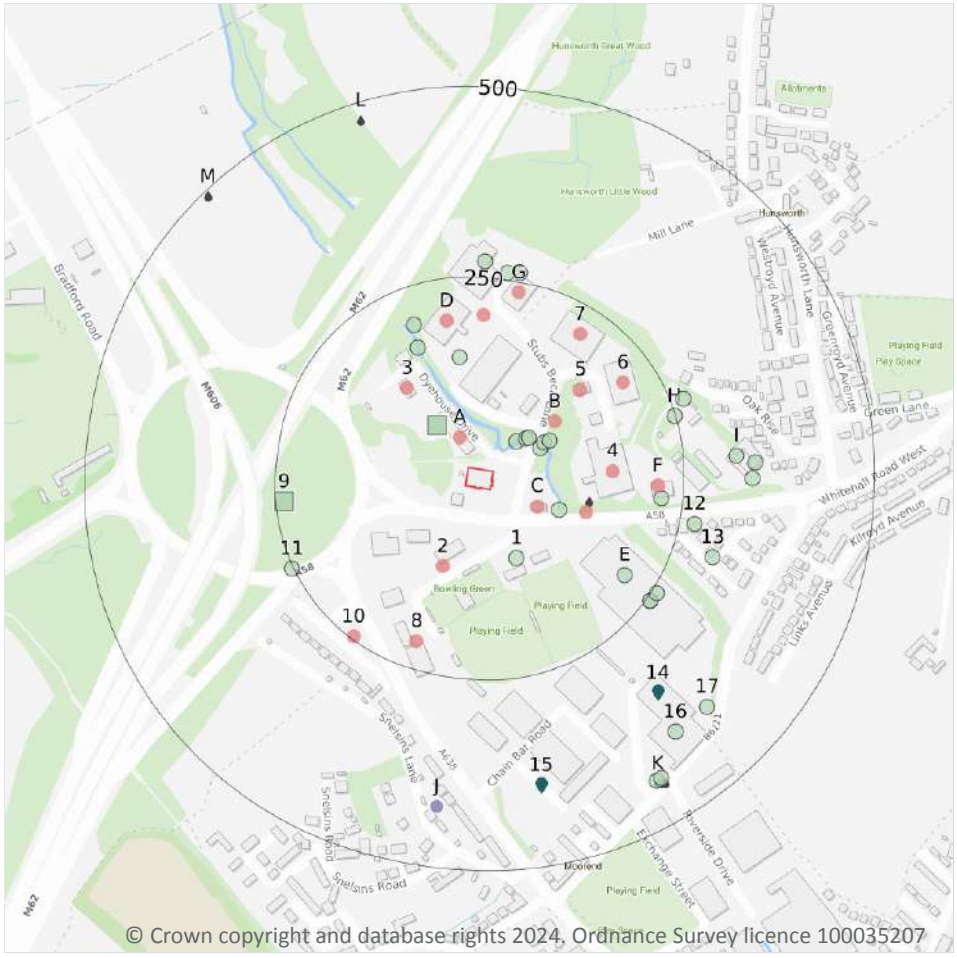
3.7 Waste exemptions

Records within 500m	0

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

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

4 Current industrial land use



Site Outline

Search buffers in metres (m)

Recent industrial land uses

Historical licensed industrial activities

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

Licensed Discharges to controlled waters

List 2 Dangerous Substances

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	16

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Company	Address	Activity	Category
A	41m NW	Premier Meetings	Premier Inn Bradford South, Dyehouse Drive, Hunsworth, Cleckheaton, West Yorkshire, BD19 6HG	Business Parks and Industrial Estates	Industrial Features
C	64m SE	Network Storage Systems Ltd	Network House, Stubs Beck Lane, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TT	Shelving, Storage, Safes and Vaults	Industrial Products

ID	Location	Company	Address	Activity	Category
B	104m NE	Electricity Sub Station	West Yorkshire, BD19	Electrical Features	Infrastructure and Facilities
2	110m SW	Electricity Sub Station	West Yorkshire, BD19	Electrical Features	Infrastructure and Facilities
C	127m E	Gas Governor	West Yorkshire, BD19	Gas Features	Infrastructure and Facilities
3	131m NW	Morson Projects	The Dyehouse, Dyehouse Drive, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TY	Civil Engineers	Engineering Services
4	157m E	Group Auto	Unit 4a West 26 Industrial Estate, Little Wood Drive, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TQ	Vehicle Parts and Accessories	Motoring
5	157m NE	S K N Scaffolding	Unit A1 Ground Floor, West 26 Industrial Estate, Hanging Wood Way, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TE	Construction and Tool Hire	Hire Services
D	194m N	Alliance Health Care Distribution Ltd	Unit 3, West 26 Industrial Estate, Hanging Wood Way, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TS	Distribution and Haulage	Transport, Storage and Delivery
D	201m N	Electricity Sub Station	West Yorkshire, BD19	Electrical Features	Infrastructure and Facilities
6	206m NE	Hart & Clough	Ezra House, Little Wood Drive, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TQ	Published Goods	Industrial Products
7	213m NE	Ferno UK Ltd	Ferno House West 26 Industrial Estate, Stubs Beck Lane, Hunsworth, Cleckheaton, West Yorkshire, BD19 4TZ	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
8	213m S	Electricity Sub Station	West Yorkshire, BD19	Electrical Features	Infrastructure and Facilities
F	216m E	Wrawby Services	Unit 8a Hillside Works, Whitehall Road, Hunsworth, Cleckheaton, West Yorkshire, BD19 4DN	Sewage Services	Personal, Consumer and Other Services
G	237m N	Vokera	Stubs Beck Lane, West 26 Industrial Estate, Cleckheaton, West Yorkshire, BD19 4TT	Industrial Repairs and Servicing	Repair and Servicing
10	246m SW	Electricity Sub Station	West Yorkshire, BD19	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	10

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Details	
J	420m S	Operator: Econosto Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Processes Involving Asbestos Permit Number: AI0144	Original Permit Number: IPCAIRAPP Date Approved: 12-11-1993 Effective Date: 12-11-1993 Status: Superseded By Variation
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Processes Involving Asbestos Permit Number: AI0152	Original Permit Number: IPCAIRAPP Date Approved: 1-8-1993 Effective Date: 1-8-1993 Status: Superseded By Variation
J	420m S	Operator: Econosto Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Processes Involving Asbestos Permit Number: AP3711	Original Permit Number: IPCMINVAR Date Approved: 15-12-1994 Effective Date: 31-12-1994 Status: Superseded By Variation

ID	Location	Details	
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Processes Involving Asbestos Permit Number: BC5776	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Superseded By Variation
J	420m S	Operator: Econosto Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Processes Involving Asbestos Permit Number: BD0524	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 Status: Revoked
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Inorganic Chemical Processes Permit Number: BJ9665	Original Permit Number: IPCMINVAR Date Approved: 15-3-2001 Effective Date: 30-3-2001 Status: Superseded By Variation
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Inorganic Chemical Processes Permit Number: BR9251	Original Permit Number: IPCMINVAR Date Approved: 18-4-2002 Effective Date: 18-4-2002 Status: Superseded By Variation
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Inorganic Chemical Processes Permit Number: BS8583	Original Permit Number: IPCMINVAR Date Approved: 25-7-2002 Effective Date: 25-7-2002 Status: Superseded By Variation
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Inorganic Chemical Processes Permit Number: BV6137	Original Permit Number: IPCMINVAR Date Approved: 19-12-2003 Effective Date: 19-12-2003 Status: Superseded By Variation
J	420m S	Operator: Tmd Friction UK Ltd Address: Hunsworth Lane, Cleckheaton, West Yorkshire, BD19 3UJ Process: Inorganic Chemical Processes Permit Number: BX6391	Original Permit Number: IPCMINVAR Date Approved: 31-3-2004 Effective Date: 31-3-2004 Status: Revoked - Now Ippc

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Address	Details	
14	346m SE	Flexitallic Ltd (formerly Novus Sealing Ltd), Hunsworth Lane, Cleckheaton, BD19 3UJ	Process: Rubber Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
15	394m S	Scandura Ltd, Po Box 18, Scandinavian Hills, Cleckheaton, BD19 3TY	Process: Adhesive Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	23

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Address	Details	
C	128m E	HUNSWORTH DYEING CO, WHITEHALL ROAD, CLECKHEATON, BRADFORD	Effluent Type: TRADE DISCHARGES - UNSPECIFIED Permit Number: 3364 Permit Version: 1 Receiving Water: -	Status: REVOKED - UNSPECIFIED Issue date: 01/01/1982 Effective Date: 01/01/1982 Revocation Date: 18/10/1990
K	444m SE	WHITEHALL ROAD CSO, WHITEHALL ROAD, CLECKHEATON, WEST YORKSHIRE, BD19 4EF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WA6376 Permit Version: 2 Receiving Water: RIVER SPEN	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 26/03/2004 Effective Date: 31/03/2004 Revocation Date: 30/03/2018
K	446m SE	WHITEHALL ROAD CSO, WHITEHALL ROAD, CLECKHEATON, WEST YORKSHIRE, BD19 4EF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WA6376 Permit Version: 3 Receiving Water: RIVER SPEN	Status: VARIED UNDER EPR 2010 Issue date: 21/02/2018 Effective Date: 31/03/2018 Revocation Date: -
K	449m SE	WHITEHALL ROAD CSO, WHITEHALL ROAD, CLECKHEATON, WEST YORKSHIRE, BD19 4EF	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WA6376 Permit Version: 1 Receiving Water: RIVER SPEN	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 11/06/1991 Effective Date: 11/06/1991 Revocation Date: 30/03/2004
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 6 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 01/06/1997 Revocation Date: 28/02/1998
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 5 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 31/01/1997 Revocation Date: 31/05/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 3 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 05/12/1989 Revocation Date: 29/02/1992

ID	Location	Address	Details	
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 4 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 01/03/1992 Revocation Date: 30/01/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 3 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 05/12/1989 Revocation Date: 29/02/1992
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 4 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 01/03/1992 Revocation Date: 30/01/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 4 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 01/03/1992 Revocation Date: 30/01/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 5 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 31/01/1997 Revocation Date: 31/05/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 3 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 05/12/1989 Effective Date: 05/12/1989 Revocation Date: 29/02/1992
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 6 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 01/06/1997 Revocation Date: 28/02/1998

ID	Location	Address	Details	
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 5 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 31/01/1997 Revocation Date: 31/05/1997
L	477m N	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 6 Receiving Water: HUNSWORTH BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 31/01/1997 Effective Date: 01/06/1997 Revocation Date: 28/02/1998
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 2 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM COPA 1974 Issue date: 23/12/1985 Effective Date: 23/12/1985 Revocation Date: 04/12/1989
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 2 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM COPA 1974 Issue date: 23/12/1985 Effective Date: 23/12/1985 Revocation Date: 04/12/1989
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 13 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 20/03/1965 Effective Date: 20/03/1965 Revocation Date: 31/12/1969
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 14 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 13/09/1967 Effective Date: 01/01/1970 Revocation Date: 05/05/1980
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 1 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM 1978 ORDER Issue date: 06/05/1980 Effective Date: 06/05/1980 Revocation Date: 22/12/1985

ID	Location	Address	Details	
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - STW STORM OVERFLOW/STORM TANK - WATER COMPANY Permit Number: E14 Permit Version: 2 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM COPA 1974 Issue date: 23/12/1985 Effective Date: 23/12/1985 Revocation Date: 04/12/1989
M	493m NW	NORTH BIERLEY WWTW, CLIFFE HOLLINS LANE, BRADFORD, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: E14 Permit Version: 1 Receiving Water: HUNSWORTH BECK	Status: TRANSFERRED FROM 1978 ORDER Issue date: 06/05/1980 Effective Date: 06/05/1980 Revocation Date: 22/12/1985

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	2

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Name	Status	Receiving Water	Authorised Substances
A	69m NW	New List2 Water Site 9	Active	Spen River	MCPA, Mecoprop
9	239m W	New List2 Water Site 11	Active	Stubs Beck	MCPA

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	31

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Details	
B	50m NE	Incident Date: 26/07/2002 Incident Identification: 94640 Pollutant: Inert Materials and Wastes Pollutant Description: Other Inert Material or Waste	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	61m NE	Incident Date: 19/12/2001 Incident Identification: 48986 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	64m NE	Incident Date: 19/12/2001 Incident Identification: 48911 Pollutant: Sewage Materials Pollutant Description: Grey Water	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	69m NE	Incident Date: 08/04/2002 Incident Identification: 69752 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	76m NE	Incident Date: 09/07/2003 Incident Identification: 172143 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Location	Details	
B	84m NE	Incident Date: 02/02/2006 Incident Identification: 374958 Pollutant: Oils and Fuel Pollutant Description: Cutting Oils	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
C	93m E	Incident Date: 25/11/2003 Incident Identification: 203545 Pollutant: Contaminated Water Pollutant Description: Minewater	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
1	96m SE	Incident Date: 01/02/2002 Incident Identification: 55871 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	146m N	Incident Date: 17/02/2021 Incident Identification: 1892420 Pollutant: Organic Chemicals/Products Pollutant Description: Surfactants and Detergents	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	170m NW	Incident Date: 10/02/2021 Incident Identification: 1890376 Pollutant: Organic Chemicals/Products Pollutant Description: Surfactants and Detergents	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
D	201m NW	Incident Date: 30/05/2002 Incident Identification: 82149 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
E	209m SE	Incident Date: 31/07/2003 Incident Identification: 178096 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
F	222m E	Incident Date: 13/07/2001 Incident Identification: 16125 Pollutant: Contaminated Water Pollutant Description: Other Contaminated Water	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
H	248m E	Incident Date: 25/10/2007 Incident Identification: 541076 Pollutant: Specific Waste Materials Pollutant Description: Vehicles and Vehicle Parts	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
11	253m SW	Incident Date: 21/06/2015 Incident Identification: 1347118 Pollutant: Inert Materials and Wastes Pollutant Description: Soils and Clay	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

ID	Location	Details	
E	255m SE	Incident Date: 15/06/2001 Incident Identification: 9557 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Chemical Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	255m SE	Incident Date: 15/06/2001 Incident Identification: 9557 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Chemical Odour	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
E	257m SE	Incident Date: 01/10/2001 Incident Identification: 33988 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
G	260m N	Incident Date: 13/05/2002 Incident Identification: 78395 Pollutant: Oils and Fuel Pollutant Description: Cutting Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
G	263m N	Incident Date: 26/11/2003 Incident Identification: 203700 Pollutant: Oils and Fuel Pollutant Description: Diesel	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
H	266m E	Incident Date: 22/08/2001 Incident Identification: 26076 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Fumes	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
12	269m E	Incident Date: 18/09/2003 Incident Identification: 190995 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
G	271m N	Incident Date: 27/09/2004 Incident Identification: 268643 Pollutant: Oils and Fuel Pollutant Description: Cutting Oils	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
13	303m E	Incident Date: 18/08/2003 Incident Identification: 183137 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
I	319m E	Incident Date: 08/07/2003 Incident Identification: 171876 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)

ID	Location	Details	
I	340m E	Incident Date: 04/04/2002 Incident Identification: 69009 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
I	344m E	Incident Date: 10/03/2008 Incident Identification: 569817 Pollutant: Specific Waste Materials Pollutant Description: Vehicles and Vehicle Parts	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) Air Impact: Category 4 (No Impact)
16	400m SE	Incident Date: 21/11/2002 Incident Identification: 122277 Pollutant: Organic Chemicals/Products Pollutant Description: Dyes and Inks	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
17	403m SE	Incident Date: 18/03/2003 Incident Identification: 143962 Pollutant: Contaminated Water Pollutant Description: Minewater	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
K	440m SE	Incident Date: 08/06/2006 Incident Identification: 405449 Pollutant: Contaminated Water Pollutant Description: Minewater	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
K	440m SE	Incident Date: 23/05/2002 Incident Identification: 80767 Pollutant: Contaminated Water Pollutant Description: Minewater	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	**0**

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer

5.1 Superficial aquifer

Records within 500m	1

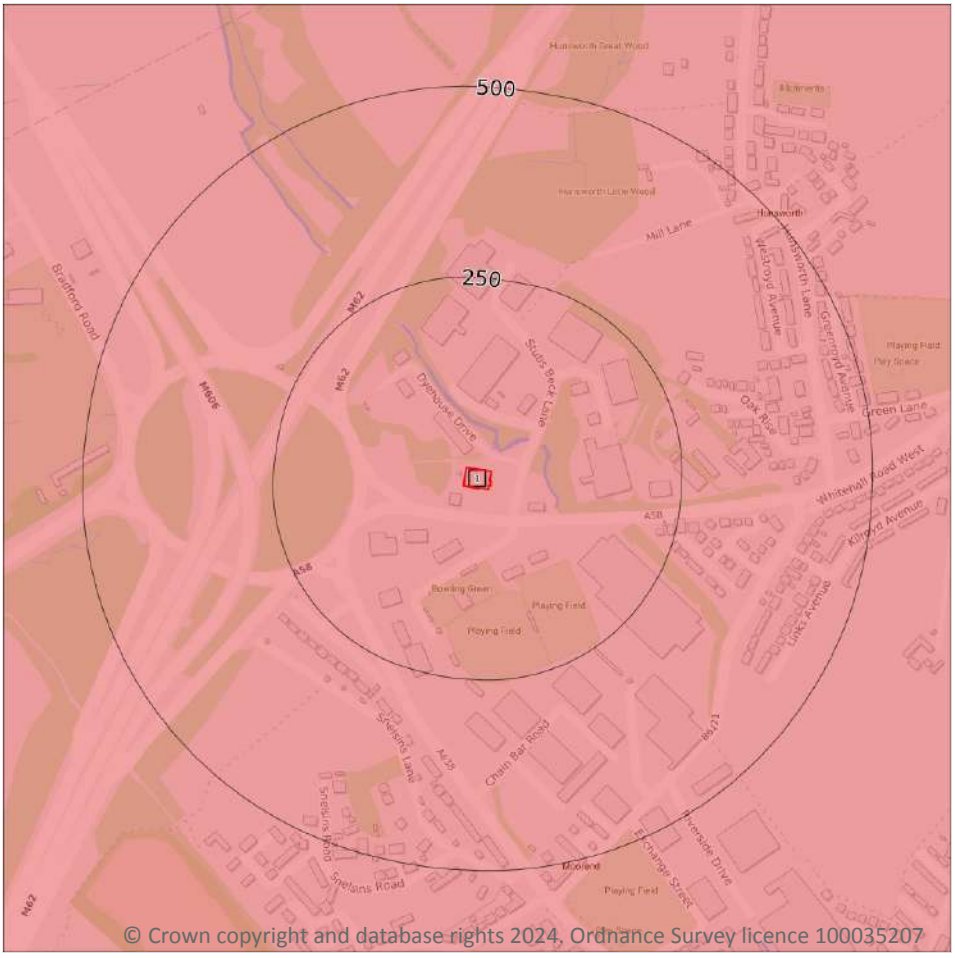
Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 53 >**

ID	Location	Designation	Description
1	5m NE	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	1

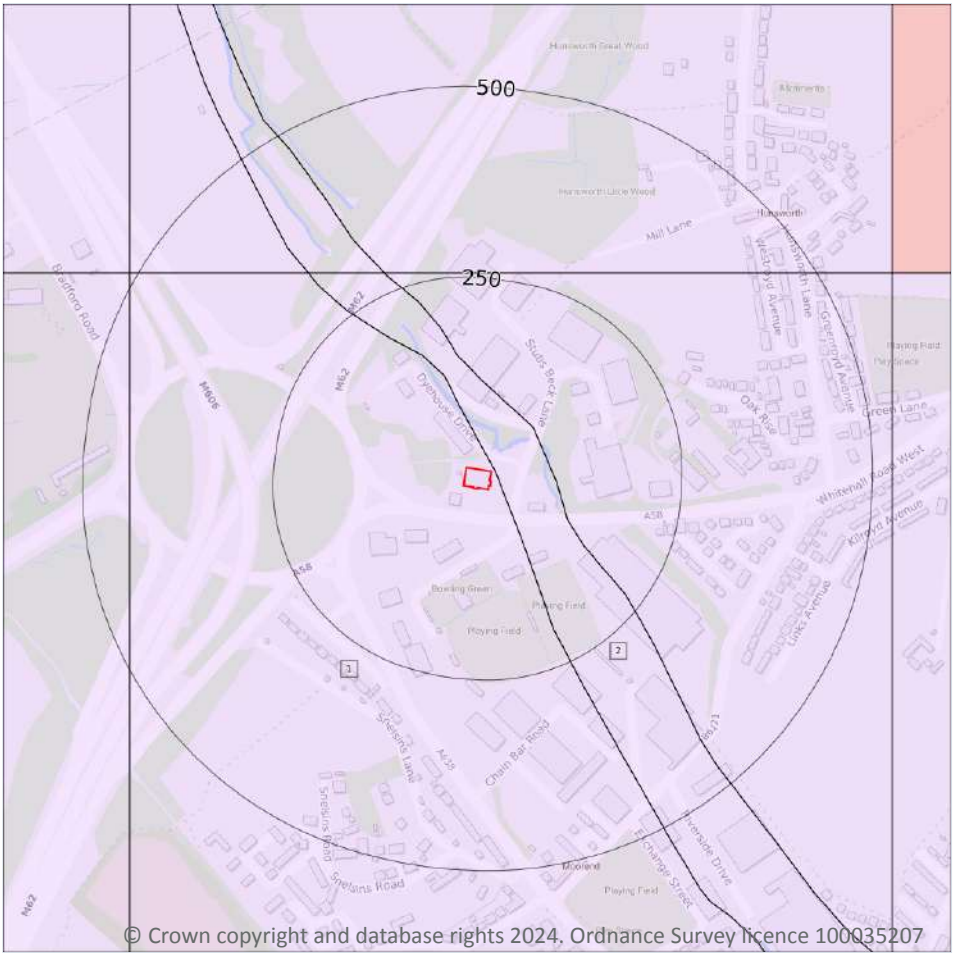
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 54 >**

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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability

- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	2

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

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

Features are displayed on the Groundwater vulnerability map on **page 55 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year**	**Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data**	**Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures**
2	5m NE	Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: <40% Dilution value: 300-550mm/year	Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	**0**

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

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

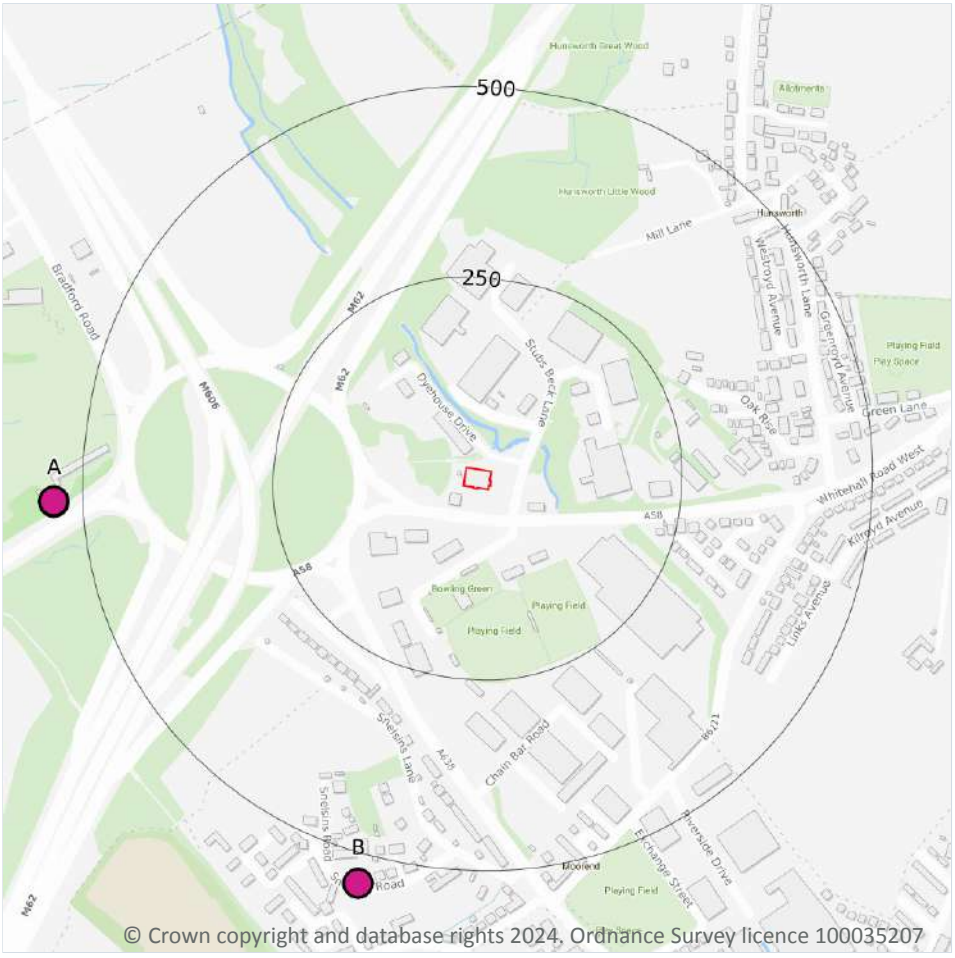
5.5 Groundwater vulnerability- local information

Records on site	**0**

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

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

5.6 Groundwater abstractions

Records within 2000m	7

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 57 >**

ID	Location	Details	
A	538m W	Status: Active Licence No: 2/27/13/221/R01 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - CLECKHEATON Data Type: Point Name: CLECKHEATON & DISTRICT GOLF CLUB Easting: 417901 Northing: 426699	Annual Volume (m^3): 6750 Max Daily Volume (m^3): 168 Original Application No: NPS/WR/016684 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -
A	538m W	Status: Historical Licence No: 2/27/13/221 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - CLECKHEATON Data Type: Point Name: CLECKHEATON & DISTRICT GOLF CLUB Easting: 417901 Northing: 426699	Annual Volume (m^3): 6750 Max Daily Volume (m^3): 168 Original Application No: - Original Start Date: 01/01/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -
A	539m W	Status: Historical Licence No: 2/27/13/187 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: CLECKHEATON & DISTRICT GOLF CLUB Easting: 417900 Northing: 426700	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 10/03/1997 Expiry Date: 31/12/2006 Issue No: 100 Version Start Date: 10/03/1997 Version End Date: -
A	539m W	Status: Historical Licence No: 2/27/13/187 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - CLECKHEATON Data Type: Point Name: CLECKHEATON & DISTRICT GOLF CLUB Easting: 417900 Northing: 426700	Annual Volume (m^3): 13500 Max Daily Volume (m^3): 168 Original Application No: - Original Start Date: 10/03/1997 Expiry Date: 31/12/2006 Issue No: 100 Version Start Date: 10/03/1997 Version End Date: -
A	539m W	Status: Historical Licence No: 2/27/13/221 Details: Spray Irrigation - Direct Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - CLECKHEATON Data Type: Point Name: CLECKHEATON & DISTRICT GOLF CLUB Easting: 417900 Northing: 426700	Annual Volume (m^3): 6750 Max Daily Volume (m^3): 168 Original Application No: - Original Start Date: 01/01/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 01/01/2007 Version End Date: -

ID	Location	Details	
B	539m S	Status: Historical Licence No: 2/27/13/022 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: METROTECT LIMITED Easting: 418300 Northing: 426200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 21/10/1996 Version End Date: -
B	539m S	Status: Historical Licence No: 2/27/13/022 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - CLECKHEATON Data Type: Point Name: METROTECT LTD Easting: 418300 Northing: 426200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 21/10/1996 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	0

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

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	18

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

Features are displayed on the Hydrology map on **page 61 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
A	10m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Stubs Beck

ID	Location	Type of water feature	Ground level	Permanence	Name
A	17m NW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Stubs Beck
A	18m N	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Stubs Beck
A	28m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Stubs Beck
2	28m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Stubs Beck
A	31m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
B	34m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
A	65m NE	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
A	70m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
3	92m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
4	120m W	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	Stubs Beck
5	155m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Stubs Beck
6	206m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
7	206m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
C	217m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	217m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Hunsworth Beck
8	231m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Stubs Beck
9	231m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Sugden Beck

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**2**

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

Features are displayed on the Hydrology map on **page 61 >**

This data is sourced from the Ordnance Survey.

6.3 WFD Surface water body catchments

Records on site	**1**

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

Features are displayed on the Hydrology map on **page 61 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River**	**Spen Beck from Source to River Calder**	**GB104027062710**	**Calder Lower**	**Aire and Calder**

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

6.4 WFD Surface water bodies

Records identified	1

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

Features are displayed on the Hydrology map on **page 61 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
1	18m NW	River	Spen Beck from Source to River Calder	GB104027062710 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	1

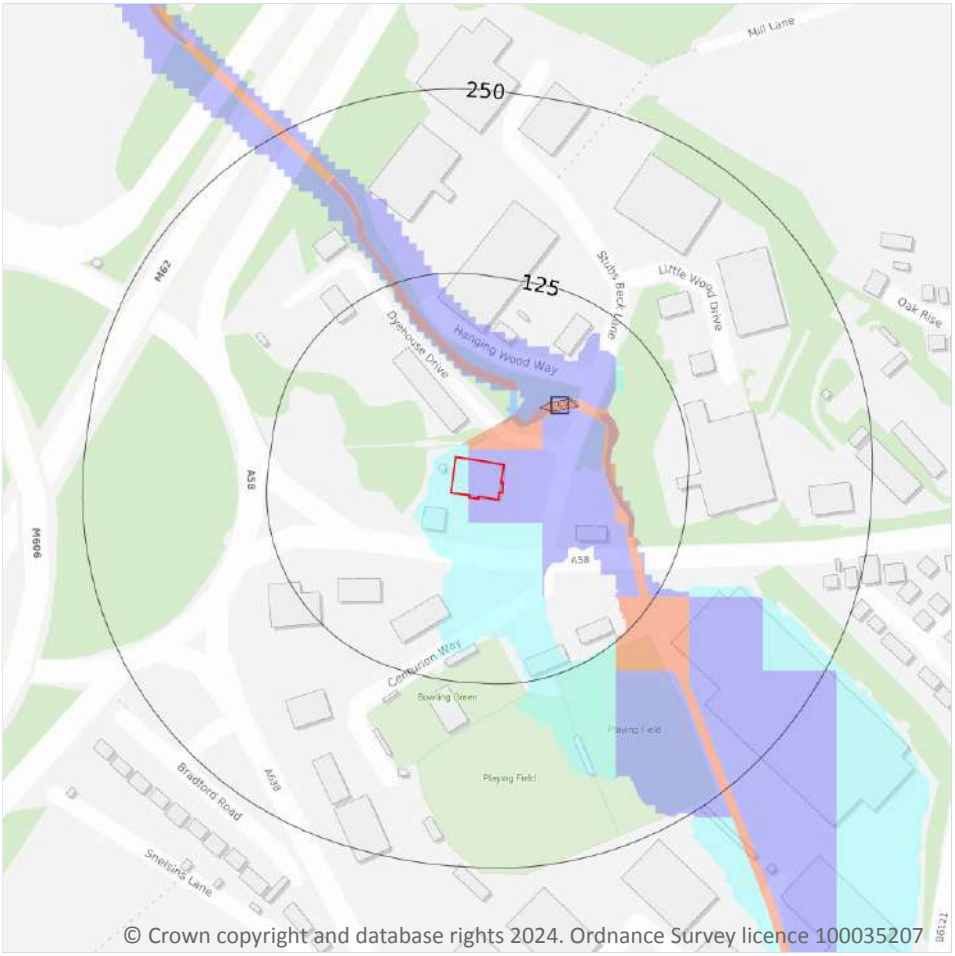
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 61 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Aire & Calder Carb Limestone / Millstone Grit / Coal Measures.**	**GB40402G700400 ↗**	**Poor**	**Poor**	**Good**	**2019**

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

7 River and coastal flooding



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

7.1 Risk of flooding from rivers and the sea

Records within 50m	6

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

Features are displayed on the River and coastal flooding map on **page 65 >**

Distance	Flood risk category
On site	**Medium**
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	**1**

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

Features are displayed on the River and coastal flooding map on **page 65 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
5	45m NE	2020 February Flood Incident - Storm Ciara/dennis	2020-02-08 2020-03-19	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

7.3 Flood Defences

Records within 250m	**0**

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	**0**

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

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

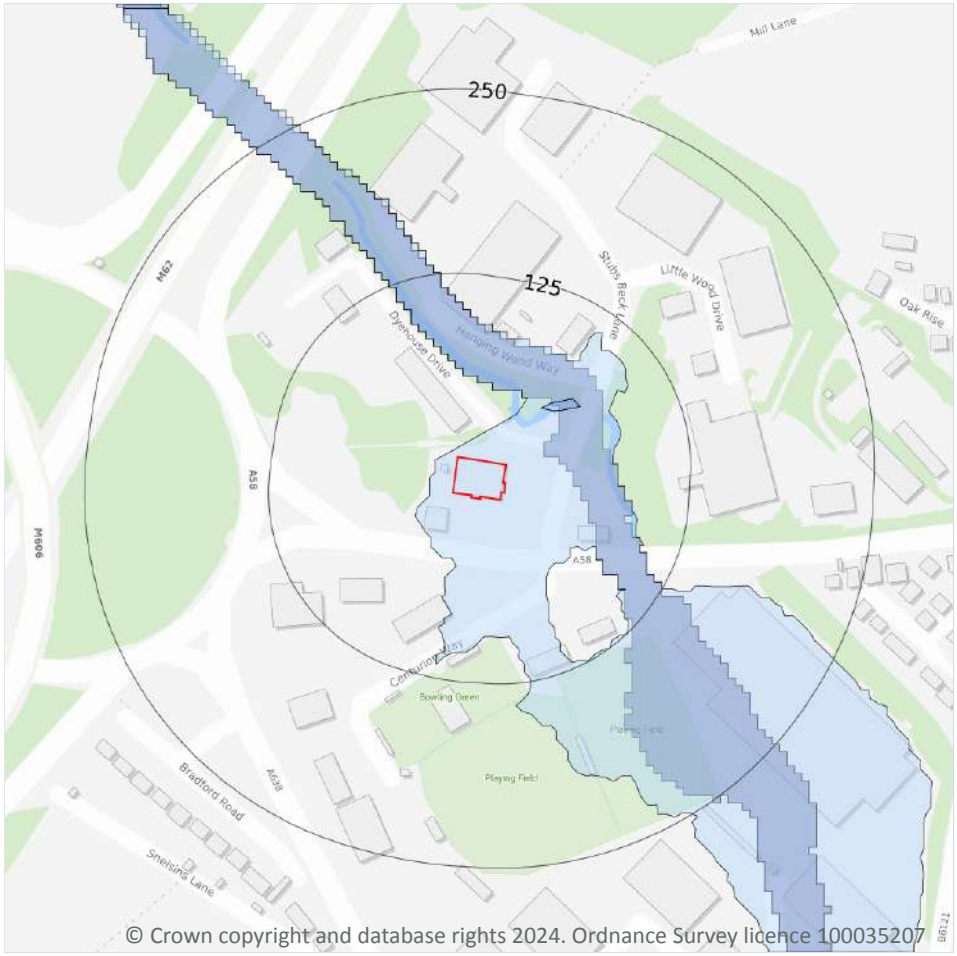
7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones



Site Outline

Search buffers in metres (m)

Flood zone 2

Flood zone 3

7.6 Flood Zone 2

Records within 50m	1

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

Features are displayed on the River and coastal flooding map on **page 65 >**

Location	Type
On site	**Zone 2 - (Fluvial /Tidal Models)**

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

7.7 Flood Zone 3

Records within 50m	1

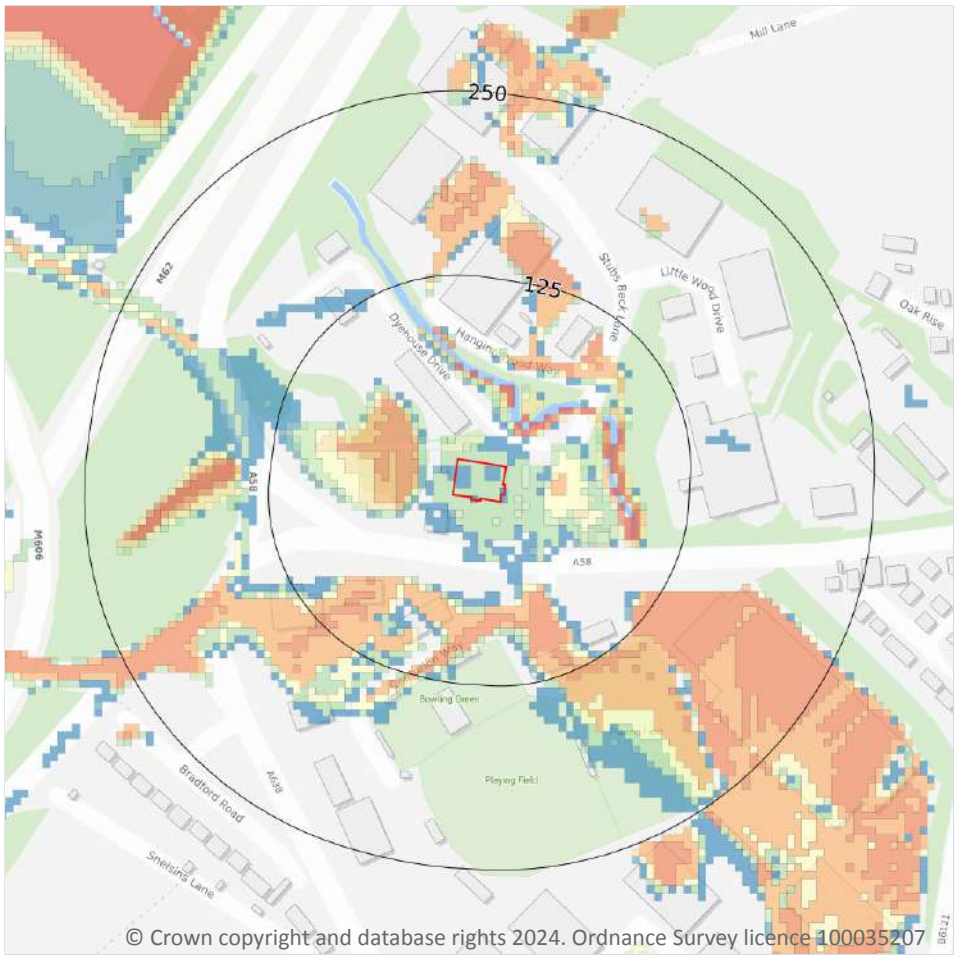
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 65 >**

Location	Type
26m E	Zone 3 - (Fluvial Models)

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

8 Surface water flooding



Site Outline
Search buffers in metres (m)

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

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

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

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

8.1 Surface water flooding

Highest risk on site	**1 in 250 year, 0.1m - 0.3m**
Highest risk within 50m	**1 in 30 year, Greater than 1.0m**

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

Features are displayed on the Surface water flooding map on **page 70 >**

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

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

Return period	Maximum modelled depth
1 in 1000 year	Between 0.3m and 1.0m
1 in 250 year	Between 0.1m and 0.3m
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding

Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

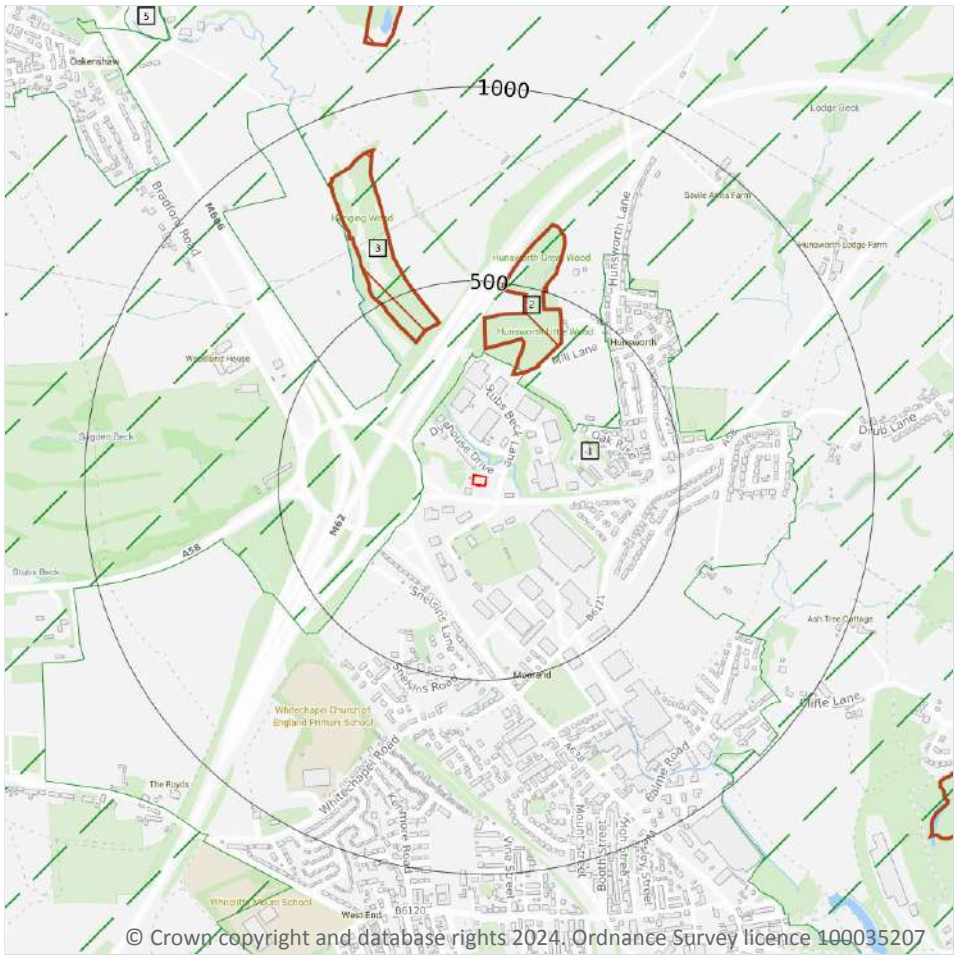
Highest risk on site	**Negligible**
Highest risk within 50m	**Low**

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

Features are displayed on the Groundwater flooding map on **page 72 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Designated Ancient Woodland

Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	4

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Woodland Type
2	274m N	Great And Little Hunsworth Woods	Ancient & Semi-Natural Woodland
3	372m NW	Unknown	Ancient & Semi-Natural Woodland
4	1130m N	Chatts Wood	Ancient & Semi-Natural Woodland
6	1400m SE	Fusden Wood	Ancient Replanted Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	4

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

Features are displayed on the Environmental designations map on **page 73 >**

ID	Location	Name	Local Authority name
1	127m W	South and West Yorkshire	Kirklees
5	1372m NW	South and West Yorkshire	Bradford
-	1598m W	South and West Yorkshire	Bradford
-	1644m N	South and West Yorkshire	Bradford

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m	2

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

Location	Name	Type	NVZ ID	Status
On site	**Spen Beck from Source to River Calder NVZ**	**Surface Water**	**271**	**Existing**

Location	Name	Type	NVZ ID	Status
734m S	Spen Beck from Source to River Calder NVZ	Surface Water	271	Existing

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

SSSI Impact Zones and Units

10.17 SSSI Impact Risk Zones

Records on site	0

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

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

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

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

11 Visual and cultural designations

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	0

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

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

11.5 Conservation Areas

Records within 250m	0

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

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

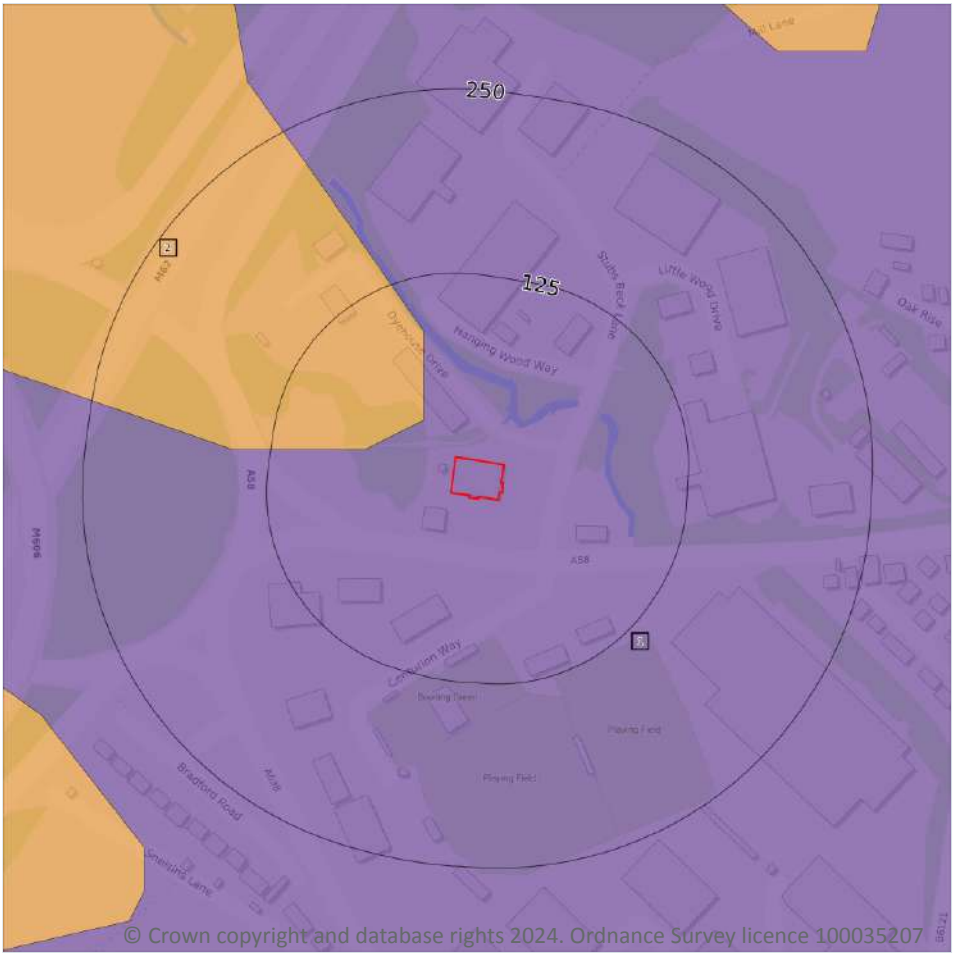
11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations



Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	2

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

Features are displayed on the Agricultural designations map on **page 82 >**

ID	Location	Classification	Description
1	**On site**	**Urban**	-
2	33m NW	Grade 3	Good to moderate quality agricultural land. Land with moderate limitations which affect the choice of crops, timing and type of cultivation, harvesting or the level of yield. Where more demanding crops are grown yields are generally lower or more variable than on land in Grades 1 and 2.

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

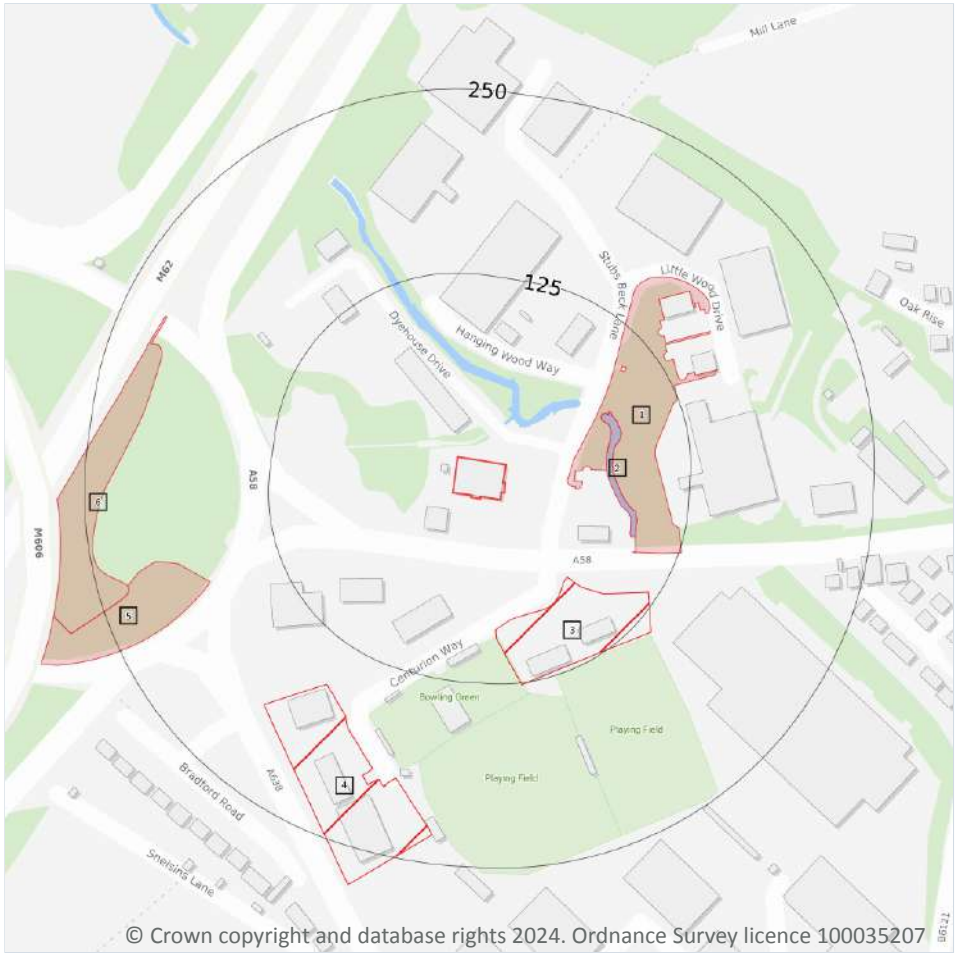
12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations



Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

Habitat Networks

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

13.1 Priority Habitat Inventory

Records within 250m	4

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

Features are displayed on the Habitat designations map on **page 84 >**

ID	Location	Main Habitat	Other habitats
1	42m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	68m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
5	175m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	212m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	2

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

Features are displayed on the Habitat designations map on **page 84 >**

ID	Location	Site reference	Identification confidence	Primary source	Secondary source	Tertiary source
3	69m SE	NLUD Ref: 471801583	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-
4	156m SW	NLUD Ref: 471801704	Low	National Land Use Database - Previously Developed Land	UK Perspectives Aerial Photography	-

This data is sourced from Natural England.

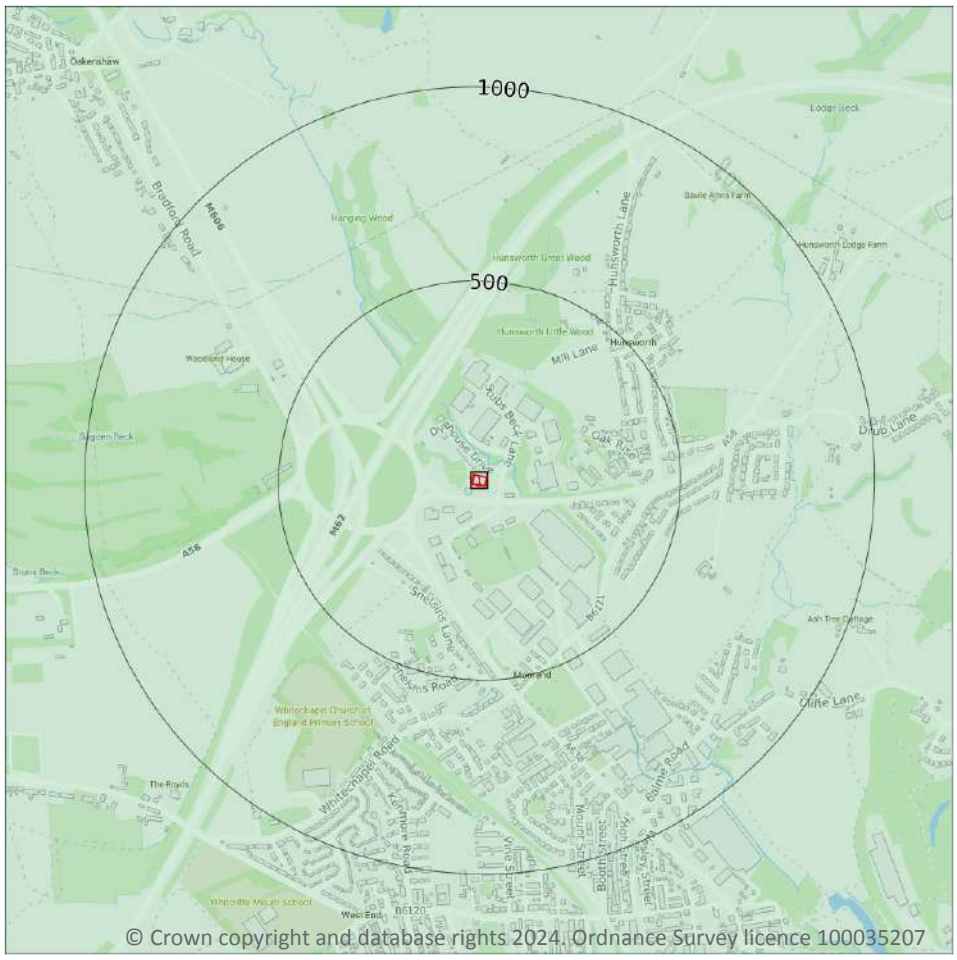
13.4 Limestone Pavement Orders

Records within 250m	0

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

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

- Full coverage
- Partial coverage
- No coverage

14.1 10k Availability

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 86 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**SE12NE**

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	15

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

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 87 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**MGR-ARTDP**	**Made Ground (Undivided)**	**Artificial Deposit**
2	74m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	129m SE	WGR-VOID	Worked Ground (Undivided)	Void
A	158m SW	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
4	177m NE	WGR-VOID	Worked Ground (Undivided)	Void
A	178m SW	WGR-VOID	Worked Ground (Undivided)	Void
5	212m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
B	236m S	WGR-VOID	Worked Ground (Undivided)	Void
6	238m SW	WGR-VOID	Worked Ground (Undivided)	Void
B	280m S	WGR-VOID	Worked Ground (Undivided)	Void
7	363m S	WGR-VOID	Worked Ground (Undivided)	Void
8	475m N	WGR-VOID	Worked Ground (Undivided)	Void
9	477m N	WGR-VOID	Worked Ground (Undivided)	Void
10	484m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
C	490m NW	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

Site Outline

Search buffers in metres (m)

Landslip (10k)

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

14.3 Superficial geology (10k)

Records within 500m	1

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

Features are displayed on the Geology 1:10,000 scale - Superficial map on **page 89 >**

ID	Location	LEX Code	Description	Rock description
1	3m NE	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel

This data is sourced from the British Geological Survey.

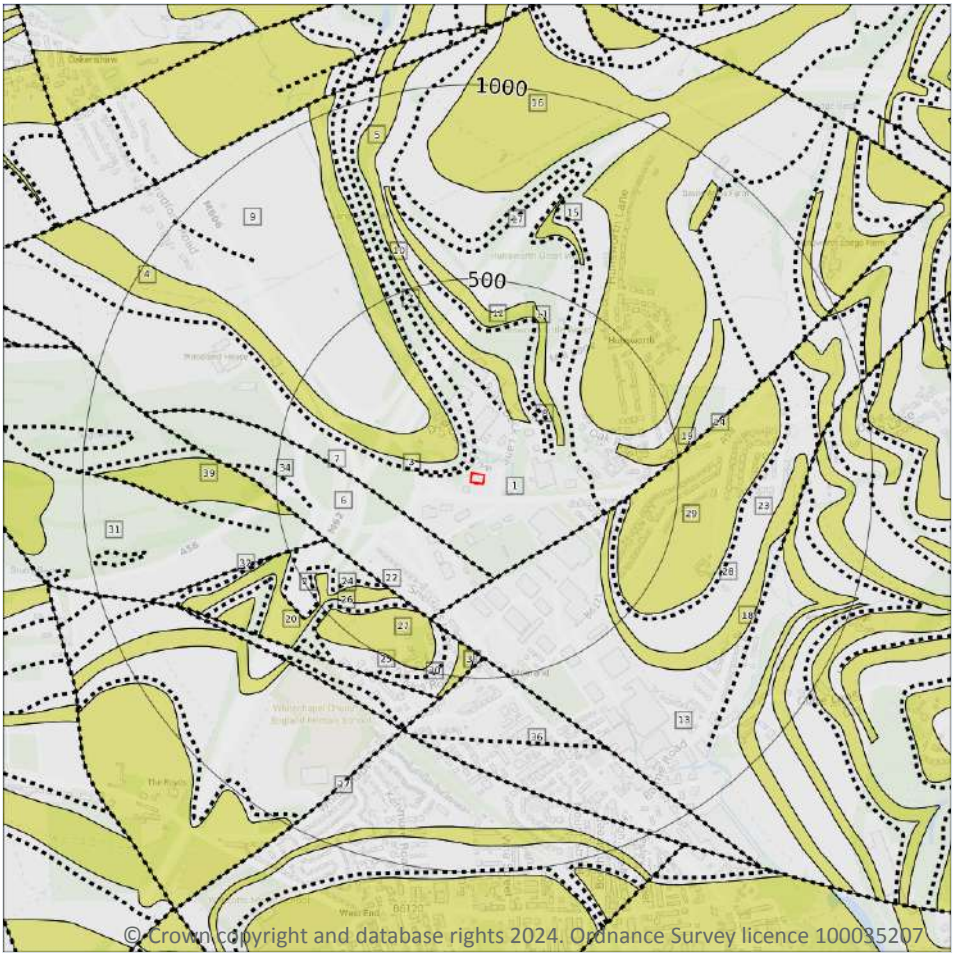
14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m **21**

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

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 91 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PLCM-MDSS**	**Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone**	**Langsettian Sub-age**
4	57m NW	CLRK-SDST	Clifton Rock - Sandstone	Langsettian Sub-age
5	161m NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age

ID	Location	LEX Code	Description	Rock age
6	166m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
9	169m NW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
12	203m E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
13	225m SE	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
16	307m NE	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
18	332m E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
19	343m E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
20	345m SW	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
21	345m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
23	345m E	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
25	347m SW	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
27	359m SW	FHR-SDST	Falhouse Rock - Sandstone	Langsettian Sub-age
29	374m E	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
31	401m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
33	408m S	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age
35	432m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
36	448m S	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age
39	457m W	PLCM-SDST	Pennine Lower Coal Measures Formation - Sandstone	Langsettian Sub-age

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**18**

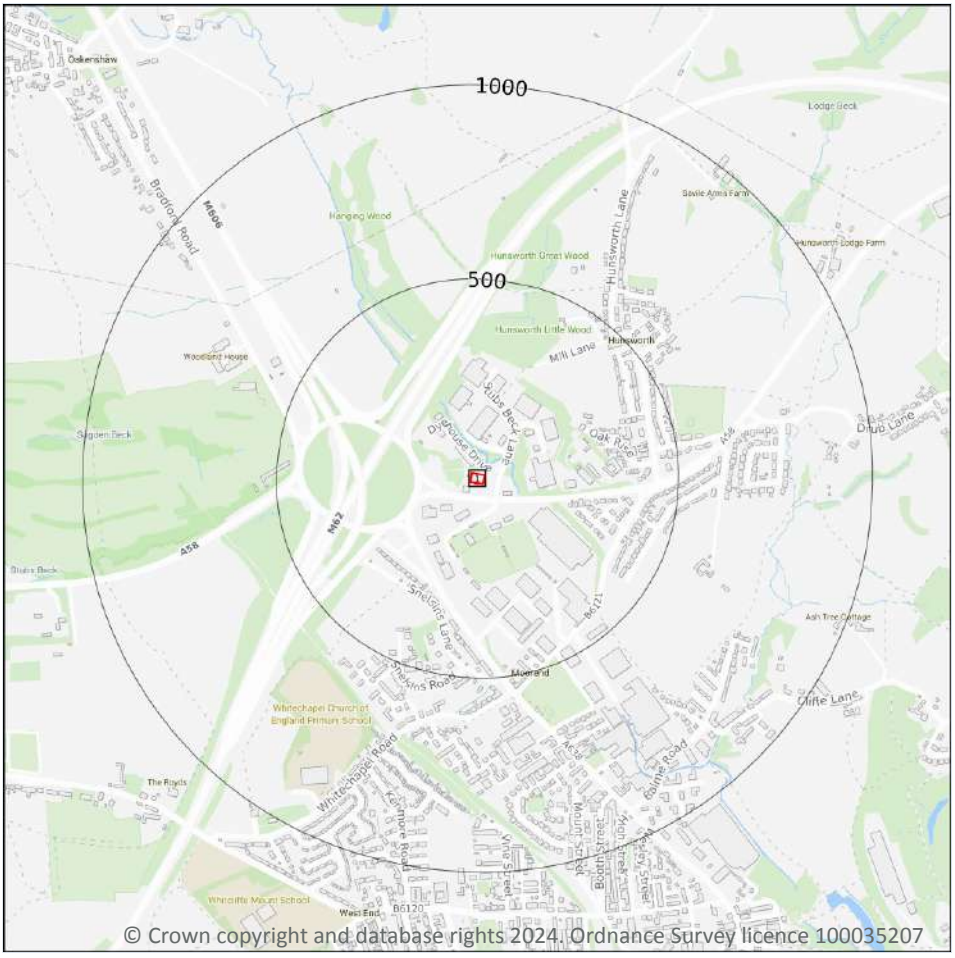
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 91 >**

ID	Location	Category	Description
2	17m NW	ROCK	Coal seam, inferred
3	35m NW	ROCK	Coal seam, inferred
7	166m SW	FAULT	Normal fault, inferred
8	166m E	ROCK	Coal seam, inferred
10	173m N	ROCK	Coal seam, inferred
11	185m E	ROCK	Coal seam, inferred
14	225m SE	FAULT	Normal fault, inferred
15	237m E	ROCK	Coal seam, inferred
17	329m NE	ROCK	Coal seam, inferred
22	345m SW	FAULT	Normal fault, inferred
24	346m SW	ROCK	Coal seam, inferred
26	353m SW	ROCK	Coal seam, inferred
28	363m E	ROCK	Coal seam, inferred
30	381m S	ROCK	Coal seam, inferred
32	401m W	FAULT	Normal fault, inferred
34	413m W	ROCK	Coal seam, inferred
37	448m S	FAULT	Normal fault, inferred
38	456m SW	ROCK	Coal seam, observed

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

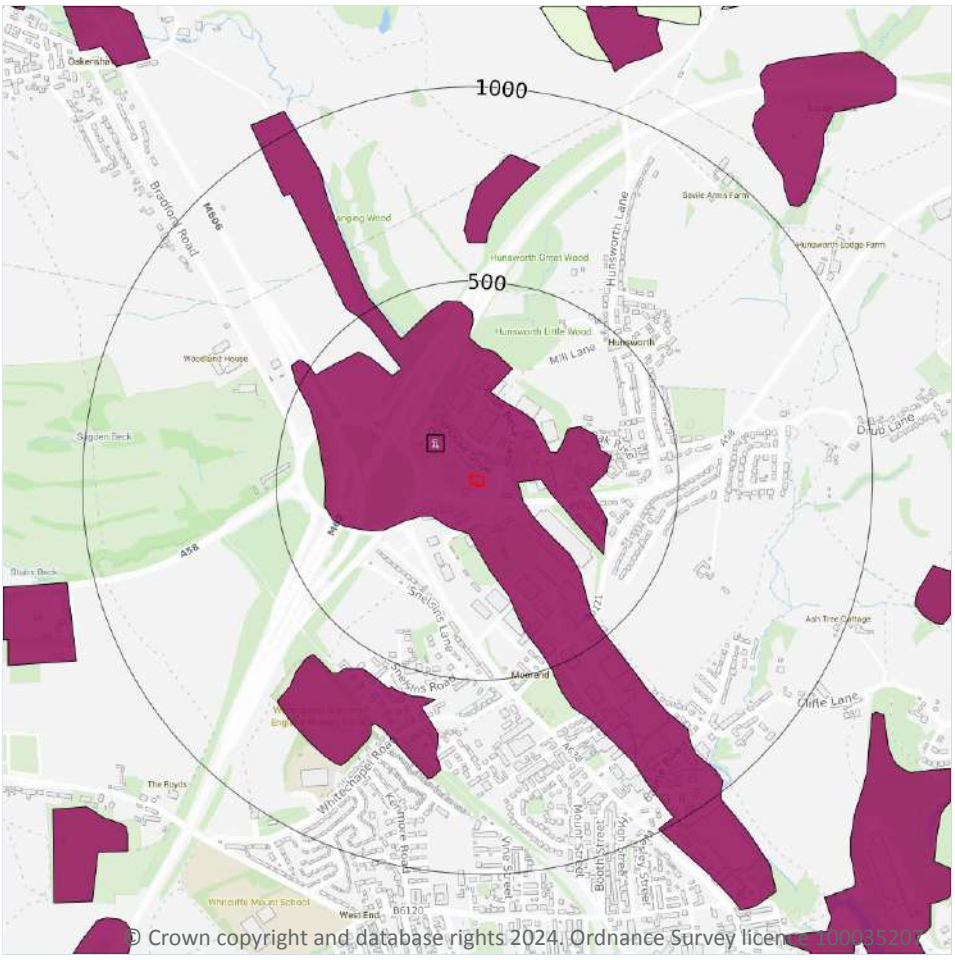
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 94 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW077_huddersfield_v4**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

15.2 Artificial and made ground (50k)

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 95 >**

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

15.3 Artificial ground permeability (50k)

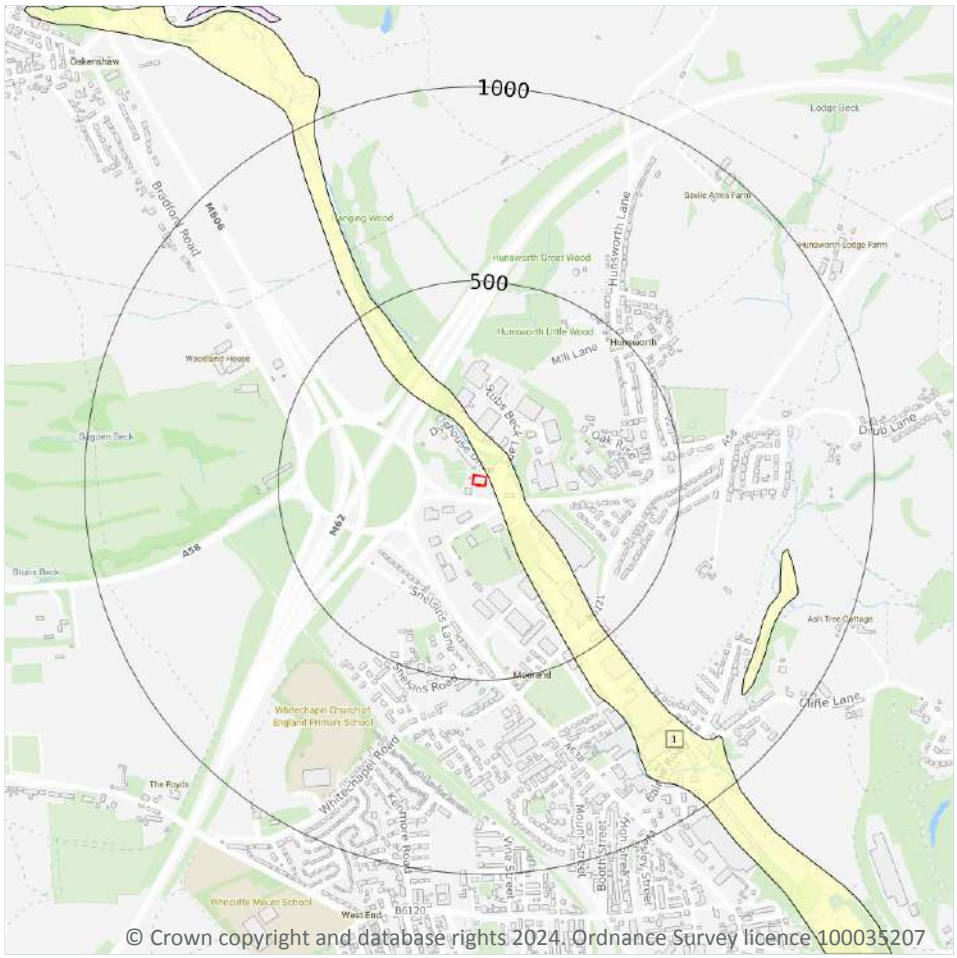
Records within 50m	1

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

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Superficial



Site Outline

Search buffers in metres (m)

Landslip (50k)

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

15.4 Superficial geology (50k)

Records within 500m	1

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 97 >**

ID	Location	LEX Code	Description	Rock description
1	5m NE	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	1

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

Location	Flow type	Maximum permeability	Minimum permeability
5m NE	Intergranular	High	Very Low

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

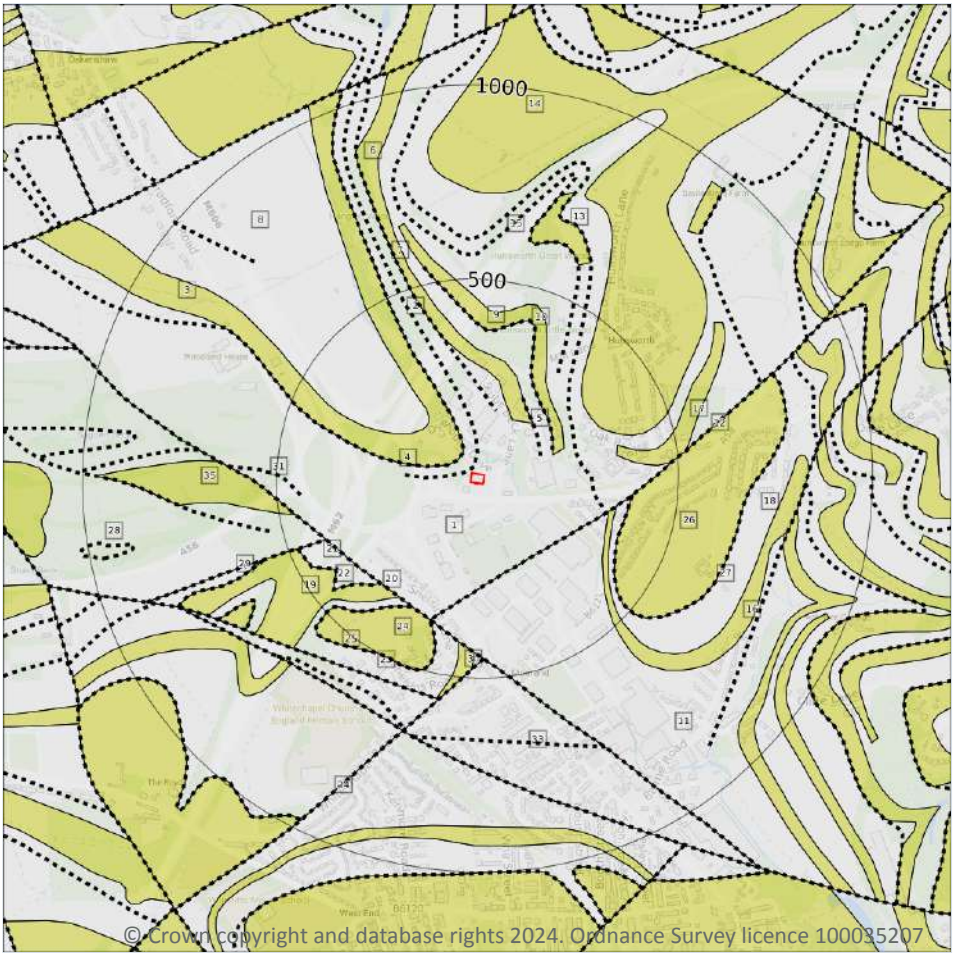
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m	20

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 99 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PLCM-MDSS**	**PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
3	48m NW	CLRK-SDST	CLIFTON ROCK - SANDSTONE	WESTPHALIAN
6	159m NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
8	168m NW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
9	183m E	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
11	226m SE	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	311m NE	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
16	329m E	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
17	344m E	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
18	346m E	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
19	346m SW	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
21	348m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
23	349m SW	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
24	354m SW	FHR-SDST	FALHOUSE ROCK - SANDSTONE	WESTPHALIAN
26	372m E	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
28	400m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
30	410m S	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN
32	435m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
33	450m S	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
35	459m W	PLCM-SDST	PENNINE LOWER COAL MEASURES FORMATION - SANDSTONE	WESTPHALIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

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

Location	Flow type	Maximum permeability	Minimum permeability
On site	**Fracture**	**Moderate**	**Low**
48m NW	Fracture	High	Moderate

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	15

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

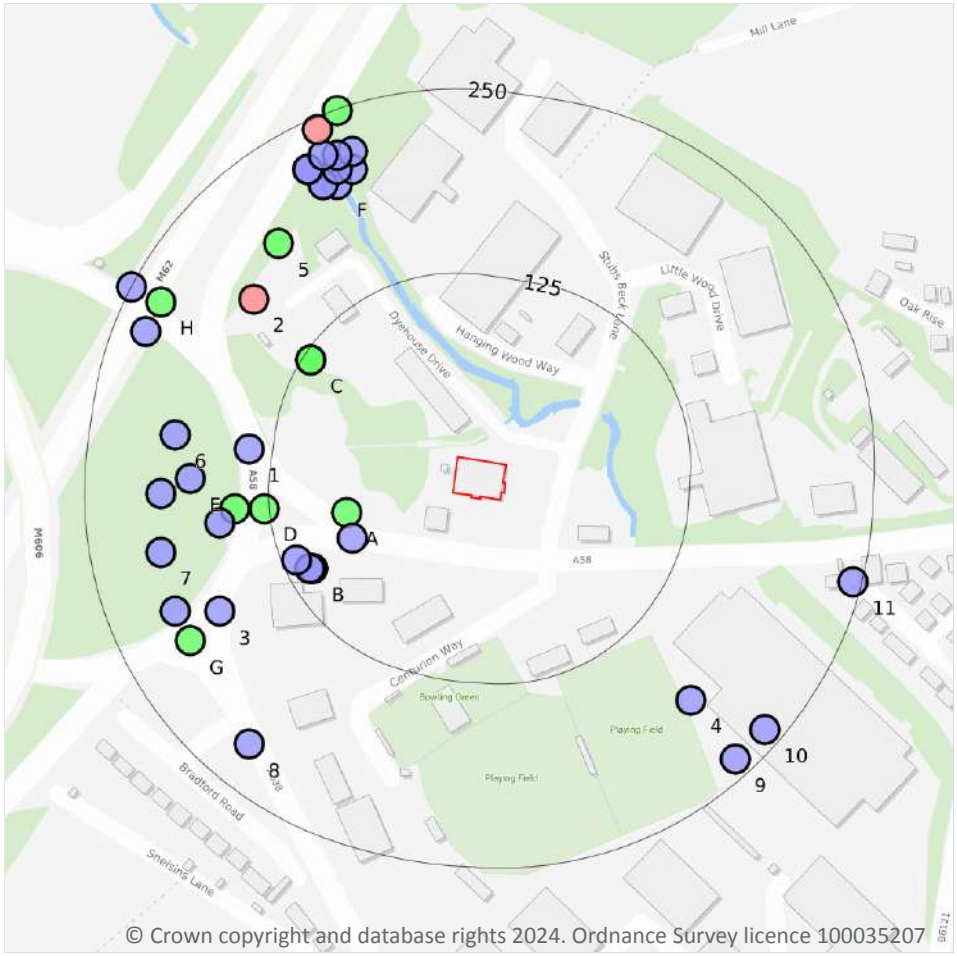
Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 99 >**

ID	Location	Category	Description
2	11m NW	ROCK	Coal seam, inferred
4	48m NW	ROCK	Coal seam, inferred
5	152m E	ROCK	Coal seam, inferred
7	168m N	ROCK	Coal seam, inferred
10	183m E	ROCK	Coal seam, inferred
12	226m SE	FAULT	Fault, inferred
13	242m E	ROCK	Coal seam, inferred
15	322m NE	ROCK	Coal seam, inferred
20	346m SW	FAULT	Fault, inferred
22	348m SW	ROCK	Coal seam, inferred
25	354m SW	ROCK	Coal seam, inferred
27	372m E	ROCK	Coal seam, inferred
29	400m W	FAULT	Fault, inferred, displacement unknown

ID	Location	Category	Description
31	435m W	ROCK	Coal seam, inferred
34	450m S	FAULT	Fault, inferred

This data is sourced from the British Geological Survey.

16 Boreholes



Site Outline

Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

16.1 BGS Boreholes

Records within 250m	42

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

Features are displayed on the Boreholes map on **page 103 >**

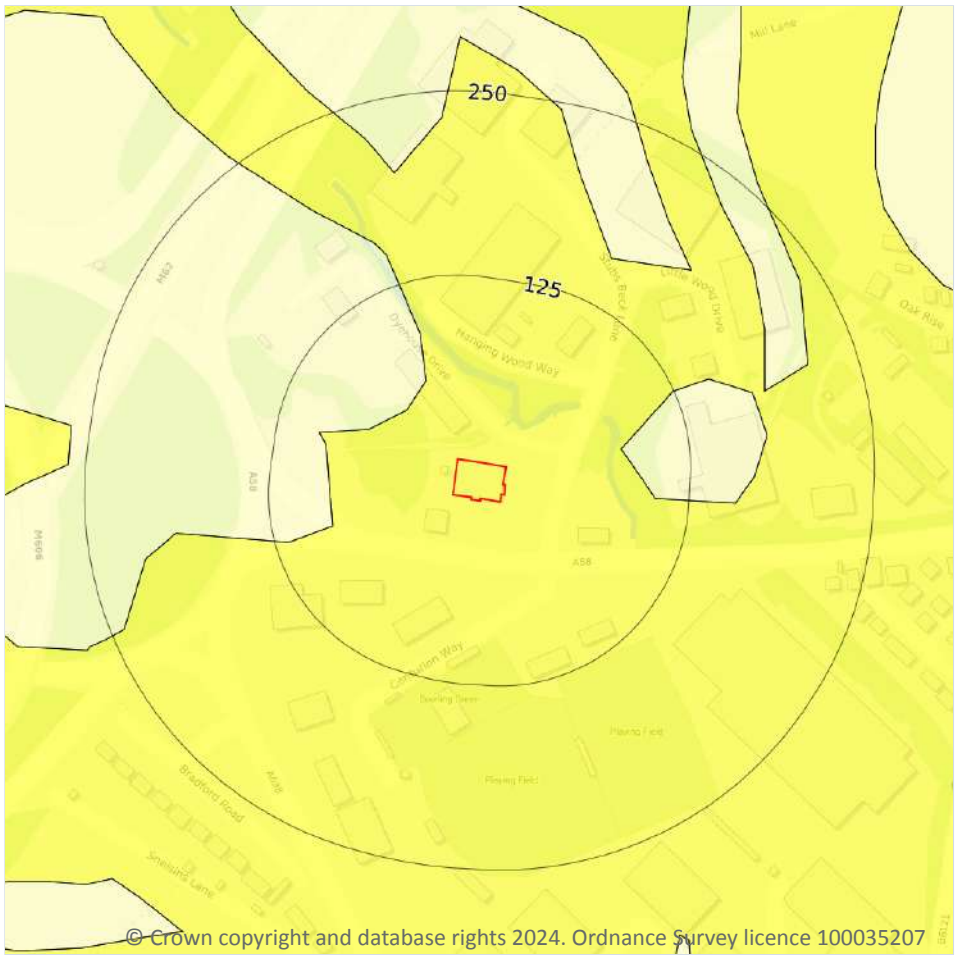
ID	Location	Grid reference	Name	Length	Confidential	Web link
A	73m W	418366 426707	SPEN VALLEY, DEWSBURY BH109	15.0	N	20715983 ↗
A	75m SW	418370 426690	M62 MOTORWAY F83	5.49	N	42084 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	108m SW	418343 426669	SPEN VALLEY, DEWSBURY BH110C	17.0	N	20751841 ↗
B	108m SW	418343 426669	SPEN VALLEY, DEWSBURY BH110	0.7	N	20715984 ↗
B	110m SW	418341 426669	SPEN VALLEY, DEWSBURY BH110A	0.7	N	20715992 ↗
B	116m SW	418332 426675	SPEN VALLEY, DEWSBURY BH110B	1.4	N	20715993 ↗
C	120m NW	418342 426811	SPEN VALLEY, DEWSBURY BH108	15.7	N	20715982 ↗
C	120m NW	418342 426811	SPEN VALLEY, DEWSBURY BH108A	22.0	N	20751840 ↗
D	129m W	418310 426710	BRADFORD M62 JUNCTION 26 IMPROVEMENTS BHPG6(0)	13.0	N	42935 ↗
1	141m W	418300 426750	M62 MOTORWAY F80	4.88	N	42075 ↗
D	149m W	418290 426710	BRADFORD M62 JUNCTION 26 IMPROVEMENTS BHPG6(1)	20.0	N	42934 ↗
D	160m W	418280 426700	M62/M606 ROUNDABOUT 4	6.0	N	42687 ↗
2	175m NW	418303 426852	HUNSWORTH DYING CO LTD CLECKHEATON	87.78	N	41590 ↗
3	178m SW	418280 426640	M62 MOTORWAY F81	4.27	N	42076 ↗
E	178m W	418260 426730	M62/M606 ROUNDABOUT 2	7.5	N	42685 ↗
4	188m SE	418600 426580	MINTEX DON BRADFORD 1	6.0	N	42669 ↗
5	189m NW	418320 426890	M62 MOTORWAY F64	18.29	N	42079 ↗
6	192m W	418250 426760	M62/M606 ROUNDABOUT 1	8.0	N	42684 ↗
E	198m W	418240 426720	M62/M606 ROUNDABOUT 3	9.1	N	42686 ↗
7	202m W	418240 426680	BRADFORD M62 JUNCTION 26 IMPROVEMENTS BHCCTV1	9.5	N	42923 ↗
F	202m NW	418360 426930	CHAIN BAR SLIP TP5	1.0	N	42822 ↗
G	205m SW	418260 426620	BRADFORD M62 JUNCTION 26 IMPROVEMENTS BHPGI(0)	10.4	N	42926 ↗
G	205m SW	418250 426640	BRADFORD M62 JUNCTION 26 IMPROVEMENTS BHPGI(1)	10.0	N	42925 ↗
F	207m NW	418350 426930	CHAIN BAR SLIP TP3	1.0	N	42820 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
F	207m NW	418350 426930	CHAIN BAR SLIP TP4	1.0	N	42821 ↗
F	208m N	418370 426940	CHAIN BAR SLIP TP8	1.0	N	42825 ↗
F	212m NW	418360 426940	CHAIN BAR SLIP TP7	1.0	N	42824 ↗
F	219m N	418370 426952	M62 EAST/M606 LINK RDS TP 115	4.0	N	42546 ↗
8	220m SW	418300 426550	M62 MOTORWAY F82	5.18	N	42085 ↗
F	220m NW	418340 426940	CHAIN BAR SLIP BH1A	5.8	N	42816 ↗
F	220m NW	418340 426940	CHAIN BAR SLIP TP2	1.0	N	42819 ↗
F	220m NW	418340 426940	CHAIN BAR SLIP TP1	0.0	N	42818 ↗
F	221m NW	418360 426950	CHAIN BAR SLIP TP6	1.0	N	42823 ↗
F	225m NW	418350 426950	CHAIN BAR SLIP BH6A	6.0	N	42817 ↗
H	227m NW	418240 426850	M62 MOTORWAY F61	21.56	N	42052 ↗
H	228m NW	418230 426830	M62 MOTORWAY F59	9.14	N	42050 ↗
9	237m SE	418630 426540	MINTEX DON BRADFORD 2	5.3	N	42670 ↗
10	238m SE	418650 426560	MINTEX DON BRADFORD 3	4.0	N	42671 ↗
F	242m NW	418346 426967	M62 EAST/M606 LINK RDS 18	35.75	N	42496 ↗
11	244m E	418710 426660	HUNSWORTH LANE CLECKHEATON S/A1	6.0	N	42858 ↗
F	249m N	418360 426980	M62 MOTORWAY F66	15.85	N	42080 ↗
H	250m NW	418220 426860	M62 MOTORWAY F60	9.14	N	42051 ↗

This data is sourced from the British Geological Survey.

17 Natural ground subsidence - Shrink swell clays



Site Outline

Search buffers in metres (m)

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

17.1 Shrink swell clays

Records within 50m	2

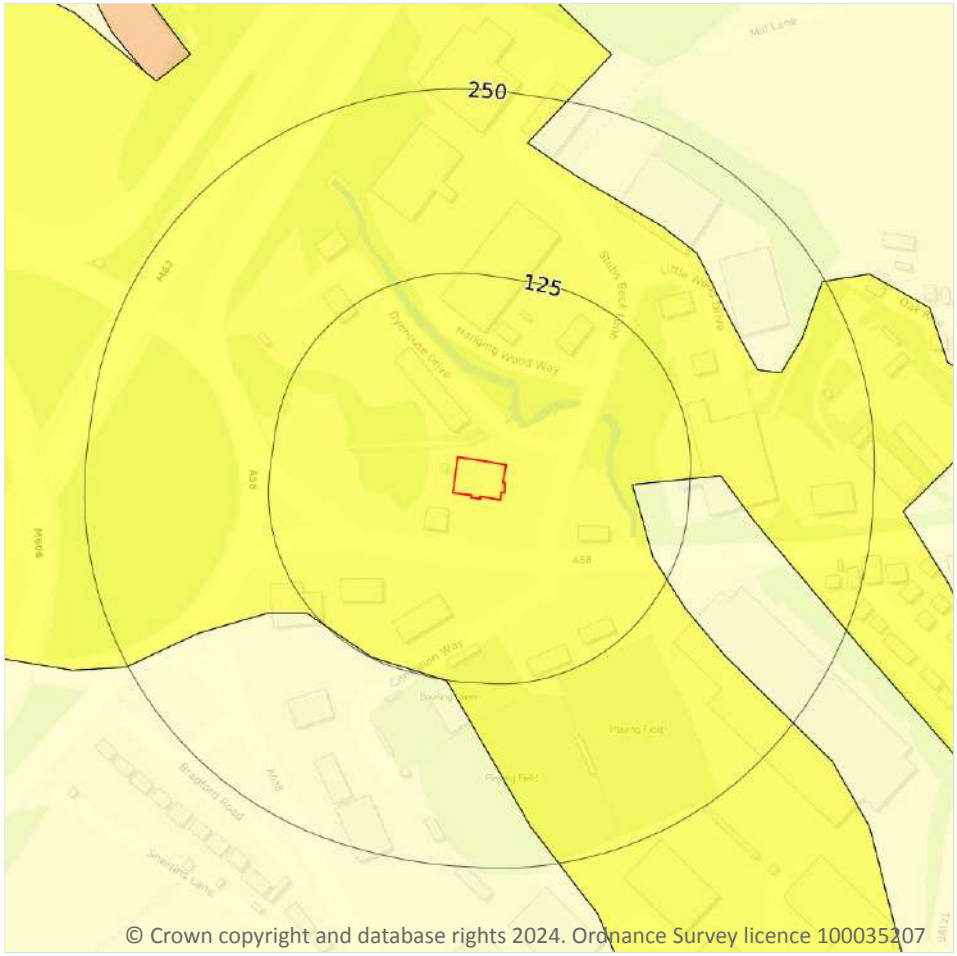
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 106 >**

Location	Hazard rating	Details
On site	**Very low**	**Ground conditions predominantly low plasticity.**
48m NW	Negligible	Ground conditions predominantly non-plastic.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

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

17.2 Running sands

Records within 50m	1

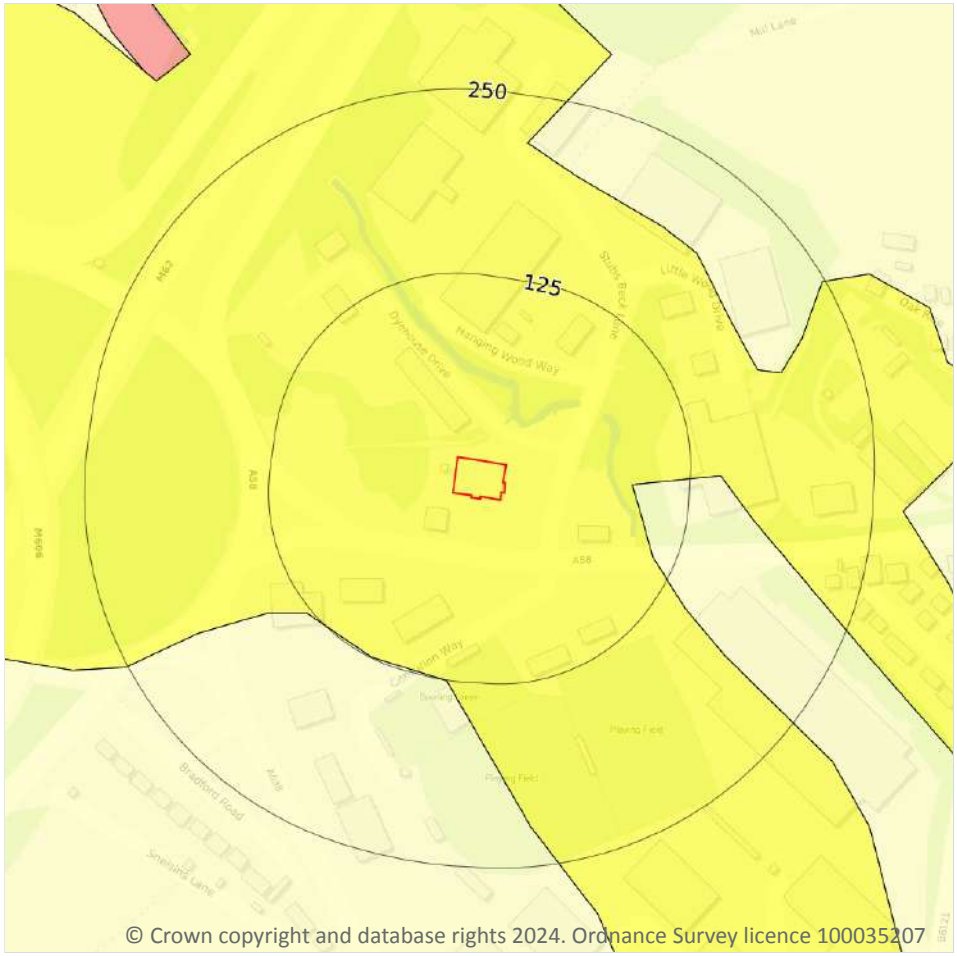
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 107 >**

Location	Hazard rating	Details
On site	**Very low**	**Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

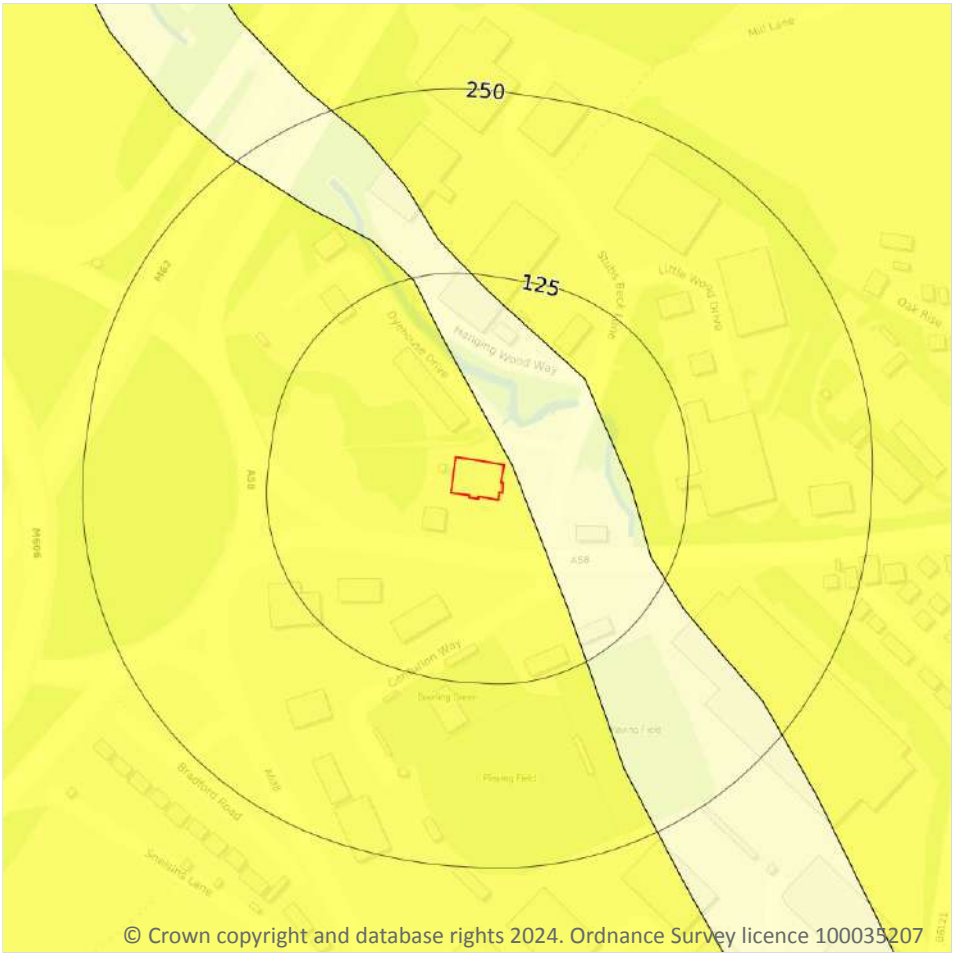
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 108 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



Site Outline

Search buffers in metres (m)

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

17.4 Collapsible deposits

Records within 50m	2

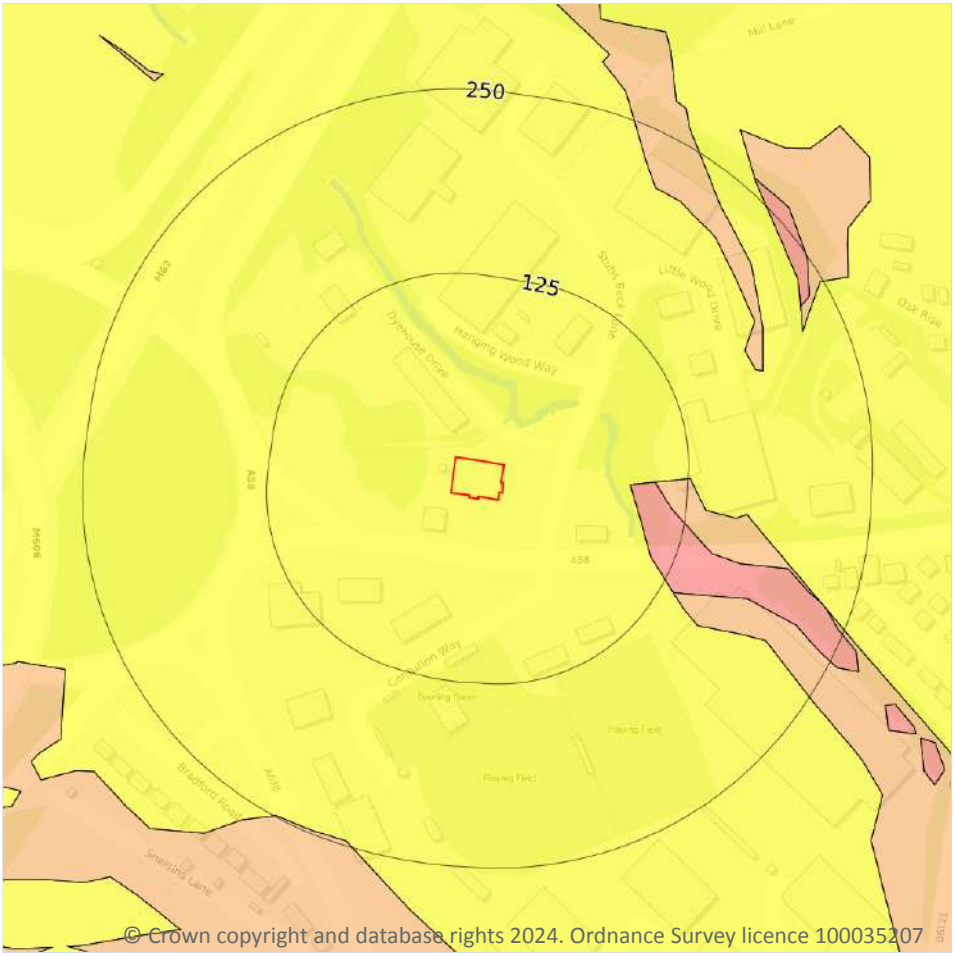
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 109 >**

Location	Hazard rating	Details
On site	**Very low**	**Deposits with potential to collapse when loaded and saturated are unlikely to be present.**
5m NE	Negligible	Deposits with potential to collapse when loaded and saturated are believed not to be present.

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



17.5 Landslides

Records within 50m	1

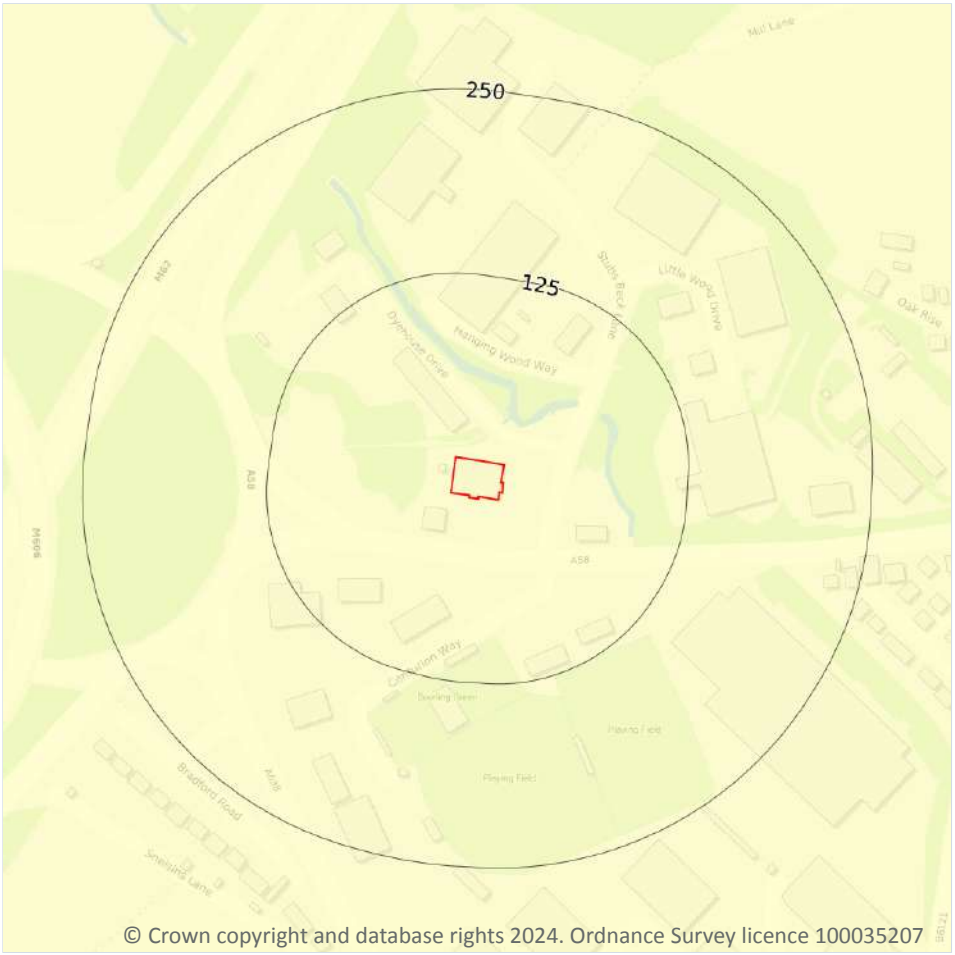
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 110 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



Site Outline

Search buffers in metres (m)

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

17.6 Ground dissolution of soluble rocks

Records within 50m	1

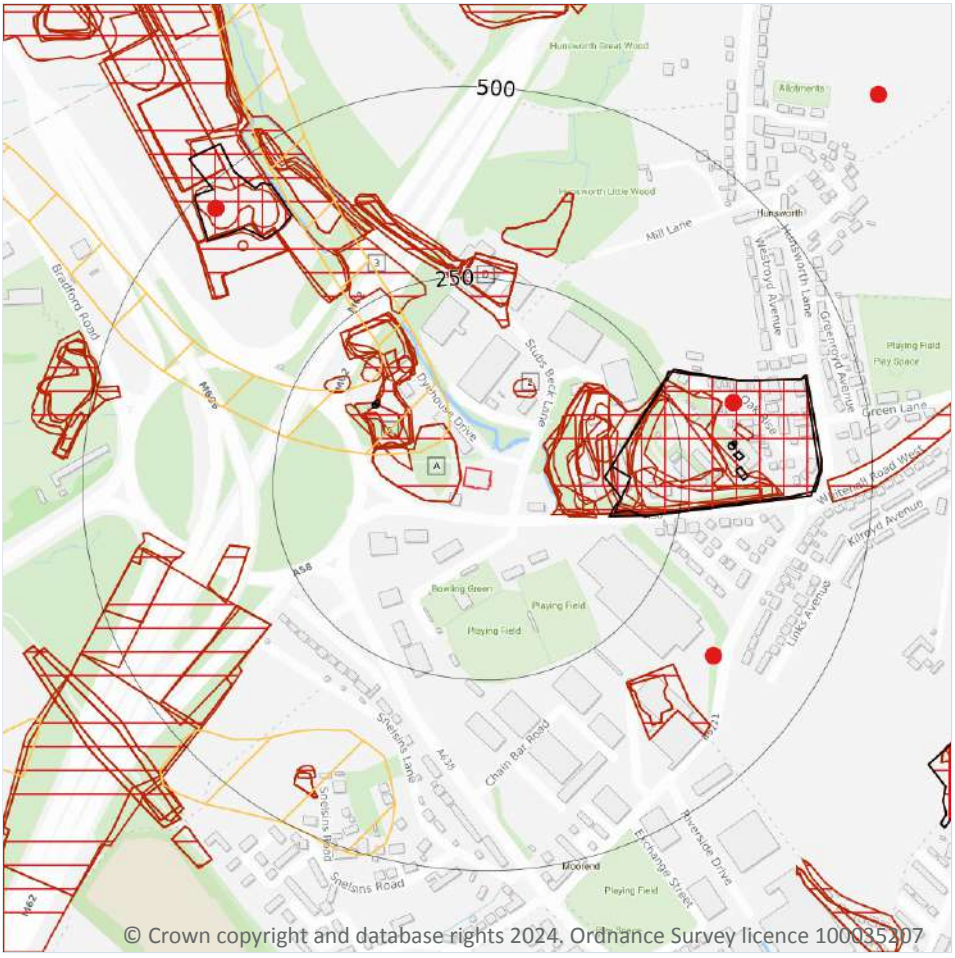
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 111 >**

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

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

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

18.1 BritPits

Records within 500m	3

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

Features are displayed on the Mining and ground workings map on **page 113 >**

ID	Location	Details	Description
B	330m E	Name: Fern House Address: Hunsworth, CLECKHEATON, West Yorkshire Commodity: Coal, Deep Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
4	368m SE	Name: Merchant House Address: Merchant Fields, BATLEY, West Yorkshire Commodity: Coal, Deep Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
P	473m NW	Name: Hunsworth Little Wood Address: Hunsworth, CLECKHEATON, West Yorkshire Commodity: Coal, Deep Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**45**

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

Features are displayed on the Mining and ground workings map on **page 113 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	5m W	Unspecified Pit	1990	1:10000
A	5m W	Unspecified Pit	1983	1:10000
A	5m W	Unspecified Ground Workings	1974	1:10000
B	70m E	Refuse Heap	1948	1:10560
B	70m E	Refuse Heap	1938	1:10560
C	70m W	Refuse Heap	1892	1:10560
B	73m E	Unspecified Heap	1990	1:10000

ID	Location	Land Use	Year of mapping	Mapping scale
B	73m E	Unspecified Heap	1983	1:10000
B	75m E	Unspecified Heap	1967	1:10560
B	76m E	Unspecified Ground Workings	1974	1:10000
C	77m NW	Refuse Heap	1955	1:10560
C	80m NW	Refuse Heap	1948	1:10560
C	80m NW	Refuse Heap	1938	1:10560
C	82m NW	Refuse Heap	1905	1:10560
B	82m E	Unspecified Ground Workings	1955	1:10560
2	105m NE	Unspecified Pit	1905	1:10560
B	112m E	Ponds	1990	1:10000
B	112m E	Ponds	1983	1:10000
B	114m E	Ponds	1974	1:10000
B	114m E	Ponds	1967	1:10560
B	129m E	Pond	1892	1:10560
B	134m E	Refuse Heap	1905	1:10560
C	140m NW	Unspecified Heap	1967	1:10560
C	146m NW	Unspecified Heap	1905	1:10560
C	146m NW	Unspecified Heap	1892	1:10560
B	146m E	Unspecified Ground Workings	1974	1:10000
B	149m E	Disused Colliery	1905	1:10560
C	150m NW	Refuse Heap	1892	1:10560
B	158m E	Colliery	1892	1:10560
C	164m NW	Pond	1967	1:10560
B	178m E	Refuse Heap	1905	1:10560
B	179m E	Refuse Heap	1892	1:10560
B	180m E	Refuse Heap	1955	1:10560
B	182m E	Unspecified Heap	1967	1:10560
C	186m NW	Unspecified Heap	1892	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
D	188m N	Mill Ponds	1905	1:10560
D	188m N	Mill Ponds	1892	1:10560
D	215m N	Reservoir	1948	1:10560
D	215m N	Reservoir	1938	1:10560
D	220m N	Reservoir	1955	1:10560
D	220m N	Reservoir	1990	1:10000
D	220m N	Reservoir	1983	1:10000
D	220m N	Reservoir	1974	1:10000
D	220m N	Reservoir	1967	1:10560
3	220m NW	Refuse Heap	1967	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**21**

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

Features are displayed on the Mining and ground workings map on **page 113 >**

ID	Location	Land Use	Year of mapping	Mapping scale
C	141m NW	Unspecified Old Shaft	1955	1:10560
C	141m NW	Unspecified Old Shafts	1948	1:10560
C	141m NW	Unspecified Old Shafts	1938	1:10560
B	149m E	Disused Colliery	1905	1:10560
B	158m E	Colliery	1892	1:10560
B	313m E	Air Shaft	1948	1:10560
B	313m E	Air Shaft	1938	1:10560
B	317m E	Air Shaft	1955	1:10560
B	318m E	Unspecified Old Shaft	1948	1:10560
B	318m E	Unspecified Old Shaft	1938	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	320m E	Unspecified Old Shaft	1955	1:10560
P	397m NW	Old Coal Pit	1905	1:10560
AD	681m SE	Colliery	1892	1:10560
-	700m N	Unspecified Old Shafts	1948	1:10560
-	700m N	Unspecified Old Shafts	1938	1:10560
-	702m N	Unspecified Old Shafts	1955	1:10560
-	712m N	Unspecified Old Shafts	1955	1:10560
-	712m N	Unspecified Disused Shaft	1967	1:10560
-	798m W	Unspecified Old Shaft	1948	1:10560
-	816m W	Unspecified Old Shafts	1955	1:10560
-	818m W	Unspecified Old Shaft	1948	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground mining extents

Records within 500m	0

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

This data is sourced from Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	0

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	5

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

Features are displayed on the Mining and ground workings map on **page 113 >**

ID	Location	Name	Commodity	Class	Likelihood
1	48m NW	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
M	354m SW	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
5	633m SW	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	785m E	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.
-	899m SE	Leeds/Bradford area	Iron Ore (Bedded)	B	Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.

This data is sourced from the British Geological Survey.

18.7 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.8 The Coal Authority non-coal mining

Records within 500m	0

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

This data is sourced from The Coal Authority.

18.9 Researched mining

Records within 500m	0

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	2

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

Location	Mineral
9m W	Coal
13m W	Lead

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	1

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

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

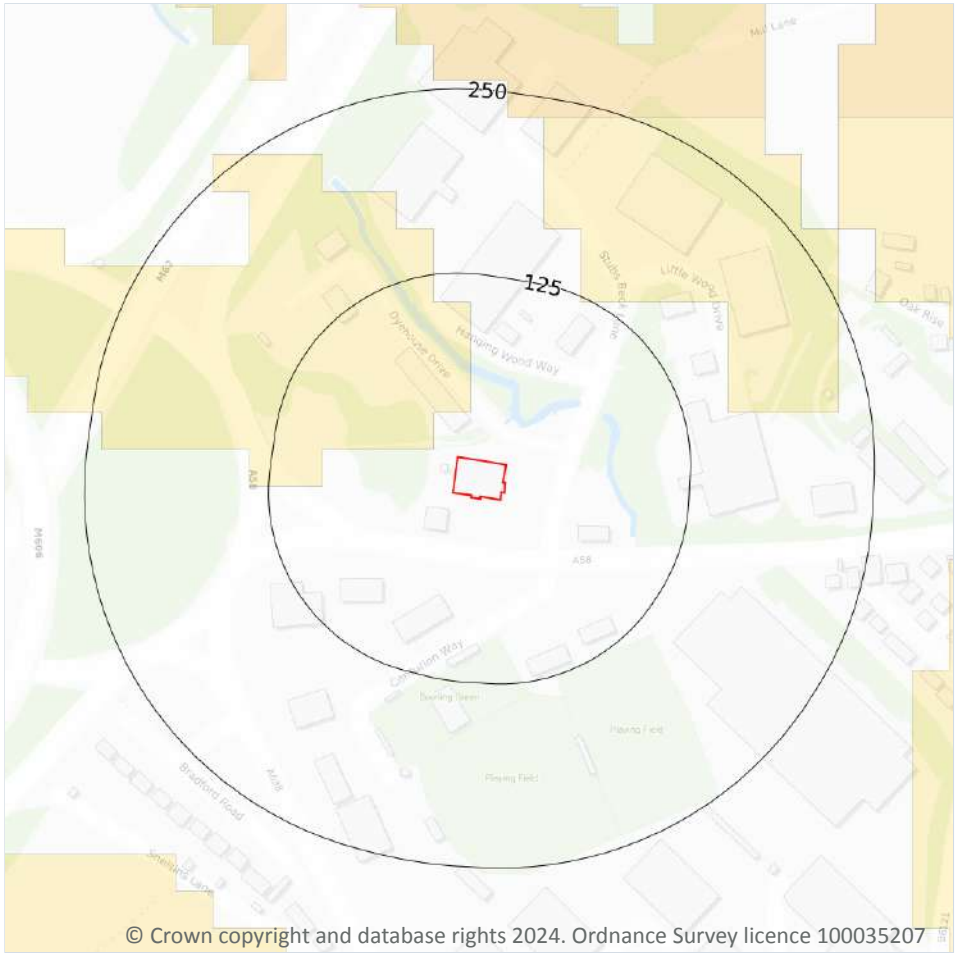
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

20.1 Radon

Records on site	1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on **page 124 >**

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

This data is sourced from the British Geological Survey and UK Health Security Agency.

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	5

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**35 - 45 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
5m NE	25 - 35 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	120 - 180 mg/kg	30 - 45 mg/kg
26m E	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	120 - 180 mg/kg	30 - 45 mg/kg
41m SE	35 - 45 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg
48m NW	35 - 45 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects

Site Outline

Search buffers in metres (m)

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

22.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

22.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

22.4 Historical railway and tunnel features

Records within 250m	5

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

Features are displayed on the Railway infrastructure and projects map on **page 128 >**

Location	Land Use	Year of mapping	Mapping scale
146m NW	Railway Sidings	1892	10560
150m NW	Tramway Sidings	1894	2500
181m NW	Railway Sidings	1907	2500
248m NE	Railway Sidings	1892	10560
250m NE	Tramway Sidings	1907	2500

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

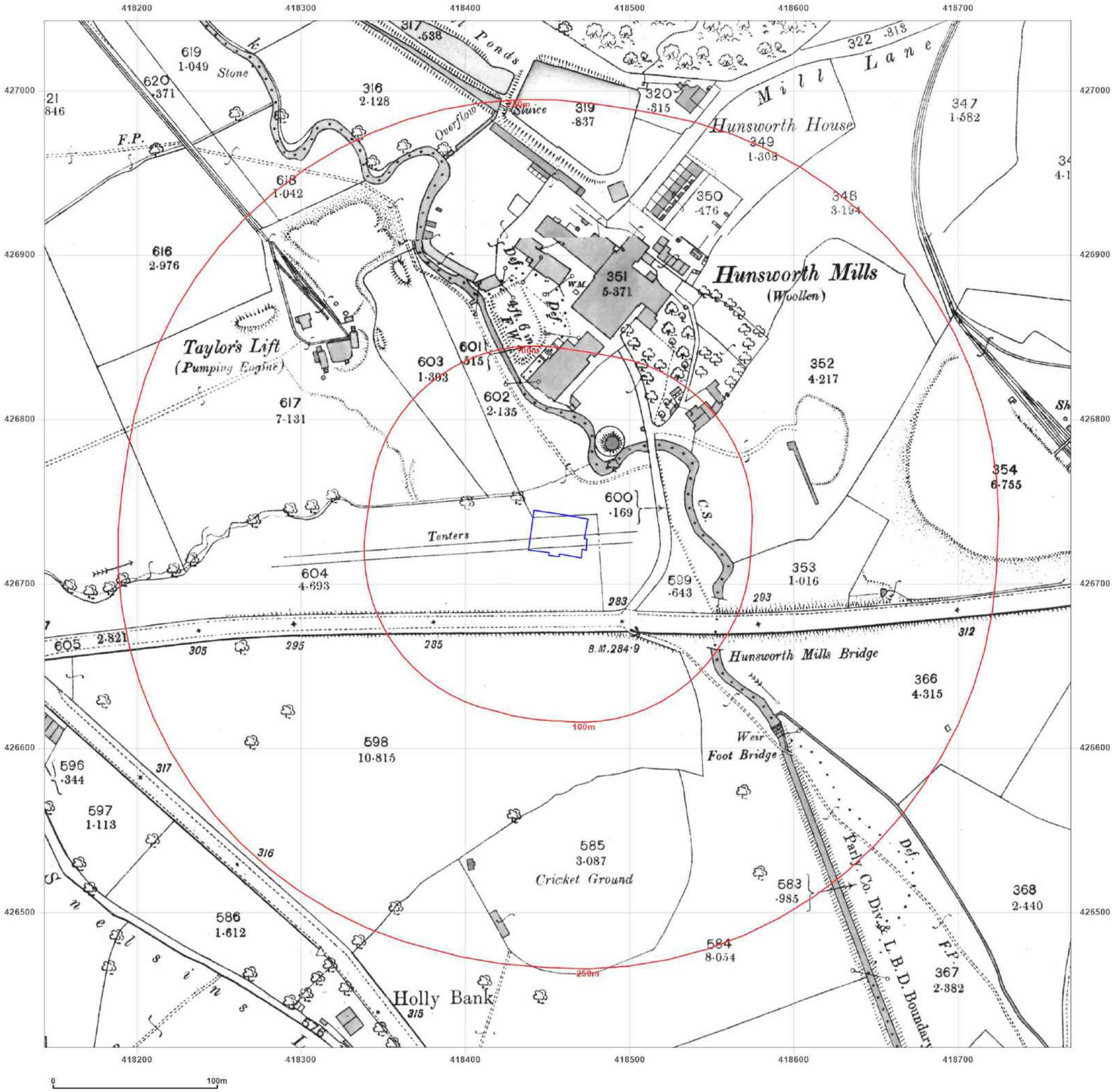
This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: www.groundsure.com/terms-and-conditions-april-2023/ ↗.



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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1893-1894**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1893
Revised 1893
Edition N/A
Copyright N/A
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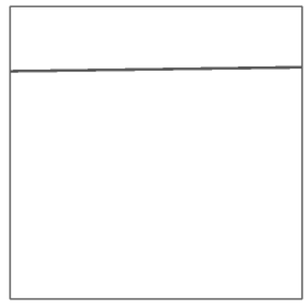

Surveyed 1894
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Edition N/A
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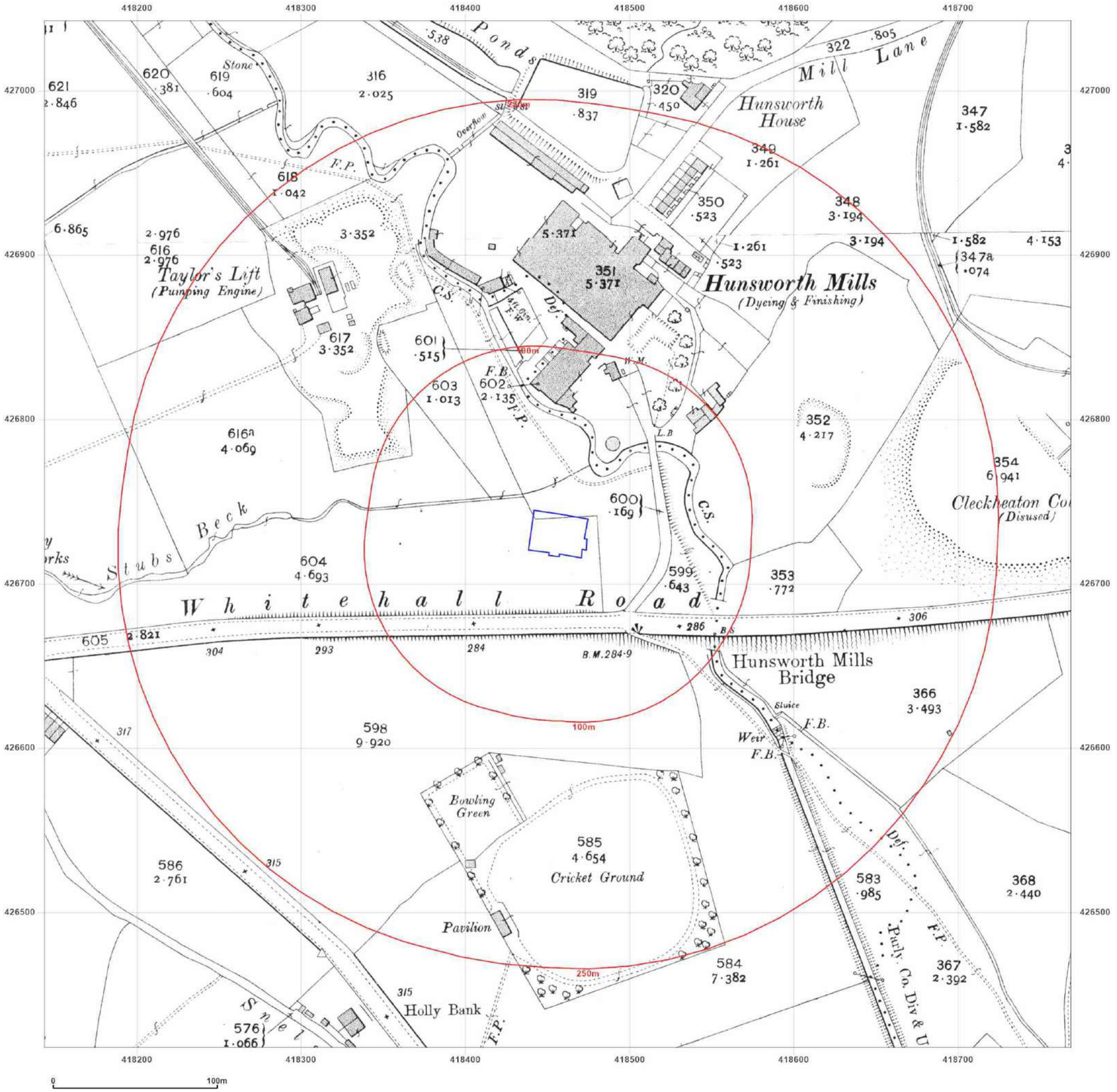

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Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1907-1908**

Scale: 1:2,500

Printed at: 1:2,500

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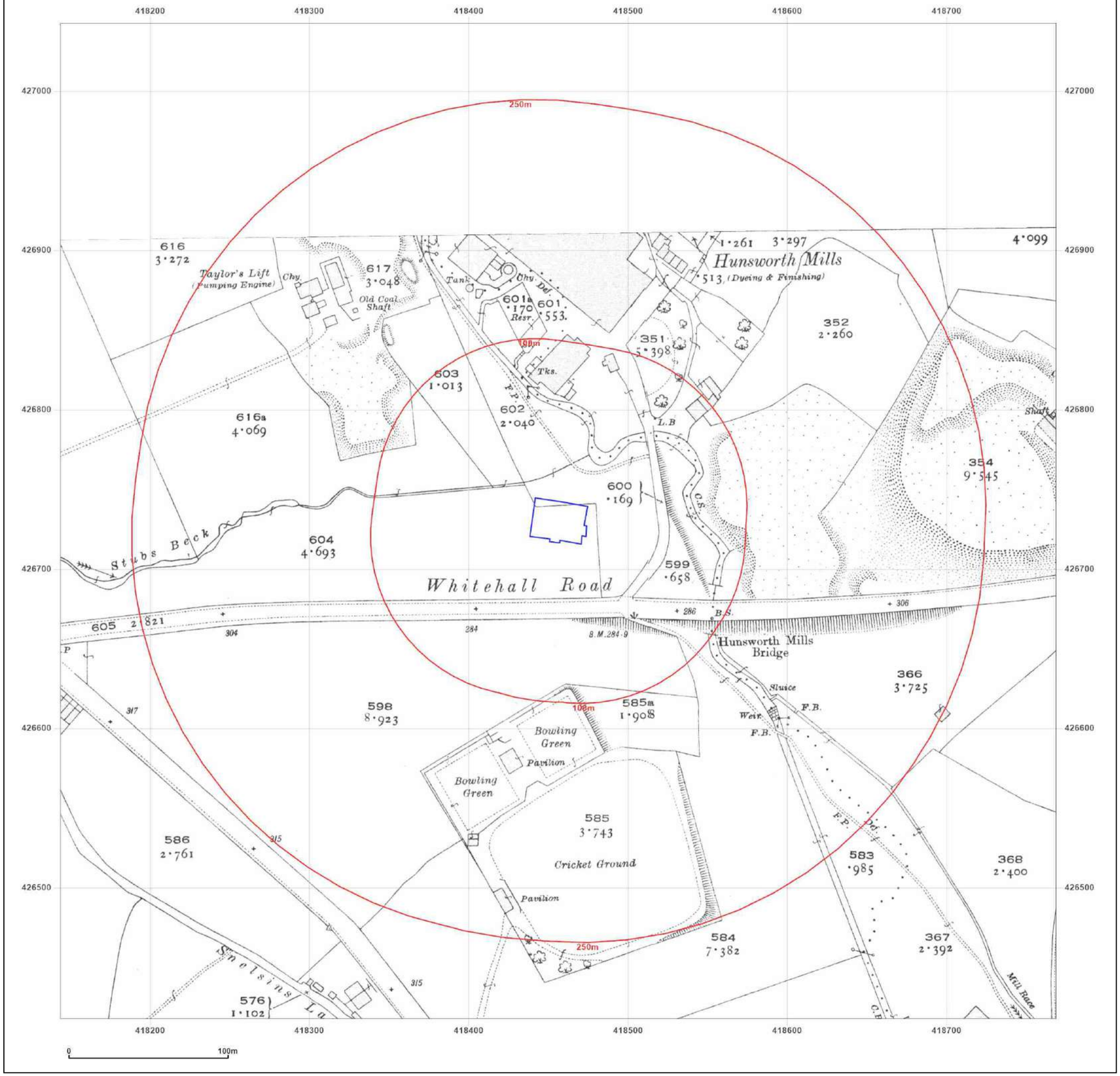

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Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1922**

Scale: 1:2,500

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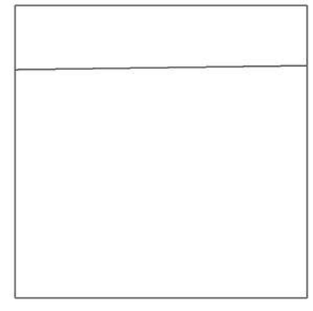

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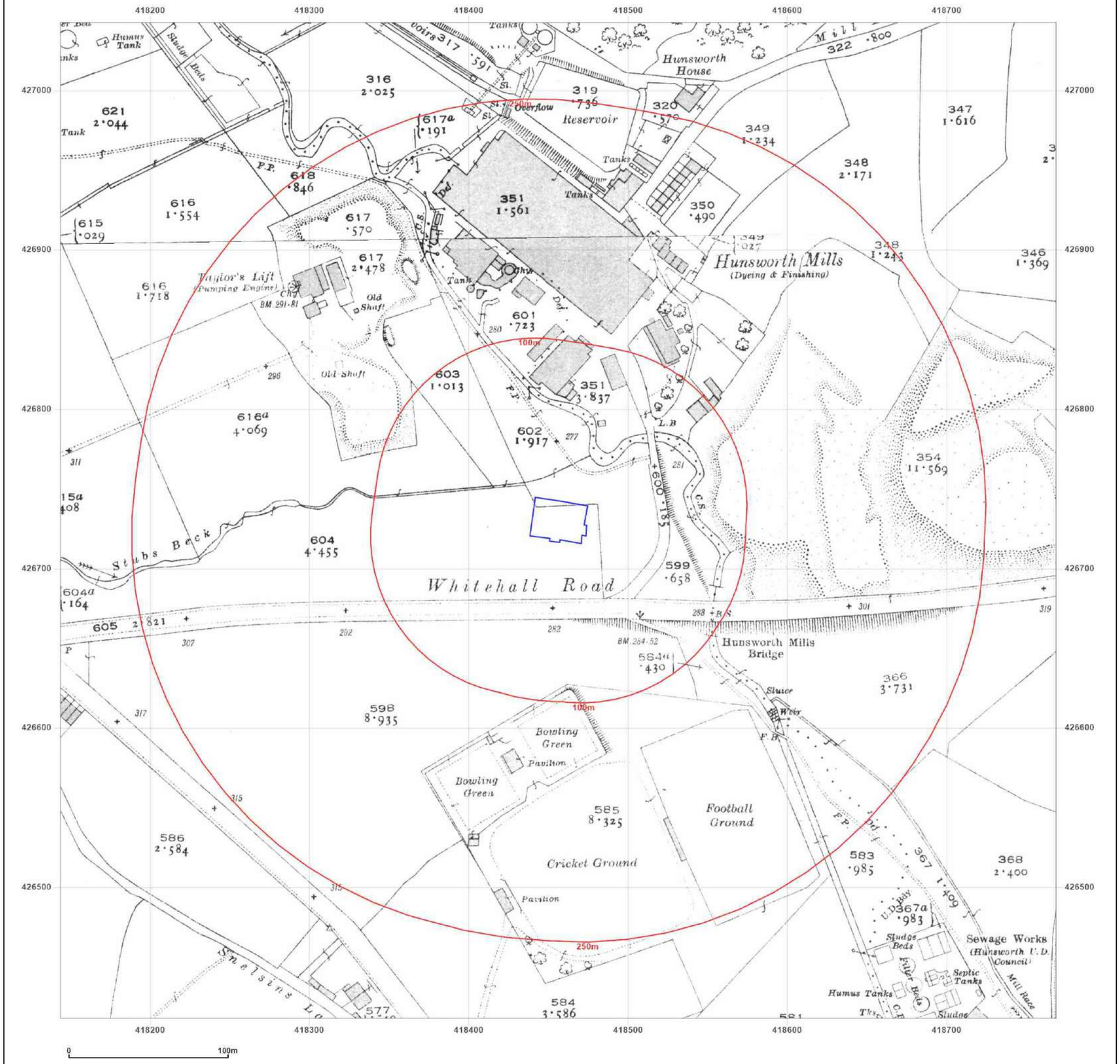

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Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1933**

Scale: 1:2,500

Printed at: 1:2,500

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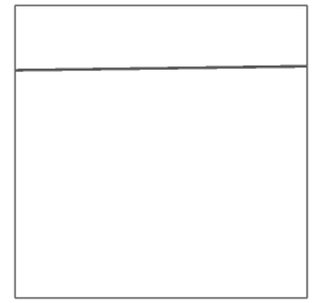

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1938**

Scale: 1:2,500

Printed at: 1:2,500

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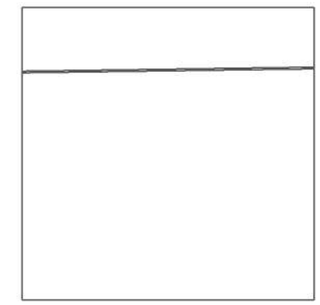

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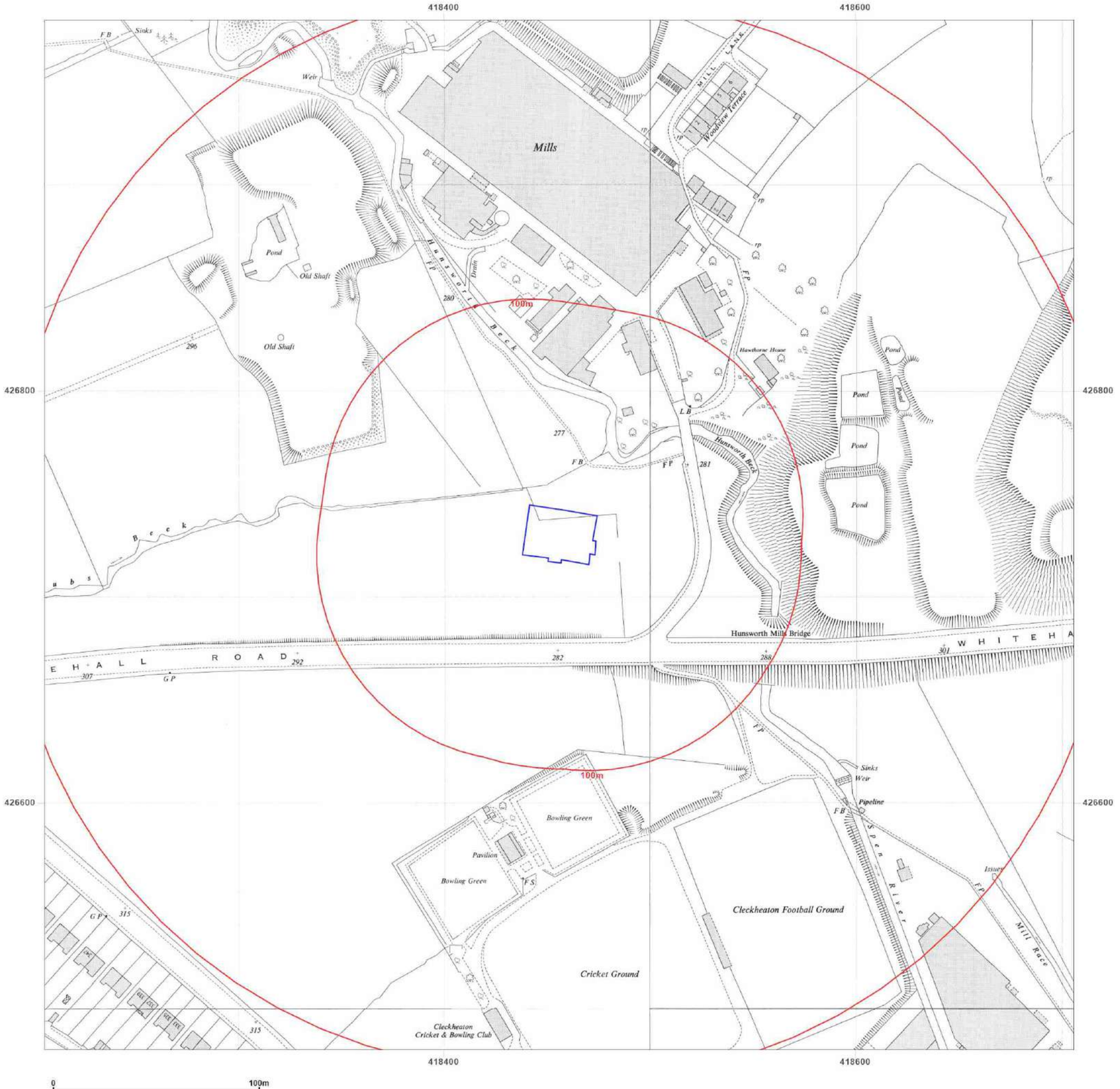

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BD19 6HG

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Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1956-1957**

Scale: 1:1,250

Printed at: 1:2,000

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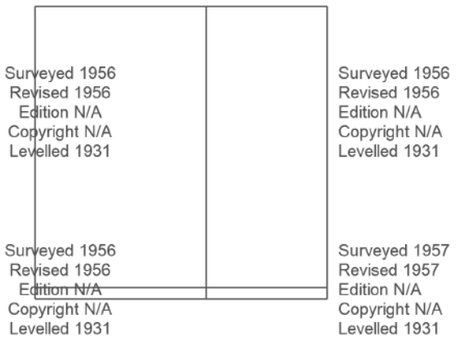

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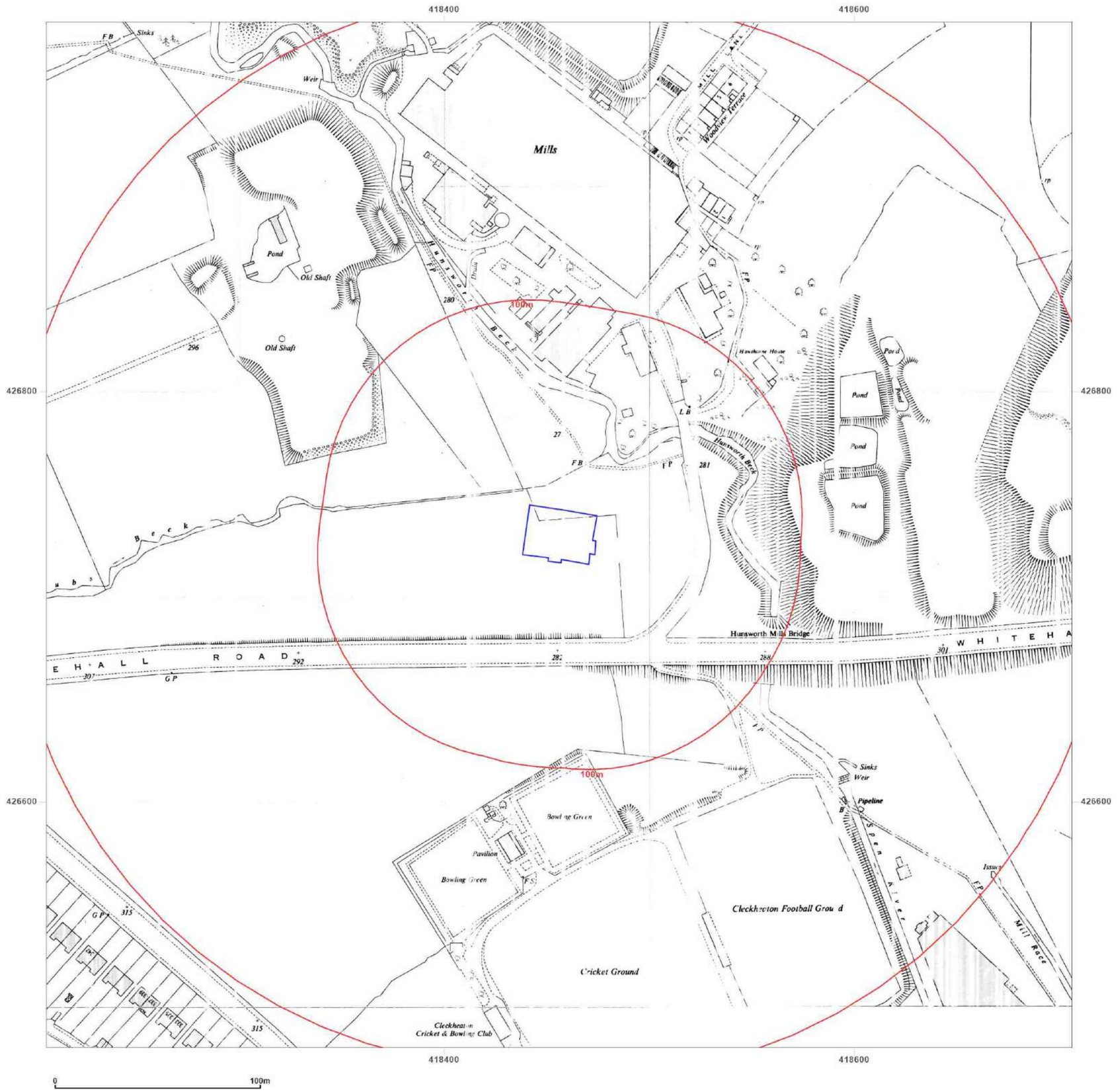

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Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid
Map date: **1957**
Scale: 1:1,250
Printed at: 1:2,000

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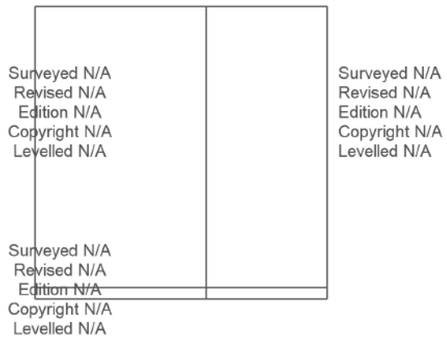

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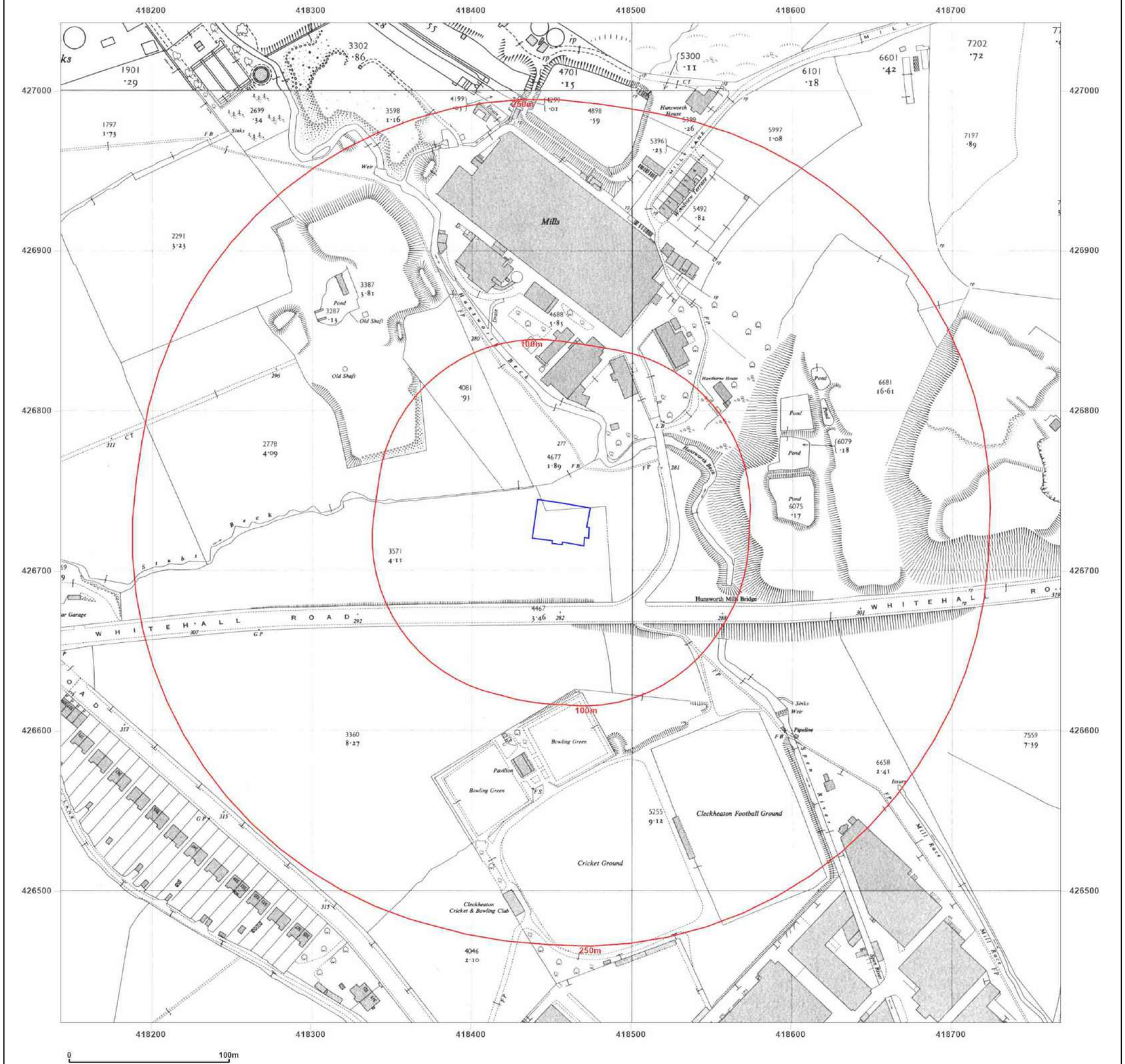

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Site Details:

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1957-1958**

Scale: 1:2,500

Printed at: 1:2,500

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Revised 1957
Edition 1958
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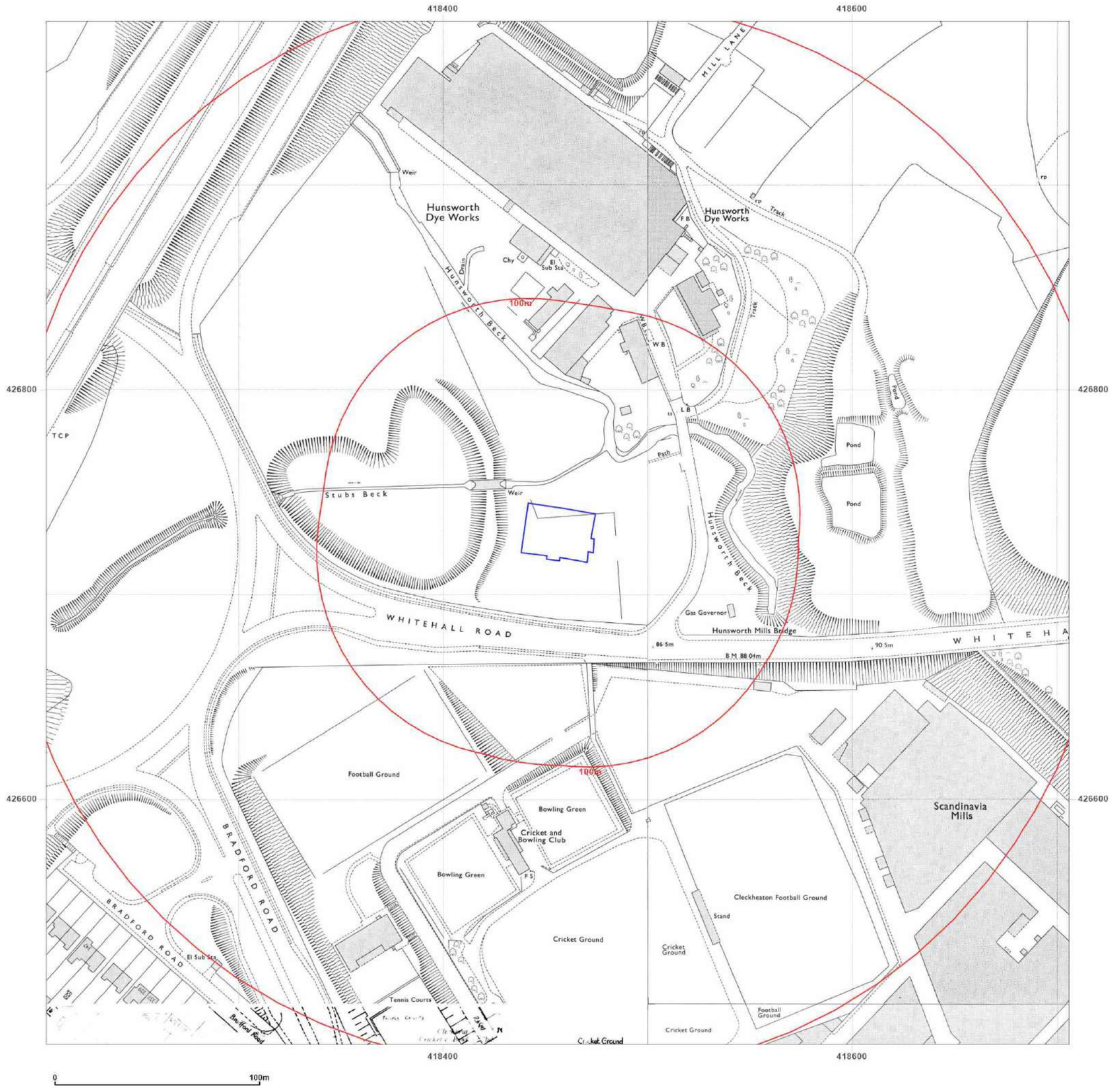

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Site Details:

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1972-1974**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A Revised N/A Edition N/A Copyright 1974 Levelled N/A	Surveyed 1957 Revised 1971 Edition N/A Copyright 1972 Levelled 1962

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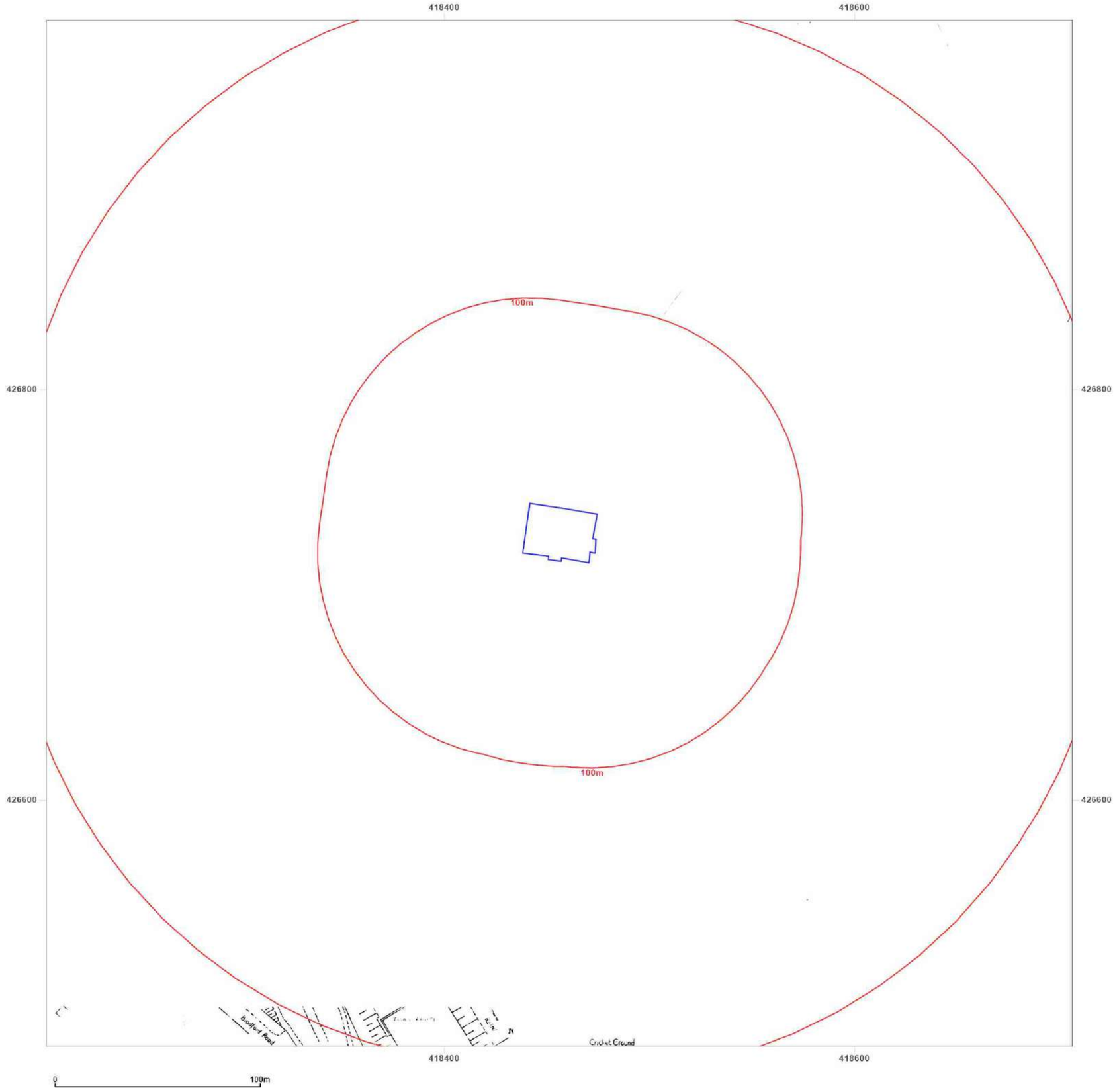

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Site Details:

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BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1975-1977**

Scale: 1:1,250

Printed at: 1:2,000

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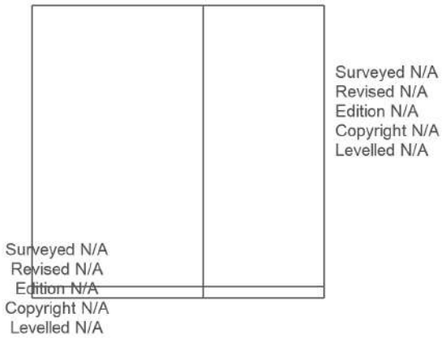

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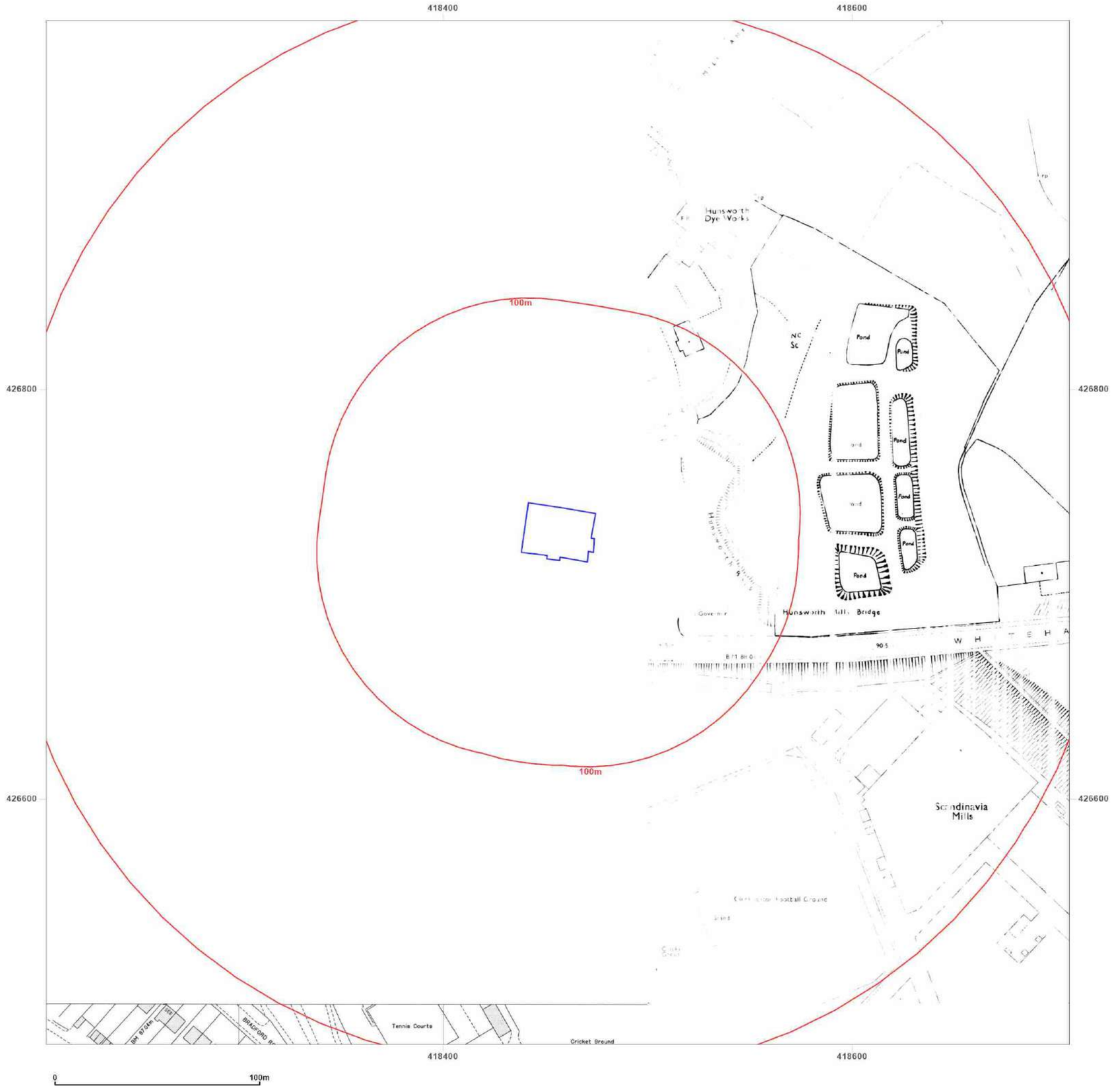

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1984-1988**

Scale: 1:1,250

Printed at: 1:2,000

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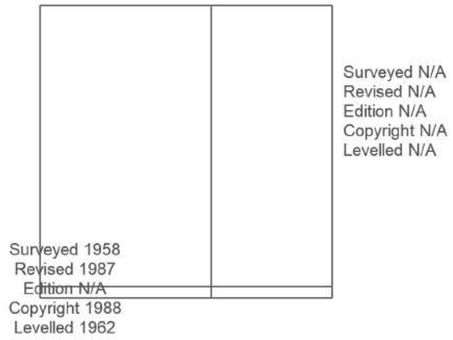

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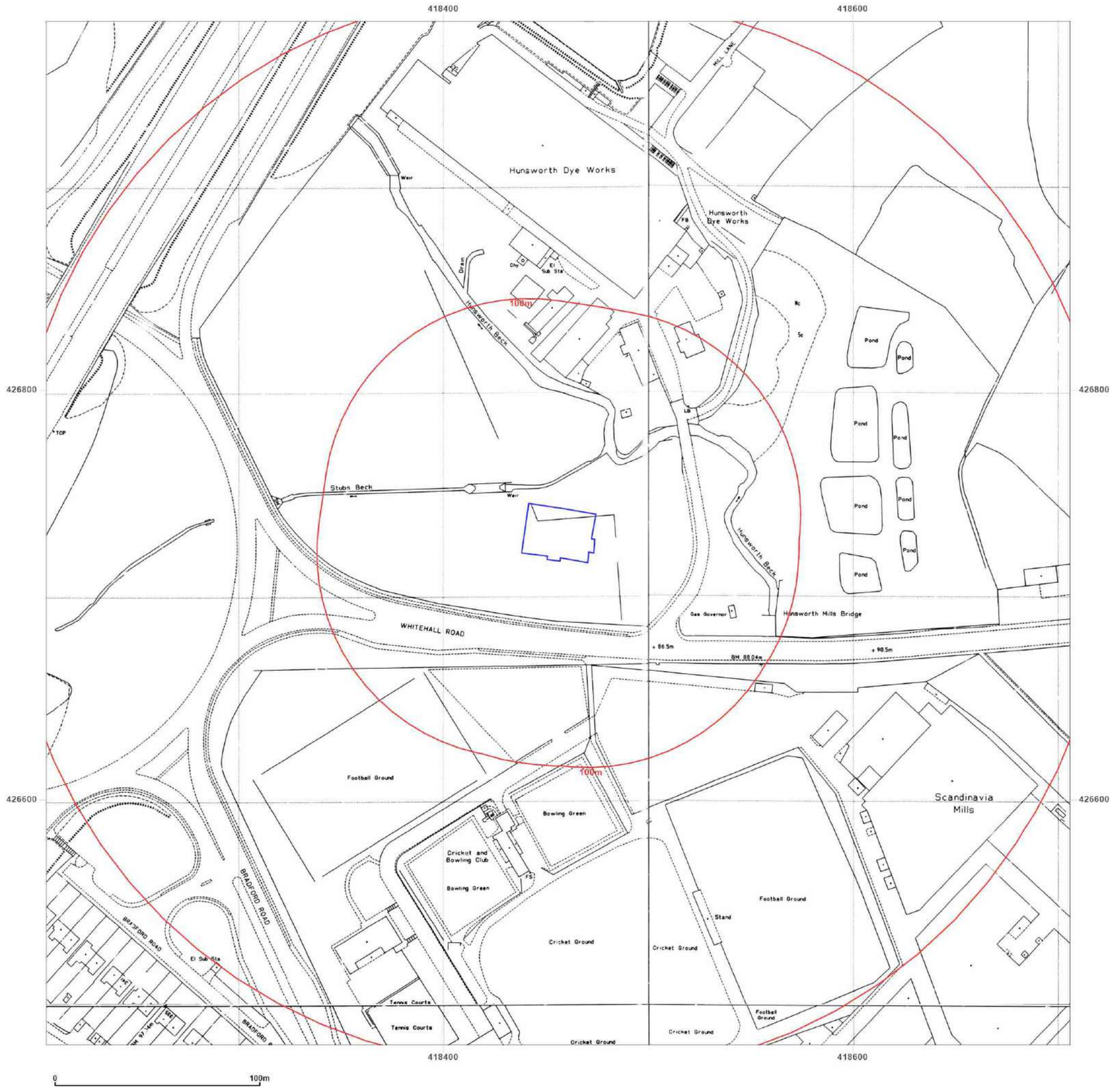

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Site Details:

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1992**

Scale: 1:1,250

Printed at: 1:2,000

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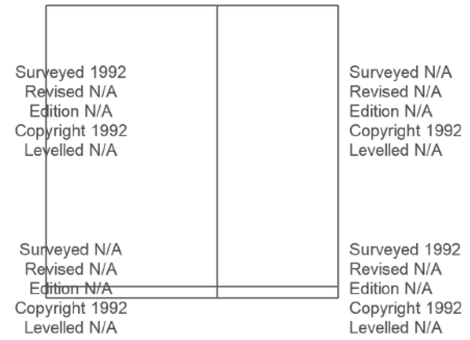

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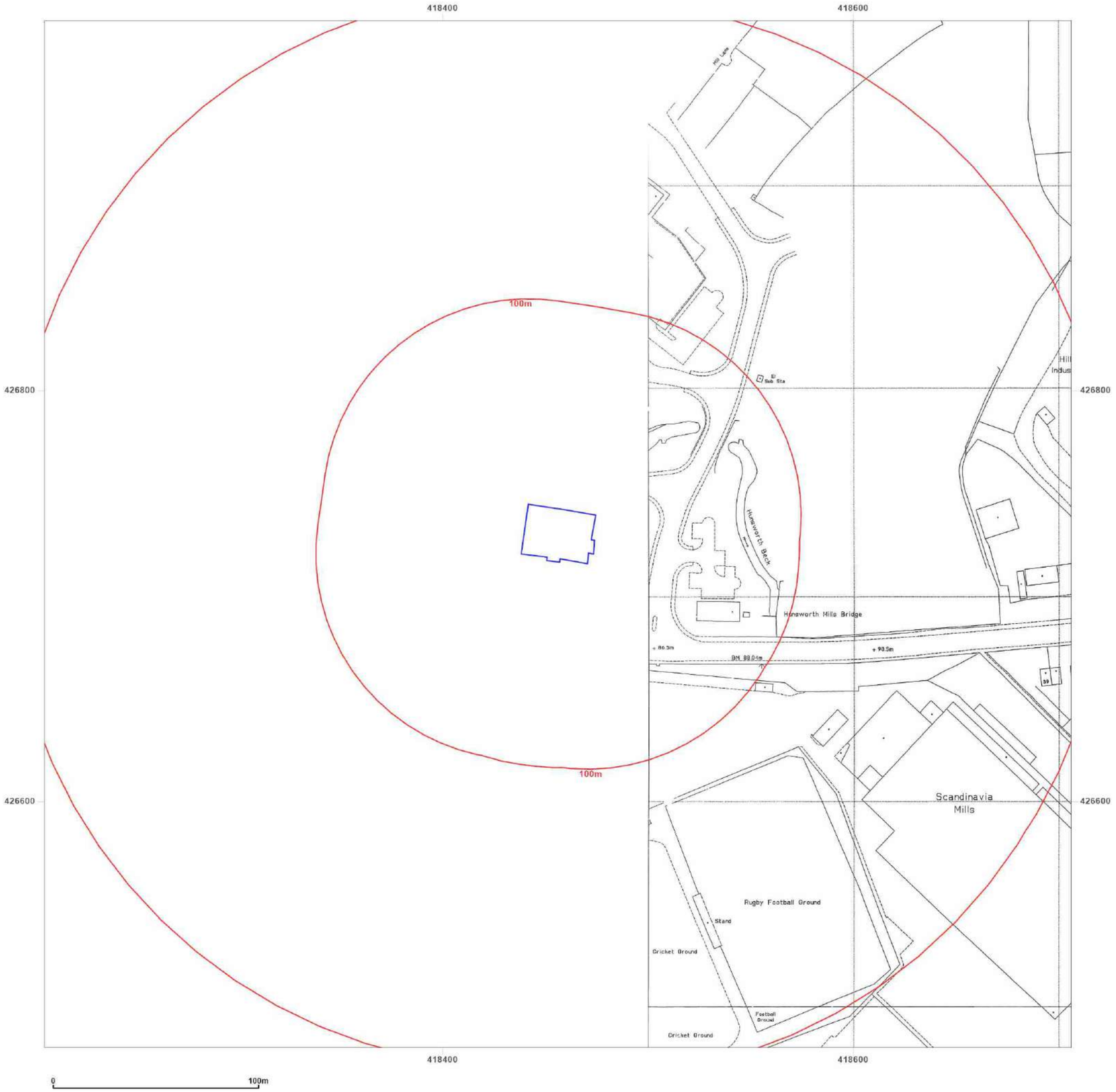

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

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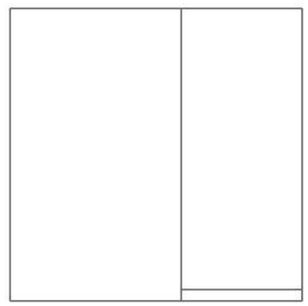

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Revised N/A
Edition N/A
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Surveyed 1995
Revised 1995
Edition N/A
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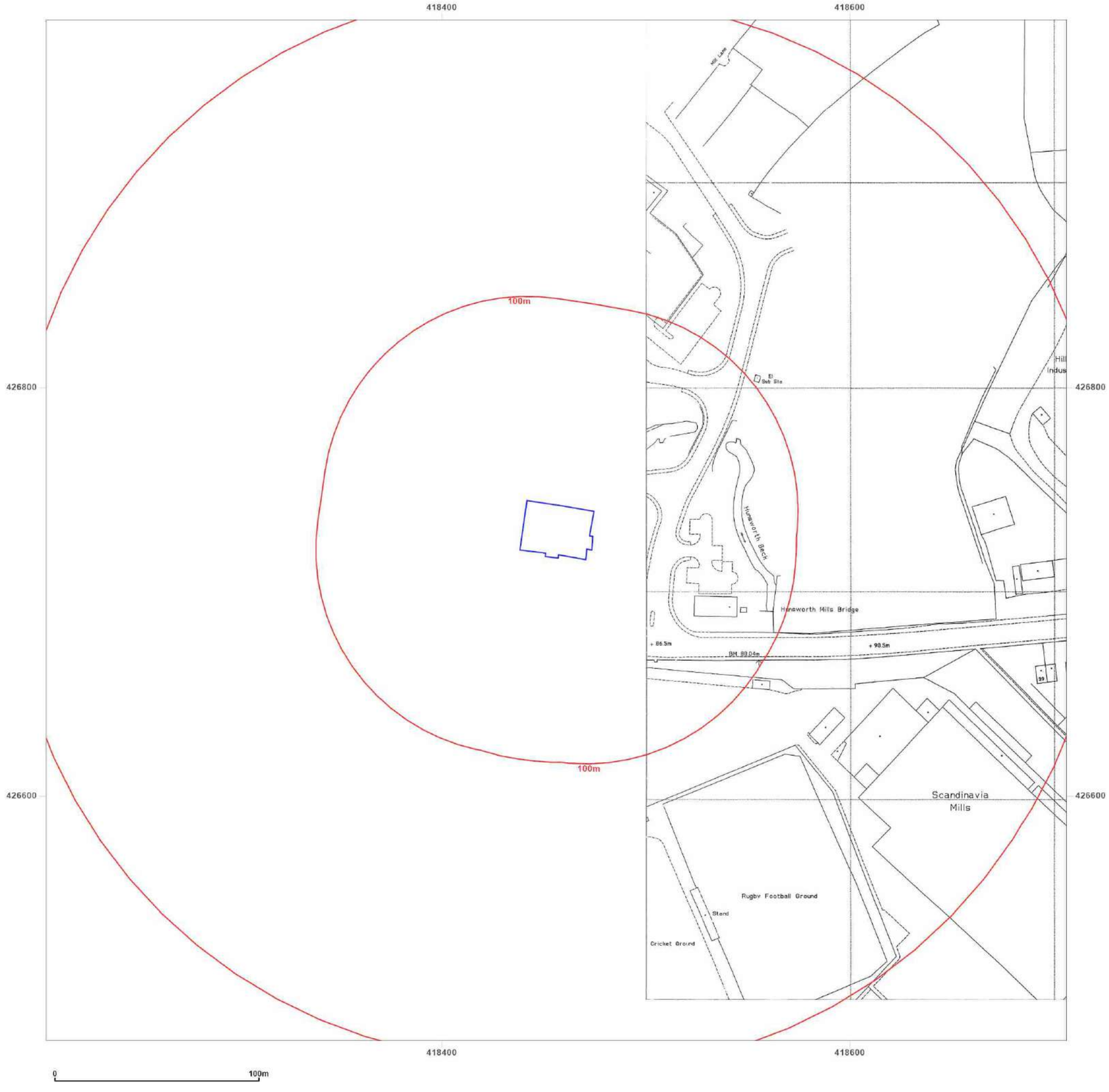

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

Printed at: 1:2,000

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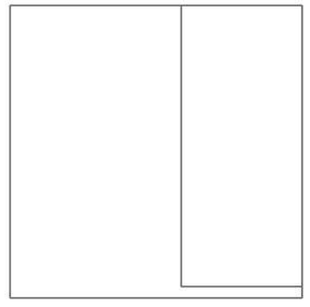

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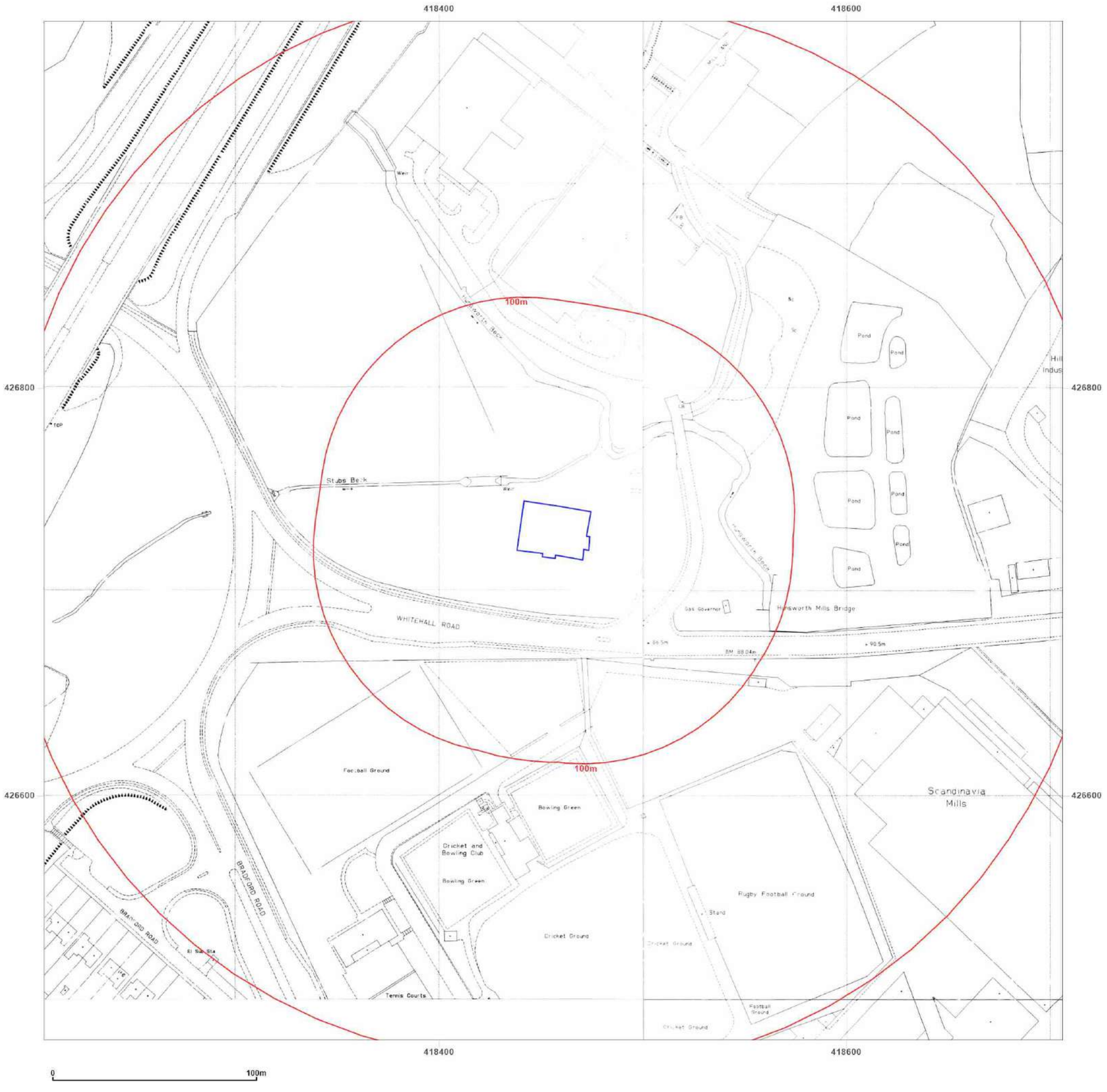

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:1,250

Printed at: 1:2,000

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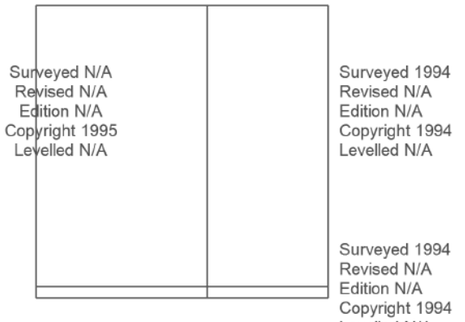

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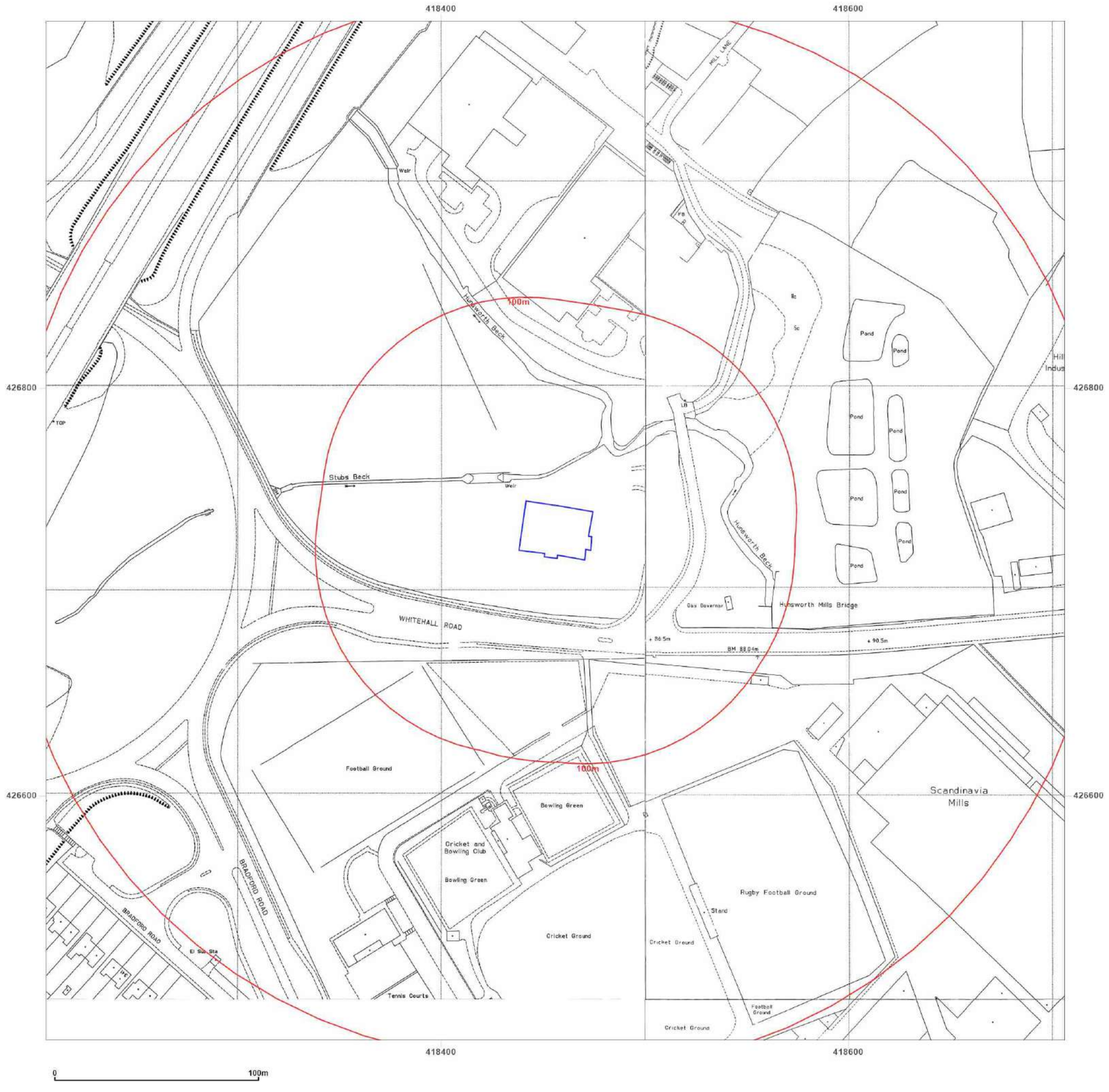

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Site Details:

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1994-1995**

Scale: 1:1,250

Printed at: 1:2,000

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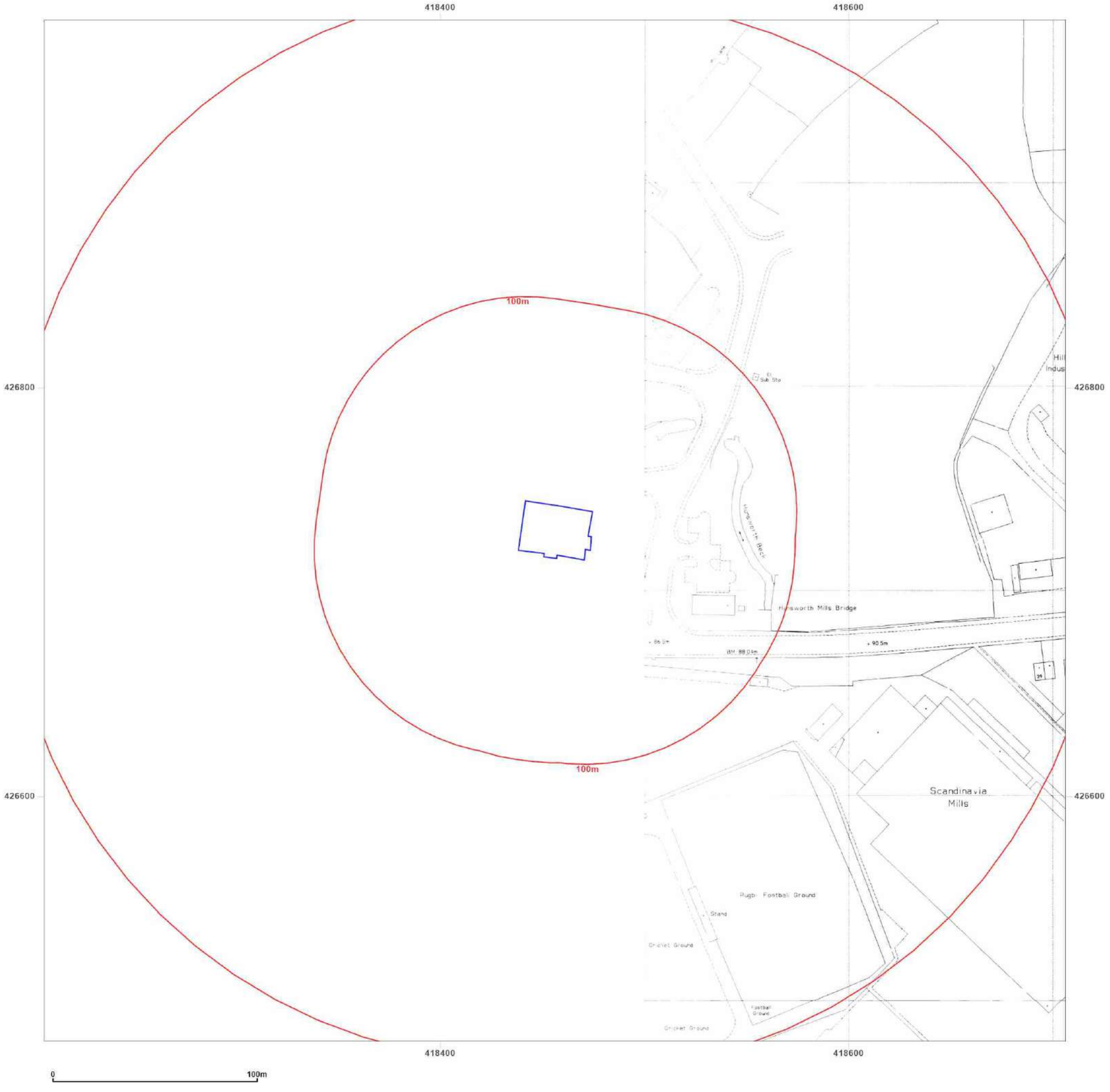

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Site Details:

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BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1995**

Scale: 1:1,250

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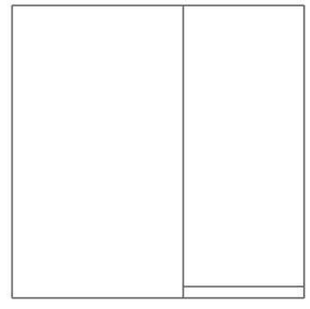

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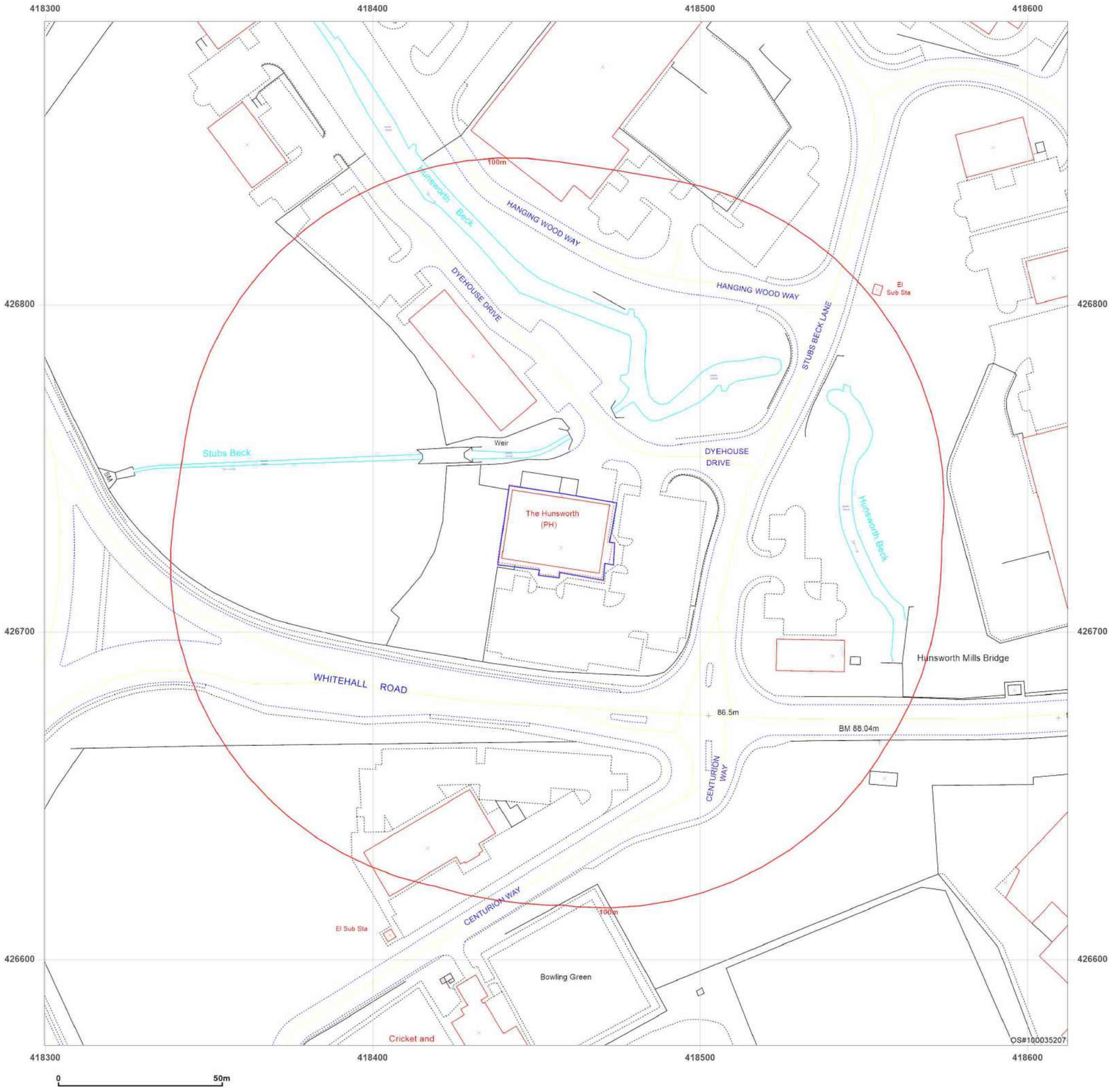

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

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

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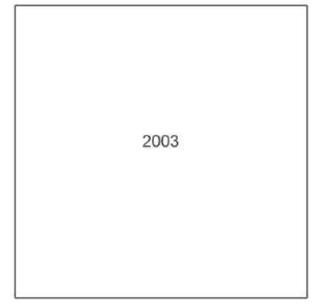

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County Series 1:10,560 scale

VEGETATION

Fir Wood

Deciduous Wood

Mixed Wood

Brushwood

Orchard

Reeds

Rough Pasture

Furze

Marsh

Osiers

ROADS

Railway over Road

Road over Railway

Road over River or Canal

Level Crossing

Railway over River

Road over Stream

Sunken Road

Raised Road

RAILWAYS

Double Lines of Railway

Single Lines of Railway and Tramway

GENERAL FEATURES

Gravel Pit

Sand Pit

Quarry

Shingle

Other Pits

Antiquities, Site of

Arrow, showing direction of flow of water

Trigonometrical Station

BOUNDARIES

County Boundary

Parliamentary Division Boundary

Parish Boundary

Union Boundary

200 Contours

Rural District Boundary

National Grid 1:10,000 scale

HEIGHTS (METRES)

Values are given in metres above mean sea level at Newlyn.

Surface heights determined by: ground survey • 163m; air survey

Bench marks and their values are shown on large scale maps, and bench mark lists containing fuller and possibly later levelling information are obtainable from the Director General, Ordnance Survey.

Contours are at 5 metres vertical interval.

ROCK FEATURES

Loose rock

Boulders

Outcrop

Scree

Vertical face

CONVERSION SCALE

Metres - Feet

2000 Metres – 6500 Feet

6000

5000

1500

4000

ABBREVIATIONS

BP,BS	Boundary Post or Stone
Ch	Church
CH	Club House
F Sta	Fire Station
FB	Foot Bridge
Fn	Fountain
GP	Guide Post
MP,MS	Mile Post or Stone
P	Pole or Post
Pol Sta	Police Station
PO	Post Office
PC	Public Convenience
PH	Public House
S	Stone
Spr	Spring
TCB	Telephone Call Box
TCP	Telephone Call Post
TH	Town Hall
W	Well
Y	Youth hostel

ROADS

Road

Track (Where unfenced shown by pecked lines.)

Path

RAILWAYS

Cutting, Embankment, Road over, Road under, Level crossing, Foot Bridge

Multiple track

Single track

Siding, tramway or mineral line

Standard gauge

Narrow gauge

GENERAL FEATURES

Antiquity, (site of)

Boulders

Building

Pylon

Pole

Electricity transmission line

Glasshouse

Triangulation station

Direction of flow of water

Lake, loch or pond

Sloping masonry

Chalk pit, clay pit or quarry

Gravel pit

Sand pit

Refuse or slag heap

Shingle

Sand

VEGETATION

Bracken, rough grassland

Scrub

Heath

Marsh

Saltings

Reeds

Coppice

Orchard

Coniferous trees

Non-coniferous trees

In some areas bracken ( ) and rough grassland ( ) are shown separately.

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Historical Map Pack Legend

County Series & National Grid

1:10,560 scale

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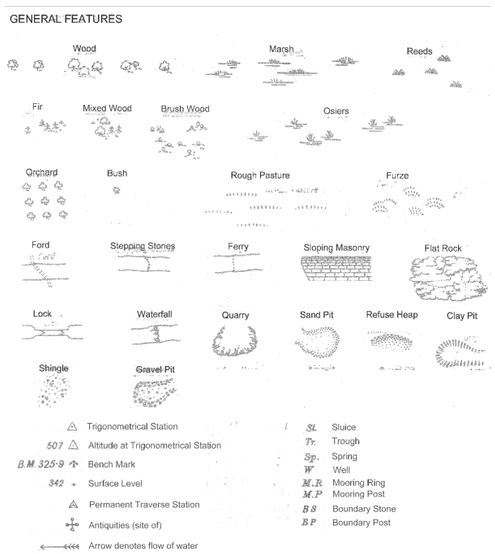
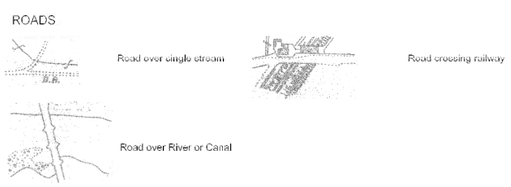
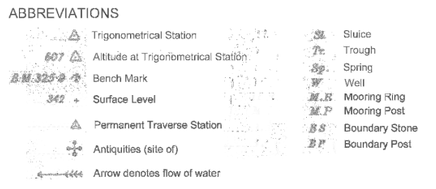
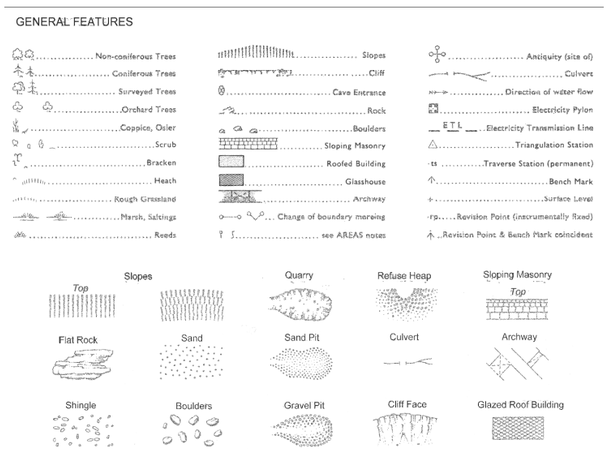
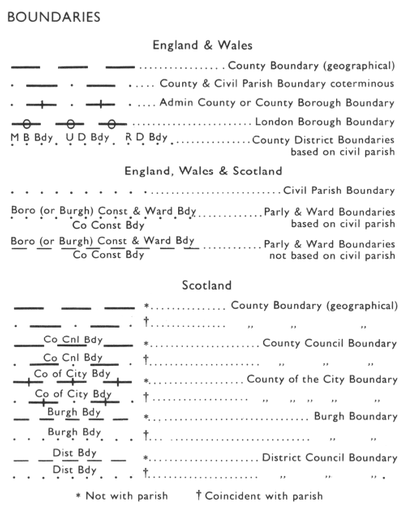


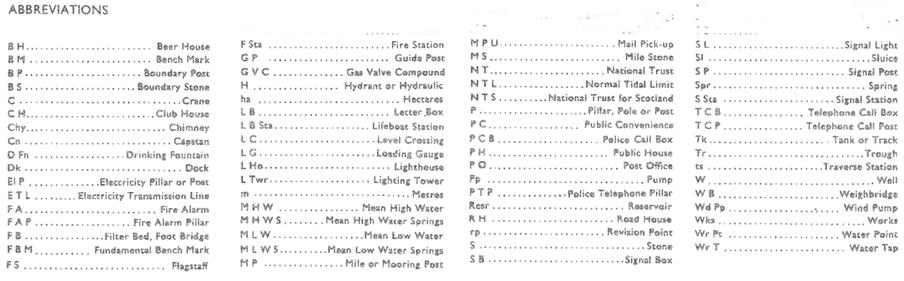




National Grid 1:2,500 / 1:1,250 scale







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Historical Map Pack Legend

County Series

1:1,250 scale

~

County Series & National Grid

1:2,500 scale

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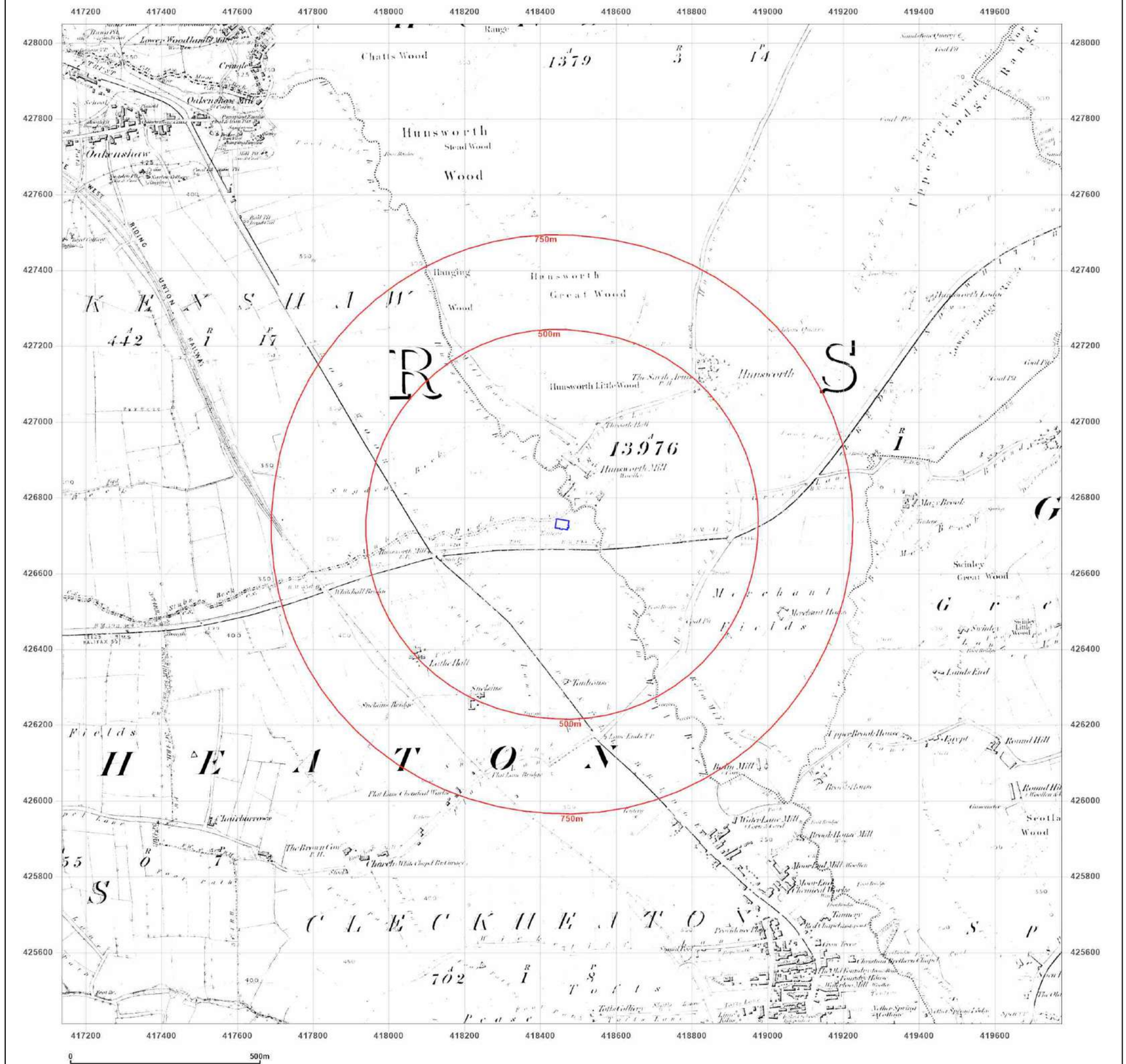

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1854**

Scale: 1:10,560

Printed at: 1:10,560

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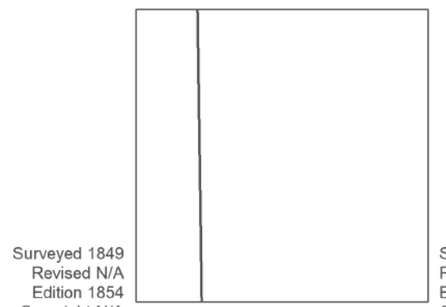

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Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1892**

Scale: 1:10,560

Printed at: 1:10,560

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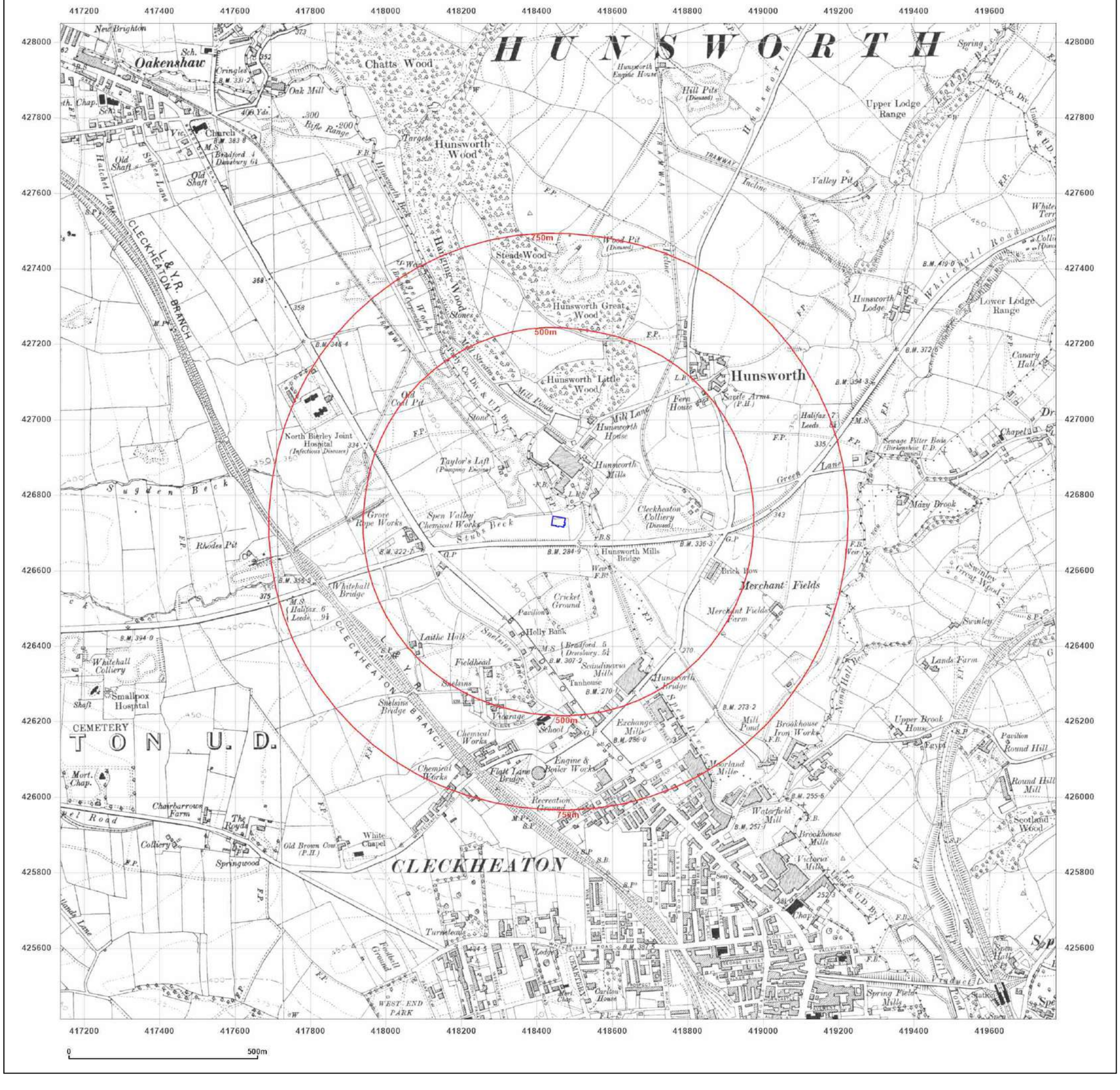

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1892
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1889
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 September 2024

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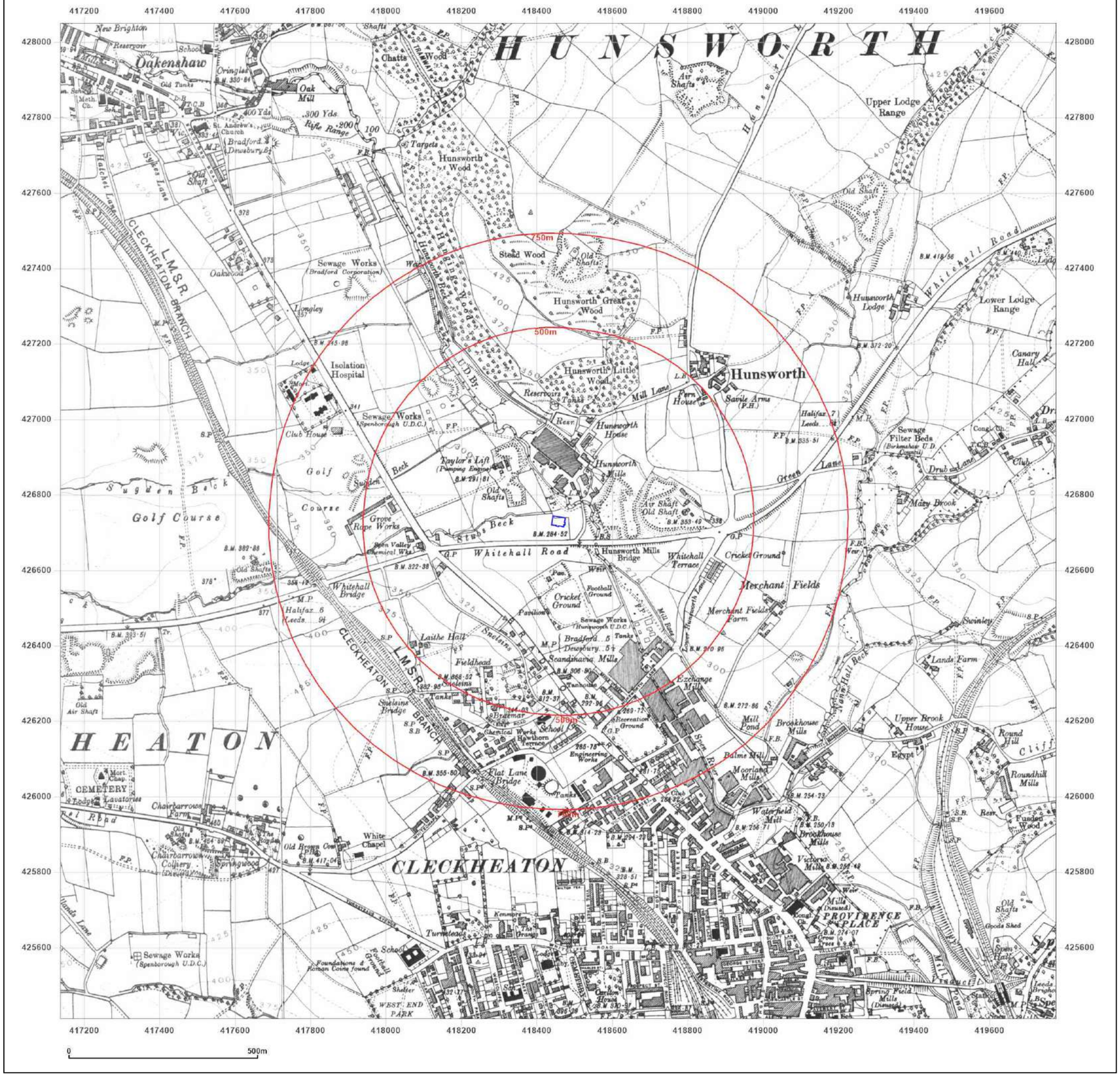

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1932**

Scale: 1:10,560

Printed at: 1:10,560

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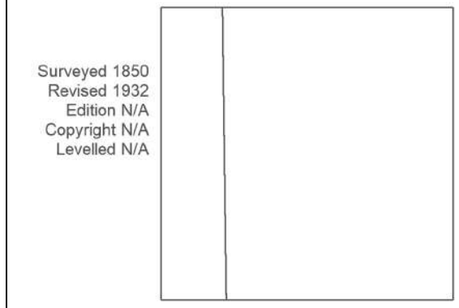

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1850
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

Surveyed 1850
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A

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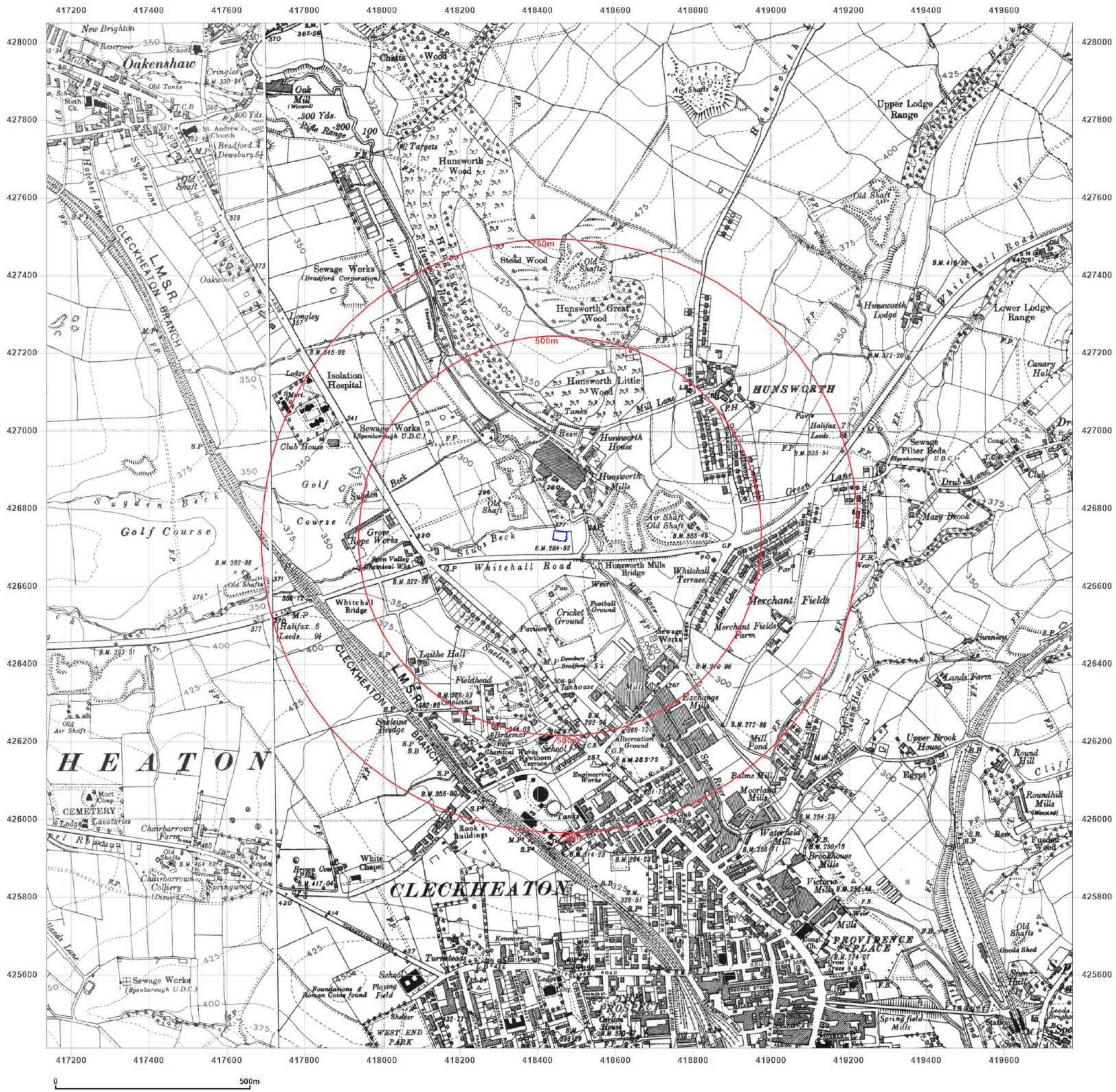

Site Details:

Bradford, Premier inn, Bradford,
BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

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Surveyed 1850
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1850
Revised 1948
Edition N/A
Copyright N/A
Levelled 1931

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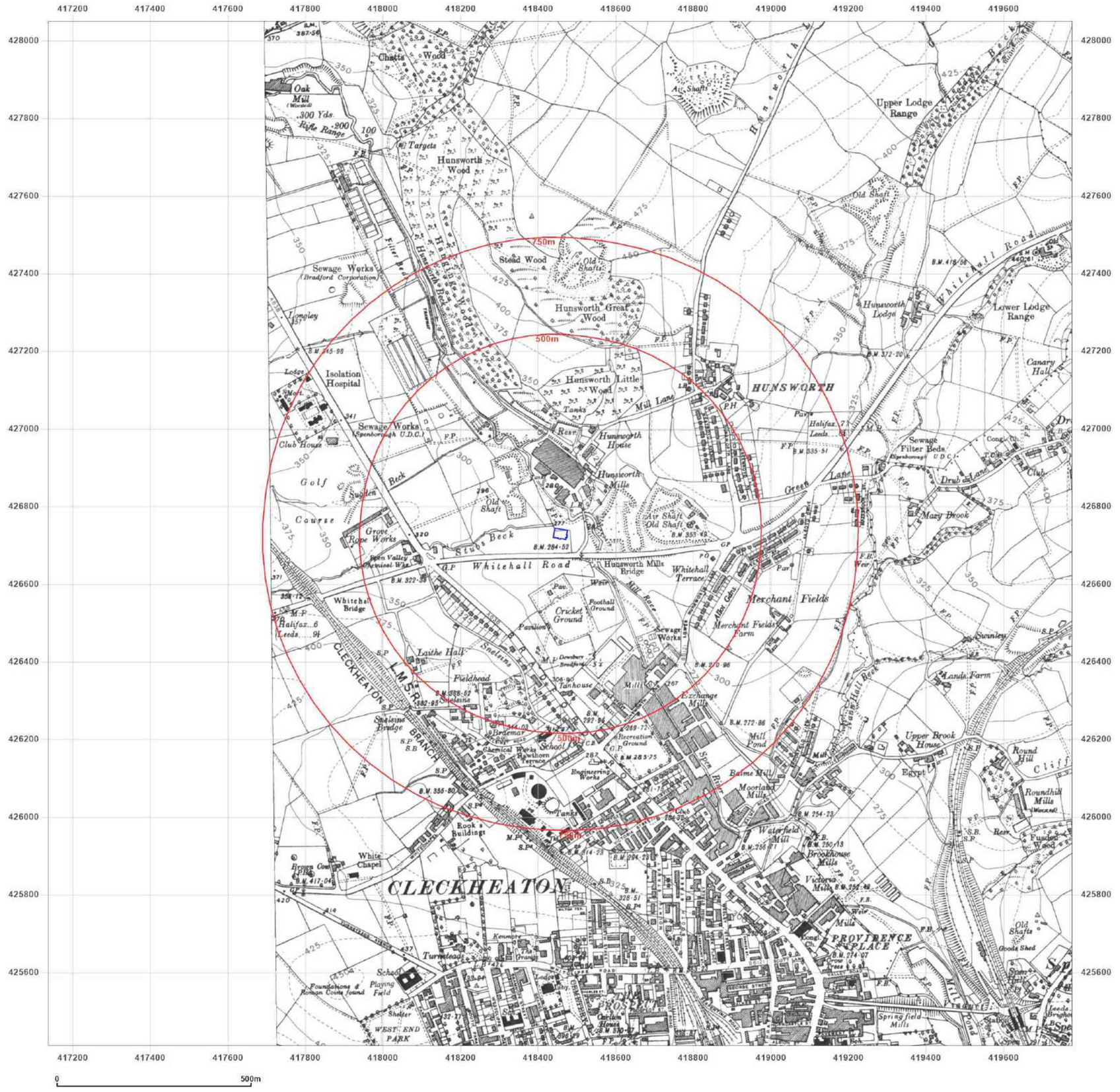

EMAPSITE™

Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

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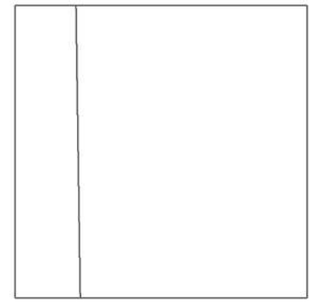

Surveyed 1850
Revised 1948
Edition N/A
Copyright N/A
Levelled N/A

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Production date: 05 September 2024

Map legend available at:
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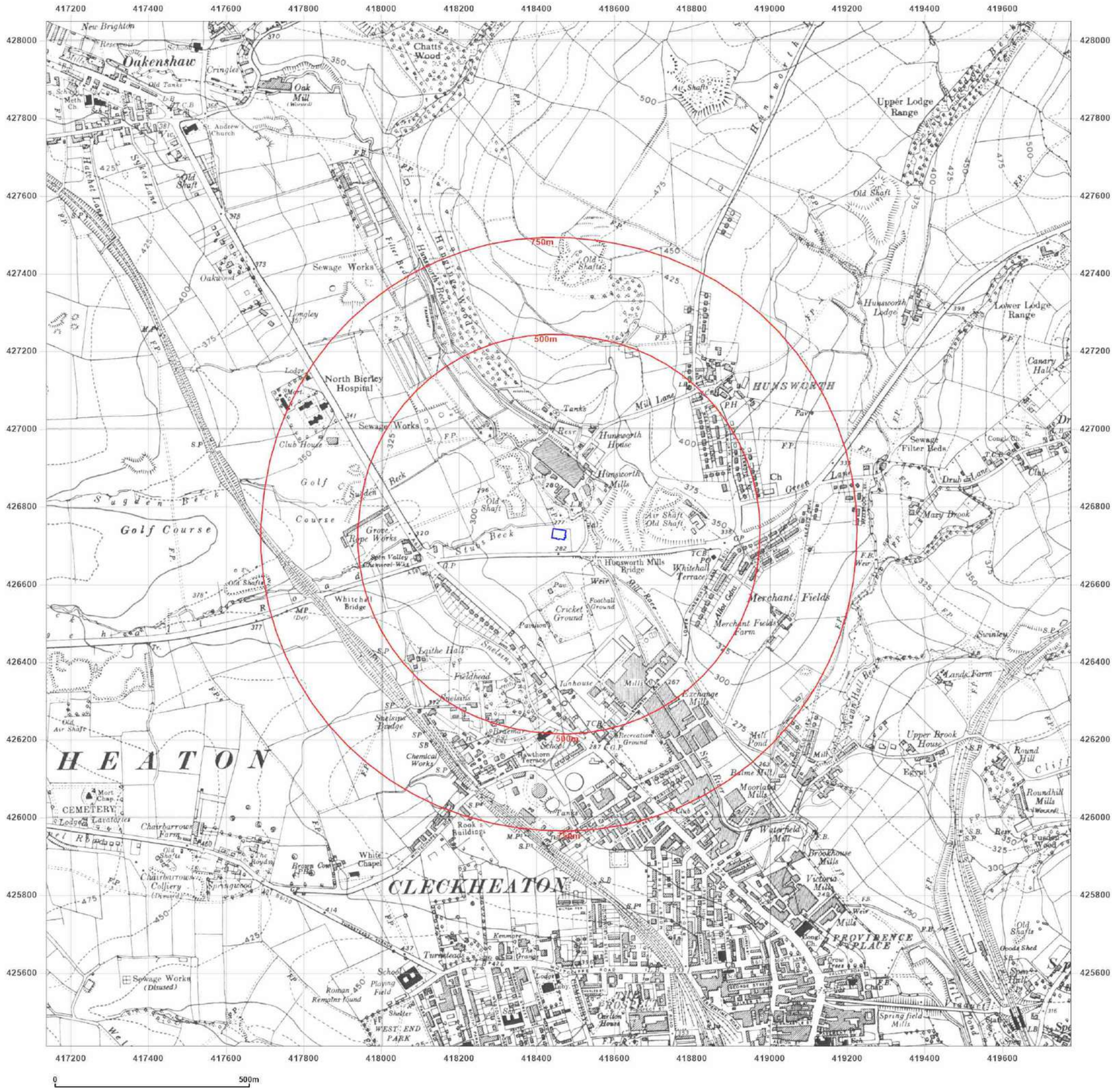

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: Provisional

Map date: **1955**

Scale: 1:10,560

Printed at: 1:10,560

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

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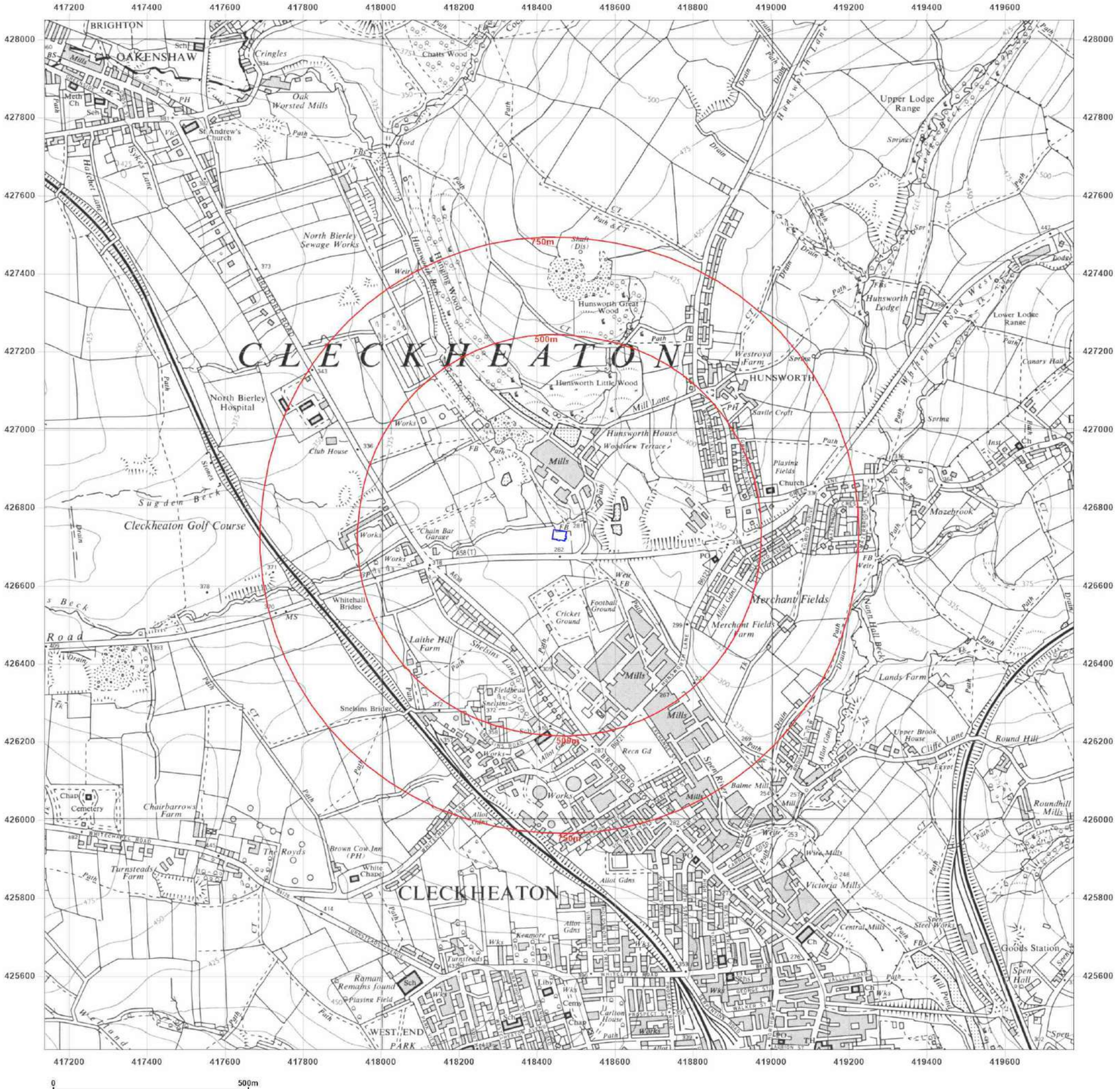

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: Provisional

Map date: **1967**

Scale: 1:10,560

Printed at: 1:10,560

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

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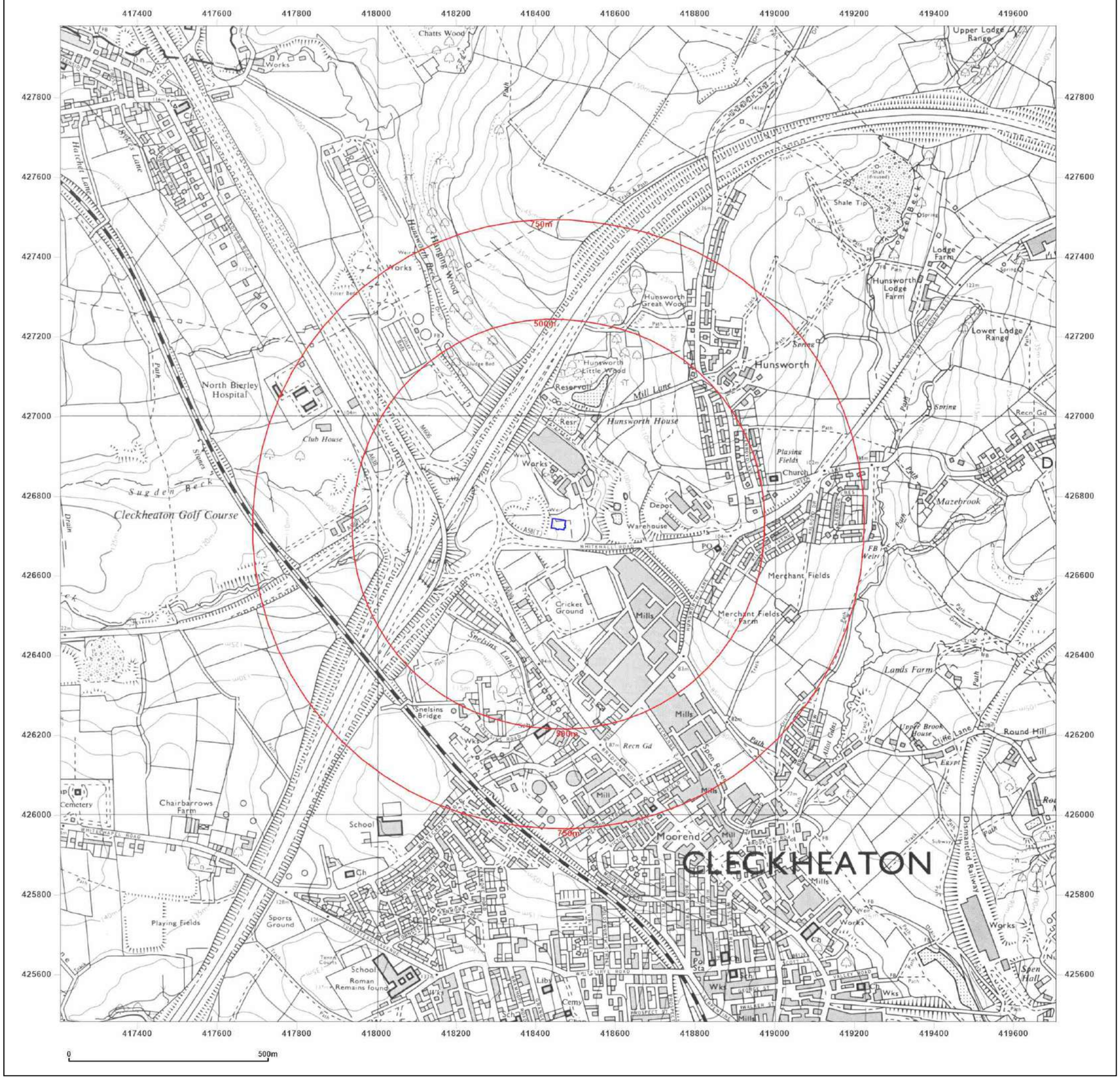

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1974**

Scale: 1:10,000

Printed at: 1:10,000

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

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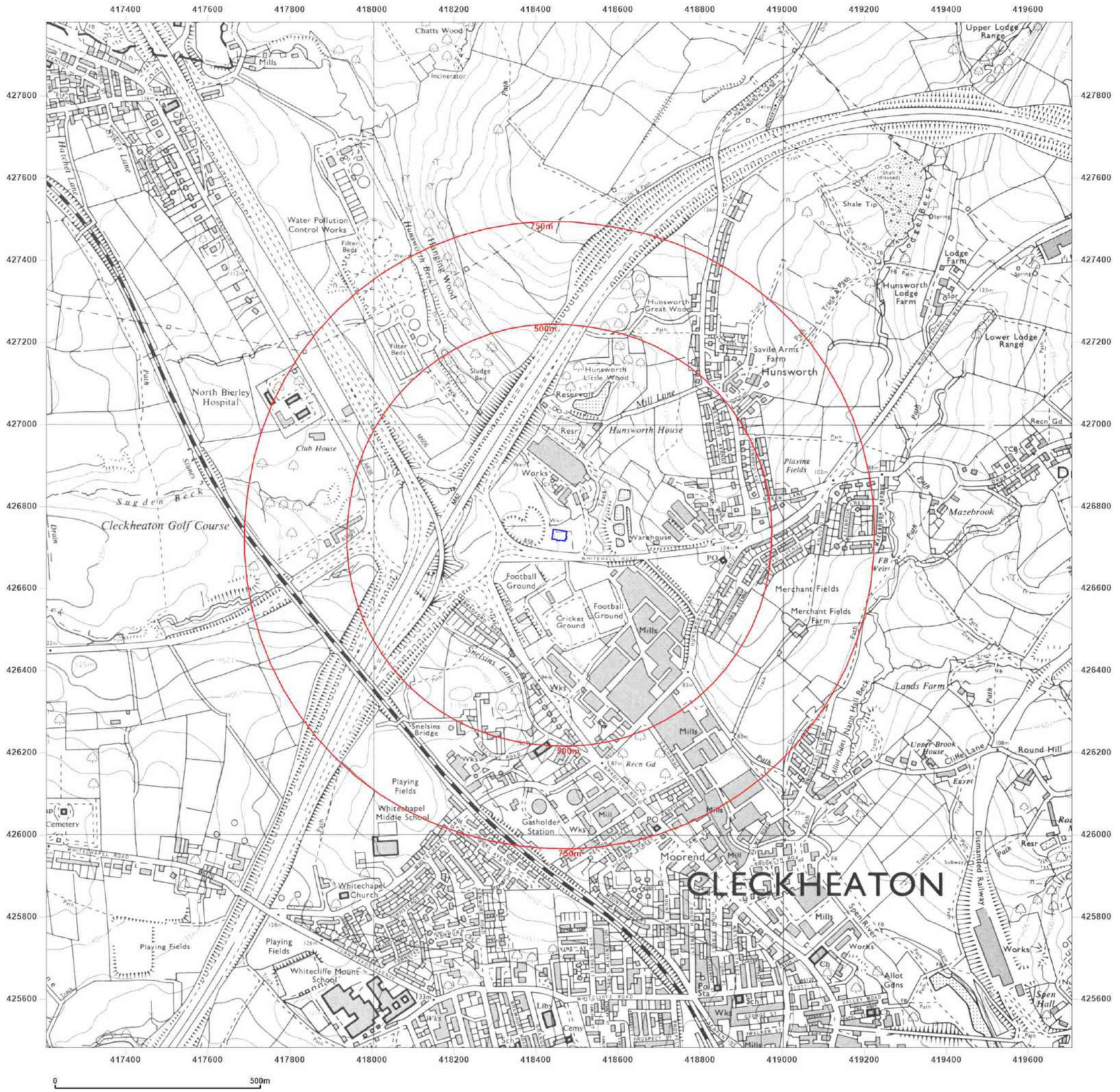

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1983**

Scale: 1:10,000

Printed at: 1:10,000

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

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Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **1990**

Scale: 1:10,000

Printed at: 1:10,000

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Surveyed 1987
Revised 1990
Edition N/A
Copyright N/A
Levelled N/A

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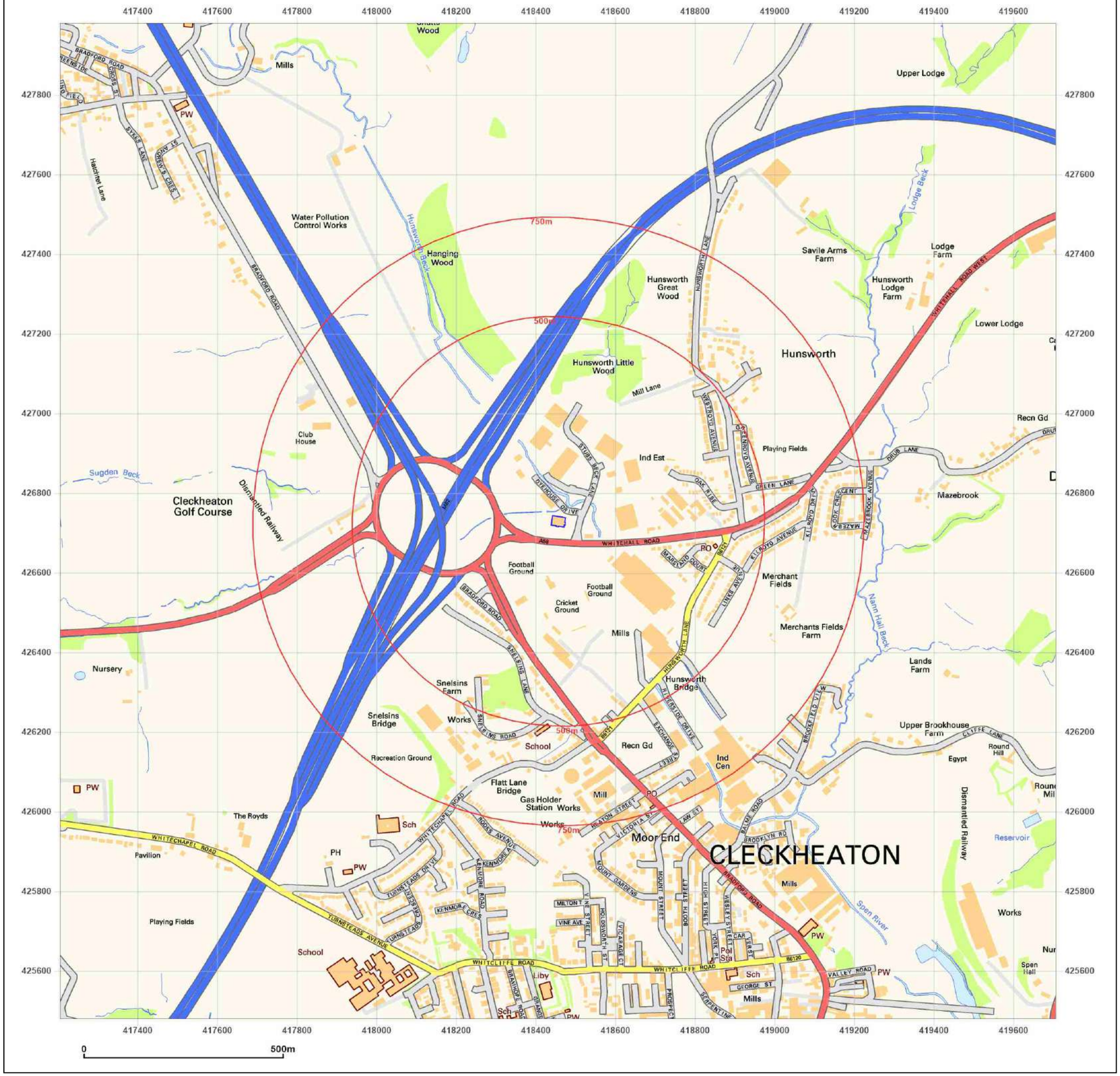

EMAPSITE™

Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **2001**

Scale: 1:10,000

Printed at: 1:10,000

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2001

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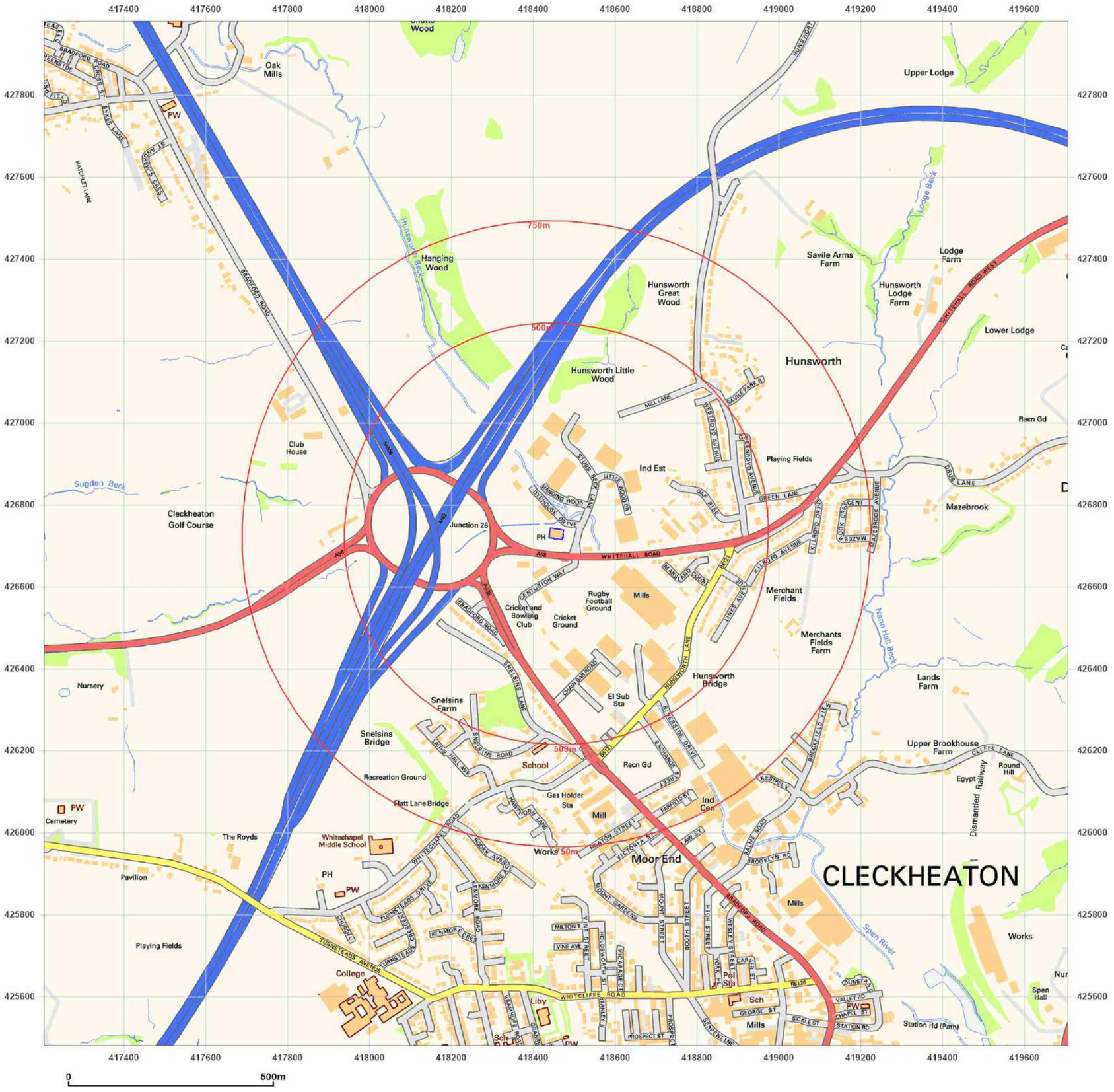

EMAPSITE™

Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid

Map date: **2010**

Scale: 1:10,000

Printed at: 1:10,000

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2010

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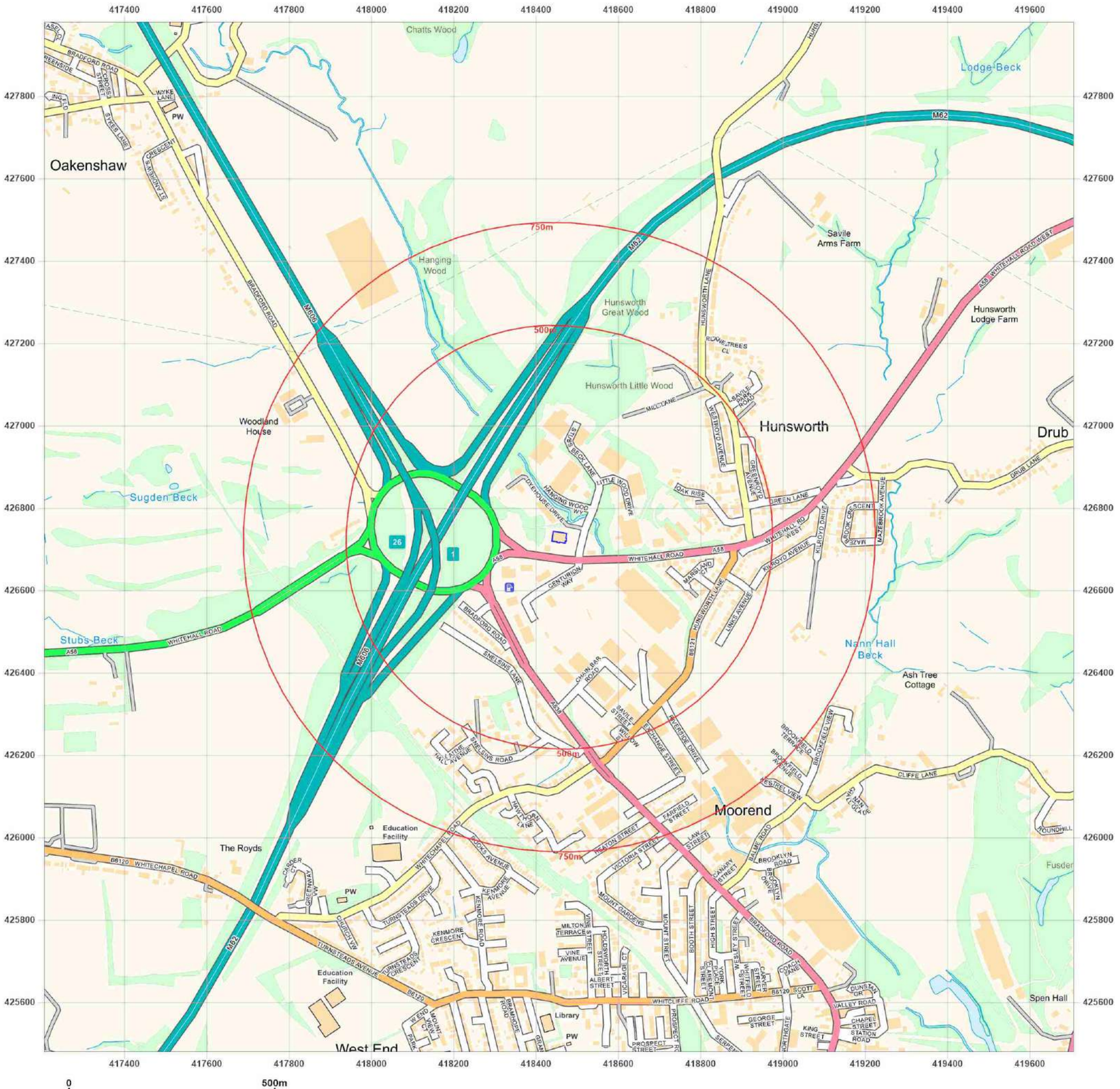

EMAPSITE™

Site Details:

Bradford, Premier inn, Bradford, BD19 6HG

Client Ref: EMS_969388_1204701
Report Ref: EMS-969388_1230124
Grid Ref: 418456, 426730

Map Name: National Grid
Map date: **2024**
Scale: 1:10,000
Printed at: 1:10,000

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2024

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Production date: 05 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

Appendix 2 – Mining Reports

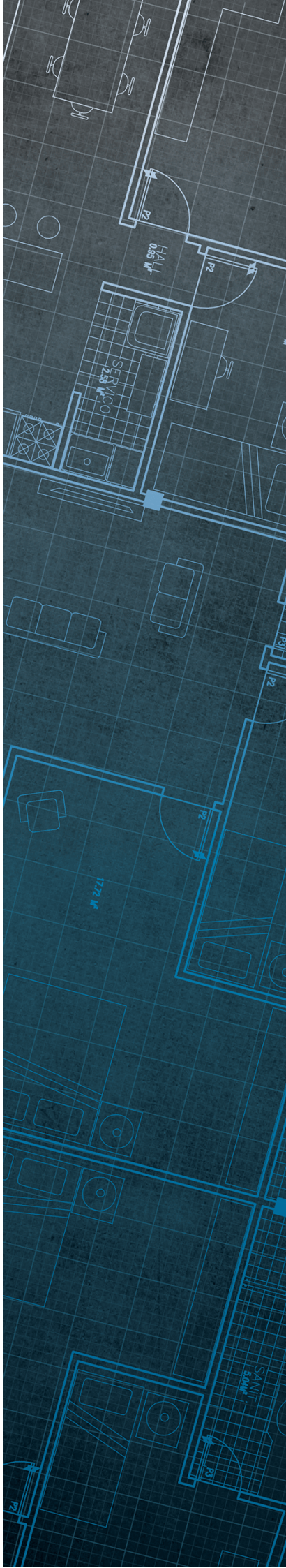
The Coal Authority

Consultants

Coal Mining Report

Premier Inn Bradford South
Dyehouse Drive
Hunsworth
Cleckheaton
Kirklees
BD19 6HG

Date of enquiry:	**5 September 2024**
Date enquiry received:	**5 September 2024**
Issue date:	**5 September 2024**
Our reference:	**51003448205001**
Your reference:	**CRM.1483.062**



Consultants

Coal Mining Report

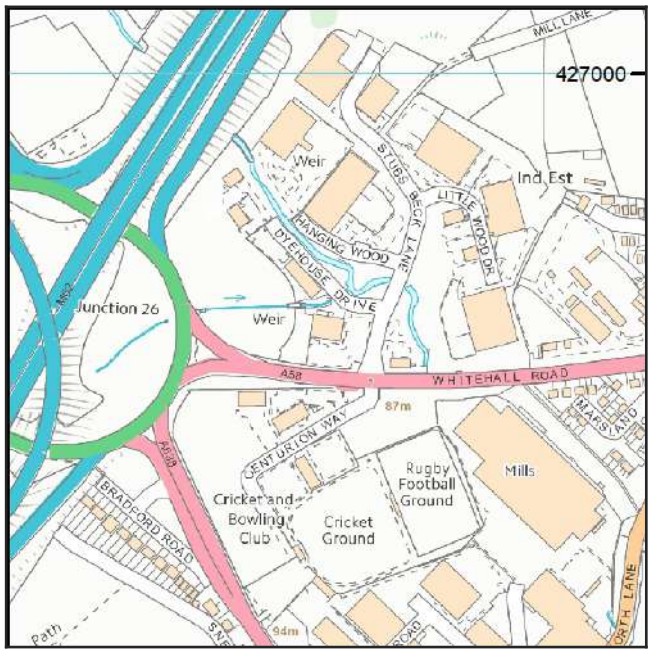
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

ENZYGO GEOENVIRONMENTAL LTD

Enquiry address

Premier Inn Bradford South
Dyehouse Drive
Hunsworth
Cleckheaton
Kirklees
BD19 6HG



Approximate position of property

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

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

Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	BLACK BED	Coal	6H9Q	81	Beneath Property	1.9	East	170	1859
unnamed	BETTER BED	Coal	6H9T	128	Beneath Property	2.5	South-East	46	1864

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers

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

GCR180	M262	GCR53
GCR179	FGB667	M49
PO0	2983	FGB694

Our records show we have more plans than those shown above which could affect the enquiry boundary.

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

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
LITTLE COAL	Coal	Yes	8.8	North-West	237

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

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

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

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

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

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

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

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

Court orders
None recorded.

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

Withdrawal of support notices
The property is not in an area where a notice to withdraw support has been given.

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

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

Section 4 – Further information

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

Future development

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

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

Development advice

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

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

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The Coal Authority

Summary of findings

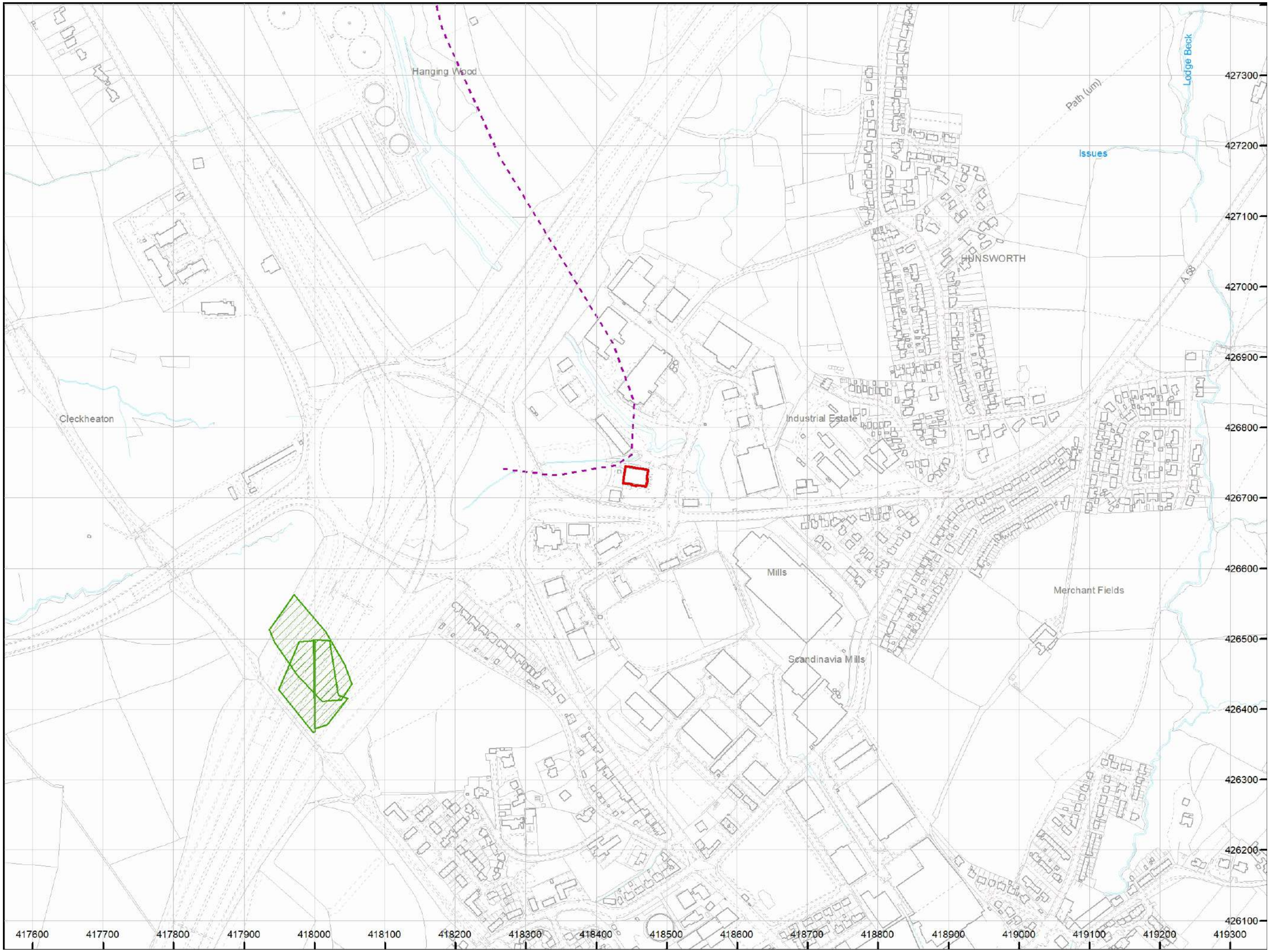
The map highlights any specific surface or subsurface features within or near to the boundary of the site.

Key

Approximate position of the enquiry boundary shown

Outcrop (Conjectured)

Unlicensed opencast site



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
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Appendix 3 – BGS Borehole Logs for the area

SE12NE 489 1837 -2669

Works: Water Rising C.C. M6R Contract F ..... Borehole no. F83

Contractor: Wm. Coulson Ltd. ..... Sheet no. 1

Site: Whitehall Road (East) Realignment ..... Chainage .....

Drift (ft) 7·5 ..... Offset from C/L (ft) .....

Type of boring Shell and Auger to 18'-0" ..... O.H. Level (O.D.) 284·5

..... Date(s) of boring 31·7·47 (S.A.A)

Lining Tubes not used

Samples & Core Recovery.			Change of Strata			
No.	Depth	Type or %	Key	Depth	Level	Description of Strata
	1'-0"	(1)		1'-0"	283·5	TOPSOIL.
	2'-6"					Firm grey brown mottled silty CLAY with fine gravel.
	3'-6"	JB				
	5'-0"	W				
	6'-0"	(72)				
	7'-6"					
	9'-0"	S (N=9)		9'-0"	275·5	
	9'-9"					Stiff brown mottled sandy CLAY with shale and medium, fine grained SANDSTONE pieces.
	11'-0"	(73)				
	12'-6"					
	14'-6"	JB				
				15'-0"	269·0	Grey brown weathered SILTSTONE becoming less weathered, some coaly streaks.
	17'-0"	S (N=9)				
	17'-3"			18'-0"	266·5	
						Borehole Completed.

Remarks (Observations on ground water, etc)

Water encountered at 5'-0". Weather fine.

C219

429

SE12NE 7/10

BOREHOLE RECORD - Rotary

Project BRADFORD M62, JUNCTION 26 IMPROVEMENTS. Engineer WSP ENVIRONMENTAL LTD. Borehole BHPG6(O)

Coordinates E418317.5-N426716. National Grid

Client WILSON BOWDEN DEVELOPMENTS LTD. Project No 01-11079

Drilling / Core / Strata

Depths of Core Run	Depth Cased	Recovery % Total(T) Split(S)	Length Max Min	R.Q.D. %	Fracture Index	Description General	Description Detail	Depth	Legend	Level OD
								G.L.		91.31
						TOPSOIL.		0.20		91.11
						Dark brown, clayey sandy gravel size fragments of brick, sandstone, mudstone and occasional concrete. MADE GROUND.		0.85		90.46
						Grey brown, clayey medium to coarse subangular gravel size fragments of limestone (hardcore). MADE GROUND.		1.40		89.91
						Stiff brown gravelly clay with some sandstone fragments. MADE GROUND.		2.30		89.01
						Brown angular gravel of sandstone, coal and fine brick. MADE GROUND.		2.50		88.81
3.20		54(T) 05(S)	0.08	0		Stiff orange brown locally slightly sandy very gravelly CLAY. Gravel is fine to coarse subrounded and subangular sandstone. Possible brick fragments insitu. POSSIBLE MADE GROUND.				
4.20		90(T) 0(S)		0				4.70		86.61
5.20						Stiff brown/red brown gravelly sandy CLAY. Gravel is fine to coarse subangular sandstone, siltstone and occasional quartz. POSSIBLE GLACIAL TILL.				
5.60		100(T) 0(S)		0						
6.20		60(T) 0(S)		0						
6.60		80(T) 0(S)		0						
7.20		90(T) 0(S)		0				7.20		84.11
		65(T) 19(S)	0.19	19		Grey brown and orange brown locally slightly clayey GRAVEL with occasional cobbles. Gravel is medium and coarse subangular, moderately strong sandstone		8.00		83.31

Drilling

Depth	Dia	Technique	Crew
1.20		Inspection Pit.	AEJ
3.20	92mm.	Open Hole.	
13.00		Rotary Coring.	

Progress

Depth of Hole	Depth Cased	Depth to Water	am (A) pm (P) Date
Start			16/05/01
7.20		6.35	P16/05/01
7.20	6.20	DRY	A17/05/01
13.00	12.00	9.00	P17/05/01
End			16/05/01

Groundwater

Depth Struck	Depth Cased	Depth after 20 mins.	Depth Sealed	Remarks
7.00	3.00	6.35	NS	Fast inflow.
10.55	9.30	9.00	NS	Fast inflow.

Remarks

Inspection pit hand excavated to 1.20m.
SPT at 1.20-1.65m., N=30. SPT at 2.20-2.65m., N=19.
SPT at 3.20-3.65m., N=20. CPT at 4.20-4.65m., N=19.
SPT at 5.20-5.65m., N=25. CPT at 6.20-6.65m., N=26.
CPT at 8.20-8.65m., N=38. CPT at 9.50-9.95m., N=22.
Standpipe inserted to 13.00m., with gravel 13.00-3.00m.

geotechnics

Logged by: CPB Symbols and abbreviations are explained on the accompanying key. All linear dimensions are in metres Scale: 1:50

SE12NE 1340

BOREHOLE RECORD - Rotary

Project BRADFORD M62, JUNCTION 26 IMPROVEMENTS. Engineer WSP ENVIRONMENTAL LTD. Borehole BHPG6(O)

Coordinates E418317.5-N426716. National Grid

Client WILSON BOWDEN DEVELOPMENTS LTD. Project No 01-11079

Drilling: Depths of Core Run	Drilling: Depth Cased	Core: Recovery % Total(T) Solid(S)	Core: Length Max Min	Core: R.Q.D. %	Core: Fracture Index	Strata: Description General	Strata: Description Detail	Strata: Depth	Strata: Legend	Strata: Level OD
8.20						and occasional siltstone. WEATHERED LOWER COAL MEASURES (FRAGMENTARY).		8.00		83.31
8.90		100(T) 0(S)		0						
9.50		100(T) 6(S)	0.06	0		Grey brown silty sandy fine to coarse GRAVEL. Gravel is fine to coarse subrounded and subangular, strong siltstone and sandstone. WEATHERED LOWER COAL MEASURES (FRAGMENTARY).		9.20		82.11
10.10		80(T) 0(S)		0						
10.50		80(T) 0(S)		0						
11.00						Grey fine, medium and coarse sandstone GRAVEL. WEATHERED LOWER COAL MEASURES (FRAGMENTARY).		10.55		80.76
12.00		57(T) 0(S)		0		Grey and light grey GRAVEL. Gravel is fine to coarse sandstone and siltstone. WEATHERED LOWER COAL MEASURES (FRAGMENTARY).		11.30		80.01
13.00						Weak COAL and seat earth. LOWER COAL MEASURES.		12.30		79.01
								13.00		78.31

Drilling

Depth	Dia	Technique	Crew
1.20		Inspection Pit.	AEJ
3.20	92mm.	Open Hole.	
13.00		Rotary Coring.	

Progress

Depth of Hole	Depth Cased	Depth to Water	am (A) pm (P) Date
Start			16/05/01
7.20		6.35	P16/05/01
7.20	6.20	DRY	A17/05/01
13.00	12.00	9.00	P17/05/01
End			16/05/01

Groundwater

Depth Struck	Depth Cased	Depth after 20 mins.	Depth Sealed	Remarks
7.00	3.00	6.35	NS	Fast inflow.
10.55	9.30	9.00	NS	Fast inflow.

Remarks

Inspection pit hand excavated to 1.20m.
SPT at 1.20-1.65m., N=30. SPT at 2.20-2.65m., N=19.
SPT at 3.20-3.65m., N=20. CPT at 4.20-4.65m., N=19.
SPT at 5.20-5.65m., N=25. CPT at 6.20-6.65m., N=26.
CPT at 8.20-8.65m., N=38. CPT at 9.50-9.95m., N=22.
Standpipe inserted to 13.00m., with gravel 13.00-3.00m.

geotechnics

Logged by: CPB Symbols and abbreviations are explained on the accompanying key. All linear dimensions are in metres Scale: 1:50

SE12NE 480 1830·2675

Works: West Riding C.C. M62 Contract F — Borehole no. F 80

Contractor: Wm. Coulson Ltd. — Sheet no. 1

Site: Chain Bar Rine. — Chainage

Fill (ft) 2·5 — Offset from C/L (ft)

Type of boring S.B.W.I. rot. Auger to 16'-0" — B.H. Level (O.D.) 289·25

Dated of boring 28-1-67 S. and A.

Lining Tubes not used

Samples & Core Recovery. Change of Strata

No.	Depth	Type or %	Key	Depth	Level	Description of Strata
	1'-0"	(54)		1'-0"	288·25	TOPSOIL.
	2'-6"					Firm to stiff grey brown mottled silty CLAY with small pieces of weathered brown SILTSTONE and fine grained SANDSTONE.
	3'-6"	JB				
	6'-0"	(88)				
	7'-6"					
	9'-0"	JB				
	10'-0"	W				
	11'-0"	S W-69				
	11'-9"					
	13'-0"	JB		13'-0"	266·25	Grey-brown fractured sandy SILTSTONE and fine grained SANDSTONE
	16'-0"	S W-50		16'-0"	263·25	Borehole Completed.
	16'-2½"					

Remarks (Observations on ground water, etc)

Water encountered at 10'-0". Weather fine.

C219

402

Appendix 4 – Planning portal information

.

GI 9231

PREMIER INN

PROPOSED EXTENSION

WHITEHALL ROAD

CLECKHEATON

BRADFORD

Northern Foundations Ltd

Geotechnical and Environmental Ground Investigations

18 Ashbourne Drive, High Lane
Stockport SK6 8DB
Tel: 0845 370 3663
Fax: 0845 370 3664
mail@northernfoundations.co.uk

GI 9231

MAY 2009

GEOTECHNICAL REPORT ON GROUND INVESTIGATION
FOR PREMIER INN
PROPOSED EXTENSION
WHITEHALL ROAD
CLECKHEATON
BRADFORD

Engineer: Simpson Associates
8 Friday Street
Henley on Thames
Oxfordshire
RG9 1AH

CONTENTS

GEOTECHNICAL REPORT ON GROUND INVESTIGATION
FOR PREMIER INN
PROPOSED EXTENSION
WHITEHALL ROAD
CLECKHEATON
BRADFORD

1. SITE

The site was situated in Cleckheaton within the Metropolitan Borough of Kirklees, in West Yorkshire, and approximately 1.5km to the north west of Cleckheaton town centre. At the time of the investigation, the property comprised an existing Premier Inn Hotel, with a nearby pub/restaurant (The Hunsworth Table Table), car parking and surrounding landscaping. The area of investigation lay directly adjacent to, and to the north west of the existing hotel. It was located approximately 90m to the north east of the M62 Junction 26 (approximately 110m south east of the M62 motorway and approximately 95m north of the A58 Whitehall Road).

At the time of the site works, the area of investigation consisted of tarmacadam car park with vehicle access use, a paved area and fringe landscaped areas which included shrubs and small trees. A small tree was noted within the building footprint close to the north corner of the site and semi-mature trees were noted close to the south west boundary of the site. A general appraisal of the site indicated that the existing ground levels increased in a generally westerly direction with a high point in the west corner and a low point within the south east section of the footprint; with reference to the survey drawing, the ground levels in the area of investigation were noted to differ by approximately 0.5m.

The approximate Ordnance Survey grid reference for the site is 418410, 426810.

2. PROPOSED DEVELOPMENT

At the time of the report, the proposed development consisted of the construction of a two-storey extension to the existing Premier Inn Hotel. Modified vehicle access and car parking areas would also be incorporated into the development.

The brief for the investigation was limited to the targeted investigation of the area of proposed development, to provide ground investigation information for the new extension works presently proposed for the site.

3. DESK STUDY

An Envirocheck Report including historical maps has been obtained from the Landmark Information Group Limited as part the brief.

The purpose of the 'Desk Study' was to try to identify possible hazards for the re-development of the site and its proposed uses. The documentation supplied in the 'Desk Study' should be read in conjunction with this report. The following comprises only a brief summary of this data:

3.1. Historical Records

1893-94 Map (1:2500)

The 1893-94 Ordnance Survey maps showed the area of the investigation in an undeveloped section of land. A possible field boundary passed through the site footprint, passing from the north corner of the site to the south east boundary. A footpath was shown passing approximately 12m north east of the site.

Although the coverage of the 1:2500 scale map showed general agricultural/woodland use for most of the map area, significant industrial/commercial development was indicated within 150m of the site; Hunsworth Mills (Woollen) were shown approximately 26m north east of the site, Taylor's Lift (Pumping Engine) and refuse/slag heaps (possibly associated with colliery working) were indicated approximately 62m north west of the site. Tenters were shown positioned in the field approximately 62m south of the site.

Additional colliery type workings were indicated approximately 320m north west of the site, and approximately 250m east of the site, and a possible rock/mineral extraction pit approximately 180m east of the site. A road was shown close to the alignment of the present day Whitehall Road and approximately 105m to the south of the site.

The nearest surface water feature appeared to be Hunsworth Beck which was indicated running in an approximate north west to south east direction, approximately 18m north east of the site. A small stream (Stubs Beck) was indicated approximately 35m south of the site. Two possible river diversions were indicated on the map, both affecting the Hunsworth Beck/Spen River watercourse; the first was approximately 20m north east of the site and the second below a weir approximately 250m south east of the site.

1894 Map (1:10560)

The coverage of the 1:10560 scale 1894 Ordnance Survey map showed mainly

agricultural use for most of the map area, although significant industrial/commercial development was indicated; the town of Cleckheaton with associated railways and industrial development occupied the south section of the map. Oakenshaw village was indicated approximately 1.3km north west of the site.

The greater coverage of the 1:10560 scale map indicated numerous coal pits and collieries, which included: Taylor's Lift (Pumping Engine) approximately 55m north west of the site, two colliery type workings approximately 320m north west and approximately 450m west of the site, a Colliery approximately 360m east of the site, Wood Pit approximately 550m north of the site, Valley Pit approximately 700m north west of the site, Royd Pit approximately 750m south west of the site, a Colliery approximately 800m south east of the site and Wall Pit approximately 950m east of the site.

Other commercial/industrial developments included Hunsworth Mills approximately 30m north east of the site, a Chemical Works approximately 325m south west of the site, Savile Mills approximately 500m south east of the site, North Bierley Joint Hospital approximately 550m north west of the site, the Cleckheaton Branch Railway approximately 560m south west of the site, Chemical Works and a Gasometer approximately 700m south of the site, Exchange Mill approximately 750m south east of the site, and a Sewage Works approximately 800m north west of the site.

The watercourse of Hunsworth Beck was labelled as Spen River as it passed south of Hunsworth Bridge and approximately 600m south east of the site.

The map indicated the area of investigation remaining in an undeveloped section of land.

1907-08 Map (1:2500)

The land use of the map area was generally similar to that shown on the previous map and the area of the investigation appeared to remain in an undeveloped section of land. Earthworks associated with Taylor's Lift had been extended to within 35m west of the site. Spen Valley Chemical Works was indicated approximately 325m south west of the site. Hunsworth Mills were labelled as Dyeing and Finishing. Possible filter beds for the Sewage Works were indicated approximately 377m north west of the site.

1922 Map (1:2500)

The site area shown on this survey was generally similar to that of the previous map; it appeared to remain undeveloped. An old mineshaft was indicated within the Taylor's Lift workings, approximately 75m north west of the site. Hunsworth Mills had been significantly extended. Earthworks possibly associated with the former Cleckheaton

Colliery had been extended to within 135m east of the site. Additional Sewage Works were indicated approximately 315m north west of the site.

1938 Map (1:2500)

The immediate area around the site shown on this survey was generally similar to that of the previous map. The site footprint appeared to remain undeveloped. An additional old mineshaft was indicated within the former Taylor's Lift colliery workings, approximately 70m north west of the site. Humus Tanks associated with the Sewage Works were indicated approximately 235m north west of the site.

1957 – 58 Maps (Source 1:1250 and 1:2500)

The map sections dated 1957 – 58 continued to indicate the area of investigation in an undeveloped section of land. Small ponds were shown in the colliery workings approximately 77m north west of the site and approximately 168m east of the site. Chain Bar Garage was shown approximately 274m south west of the site.

1972 - 88 Maps (Source 1:1250 and 1:2500)

Major development of the road network had taken place by the time of these surveys. The M62 and M606 motorways were shown as constructed by these dates; the M62 was located approximately 110m to the north west of the site and the roundabout to M62 Junction 26 was shown approximately 90m to the south west.

As part of the motorway junction works, Stubs Beck had been modified and incorporated a weir (approximately 36m south of the site); an earthwork, possibly associated with the motorway construction ground works, passed through the southern section of the site footprint.

New commercial/industrial developments had taken place to the south of Whitehall Road and Scandinavia Mill was shown approximately 250m south east of the site. The 1984 map indicated an extension to the complex of ponds located approximately 165m east of the site.

The site footprint appeared to remain vacant.

1994 - 96 Maps (Source 1:1250)

The site footprint appeared to remain in a vacant area of land with no indication of use; a possible field boundary was still indicated passing through the site footprint, passing from the north corner of the site to the south east boundary. The land use of the immediate area around the site remained similar to that of the previous map.

New commercial/industrial developments had taken place in the area of the former Hunsworth Mills (Dye Works), which was shown as removed by the time of the 1995 survey; three industrial units were shown to the north of Hunsworth Beck and approximately 37m north east of the site.

1995-96 Map (Source 1:1250)

The 1995-96 Ordnance Survey map showed the site area occupied by a hotel with the Hunsworth Public House shown approximately 57m south east of the site. The immediate area around the site shown on this survey was similar to that of the present day. The hotel and adjacent pub/restaurant were shown in their present position, with surrounding car parking and grounds generally shown similar to those of the present layout. The area of investigation was shown as unoccupied other than the car park and landscaped areas.

Further maps to differing scales were also issued and were in general agreement with the above. Please refer to the historical maps for further historical details.

3.2. Database Maps

The 1:2500 scale Site Sensitivity Map, showed key features within a 250m radius of the site. Thirty-five data entries were indicated on the map within this boundary. The 1:10,000 scale Site Sensitivity Map, showed additional various features within a 1000m radius of the site. The following is a brief summary of the Site Sensitivity information:

- **Nearest Surface Water Feature and River Quality:**
  The nearest Surface Water Feature was indicated as Hunsworth Beck approximately 12m north east of the site.

  The Envirocheck Survey indicated that the River Quality Chemistry Sampling data close to the site for Spen Beck/Dean Beck varied between River Quality F (Bad) in 1990, to River Quality C (fairly good) in 2006. The River Quality data listed in the Envirocheck Survey for Hunsworth Beck (87m south east) varied between River Quality F (Bad) in 1990, to River Quality E (poor) in 2006. Further and more detailed information regarding river quality was listed in the Envirocheck Survey.

- **Water Abstractions, Discharge and Pollution:**
  No Water Abstractions were listed within 500m of the site. The nearest was listed as a borehole groundwater source at Cleckheaton & District Golf Club for spray irrigation, and was estimated to be 500m west of the site.

Thirteen Pollution Incidents to Controlled Waters were listed within 250m of the site. Four of these were listed as 77m to 82m east of the site, all were given Category 3 – Minor Incident status, presumably into the Hunsworth Beck/River Spen; they were listed as other sewage or unknown, resulting in fish being killed in two of the incidents. A Category 1 – Major Incident was noted 174m north of the site (positioned within 100m) for industrial effluent presumably into the Hunsworth Beck/River Spen. A further Category 1 – Major Incident was noted 266m north of the site (positioned within 100m), for sewage - treated effluent, again presumably into the Hunsworth Beck/River Spen. Further and more detailed information regarding Pollution Incidents was listed in the Envirocheck Survey.

Two entries were noted from the Substantiated Pollution Register within 250m of the site. These were located 127m east and 198m north of the site and both were given a Water Impact Category 2 –Significant Incident status for oils – cutting oils.

One Discharge Consent was listed within 250m of the site. This was listed 206m south east of the site, and was for discharge of trade effluent, presumably into Hunsworth Beck, freshwater stream/river by Hunsworth Dyeing Co Ltd (now revoked). A further Discharge Consent for sewage final treated effluent discharge into Hunsworth Beck was noted 389m north of the site, by Yorkshire Water Services Ltd.

- **Contaminated Land Register Entries:** None were indicated by the Envirocheck Survey within 1000m of the site.

- **Pollution Prevention and Control:** No Local Authority Pollution Prevention and Control entries were indicated by the Envirocheck Survey within 350m of the site. The nearest was listed for textile and fabric coating at Scandinavian Mills and was estimated to be 399m south of the site. An Integrated Pollution Control was listed for Inorganic Chemical Processes at TMD Friction UK Ltd and was positioned to 403m south of the site on Hunsworth Lane.

- **Waste:** The Envirocheck database survey indicated two recorded/registered landfill sites within 250m of the site. These were indicated as Historical Landfill Sites and as Registered Landfill Sites. The nearest was on land off Whitehall Road listed for Hunsworth Dyeing Company Ltd; the closest point for this landfill was estimated to be 53m south east of the site; the specified waste included inert and commercial waste; the input dates were from 1980 to 1991. The other landfill site

was also listed for Hunsworth Dyeing Company Ltd on land off Whitehall Road; the closest point for this second landfill was estimated to be 96m east of the site; the specified waste included inert, industrial and special waste and liquid sludge and the input dates were from 1919 to 1994. Please refer to the 'Desk Study' for the other information regarding Registered and Licensed Waste entries.

- **Hazardous Substances**: No entries for Hazardous Substances were listed within 700m of the site by the Envirocheck Survey. The nearest was operated by Transco, it was positioned at Cleckheaton Gas Holder Station, and was estimated to be 708m south of the site. Please refer to the 'Desk Study' for the other Hazardous Substances entries.

- **Fuel Station Entries**: The Envirocheck database survey indicated no entries for Fuel Stations within 1000m of the site.

- **Contemporary Trade Entries**: Nine Contemporary Trade Entries were listed within 250m of the site. The nearest was estimated to be 79m north east of the site on Hanging Wood Way, and was listed as Parkam Chilled Foods, for frozen food processors & distributors. Vokera Ltd was listed as boiler manufacturers, 168m north of the site, and Automatic components Ltd. was listed for Engineers - general, 183m north east of the site. Please refer to the Envirocheck Report for the other database entries.

There were other entries listed within a 1000m radius of the site and indicated on the database maps; please refer to the 'Desk Study' for these other database entries.

3.3. Groundwater Vulnerability and Flooding

The Envirocheck Groundwater Vulnerability Map described the site as being underlain by a Minor Aquifer (variably permeable). Although not producing large quantities of water for abstraction, they are important for local supplies and in supplying base flows to rivers. The site has a soil classification of high leaching potential (U), based on land being located on restored mineral workings and located in urban areas and based on fewer observations; a worst case vulnerability (H) is assumed until proved otherwise. The report predicts no Drift deposits for the site.

The Envirocheck survey indicated that the site is not over a Groundwater Source Protection Zone. The report does not note any Groundwater Source Protection Zones within 1000m of the site.

The 'Desk Study' indicated that although the site was not directly in an area of flooding, the nearest point of extreme flooding was noted as approximately 10m to the north east of the site, and adjacent to Dyehouse Drive.

3.4. Sensitive Land Uses

The site is located within an area which has been designated as a nitrate vulnerable zone.

3.5. Coal Mining Affected Areas and BGS Recorded Mineral Sites

The Envirocheck Survey indicated that the site is located in an area which may be affected by coal mining. The survey indicated that the site is located in an area of inconclusive coal mining instability (by Ove Arup & Partners). It is recommended that a coal mining report be obtained from the coal authority.

Within the report, the British Geological Survey (BGS) indicated 'low' shallow mining hazards on the site and 'low-moderate' shallow mining hazards 14m north of the site.

3.6. Ground Stability Hazards

The Envirocheck Survey stated 'very low' to 'no hazard' risks for compressible ground stability hazards on the site. The Envirocheck Survey stated 'moderate' risk for compressible ground stability hazards 233m north west of the site; 'moderate' risk for landslide ground stability hazards 172m south east and 245m east of the site; the report stated 'low' to 'no hazard' potential for the other listed ground stability hazards in the vicinity of the site.

3.7. Radon

The report stated that the site is not in a radon affected area, as less than 1% of homes are above the 'action level'. The National Geoscience Information Service provided by the British Geological Survey indicates that in these cases, no radon protection measures are necessary in the construction of new dwellings or extensions.

4. DOCUMENTED GEOLOGY

4.1. Drift and Solid Geology

The Geological Survey map for this area (sheet 77 Huddersfield) showed the following:

Drift: No Drift/Alluvium

Solid: Lower Coal Measures (Westphalian A)

The site is located in the vicinity of a geological Drift boundary indicating Alluvium to the

north east and in the area of Hunsworth Beck, and possibly extending onto the site. 'No Drift' is indicated to the south west of the geological boundary.

The conjectured line of a coal seam (Shertcliffe or Black Band) was indicted approximately 300m to the north west of the site, this coal seam may dip under the site.

The conjectured line of a geological fault was shown approximately 200m to the south west of the site and tending in an approximately north west to south east direction, with the down throw of the fault to the south west side.

4.2. Coal Authority Mining Report

Cleckheaton was listed within the places that require a mining search (coal and brine) within the 'on-line' Coal Authority Gazetteer for England and Wales. A copy of the Coal Authority Mining Report has been obtained by others from the Coal Authority.

The Coal Authority Mining Report indicated that the property is in the likely zone of influence from workings in 2 seams of coal at 90m to 130m depth, and last worked in 1864, and any ground movement from these coal workings should have stopped by now. The Coal Authority report indicated that the property is not in the likely zone of influence of any present underground coal workings. There are no known coal mine entries within, or within 20 metres of, the boundary of the property. Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge. The site is not located within an area that has been subject to past or present opencast working.

Records in the Coal Authority's indicated that at the surface, there are no known faults or other lines of weakness due to coal mining that have made the property unstable. There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property. The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

However, it should be noted that the report states that the property is in an area where the Coal Authority believe there is coal at or close to the surface and that the coal may have been worked at some time in the past.

The report also contains an extra paragraph which states that, in view of the mining circumstances, a prudent developer would seek appropriate technical advice before any works are undertaken. Therefore, if development proposals are being considered,

technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/ former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Please refer to the full report obtained from the Coal Authority, a copy of which is enclosed within this report.

Further contact has been made with the Coal Authority; they have indicated that there is a group of four mineshafts approximately 100m to the north west of the site, which appear to be associated with the Taylor Mill Pit. Further consultation with the Coal Authority may help to further quantifying any risks associated with previous coal workings.

The Local Authority Building Control may have requirements regarding additional deeper investigations into the rock and there may be associated conditions in the Planning Conditions for the development.

5. INVESTIGATION

5.1. Methodology

The intrusive ground investigation comprised the use of a Mini Percussive Sampling Rig incorporating Dynamic Probe and SPT testing for one day's investigation, and two trialholes hand excavated adjacent to the existing hotel. A subsequent visit was made to the site in order to monitor the presence of in-ground gas and to measure the groundwater level.

The Mini Percussive Sampling Rig installed five boreholes around the site, some with adjacent dynamic probe tests, to determine the underlying strata and ground conditions. Two trialholes were excavated by hand adjacent to the existing hotel wall and one was subsequently extended by hand auger to determine the underlying ground conditions. Samples were recovered from each borehole and trialhole for physical and chemical testing. The works were supervised and logged by an experienced Engineering Geologist.

The sampling points were spaced across the site and were positioned to provide reasonable representation of the ground conditions relating to the proposed development.

This report refers to conditions that existed on the site at the time of the investigation and to depths relative to the existing ground levels at that time. The approximate borehole positions are indicated on the attached copy of the location plan.

5.2. Percussive Sampling Boreholes

This investigation included five Drive-In Sampler boreholes (WS1 to WS5). The boreholes were sampled to total depths varying between 2.90m and 5.00m below existing ground levels.

The Drive-In Sampler comprises a series of one metre long metal tubes, which can vary in diameter from 100mm down to 35mm, driven into the ground using a Mini Percussive Sampling Rig. The tubes are subsequently hydraulically jacked out of the ground and the use of plastic tube liners enable samples to be taken at generally continuous intervals. The full details of the boreholes have been shown on the attached log sheets.

6. SUB-SURFACE CONDITIONS

The full details of the boreholes have been shown on the attached log sheets. The following notes provide a brief generalised summary to be read in conjunction with the logs. The ground conditions encountered are summarised as follows (all depths in metres):

Stratum	**WS 1**	**WS 2**	**WS 3**	**WS 4**	**WS5**	**TH2**
Made Ground	GL-2.45	GL-2.50	GL-2.45	GL-2.50	GL-2.35	GL-2.60
Drift Deposits	2.45-5.0+	2.50-2.9+	2.45-5.0+	2.50-5.0+	2.35-5.0+	2.60-3.1+

General descriptions of the basic material units encountered are detailed below:

Foundations:

From the findings of the hand excavated trialholes, it appears that the existing hotel wall was supported on two concrete sections. The upper section was wrapped in a blue membrane and had an outstand of 140mm and a thickness of 280mm to 300mm. The depth to the base of this upper concrete section was noted at 0.50m to 0.55m. The upper concrete sat on a lower layer of concrete. The lower concrete appeared to have been formed from an unshuttered pour; a membrane was present on its upper surface. The profile of the underside of this lower concrete unit was determined by probing in trialhole TH2. The external dimensions noted in the trialholes are presented in Table 1.0.

Table 1.0 hotel wall:

	Depth to top of concrete (m)	Depth to underside of concrete (m)	Total Concrete thickness (m)	Projection from face of wall to edge of concrete (m)
TH1 upper	0.22	0.55	0.33	0.14
TH1 lower	0.55	not determined	not determined	>0.55
TH2 upper	0.22	0.50	0.28	0.14
TH2 lower	0.50	0.75	0.25	0.60

Made ground deposits:

Made ground deposits were noted below the surface in all of the borehole and trialhole locations. The depth of made ground varied between 2.35m in borehole WS5, and 2.60m in trialhole TH2.

Three of the boreholes were located in car park areas, and borehole WS4 and trialhole TH2 were located in a paved area; in these locations, below the surface layers, the upper made ground deposits were generally crushed stone with fines, clayey in parts; the depth of crushed stone varied between 0.35m and 0.40m in the car park, and between 0.70m to 0.80m depth in the paved area near the building. Borehole WS2 was located in a landscaped area; here, the surface layers contained topsoil with silt, gravel, sand and contained concrete and brick fragments.

Below the upper layers as described above, the made ground deposits were variable and were mainly found to contain generally 'firm' to 'stiff' sandy, gravelly clays and silts, with some organic content in parts and common carbonaceous shale and mudstone fragments. A significant base layer of generally 'loose', dark grey, gravel of carbonaceous shale and mudstone fragments, with occasional coaly fragments was noted in four of the boreholes and in trialhole TH2. The thickness of this shaly gravel layer varied between 0.80m in borehole WS5 and 1.50m in borehole WS1, and it was noted from depths varying between 0.95m in borehole WS1 and 1.70m in borehole WS3.

In borehole WS4, the made ground deposits were notably different; generally 'very loose'/'firm' to 'soft' clays were noted below the surface gravel, with trace brick fragments and occasional possible organic horizons.

Natural Drift deposits:

Below the made ground layers, natural Drift deposits were found in all five of the boreholes, and trialhole TH2. A variable, yellow brown to orange grey brown, upper clay layer was noted in all of the locations (0.20m to 0.90m thick). This upper clay layer was generally 'soft' and 'firm' to the south west side of the site in boreholes WS1 and WS2 and trialhole TH2; and generally 'firm' to 'stiff' in boreholes WS3, WS4 and WS5, in the north east section of the site.

Below the upper clay layers as described above, the Drift deposits mainly comprised 'loose' to 'medium dense' gravels, and very gravelly sands and silts, from depths ranging between 2.80m and 3.4m. The gravel layers were variable in content and generally consisted of silty sandy gravels of sub-angular to sub-rounded sandstone, mudstone and siltstone fragments, with occasional large cobbles, and with sections of very gravelly sands and silts. Groundwater entries were generally noted within the gravels. These gravel layers were generally noted to the total depth of the four deeper boreholes at 5.00m. Borehole WS2 was terminated with a refusal at a depth of 2.90m, with a SPT value greater than 50 blows, possibly on a large sandstone cobble or boulder.

7. GROUNDWATER

During the site excavation works, groundwater was noted in three of the deeper boreholes and trialhole TH2. Where noted, the groundwater entry levels varied between 2.50m in trialhole TH2, and 2.90m in borehole WS5. The noted final observed standing water levels varied between depths of 2.63m in borehole WS4 and 3.91m in borehole WS3.

A monitoring standpipe was installed in borehole WS1 which indicated a standing water level of 2.64m during the drilling works, and a standing water level of 2.76m (approximate survey datum level 84.67m) was measured in the standpipe during a return visit to site on the 23rd April 2009.

It appears that the some of the groundwater entered the boreholes from the lower gravel strata; the groundwater appeared to be under some sub-artesian pressure in parts, as its level rose up the boreholes. Accordingly, some dewatering should be anticipated should deep excavation work be undertaken. In particular, should excavations be taken below the top of the gravels, then we would expect that some form of groundwater control would be required.

It should be noted that the above comments are only based on observations noted during the course of one day of site work and on a single return monitoring visit to the site.

Longer term monitoring of the groundwater levels with deeper standpipes would help to provide a more accurate assessment of the groundwater conditions on the site. Groundwater levels are likely to vary seasonally. Accordingly, groundwater levels may be higher over wet weather periods or lower in dry periods and may fluctuate according to local weather conditions.

8. SAMPLING AND IN-SITU TESTING

8.1. Disturbed Samples

Small disturbed soil samples of approximately 1 kg to 2 kg weight were taken from the boreholes, and after sealing in polythene bags, borosilicate glass jars or laboratory supplied tubs, were forwarded to the laboratory for examination and testing. Some larger bulk samples of approximately 3 kg to 4 kg were also obtained.

8.2. Undisturbed Samples

In the Drive-In Sampler boreholes, undisturbed tube samples were extracted from the cohesive subsoil deposits: these samples were sealed on site and then brought to the laboratory for examination and testing.

8.3. Dynamic Probe Tests

Continuous 'Super Heavy Duty' Dynamic Probe Tests were carried out in the proximity of four of the drive-in-sampler borehole locations, to provide a further assessment of the subsoil conditions. Dynamic probing was also undertaken from the base of borehole WS5.

The 'Super Heavy Duty' Dynamic Probe Test ensures a free fall of 750mm (±20) for the test weight of 63.5 kg (±0.5) when driving the standard 50.5mm (±0.5) diameter driving head. These specifications are similar to those of a Standard Penetration Test (SPT) and approximate correlation between the two methods has been inferred (Huntley 1990). The testing is generally undertaken in a continuous sequence from the ground surface level to the termination depth of the test. As the depth of the test increases, an allowance should be made for friction on the drilling rods; the results tend to be more indicative and should be used as guidance to the relative densities of the strata. The test results are shown on the data sheets as the number of blows required for each 100mm penetration interval into undisturbed ground.

Three of the dynamic probe tests were undertaken in car park locations and indicated 'medium dense' to 'loose' car park construction layers. The lower made ground deposits

of generally clay produced lower readings. The layer of carbonaceous shale and mudstone gravel generally produced 'loose' conditions with gradually reducing values with increasing depth; 'very loose' conditions were noted in the lower made ground layers.

In the natural Drift deposits, the dynamic probe values increased slightly and indicated generally 'loose' to 'medium dense' conditions. Consistent 'medium dense' conditions were noted below approximate depths varying between 3.30m and 4.60m in the dynamic probe investigations. Consistent 'dense' conditions were noted below approximate depths varying between 5.20m and 6.60m in the dynamic probe investigations. All of the dynamic probe tests were terminated with a blow count greater than 50 for an increment of less than 300mm (equivalent to 'very dense' conditions). The 'Super Heavy Duty' Dynamic Probe was driven to total depths varying between 5.90m and 7.60m below existing ground levels.

The full results of the dynamic probe testing have been shown on the attached data sheets.

8.4. Standard Penetration Tests

Standard Penetration Tests (SPT) were carried out in the boreholes using automatic trip hammer equipment: this ensures a full free fall of 760mm (±20) for the test weight of 63.5 kg (±0.5) when driving the standard 50mm o.d. split spoon sampler head or solid cone. The test results are shown on the borehole logs as 'N-values', this being the number of blows required for 0.300m penetration into undisturbed ground after an initial seating drive of 0.150m. Should the test results exceed 50 blows, then the measured penetrations effected by this effort would be shown below the test results.

The penetration tests carried out in Drift deposits produced results in the range N = 16 to N = 20; such results are indicative of 'medium dense' conditions. The SPT result of greater than 50 blows obtained at a depth of 2.85m in borehole WS2 was probably a result of an anomalous large cobble/boulder.

8.5. Vane Shear Tests

Where clayey deposits were encountered within the hand excavated trialhole, vane shear tests were carried out using a Pilcon Shear Vane test device. The tests were conducted at the specified depths in-situ in the undisturbed strata using extension bars. The results of the tests are shown on the trialhole log and data sheet as values of the undrained shear strength, 'Cu', measured in kN/m^2.

The in-situ vane test undertaken in trialhole TH2 on made deposits indicated a 'Cu' value of 41 kN/m^2, indicating 'firm' conditions. The in-situ vane test undertaken on possibly natural cohesive deposits indicated a 'Cu' value of 48 kN/m^2, indicating 'firm' conditions.

8.6. Mackintosh Penetration Tests

Mackintosh Penetration Tests were carried out in the granular deposits found within the hand excavated trialhole to provide an assessment of the subsoil conditions. The test is not a British Standard Test and is used solely as a guide to assess the density of the materials. A Mackintosh Penetration Test ensures a free fall of 0.32m for the test weight of 4 kg when driving the standard 31mm diameter driving head. The test results are shown on the log sheets as the number of blows required for 75mm penetration (averaged over three intervals) into undisturbed ground after an initial seating drive of 75mm. Should the test results exceed 100 blows, then the measured penetrations effected by this effort would be shown below the test results.

8.7. Field Testing

8.7.1. Vane Shear Tests

Vane shear tests were carried out in the field on suitable undisturbed samples of the cohesive deposits extracted by the Drive-in Sampler rig using a Pilcon Shear Vane. The field testing technique used is not presently a British Standard testing technique and is used solely as a guide to assess the undrained shear strength of the materials. The results of the tests have been shown on the borehole log sheets as values of the undrained shear strength, 'Cu', measured in kN/m^2. The following results were obtained:

Made ground deposits:

Range : Cu = 32 kN/m^2 to 99 kN/m^2

Mean : Cu = 58 kN/m2

The results indicate 'firm' to 'stiff' conditions, with the mean value in the 'firm' category.

Natural cohesive deposits:

Range : Cu = 31 kN/m^2 to 48 kN/m^2

Mean : Cu = 39 kN/m^2

The results indicate a variation between 'soft' and 'firm' conditions, with the mean value in the 'soft' category. The full test results have been noted on the borehole logs and on the attached data sheets.

8.8. Field Testing – C.50 Pocket Penetrometer

Where the sample was not suitable for the use of the Pilcon Shear Vane, tests using a C.50 Pocket Penetrometer were carried out in the field on suitable undisturbed samples of

the cohesive deposits extracted by the Drive-in Sampler rig. Due to the nature of the small-scale penetration test, it is inherently liable to give misleading results, and should be regarded as a simple tool to aid in exploration and in checking and comparing similar types of soil. The results of the tests have been converted and are shown on the attached data sheet and logs as values of the undrained shear strength, 'Cu', measured in kN/m^2.

9. LABORATORY TESTING

9.1. Undrained Shear Strength

Triaxial compression tests can be carried out within the laboratory on suitable undisturbed samples of the clay deposits as extracted by the Drive-in Sampler. Two samples were selected for triaxial compression testing. The tests of the multi-stage undrained type were carried out on specimens with diameters of between 72mm and 62mm using cell pressures close to the existing overburden stress. The following results were obtained:

Natural cohesive deposits:

Range : Cu = 55 kN/m^2 to 75 kN/m^2

The results indicate 'firm' and 'firm to stiff' conditions.

9.2. Atterberg Limits

Tests for Liquid Limit, Plastic Limit and Plasticity Index were undertaken on two samples of the natural cohesive deposits in accordance with BS1377. The samples gave results with Liquid Limit values of 39% and 42%, and Plastic Limits of 19%. The results indicate clay materials with 'intermediate' plasticity. The tests produced Plasticity Index results 20% and 23%, and Modified Plasticity Index results of 16% and 18%, indicating soils with a 'low' to 'medium' volume change potential, in accordance with classifications given in Table 1 of the N.H.B.C. Standards Chapter 4.2 (2003).

The full test results are shown on the attached data sheet. Reference should be made to N.H.B.C. Standards Chapter 4.2 (2003).

9.3. CBR testing

A laboratory CBR test was carried out in accordance with BS1377. The specimen of made ground consisting of slightly sandy gravelly clay from a depth of 0.40m in borehole WS1 was tested at its existing moisture content and was prepared by dynamic compaction. The test produced CBR results of 7.1% and 6.9% at 2.5mm penetration, and 7.1% and 7.7% at 5.0mm penetration. The results of the tests have been tabulated on the attached data sheet.

9.4. Calorific Values

One soil sample was tested for its calorific value. The sample was taken from within the made ground. The value obtained was 4.45 MJ/kg.

As a guide, typical calorific values for arable soils are 0.5 MJ/kg and other soils up to 2.2 MJ/kg. Refuse feed to an incinerator has approximately 9.9MJ/kg, whilst dry coal has a calorific value of approximately 20 MJ/kg. Research has indicated that materials with values no higher than 2 MJ/kg may be capable of smouldering, provided that there is a readily available source of oxygen. The I.C.R.C.L. Guidance note 61/84 states that '(in general) materials whose calorific values exceed 10 MJ/kg are almost certainly combustible, while those with values below 2 MJ/kg are unlikely to burn.'

Compared with the above typical values, the sample tested has a moderate calorific value, and it may potentially be capable of smouldering. However, the sample was taken from a thin strata with noted higher content of coaly fragments, and given that the site is likely to be essentially sealed across the surface by hardstanding, or built upon, then the possibility of sufficient oxygen being supplied to the ground subsurface to support continuous combustion will be reduced.

9.5. Loss–on-ignition

Two samples of the made ground deposits were subjected to loss-on-ignition testing. The tests produced results varying between 7.5% and 24.7%. The higher value may be a result of a high carbonaceous content of the shale and mudstone.

9.6. Organic Matter Content

Testing for fraction of organic carbon (FOC) was undertaken on two samples. The percentage soil organic matter can be estimated from total organic carbon using the following conversion: % TOC = 58% SOM (sourced from the Environment Agency). The sample testing produced results of estimated organic matter content values of 3.74% and 28.43%. The higher value may be a result of a high carbonaceous content of the shale and mudstone. The test results are shown on the attached data sheet.

9.7. Sulphate Content & pH Value

9.7.1. Test Results

Tests were carried out to determine soluble sulphates on four of the soil samples and one water sample. The following results were obtained:

Soils:	Sulphate as SO_4 (2:1 water:soil extract) (mg/l)	:	11 to 82
	pH	:	6.8 to 10.3
Water:	Sulphate as SO_4 (mg/l)	:	253
	pH	:	6.8

The test results have been tabulated on the attached data sheet.

9.7.2. Concrete

On the basis of the levels of sulphate and pH obtained the results have been classified using BRE Special Digest 1 'Concrete in aggressive ground' (2005) for Design Sulphate Class (DS) and Aggressive Chemical Environment for Concrete (ACEC); the ground would be classed as:

BRE Special Digest 1 classification: DS-1 AC-1

10. CHEMICAL ANALYSES OF SOIL SAMPLES

Laboratory chemical analyses were undertaken by TES Bretby at Burton upon Trent who are accredited under the Environment Agency Monitoring Certification Scheme (MCERTS). Most of the Laboratory Chemical Analysis was undertaken to United Kingdom Accreditation Service (UKAS) accredited standards. Further details of the specific accreditation held by this laboratory can be provided upon request.

10.1. Principles

The Department for Environment, Food and Rural Affairs (DEFRA) and the Environment Agency over recent years have published various technical guidance relevant to the assessment of human health risks arising from long-term exposure to contaminants in soil; this work is known as the Contaminated Land Exposure Assessment (CLEA) project. The CLEA project develops tools that provide a government supported methodology that can be used to help estimate the risks to people from contaminants in soil on a given site over a long duration of exposure and provides levels of contamination in soil below which the risks are considered minimal. Soil Guideline Values (SGVs) are one of the key tools developed by the CLEA project; SGV's are scientifically based generic assessment criteria that can be used to simplify the assessment of human health risks arising from long-term and on-site exposure to chemical contamination in soil. SGVs are based on no appreciable or minimal risks to health. SGVs can be viewed as "trigger values". Where soil concentrations exceed a SGV, there may be a significant risk to human health, although

you will usually need to conduct further investigation and evaluation of risk to determine this. Where representative soil concentrations fall below the appropriate SGV, the risk can be considered to be minimal or tolerable.

In this report SGVs are used a screening tool for the generic quantitative risk assessment for any potential land contamination. The Environment Agency has recently published the first contaminant-specific chemical toxicology (TOX) and Soil Guideline Value (SGV) reports developed using the new Contaminated Land Exposure Assessment (CLEA) framework (2009). Although the CLEA Guidance is presently under review, we have used these recently published Soil Guideline Values (2009), where available, together with previously published Soil Guideline Values, as comparative soil assessment (screening) levels. Using these published DEFRA/EA Guideline Values for Contamination in Soils, the CLEA model can then be used to evaluate exposure of humans via different pathways, which can occur for a range of different land use. The Soil Guideline Values (SGVs) provided for a commercial/industrial land use are presented in Table 2.0.

Table 2.0 DEFRA/EA SGVs for commercial/industrial land use

Determinand	**Soil Guideline Value (Commercial/industrial) (mg/kg dry weight soil)**		
Arsenic	640		
Cadmium	1400		
Chromium	5000		
Mercury (non elemental)	410		
Nickel	1800		
Selenium	13000		
Lead	750		
Ethylbenzene	2800		
Benzene	95		
Toluene	4400		
Xylene	2600		
Phenol	21900 (1% SOM)	43000 (2.5% SOM)	78100 (5% SOM)
	SOM – Soil Organic Matter content		

Land Quality Management and the Chartered Institute of Environmental Health have collaborated on an initiative to develop generic assessment criteria for soil contaminants

for which there is no SGV. This unique project has resulted in generic assessment criteria (GAC) for over 30 substances. In the absence of definitive Statutory Guidance on acceptable concentrations of specific other contaminants in soils, the values obtained have been compared against the LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment.

In the absence of UK Guidance on acceptable concentrations of other contaminants in soils, the Dutch Guidelines are commonly applied (Ministry of Housing, Spatial Planning and Environment, Holland (2000)). The Dutch guideline values indicate Target (T) values and Intervention (I) values. Exceeding an 'I' value is taken to indicate the presence of significant contamination, which may have a serious impact on human health and or the environment.

It is assumed that for this development a future commercial use is applicable.

10.2. Review of results

The results of analysis of the six soil samples taken from the boreholes are provided in the appended data sheets. Four samples were tested for a suite of common toxic and phytotoxic metals, inorganic and organic compounds, and two samples were tested to a Waste Acceptance Criteria testing suite; the samples were each recovered from varying depths as noted on the data sheets.

10.2.1. Metals

The four samples tested were found to contain concentrations of the metals tested for, which were below the CLEA SGVs for soils proposed for commercial/industrial usage.

The four samples tested were found to contain concentrations of the phytotoxic metals tested for, below the LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment for soils proposed for commercial/industrial usage.

10.2.2. Inorganic compounds

The four samples were found to contain concentrations of the inorganic compounds tested for, (and not currently covered by CLEA Guidance), which were below the respective Intervention (I) values or were below the laboratory detection levels.

10.2.3. Organic compounds

The total phenol concentrations in the four samples tested were found to be below the CLEA SGVs for soils proposed for commercial/industrial usage.

Six samples were analysed for polynuclear aromatic hydrocarbons (PAHs). Reference has been made to the respective LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment and the six samples were found to contain PAH concentrations which were below the respective LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment for soils proposed for commercial/industrial usage.

Two soil samples were analysed for total petroleum hydrocarbon (TPH) content. Compared with the Dutch Values for mineral oils, the selected soil samples tested were found to contain Total Petroleum Hydrocarbon (TPH) concentration (64 mg/kg and 313 mg/kg) higher than the Dutch Target (T) value of 50 mg/kg, but lower than the Intervention (I) Value of 5000mg/kg and also below the Waste Acceptance Criteria level for Inert Waste (500mg/kg).

Two samples were analysed for ethylbenzene, toluene and benzene concentrations. Reference has been made to the respective CLEA SGV and LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment; the samples were found to contain concentrations which were below the respective CLEA SGV and LQM/CIEH Generic Assessment Criteria (GAC) Guideline Values for Human Health Assessment for soils proposed for commercial/industrial usage.

Analyses of two soil samples also took place for PCB (polychlorinated biphenyls) content. The PCB concentrations determined were found to be below the applied laboratory detection limits of 0.005mg/kg.

10.2.4. Conclusions and comments - soils

All of the testing of the soil samples revealed concentrations of twelve determinands listed within the published CLEA SGV's and previously published CLEA SGV's, which were below the Soil Guideline Values for soils proposed for commercial/industrial usage. The remaining determinands tested (and not currently covered by CLEA Guidance) were all below the respective Intervention (I) values, or GAC Guideline Values and some were also below the laboratory detection levels. Therefore based on published guidance levels, it is our opinion that the testing results would indicate soils suitable for commercial/industrial usage.

Please note that the possible effect of contaminants, in particular TPH's and arsenic, permeating potable water pipes made of polyethylene should be considered and

appropriate precautions taken. Guidance on reducing these risks is given in the Water Regulations Advisory Scheme Information and Guidance Note No.9-04-03 (WRAS 2002).

We would recommend that a suitable layer of clean topsoil be utilised in any new proposed landscaped areas on this site. It is also recommended that any imported soil used for landscaping purposes complies with CLEA SGV Guidance for soils.

Due to slightly elevated TPH and arsenic levels, we would recommend that appropriate Health and Safety precautions be adopted by ground workers and construction staff during any excavation works; they should adopt good standards of personal hygiene and take into consideration recommendations presented in the HSE Guidance Document HS(G)66 'Protection of Workers and the General Public during the Development of Contaminated Land'.

10.3. Disposal of spoil

The Waste Acceptance Requirements of the Landfill (England and Wales) Regulations 2004 came into effect on 16th July 2005. These regulations have a significant effect on the way that waste materials are treated and tested, and the resulting costs of disposal. The analytical chemical testing undertaken for this report included two samples that were tested to a Waste Acceptance Criteria testing suite. If materials are to be disposed of away from the site, we would then recommend that the relevant specialist waste management contractors and waste disposal authorities be consulted in order that any such materials can be classified for the purposes of disposal of spoil. The disposal classification of any such waste materials could have a significant effect on the costs of disposal.

10.3.1. WAC testing results

Based on published guidance levels, it is our opinion that the testing results of the two samples exceed Waste Acceptance Criteria (WAC) Limit Values, set out in the Landfill Regulations. The Loss on Ignition (LOI) value of the sample taken from a depth of 0.6m in borehole WS1 (10.8%) slightly exceeds the WAC Limit Value of 10% for Hazardous Waste Landfill. The Loss on Ignition value of the sample taken from a depth of 0.7m in borehole WS3 (25.4%) exceeds the WAC Limit Value of 10% for Hazardous Waste Landfill, and the Fraction of Organic Carbon (FOC) of the same sample (16.77%) exceeds the WAC Limit Value of 6% for Hazardous Waste Landfill. These elevated values may be due to the high content of carbonaceous shale (probable colliery spoil) found on the site.

Other than the LOI and FOC, the other tested components of the Waste Acceptance Criteria testing suite would presently indicate a classification of 'stable non-reactive hazardous waste in non-hazardous landfill', due to a slightly elevated Fluoride leachate level (12mg/kg) when compared to the WAC Limit Value of 10mg/kg for Inert Landfill.

10.3.2. Comments

It may be possible to pre-treat the waste by available recovery or disposal activities to enable the produced waste to become WAC compliant. We understand that under certain prescribed circumstances the Environment Agency are able to relax the limit on organic carbon content in hazardous waste, but only for a particular waste where it is shown that this will not increase the risk to the environment.

With the exception of the LOI, FOC and fluoride testing results, the other tested determinands were all at levels below the WAC Limit Values set for 'Inert Waste Landfill'.

Specialist waste management contractors should be approached for more detailed advice concerning the results of this testing.

Should any natural measures be removed from site, and if separated from the topsoil and made ground materials, it would be expected that these natural materials would be classified as 'inert' waste by local landfill facilities (subject to consultation with specialist waste contractors).

If some ground levels are to be raised as part of the development, where possible excavated materials may be kept on site and reused; please note that some onsite reuse of excavated ground may require a waste management licence and all such activities should be included in the Site Waste Management Plan (if required). Since July 2008, Site Waste Management Plans (SWMP) apply to all aspects of construction work, including excavation, and applies to all new work, if the construction work will cost more than £300,000.

10.4. Limitations of work

The total contamination testing has been limited to six soil samples, with four soil samples tested for a variety of determinands, including a suite of common toxic and phytotoxic metals, inorganic and organic compounds, and two samples tested to a Waste Acceptance Criteria testing suite. There is a possibility of higher concentrations in other areas or at other depths to those tested, and of the presence of contaminants not included within the testing suites. If any materials are detected during construction work,

which have an unusual appearance, colour or odour, or are otherwise suspected of being contaminated, further testing should be carried out.

Should there be a requirement for a more detailed environmental review of the site then the results of all the contamination testing should be passed to an Environmental Chemist/ Specialist: in this case there may be a requirement for additional investigation and testing being undertaken prior to the development proceeding. Consultation with environmental department of the Local Authority and the Environment Agency may be required.

10.5. Summary

Table 3.0 Site Summary based on the testing results and published standards (N.B. to be read in conjunction with Section 10 of this report in its entirety)

Criteria	Conclusions/comments
CLEA SGV	Testing results indicate soils suitable for commercial/industrial usage.
Intervention (I) & GAC values	Testing results indicate soils suitable for building and hard cover usage and/or commercial/industrial usage.
Recommendations	Appropriate protection required for potable water pipes.
Ground workers /site workers	Appropriate Health and Safety precautions and particularly good standards of personal hygiene should be adopted by ground workers. Elevated TPH and arsenic levels have been noted.
Off-site disposal	Based on published guidance levels it is our opinion that the testing results of the 2 samples exceed Waste Acceptance Criteria (WAC) Limit Values due to LOI and FOC content. Further consultation with specialist waste contractors will be required. Should areas of natural deposits require removal from site, if kept separate from the topsoil/made ground, we would expect these to be classified as 'inert' by local landfill facilities – subject to consultation with specialist waste contractors.

11. IN-GROUND GAS

A gas monitoring pipe was installed in borehole WS1 in order to monitor in-ground gas levels. Testing was carried out using a gas data LMS xi Landfill Monitoring System, simultaneously measuring methane (CH_4), Carbon Dioxide (CO_2) Carbon Monoxide (CO) Hydrogen Sulphide (H_2S) and Oxygen (O_2) concentrations together with gas flow, plus absolute atmospheric pressure, over the following ranges: -

Methane	0	to	5%	(±0.2% accuracy)
		at	30%	(±1.0% accuracy)
		at	100%	(±3.0% accuracy)
LEL	0	to	100%	(±4.0% accuracy)

Carbon dioxide	0	to	10%	(±0.1% accuracy)
		at	50%	(±3.0% accuracy)
		at	100%	(±3.00% accuracy)
Carbon Monoxide	0	to	1000ppm	(±20ppm accuracy)
Hydrogen Sulphide	0	to	200ppm	(±10ppm accuracy)
Oxygen	0	to	25%	(±0.5% accuracy)
Atmospheric pressure	800	to	1200 mbar	(±5 mbar accuracy)

Flow	- 10 l/hr	0 l/hr	5 l/hr	20 l/hr	30 l/hr
Accuracy	± 0.2	± 0	± 0.5	± 0.7	± 3.0

Methane and carbon dioxide concentrations are measured by a non-dispersive infrared analyser while oxygen concentrations are measured by a chemical cell. The absolute atmospheric pressure is measured using an internal transducer.

The following is a summary of the results obtained:

Methane	:	below the detection level (0.1% LEL)
Carbon Dioxide	:	2.8%
Carbon Monoxide	:	below the detection level
Hydrogen Sulphide	:	below the detection level
Oxygen	:	18.4%
Flow	:	0.1 l/hr to 0.0 l/hr
Atmospheric Pressure	:	1007/08mbar

The presence of methane was only detected as a percentage of the Lower Explosion Limit (LEL%); its concentration was lower than the detection limit for the normal methane instrument reading. A maximum carbon dioxide concentration of 2.8% by volume was recorded in borehole WS1 on 23rd April 2009. Concentrations of carbon monoxide and hydrogen sulphide were found to be below the detection level of the instrumentation used. A maximum oxygen depletion to 18.4% by volume was recorded in borehole WS1 on 23rd April 2009. Recorded flow rates were measured as flow out of the borehole; a maximum gaseous egress rate of 0.1 litres per hour was recorded from borehole WS1 on 23rd April 2009.

In comparison with Guidance provided in Table 8.5 of CIRIA Report C665 (Assessing risks posed by hazardous ground gases to buildings 2007), the monitoring results obtained to date, would indicate a Gas Screening Value of 0.0028 litres of gas/hr (Characteristic Situation 1). However, the 'Desk Study' indicated that the site is 53m from the edge of a historic landfill site and within approximately 70m of an old mining shaft; therefore, it is our opinion that consideration should be given to a site characterisation CS2.

Table 8.6 of CIRIA Report C665 indicates that 'Characteristic Situation 2' should include the following:

- Well-constructed ground slab with all joints and penetrations sealed.
- Gas/vapour impermeable membrane 1200g for reinforced in-situ slab or minimum 2000g/reinforced gas proof membrane for beam and block or pre-cast.
- Minimum penetration of ground slab by services with sealed service entries.
- Possibly passively ventilated underfloor sub-space or positively pressurised underfloor sub-space.

It is also recommended that the results be discussed with an appropriate specialist for the design of a suitable gas protection system prior to development taking place. The specialist may require additional gas measurements to characterise the long-term in-ground gas regime for the site.

Further and more detailed advice regarding in-ground gas is given in publications such as the C.I.R.I.A. publication CIRIA C665, various other C.I.R.I.A. publications (including CIRIA Report 149, 1995 and Report 152, 1995), and BRE 212 (1991) 'Construction of new buildings on gas contaminated land'. Please note that additional gas reading readings may be required by regulatory authorities.

We would recommend that where personnel need to enter confined spaces below ground level, such as manholes or deep excavations, checks should be made on gas levels before the personnel go into these spaces. Any such spaces should be well ventilated and a good supply of fresh air maintained.

12. FOUNDATION RECOMMENDATIONS

12.1. Summary of findings

The following notes provide a brief generalised summary of factors that may influence the selection of foundation scheme and are to be read in conjunction with the rest of the report:

Made ground deposits were noted in all of the borehole locations and varied in depth from 2.35m to 2.60m; they were variable and below the surface layers were mainly found to contain generally 'firm' to 'stiff' sandy, gravelly clays and silts, with some organic content in parts and common carbonaceous shale and mudstone fragments. A significant base layer (0.80m to 1.50m thickness) of generally 'loose', dark grey, gravel of carbonaceous shale and mudstone fragments, with occasional coaly fragments (possible colliery spoil) was noted in all the locations except borehole WS4. In borehole WS4, generally 'very

loose'/'firm' to 'soft' clays were noted below the surface gravel, with trace brick fragments and occasional possible organic horizons.

Below a variable 'soft' to 'stiff', yellow brown to orange grey brown, upper clay layer (0.20m to 0.90m thick), the natural Drift deposits mainly comprised 'loose' to 'medium dense' gravels, and very gravelly sands and silts, from depths ranging between 2.80m and 3.4m. The gravel layers were variable in content and generally comprised silty sandy gravel of sub-angular to sub-rounded sandstone, mudstone and siltstone fragments, with occasional large sandstone cobbles, and with sections of very gravelly sands and silts. Groundwater entries were generally noted within the gravels.

During the site excavation works, noted final observed standing groundwater levels varied between depths of 2.63m and 3.91m. A groundwater standing level of 2.76m was noted in the standpipe during a return monitoring visit. Accordingly, some groundwater should be anticipated in the natural gravels.

The findings of the hand-excavated trialholes indicated that the existing hotel wall appears to be supported on two concrete sections. The upper section is possibly a ground floor slab cast in-situ. The lower concrete appears to have been cast 'un-shuttered' at the top producing an overall spread of 600mm; the underside of the concrete was probed to a position below the wall and the findings indicated a depth to the underside of 0.75m. The observed details do not present conclusive evidence for a particular foundation type, but the observed construction may be consistent with foundations on vibro-compacted ground (although other interpretations may also be applicable).

The available information provided by the 'Desk Study' did not indicate any particular use for the site, although the site area appears to have remained vacant and generally free from development until the present buildings of the Hotel and the Hunsworth Public House, was constructed on it. During the period of construction for the M62 junction, some earthworks extended into the site area and may have included the reuse of colliery spoil from the nearby colliery workings; during this period the ground levels for the area of investigation may have been raised.

The Coal Authority have reported that coal is believed to exist at or close to the surface in the vicinity of the site, and that this coal may have been worked at some time in the past.

12.2. Foundation Discussion

The Coal Authority Report obtained for this site has indicated that *'the property is in an*

area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past' and 'if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site.' To date the boreholes excavated by the Mini Percussive Sampling Rig have proved only Drift materials and the depth has been limited to 5.0m. We are of the opinion that additional investigation in the form of deep rotary boreholes would be advisable to check whether there are any workings within a depth of 30 metres from the surface (this being the depth generally adopted in such circumstances).

The Coal Authority have also stated that *'All proposals should apply good engineering practice developed for mining areas.'* Accordingly, the foundations proposals should have regard to good engineering practice in mining areas, which may include the adoption of appropriate foundation design such as stiff foundations that would span potential differential movements. With regard to good engineering practice in mining areas, reference should be made to the CIRIA Special Publication 32 "Construction over abandoned mine workings". Advice should be sought from the Consulting Engineer regarding this.

The Local Authority Building Control may also have requirements regarding additional deeper investigations into the rock and building construction methods, and there may be associated conditions in the Planning Conditions for the development.

NB: Taking into consideration the previous paragraphs, the following sections and recommendations will only apply once it has been established that there are no significant risks regarding the coal mining situation:

The made ground deposits are, in our opinion, presently considered to be too weak or too variable to support foundation loadings without there being a risk of excessive settlement, both total and differential, occurring.

The following paragraphs briefly consider various foundation options for the site; please note that the final decision on the foundation solution will be subject to finalised ground and construction levels, final building design, construction constraints imposed by the site conditions, and additional information regarding the site and construction costs.

Vibro stone columns:

Considering the findings of the boreholes in isolation, the vibro compaction process may be applicable to the ground strata noted on the site, subject to approval of a Specialist

Contractor/Vibro Designer. However, the nature of the vibro process can be detrimental to the foundations and structure of nearby buildings. Taking into account the close proximity of the proposed extension to the existing building and the observed site conditions as recorded in this report, it is our opinion that ground improvement methods (such as vibro compaction) would not be suitable as a general solution for this development.

Should vibro stone columns be considered further then reference should be made to The Building Research Establishment (2000) document BRE 391 'Specifying vibro stone columns' and to N.H.B.C. Standards Chapter 4.6 (1999) Vibratory ground improvement techniques.

Conventional strip/trench fill concrete footings:

Although the natural strata found in limited sections of the site, taken in isolation may be suitable for a conventional deep trench fill foundation solution, in some of the boreholes suitable natural founding strata were noted only at excessive depths. 'Medium dense' gravels and sands were noted in the boreholes, these suitable strata were generally found at depths of between 2.80m and 3.40m, and close to or below the standing water level measured in the standpipe of 2.76m depth (approximate survey datum level 84.67m). In addition, the depth of made ground (2.35m to 2.60m) and the nature of the 'loose' shales noted in most of the locations, may cause problems in the excavation of deep trenches. A 'pier and beam' foundation system may reduce the amount of excavation, but would still suffer the underlying trench stability and groundwater problems as noted above.

Accordingly, it is our opinion that conventional strip foundations would not be the preferred solution for the proposed extension. Should conventional foundations be considered further then reference should be made to N.H.B.C. Standards Chapter 4.4 (1999) for strip and trench foundations.

Piled Foundations:

A suitable piled foundation solution generally proves to be satisfactory for most ground conditions, and should eliminate risks associated with ground variability. Accordingly, subject to construction costs, it is our opinion that a piled foundations scheme would represent the most satisfactory overall solution for the structural foundations for the proposed hotel extension.

12.3. Piled Foundations:

In the case of a piled foundation solution, an appropriately designed network of reinforced

concrete caps/beams could be supported on the piles, giving support to structural loadings. Adequate lateral restraint should be provided to each pile by appropriate detailing of the supported substructure. The piling contractor may be able to provide a complete ground beam and piling system for the structural loading for the proposed building.

It should be possible to establish sufficient sidewall friction and end bearing of the pile in 'dense' to 'very dense' natural strata, which were encountered in the lower sections of the dynamic probe tests. We would estimate pile lengths of approximately 6.00m to 8.00m should be allowed for. A 'low vibration' method of piling may be best suited to the site surroundings. In addition, care should be taken in the selection of the type of piling process to avoid creating any pathways for migration of potential contaminants. We recommend that specialist piling contractors be approached for their own advice on the pile type, length, diameter and load capacity most suited to these local conditions.

These opinions are subject to formal confirmation from a Specialist Piling Contractor/ Designer; the piling contractor should be made aware of the site conditions including the nature of the ground and levels of the groundwater; the specialist contractors should refer to this report as part of their assessment of the site.

The piling contractor may require further information for pile design in the form of additional deeper cable-percussion boreholes. This information may be obtained during deeper drilling operations that may be required for the investigation of shallow mine workings.

12.4. Ground slabs

The depth, variability and long-term settlement characteristics of the made ground deposits should be taken into account for the site, and may create a potential for differential movement, particularly in the case of a heavily or unevenly loaded ground-bearing slab. The cost of removal of unsuitable made ground deposits, and the final floor levels of the proposed extension will also influence the choice of ground floor construction. The suitability of a standard ground-bearing slab would therefore be questionable and we would expect that suspended floor construction would be the preferred solution for the proposed extension. Should a piled foundation scheme be adopted then suspended floors may prove to be an appropriate system for the development.

Due to potential risks from in-ground gas, gas prevention measures may be required. The

adoption of suspended ground floors may help in the control of in-ground gas and could enable venting to an under-slab void to be incorporated as part of a gas-control system. The specialist designers of any gas protection system should be consulted regarding this.

12.5. External Paved Areas

In the area of investigation, normal preparatory treatment should be adopted for the paved/hardstanding areas. This should include for the removal of unsuitable made ground, shallow existing subsurface structures, surface vegetation and other unsuitable deposits such as organic soils, heavily rooted sections, and any existing subsurface structures should be reduced to a suitable level, followed by compaction of the exposed surface using a medium to heavy roller. Any weak areas depressing unduly should be given additional treatment until 'firm' conditions have been established or alternatively the weak areas removed and replaced with consolidated hardcore. This preparatory treatment should be followed by a suitable thickness of well-consolidated crushed stone hardcore.

12.6. Construction Adjacent to Existing Structures

It is essential to ensure that site excavations or the construction of any new foundations do not undermine or destabilise existing adjacent structures, pavements or services on site boundaries. In particular, the foundations to the north west wall of the existing building, which are to be retained, should not be undermined, or disturbed. Appropriate codes of practice should be adopted to ensure that the ground stability to nearby construction, pavements and services is not compromised by future excavations and construction.

Movement joints should be included between the new extension and the existing hotel building to allow for differential movement between the new construction and the existing structure.

12.7. Trench Stability

Note should be taken of the deep deposits of made ground generally found across the whole site. In particular we would draw attention to the 'loose' to 'very loose' conditions encountered in the lower shale layers of the made ground deposits and the 'very loose'/'soft' conditions noted in the made ground in borehole WS4. Previous earthworks in the area (see earlier paragraphs) may have affected local ground conditions, and due caution should be observed on site. Appropriate codes of practice should be adopted regarding trench stability and it is recommended that adequate temporary support be provided to any deep excavations.

Particular caution should be observed when excavating near existing structures, embankments and stored materials, which can locally surcharge the stress within the ground and may cause rapid collapse and failure on exposed cuttings, particularly in non-cohesive deposits such as gravels, sands and silts.

12.8. Soakaway Drainage

The upper made ground deposits generally consisted of clays and silts. A lower layer of 'loose' gravel comprising shale and mudstone fragments was noted across most of the site that may exhibit some permeability. The upper natural deposits observed in the investigation locations were mainly composed of clays; it would be expected that these formations would exhibit little or no effective permeability. Accordingly, it is our opinion that the suitability of soakaway type drainage would be questionable for the site.

It appears that the existing property is presently served by local surface and foul water drainage systems; if possible, it may be possible to continue using these systems. The existing surface water drainage appears to discharge into the nearby Hunsworth Beck. Additional discharge into this drain may require Discharge Consents from the Local Authority or Environment Agency. The new drainage system should comply with the requirements of the local drainage service provider and Local Authority.

P. R. JACKSON BSc (Hons) CEng FGS MBCS

On behalf of Northern Foundations Limited

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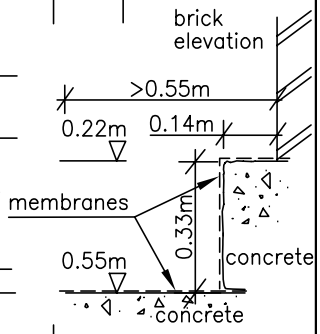
TRIALHOLE LOG SHEETS

Trialhole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	TH1	Diameter	
Grid Ref		Method	Hand Excavated/Auger
Ground Level	Approximate datum level 87.03*	Scale	1:20

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
	0.00		87.03						
MADE GROUND: turf over, dark grey brown, slightly sandy, slightly gravelly topsoil	0.16		86.87						
MADE GROUND: concrete	0.30		86.73	0.25	J				
MADE GROUND: grey, gravel, crushed limestone	0.50		86.53						
NADE GROUND: concrete covered by membrane	0.55		86.48						
Trialhole total depth 0.55m									



Remarks
No observed water entries
No observed standing water
* Approximate datum level extrapolated from Survey Drawing

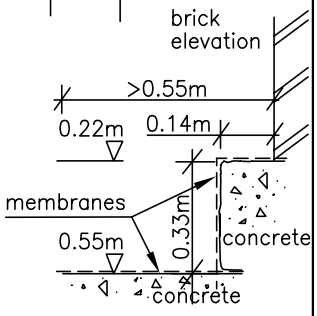
Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Trialhole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	TH2	Diameter	
Grid Ref		Method	Hand Excavated/Auger
Ground Level	Approximate datum level 87.07*	Scale	1:20

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	MPT	Cu kN/m² unconfined	Groundwater
	0.00		87.07						
MADE GROUND: 50mm concrete flag									
MADE GROUND: 100mm light brown sand	0.05		87.02						
MADE GROUND: grey, crushed stone with fines, becoming very silty and sandy with occasional clay pockets with increasing depth	0.15		86.92						
	0.70		86.37						
MADE GROUND: soft, light grey brown, very gravelly clay, with weathered mudstone fragments, occasional brick fragments, occasional carbonaceous shale fragments	1.05		86.02						
MADE GROUND: soft to very soft, grey, dark grey, weathered carbonaceous mudstone in very sandy clay matrix	1.50		85.57						
MADE GROUND: soft to firm, light yellow brown, sandy, very gravelly clay	1.70		85.37	1.55	V	41			
MADE GROUND: soft, grey, dark grey, weathered mudstone in very sandy clay matrix, much carbonaceous shale fragments	2.00		85.07						
MADE GROUND: dark grey, gravel of carbonaceous shale/mudstone, with ochre staining, damp in parts				2.20	D				
– wet from 2.50m				2.50	M		8		2.50
	2.60		84.47						
POSSIBLE NATURAL GROUND: yellow brown, light grey pockets, very sandy, gravelly CLAY, becoming very gravelly with increasing depth	2.80		84.27	2.70	DV	48			Entry
Loose, yellow brown, very clayey, silty, sandy GRAVEL, weathered sandstone/mudstone fragments	3.10		83.97	3.00					Final 2.86
Hand auger total depth 3.10m (Probe to 3.30m)				3.30	M		24		3.10



Remarks
Water entry at 2.50m
Standing water level 2.86m
* Approximate datum level extrapolated from Survey Drawing

Key U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
MPT – Mackintost Penetration Test
J – Jar

Northern Foundations Ltd

BOREHOLE LOG SHEETS

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associated	Date	March 2009
Trialhole No	WS1 Sheet 1 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.43*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests			Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
				Depth m	Type	Vane kN/m²			
	0.00		87.43						
MADE GROUND: 100mm tarmac	0.10		87.33						
MADE GROUND: grey, sandy, crushed stone with fines, clayey in parts	0.40		87.03						
MADE GROUND: stiff, grey brown, slightly sandy, very gravelly, clay, with weathered rock fragments, carbonaceous mudstone fragments, sandstone fragments	0.95		86.48	0.50 0.60	V J	99			
MADE GROUND: loose, dark grey, ochre staining, slightly silty, slightly sandy, gravel of carbonaceous shale/mudstone, occasional coaly fragments, occasional large pieces shale/mudstone fragments	2.00		85.43	1.50	D				
MADE GROUND: very loose, dark grey, ochre staining, slightly silty, slightly sandy, gravel of carbonaceous shale/mudstone, trace coaly fragments	2.45		84.98						
POSSIBLE NATURAL GROUND: soft, orange brown, light grey, slightly sandy, gravelly CLAY, with weathered rock fragments	2.80		84.63	2.50 2.80	DV DP	31		125	Final 2.64
Firm to stiff, brown, grey, sandy, very gravelly CLAY, much weathered carbonaceous shale	3.10		84.33	3.00	D				
Stiff/medium dense, brown, dark grey, very sandy, very gravelly SILT, with carbonaceous mudstone/sandstone fragments	3.60		83.83	3.40 3.60	U D				3.60
Loose/soft, grey, very sandy, very clayey, GRAVEL of subangular to subrounded shale/mudstone in SILT matrix, possibly slightly organic, occasional larger sandstone fragments, wet pockets	4.00		83.43	4.00	D				Entry 4.00
Window sample continued on sheet 2									

Remarks

Water entry at 3.60m
Standing water level 2.78m immediately after drilling – rose to 2.64m after 7hrs
Hole collapsed to 3.80m after 1hr
50mm gas/water monitoring pipe installed to 4.00m
Super Heavy Dynamic Probe to 7.30m
* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS1 Sheet 2 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.43*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
	4.00		83.43						4.00
Medium dense, brown grey, grey brown, sandy, sandstone/mudstone GRAVEL in silt matrix	4.50		82.93						Entry
Loose to medium dense, brown, brown grey, sandy, sandstone/mudstone GRAVEL in silt matrix, wet pockets, occasional larger sandstone/cobbles with increasing depth	5.00		82.43						
Window sampling total depth 5.00m									5.00

Remarks

* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.38*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests			SPT	Cu kN/m² unconfined	Groundwater
				Depth m	Type	Vane kN/m²			
	0.00		87.38						
MADE GROUND: turf over, grey brown, topsoil, with dark brown , gravelly, slightly clayey, fine to coarse sand, with concrete, brick fragments, coal and sandstone	0.30		87.08	0.20	J				
MADE GROUND: very loose to loose, brown grey, slightly sandy, very gravelly, organic silt/topsoil, with limestone gravel, concrete pieces	0.80		86.58						
MADE GROUND: very loose to loose, grey, sandy, silt/gravel. with much carbonaceous shale mudstone, occasional sandstone fragments, possibly organic content	1.10		86.28						
MADE GROUND: loose/firm to stiff, brown grey silt, tending to grey brown clay, with mudstone/shale, sandstone fragments, trace white ceramic	1.30		86.08	1.20	J V	64			
MADE GROUND: loose, dark grey, ochre staining, slightly silty, gravel of carbonaceous shale/fissile mudstone, occasional larger fragments, dry	2.30		85.08						
MADE GROUND: very loose, ochre brown, dark grey, carbonaceus mudstone fragments	2.50		84.88	2.50	D				
POSSIBLE NATURAL GROUND: firm to soft, light grey orange brown, slightly sandy, slightly gravelly CLAY, occasional carboncaeous fragments, high silt content	2.85		84.53	2.60 2.85	V D	39			
Very dense, orange brown, slightly silty, fine to medium weathered sandstone	2.90		84.48		S		50/0.150		
Window sampling total depth 2.90 (refusal)				3.30					

Remarks
No observed water entries
No observed standing water
Hole collapsed to 2.50m after 1hr
Super Heavy Dynamic Probe to 7.30m
* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
SPT – Standard Penetration Test
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS3 Sheet 1 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.05*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests			Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
				Depth m	Type	Vane kN/m²			
	0.00		87.05						
MADE GROUND: 100mm tarmac	0.10		86.95						
MADE GROUND: grey, grey brown, crushed stone with fines, clay pockets	0.40		86.65	0.40	J				
MADE GROUND: stiff, grey, slightly sandy clay, with much weathered dark grey carbonaceous shale/mudstone fragments	0.70		86.35	0.70	J				
MADE GROUND: very loose, dark grey, carbonaceous shale in brown grey silt matrix, tending to very loose, very gravelly silt	1.20		85.85						
MADE GROUND: loose/soft to firm, slightly sandy, very gravelly silt/clay, with much shale weathered mudstone fragments	1.50		85.55	1.35	V	56			
MADE GROUND: medium dense, weathered mudstone/siltstone in stiff grey silt/clay matrix	1.70		85.35	1.60 1.70	P J			49	
MADE GROUND: loose, dark grey, slightly sandy, carbonaceous shale, with occasional coaly fragments	2.00		85.05						
MADE GROUND: loose, dark grey, ochre staining weathered mudstone/shale fragments	2.45		84.60	2.45	P			68	
Firm, light grey, orange brown, sandy, slightly gravelly CLAY, occasional carbonaceous fragments, high silt content	2.80		84.25	2.50 2.70 2.80	U D		75		
Medium dense to loose, grey brown, orange brown, weathered sandstone GRAVEL/COBBLE in sand/silt matrix, clayey in parts	3.30		83.75	3.30	D				
Medium dense, grey, silty, fine to medium SAND and fine subrounded GRAVEL	3.60								
Medium dense, grey brown, weathered sandstone/mudstone GRAVEL in silt/sand matrix	4.00		83.05	3.70 3.90	U				Final 3.91
Window sampling continued on sheet 2									

Remarks

Standing water level 4.90m immediately after drilling – rose to 3.91m after 3.5hrs
Hole collapsed to 4.625m after 3.5hrs
Super Heavy Dynamic Probe to 5.90m
* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS3 Sheet 2 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.05*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests			Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
				Depth m	Type	Vane kN/m²			
	4.00		83.05						
Medium dense, grey brown, weathered sandstone/mudstone GRAVEL in silt/sand matrix	4.20		82.85	4.20	D				
Medium dense, grey, weathered mudstone/siltstone GRAVEL in silt/sand matrix	4.70		82.35	4.70	D				
Dense to medium dense, grey, occasional ochre staining, mudstone/siltstone GRAVEL in sandy silt matrix	5.00		82.05						
Window sampling total depth 5.00m									

Remarks

* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS4 Sheet 1 of 2	Diameter	
Grid Ref		Method	Mini Sampling Rig
Ground Level	Approximate datum level 87.09*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
	0.00		87.09						
MADE GROUND: 50mm concrete flag									
MADE GROUND: grey brown, medium to coarse sand, with fine gravel	0.05 0.30		87.04 86.79						
MADE GROUND: very loose, brown grey, very silty, very sandy gravel, becoming clayey with increasing depth	0.80		86.29						
MADE GROUND: very loose/firm to soft, grey brown, light grey brown, very sandy, very gravelly clay, trace brick fragments	1.30		85.79	0.90	J				
MADE GROUND: very loose/soft, brown grey, sandy, very gravelly clay, weathered rock fragments, mudstone, occasional sandstone fragments, occasional grey possibly slightly organic horizons	1.90		85.19	1.50	V	32			
MADE GROUND: firm to soft, grey brown, sandy, very gravelly CLAY, weathered rock fragments, mudstone fragments, trace brick fragments	2.20		84.89	2.20	D				
MADE GROUND: dark grey, becoming brown grey, sand/silt, with roots, dark grey organic horizons with roots at 2.20m	2.50		84.59	2.30	P			88	
POSSIBLE NATURAL GROUND: loose/firm, orange brown, light grey, sandy, slightly gravelly CLAY, becoming gravelly with increasing depth	2.90		84.19	2.50 2.70 2.90	U DP		55	135	Final 2.63
medium dense/stiff, orange grey brown, sandy, gravelly CLAY, with much weathered mudstone fragments, moist pockets from 3.00m	3.40		83.69	3.40	D				3.00
Medium dense, brown grey, orange brown, silty, clayey, sandy, sandstone GRAVEL, with moist pockets, with mudstone fragments, subangular, occasional subrounded, wet pockets	4.00		83.09	3.70 3.90	U				Possible Entry
Window sampling continued on sheet 2									4.00

Remarks

Possible water entry at 3.00m
Standing water level 2.65m immediately after drilling – rose to 2.63m after 3hrs
Hole collapsed to 4.18m immediately after drilling – collapsed to 4.00m after 3hrs
Super Heavy Dynamic Probe to 7.60m
* Approximate datum level extrapolated from Survey Drawing

Key

U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS4 Sheet 2 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.09*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests			Cu kN/m² triaxial	Cu kN/m² unconfined	Groundwater
				Depth m	Type	Vane kN/m²			
	4.00		83.09						4.00
Loose to medium dense, grey, brown grey, very sandy, very gravelly SILT, mudstone, carbonaceous shale, occasional sandstone in very sandy silt matrix, wet	4.50		82.59	4.40	D				Entry
Loose to medium dense, grey brown, grey, mudstone GRAVEL, in sand and silt matrix, wet	5.00		82.09						
Window sampling total depth 5.00m									5.00

Remarks

* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS5 Sheet 1 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate dateum level 87.13*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	SPT	Cu kN/m² unconfined	Groundwater
	0.00		87.13						
MADE GROUND: 100mm tarmac	0.10		87.03						
MADE GROUND: brown grey, very silty, sandy, gravel, with brown grey silt/clay pockets	0.35		86.78						
MADE GROUND: brown grey, dark grey, very sandy, very gravelly silt, weathered rock fragments, weathered mudstone, carbonaceous shale fragments, occasional sandstone fragments	0.70		86.43	0.40 0.50 0.70	J D DP			220	
MADE GROUND: stiff, grey brown, dark grey, slightly sandy, gravelly clay, with weathered rock fragments, mudstone, carbonaceous shale fragments, occasional hard siltstone fragments	0.95		86.18						
	1.05		86.08	1.00					
Band of loose, dark grey shale MADE GROUND: stiff, brown grey, light grey brown, sandy, very gravelly clay, with weathered rock fragments, mudstone, carbonaceous shale fragments, siltstone/sandstone	1.55		85.58	1.30 1.45	S DP		N 8	106	
MADE GROUND: loose, dark grey, brown grey, occasional ochre staining, gravel of mudstone and carbonaceous shale fragments, occasional coaly fragments	2.35		84.78	1.60 2.00	D S		N 8		
POSSIBLE NATURAL GROUND: firm to stiff, orange brown, light grey, slightly sandy, gravelly CLAY, weathered rock fragments, occasional sandstone, trace carbon fragments	2.70		84.43	2.40 2.45 2.50 2.70	DP U			91	
Loose to medium dense, grey brown, orange brown, grey, slightly clayey, very silty SAND and GRAVEL of weathered rock fragments, subangular to subrounded sandstone and mudstone fragments	3.00		84.13	2.80	D				
Medium dense, brown grey, orange brown, very silty SAND and GRAVEL of weathered rock fragments, subangular to subrounded, sandstone and mudstone fragments	3.50		83.63	3.00 3.30 3.45	S D		N 16		
Medium dense/stiff, grey, very sandy, very gravelly SILT, with gravel of subrounded to subangular sandstone and mudstone fragments, trace coaly fragments	4.00		83.13	3.70	DP			241	
Window sampling continued on sheet 2									

Remarks
No observed water entries
No observed standing water
Hole collapsed to 2.41m immediately after drilling – collapsed to 2.41 after 2hrs
Super Heavy Dynamic Probe to 7.20m
* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
SPT – Standard Penetration Test
V – vane
P – Penetrometer
J – Jar

Northern Foundations Ltd

Borehole Log

Site	Premier Inn, Cleckheaton, Bradford South	Job No	9231
Client	Simpson Associates	Date	March 2009
Trialhole No	WS5 Sheet 2 of 2	Diameter	
Grid Ref		Method	Mini Percussive Rig
Ground Level	Approximate datum level 87.13*	Scale	1:25

Description	Depth m	Legend	O.D. Level m	Samples and in situ tests: Depth m	Type	Vane kN/m²	SPT	Cu kN/m² unconfined	Groundwater
	4.00		83.13						
Medium dense, grey, dark grey, sandy, very silty GRAVEL of carbonaceous shale fragments, weathered rock fragments, mudstone, occasional sandstone fragments, occasional coaly fragments	4.50		82.63	4.00 4.30 4.45	S D		N 20		
Medium dense, grey, grey brown, very silty SAND and GRAVEL of weathered rock fragments, mudstone/sandstone fragments in stiff silt matrix	4.90		82.23	4.60 4.90	D D				
Medium dense, grey, grey brown, very silty, very sandy GRAVEL of sandstone, occasional cobbles Window sampling total depth 5.00m	5.00		82.13						

Remarks

* Approximate datum level extrapolated from Survey Drawing

Key
U – undisturbed
B – bulk
D – disturbed
W – water
V – vane
SPT – Standard Penetration Test
J – Jar

Northern Foundations Ltd

DYNAMIC PROBE RESULTS

Northern Foundations Ltd

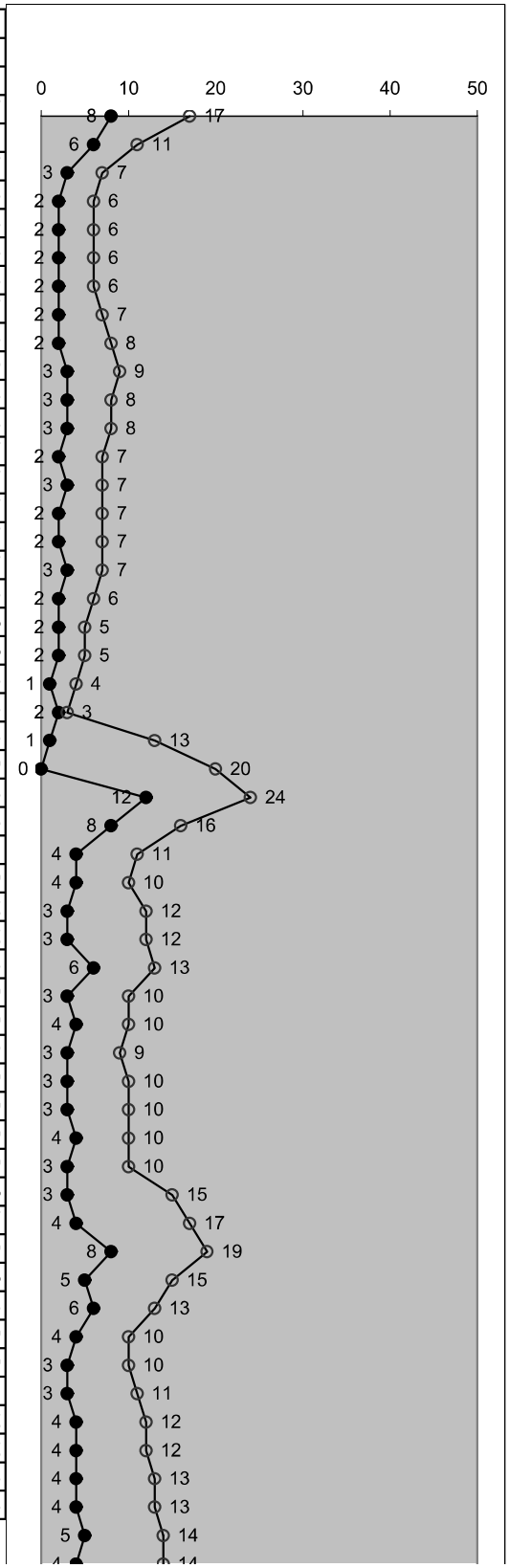
Super Heavy Dynamic Probe Test

Title: Premier Inn, Cleckheaton, Bradford South Job No. 9231

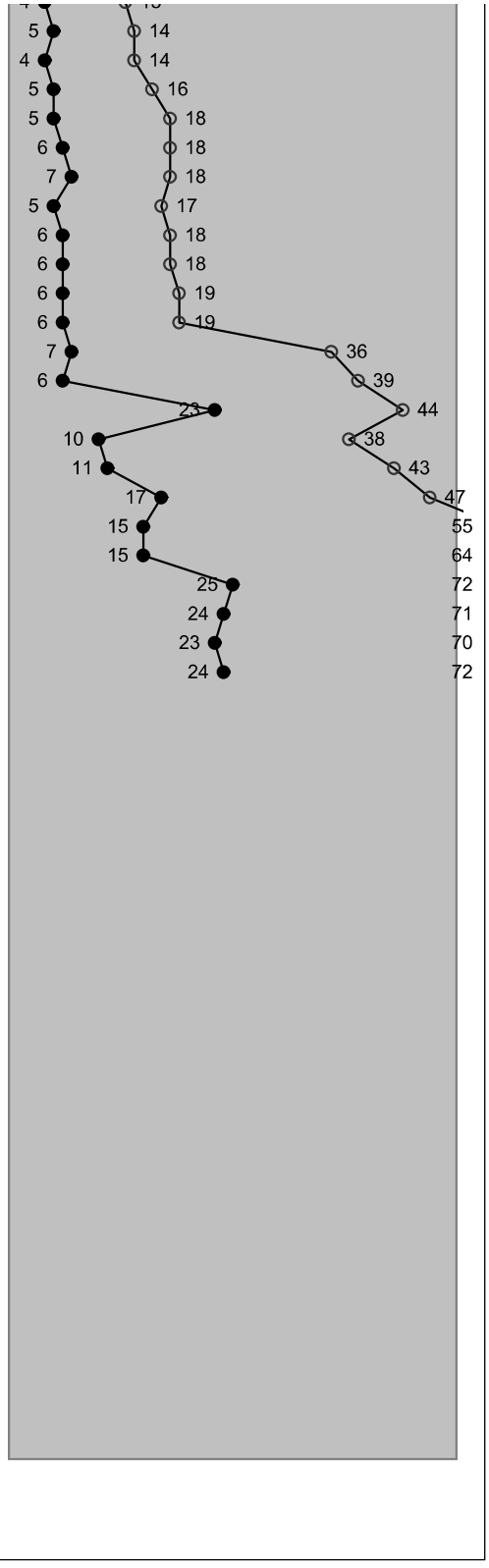
Borehole DP1 Date 27/03/2009

Test Type Super Heavy Duty

Torque (Nm)	Depth from	to	Blow count	Approximate SPT correlation (for information only)
	0.00	0.10	8	17
	0.10	0.20	6	11
	0.20	0.30	3	7
	0.30	0.40	2	6
	0.40	0.50	2	6
	0.50	0.60	2	6
	0.60	0.70	2	6
	0.70	0.80	2	7
	0.80	0.90	2	8
	0.90	1.00	3	9
	1.00	1.10	3	8
	1.10	1.20	3	8
	1.20	1.30	2	7
	1.30	1.40	3	7
	1.40	1.50	2	7
	1.50	1.60	2	7
	1.60	1.70	3	7
	1.70	1.80	2	6
	1.80	1.90	2	5
	1.90	2.00	2	5
	2.00	2.10	1	4
	2.10	2.20	2	3
	2.20	2.30	1	13
	2.30	2.40	0	20
	2.40	2.50	12	24
	2.50	2.60	8	16
	2.60	2.70	4	11
	2.70	2.80	4	10
	2.80	2.90	3	12
	2.90	3.00	3	12
	3.00	3.10	6	13
	3.10	3.20	3	10
	3.20	3.30	4	10
	3.30	3.40	3	9
	3.40	3.50	3	10
	3.50	3.60	3	10
	3.60	3.70	4	10
	3.70	3.80	3	10
	3.80	3.90	3	15
	3.90	4.00	4	17
	4.00	4.10	8	19
	4.10	4.20	5	15
	4.20	4.30	6	13
	4.30	4.40	4	10
	4.40	4.50	3	10
	4.50	4.60	3	11
	4.60	4.70	4	12
	4.70	4.80	4	12
	4.80	4.90	4	13
	4.90	5.00	4	13



	5.00	5.10	5	14
	5.10	5.20	4	14
	5.20	5.30	5	16
	5.30	5.40	5	18
	5.40	5.50	6	18
	5.50	5.60	7	18
	5.60	5.70	5	17
	5.70	5.80	6	18
	5.80	5.90	6	18
	5.90	6.00	6	19
	6.00	6.10	6	19
	6.10	6.20	7	36
	6.20	6.30	6	39
	6.30	6.40	23	44
	6.40	6.50	10	38
	6.50	6.60	11	43
	6.60	6.70	17	47
	6.70	6.80	15	55
	6.80	6.90	15	64
	6.90	7.00	25	72
	7.00	7.10	24	71
	7.10	7.20	23	70
	7.20	7.30	24	72



Northern Foundations Ltd

Northern Foundations Ltd

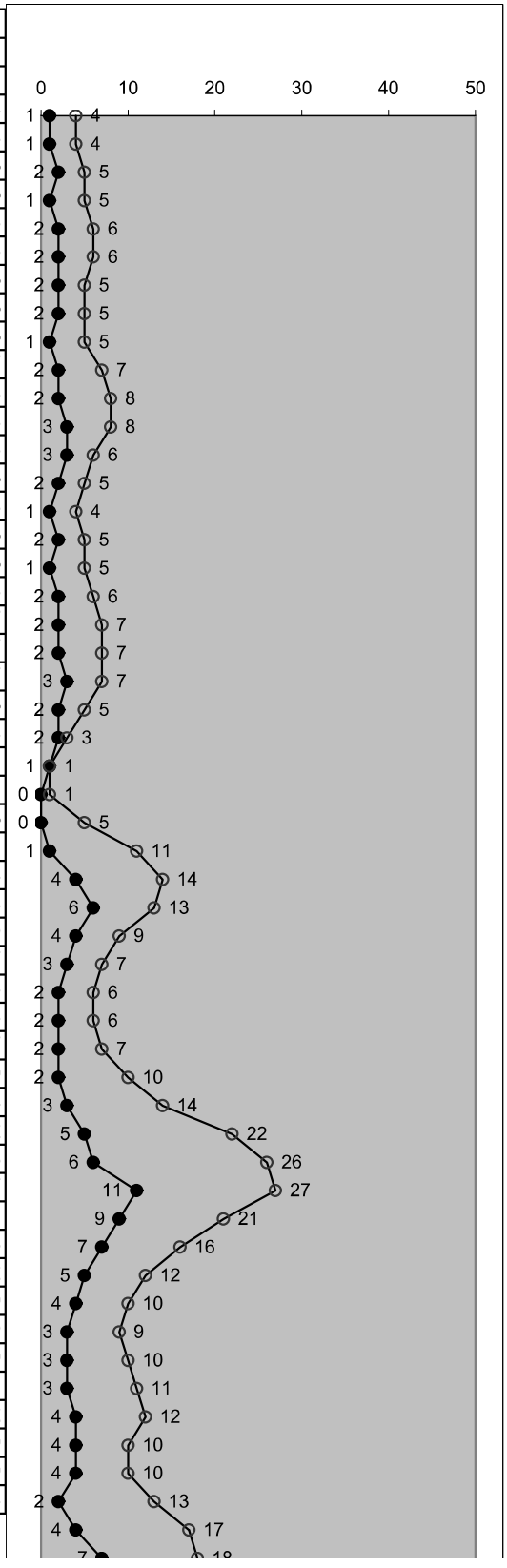
Super Heavy Dynamic Probe Test

Title: Premier Inn, Cleckheaton, Bradford South Job No. 9231

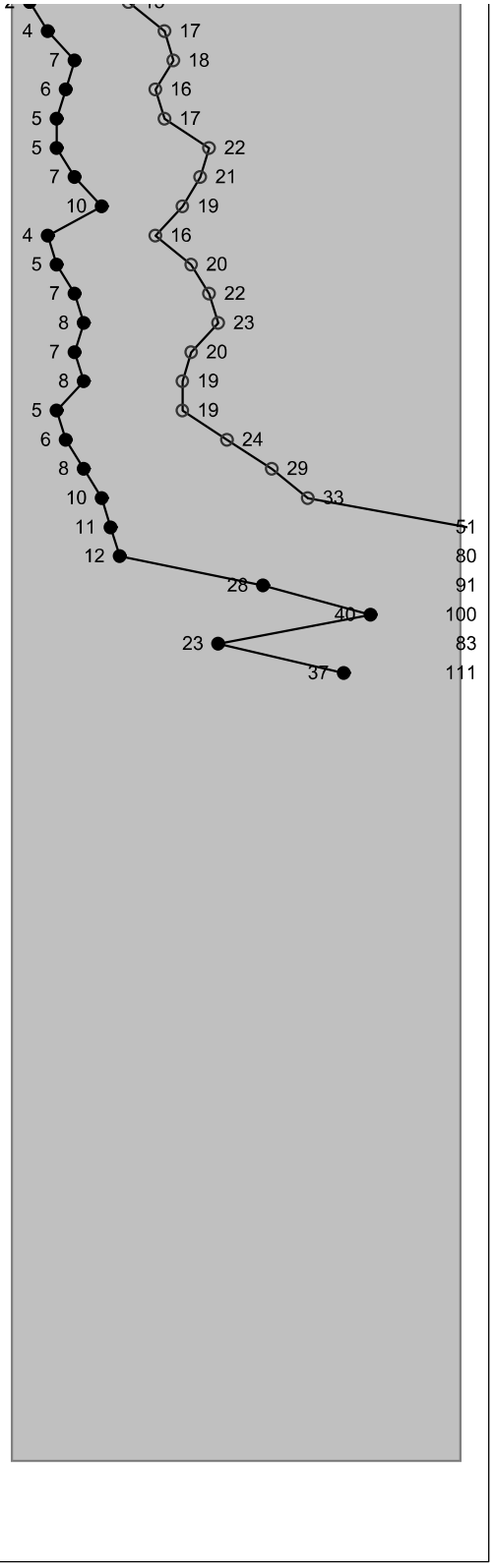
Borehole DP2 Date 27/03/2009

Test Type Super Heavy Duty

Torque (Nm)	Depth from	to	Blow count	Approximate SPT correlation (for information only)
	0.00	0.10	1	4
	0.10	0.20	1	4
	0.20	0.30	2	5
	0.30	0.40	1	5
	0.40	0.50	2	6
	0.50	0.60	2	6
	0.60	0.70	2	5
	0.70	0.80	2	5
	0.80	0.90	1	5
	0.90	1.00	2	7
	1.00	1.10	2	8
	1.10	1.20	3	8
	1.20	1.30	3	6
	1.30	1.40	2	5
	1.40	1.50	1	4
	1.50	1.60	2	5
	1.60	1.70	1	5
	1.70	1.80	2	6
	1.80	1.90	2	7
	1.90	2.00	2	7
	2.00	2.10	3	7
	2.10	2.20	2	5
	2.20	2.30	2	3
	2.30	2.40	1	1
	2.40	2.50	0	1
	2.50	2.60	0	5
	2.60	2.70	1	11
	2.70	2.80	4	14
	2.80	2.90	6	13
	2.90	3.00	4	9
	3.00	3.10	3	7
	3.10	3.20	2	6
	3.20	3.30	2	6
	3.30	3.40	2	7
	3.40	3.50	2	10
	3.50	3.60	3	14
	3.60	3.70	5	22
	3.70	3.80	6	26
	3.80	3.90	11	27
	3.90	4.00	9	21
	4.00	4.10	7	16
	4.10	4.20	5	12
	4.20	4.30	4	10
	4.30	4.40	3	9
	4.40	4.50	3	10
	4.50	4.60	3	11
	4.60	4.70	4	12
	4.70	4.80	4	10
	4.80	4.90	4	10
	4.90	5.00	2	13



	5.00	5.10	4	17
	5.10	5.20	7	18
	5.20	5.30	6	16
	5.30	5.40	5	17
	5.40	5.50	5	22
	5.50	5.60	7	21
	5.60	5.70	10	19
	5.70	5.80	4	16
	5.80	5.90	5	20
	5.90	6.00	7	22
	6.00	6.10	8	23
	6.10	6.20	7	20
	6.20	6.30	8	19
	6.30	6.40	5	19
	6.40	6.50	6	24
	6.50	6.60	8	29
	6.60	6.70	10	33
	6.70	6.80	11	51
	6.80	6.90	12	80
	6.90	7.00	28	91
	7.00	7.10	40	100
	7.10	7.20	23	83
	7.20	7.30	37	111



Northern Foundations Ltd

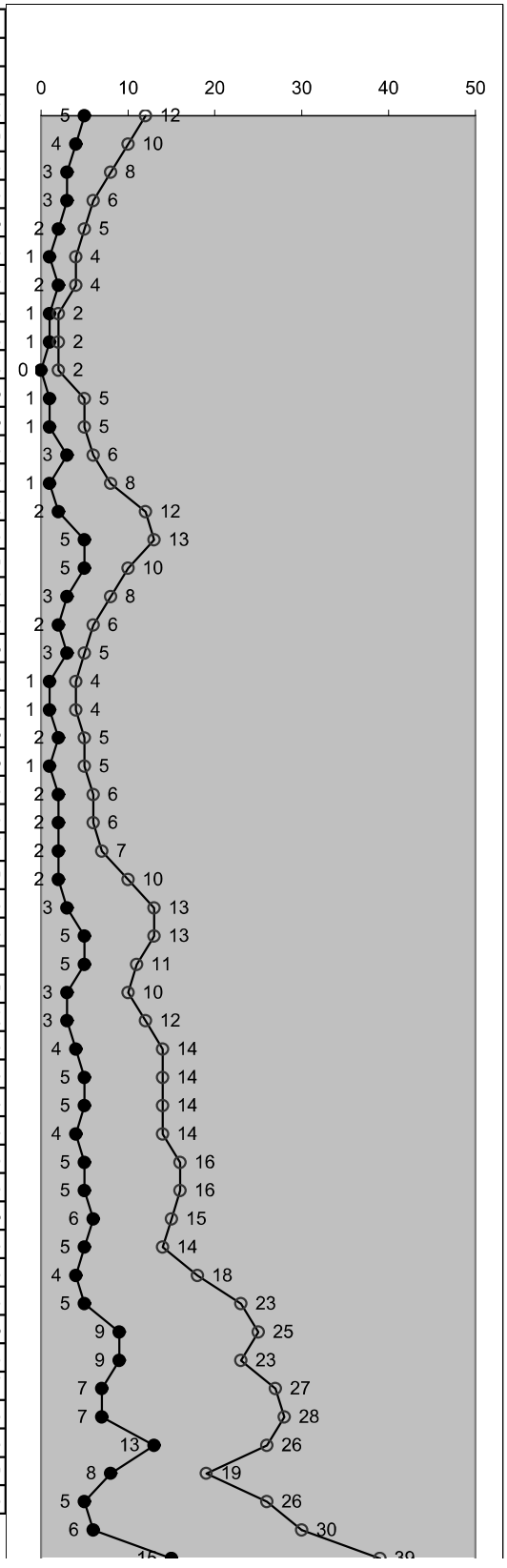
Super Heavy Dynamic Probe Test

Title: Premier Inn, Cleckheaton, Bradford South Job No. 9231

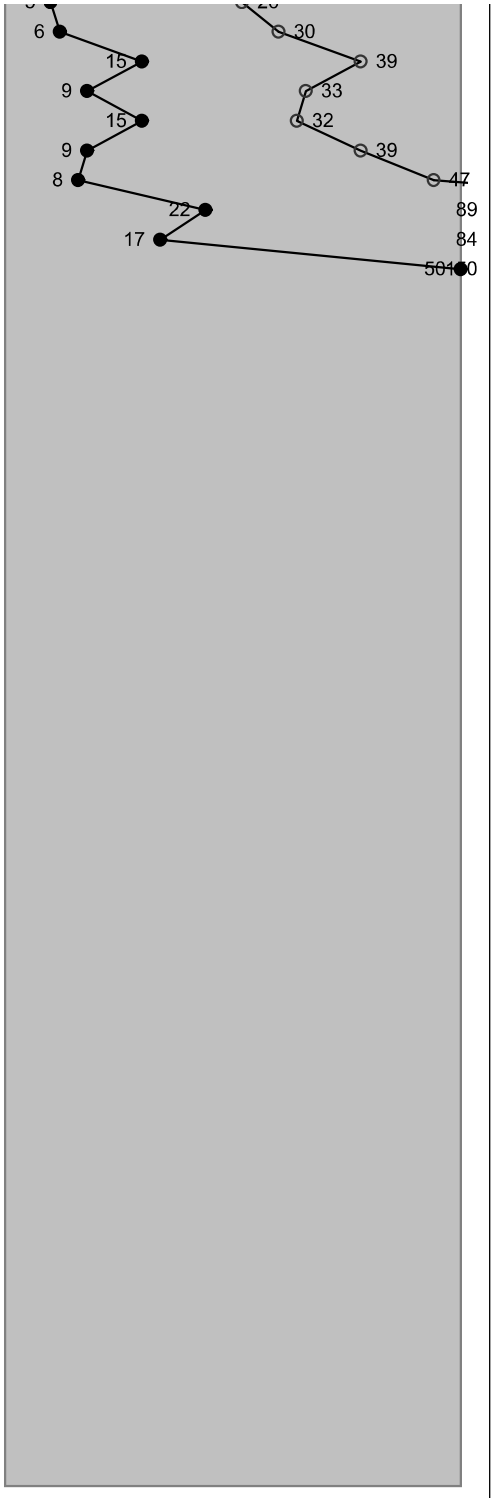
Borehole DP3 Date 27/03/2009

Test Type Super Heavy Duty

Torque (Nm)	Depth from	to	Blow count	Approximate SPT correlation (for information only)
	0.00	0.10	5	12
	0.10	0.20	4	10
	0.20	0.30	3	8
	0.30	0.40	3	6
	0.40	0.50	2	5
	0.50	0.60	1	4
	0.60	0.70	2	4
	0.70	0.80	1	2
	0.80	0.90	1	2
	0.90	1.00	0	2
	1.00	1.10	1	5
	1.10	1.20	1	5
	1.20	1.30	3	6
	1.30	1.40	1	8
	1.40	1.50	2	12
	1.50	1.60	5	13
	1.60	1.70	5	10
	1.70	1.80	3	8
	1.80	1.90	2	6
	1.90	2.00	3	5
	2.00	2.10	1	4
	2.10	2.20	1	4
	2.20	2.30	2	5
	2.30	2.40	1	5
	2.40	2.50	2	6
	2.50	2.60	2	6
	2.60	2.70	2	7
	2.70	2.80	2	10
	2.80	2.90	3	13
	2.90	3.00	5	13
	3.00	3.10	5	11
	3.10	3.20	3	10
	3.20	3.30	3	12
	3.30	3.40	4	14
	3.40	3.50	5	14
	3.50	3.60	5	14
	3.60	3.70	4	14
	3.70	3.80	5	16
	3.80	3.90	5	16
	3.90	4.00	6	15
	4.00	4.10	5	14
	4.10	4.20	4	18
	4.20	4.30	5	23
	4.30	4.40	9	25
	4.40	4.50	9	23
	4.50	4.60	7	27
	4.60	4.70	7	28
	4.70	4.80	13	26
	4.80	4.90	8	19
	4.90	5.00	5	26



	5.00	5.10	6	30
	5.10	5.20	15	39
	5.20	5.30	9	33
	5.30	5.40	15	32
	5.40	5.50	9	39
	5.50	5.60	8	47
	5.60	5.70	22	89
	5.70	5.80	17	84
	5.80	5.90	50	150



Northern Foundations Ltd

Super Heavy Dynamic Probe Test

Title: Premier Inn, Cleckheaton, Bradford South

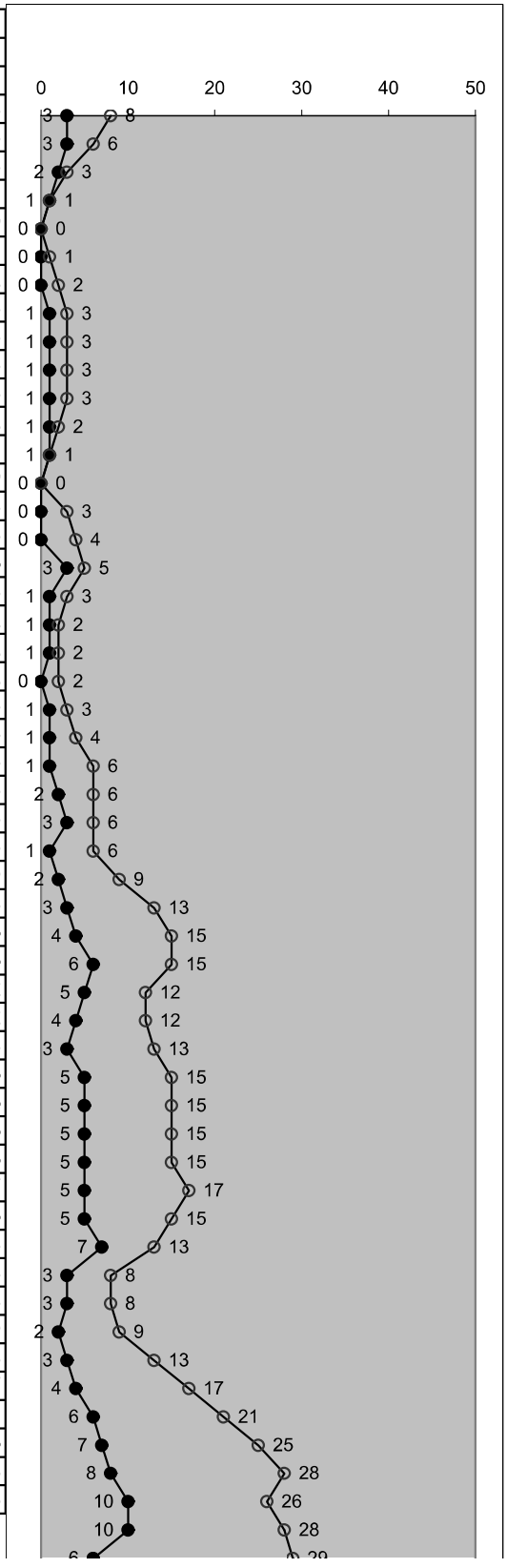
Job No. 9231

Borehole DP4

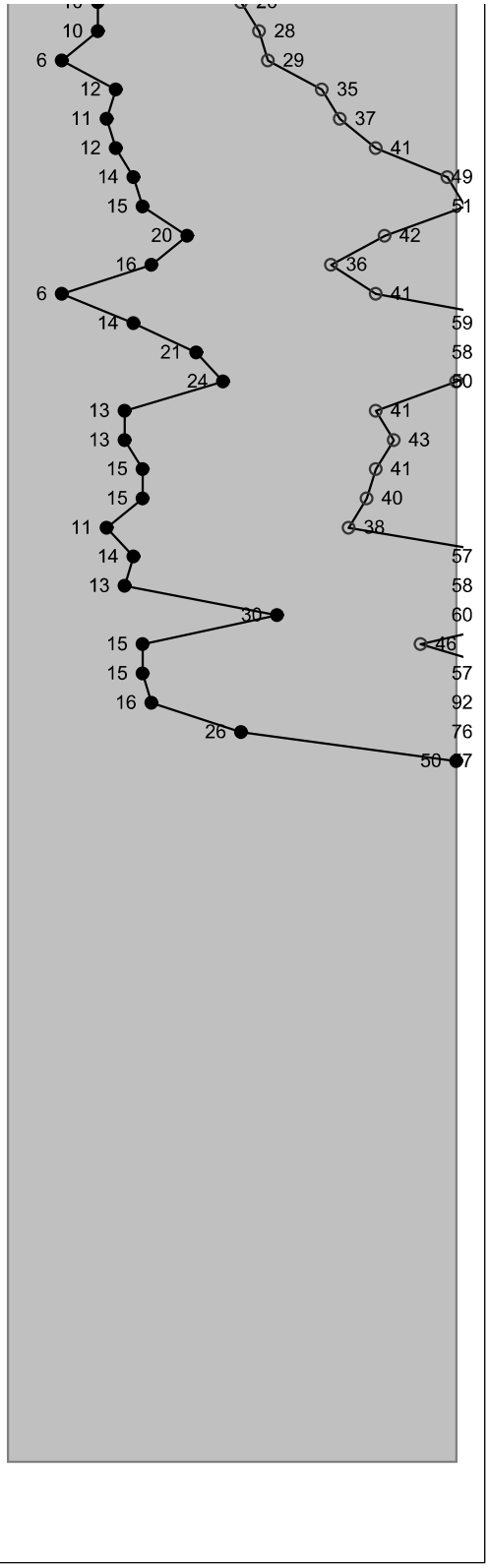
Date 27/03/2009

Test Type Super Heavy Duty

Torque (Nm)	Depth from	to	Blow count	Approximate SPT correlation (for information only)
	0.00	0.10	3	8
	0.10	0.20	3	6
	0.20	0.30	2	3
	0.30	0.40	1	1
	0.40	0.50	0	0
	0.50	0.60	0	1
	0.60	0.70	0	2
	0.70	0.80	1	3
	0.80	0.90	1	3
	0.90	1.00	1	3
	1.00	1.10	1	3
	1.10	1.20	1	2
	1.20	1.30	1	1
	1.30	1.40	0	0
	1.40	1.50	0	3
	1.50	1.60	0	4
	1.60	1.70	3	5
	1.70	1.80	1	3
	1.80	1.90	1	2
	1.90	2.00	1	2
	2.00	2.10	0	2
	2.10	2.20	1	3
	2.20	2.30	1	4
	2.30	2.40	1	6
	2.40	2.50	2	6
	2.50	2.60	3	6
	2.60	2.70	1	6
	2.70	2.80	2	9
	2.80	2.90	3	13
	2.90	3.00	4	15
	3.00	3.10	6	15
	3.10	3.20	5	12
	3.20	3.30	4	12
	3.30	3.40	3	13
	3.40	3.50	5	15
	3.50	3.60	5	15
	3.60	3.70	5	15
	3.70	3.80	5	15
	3.80	3.90	5	17
	3.90	4.00	5	15
	4.00	4.10	7	13
	4.10	4.20	3	8
	4.20	4.30	3	8
	4.30	4.40	2	9
	4.40	4.50	3	13
	4.50	4.60	4	17
	4.60	4.70	6	21
	4.70	4.80	7	25
	4.80	4.90	8	28
	4.90	5.00	10	26



	5.00	5.10	10	28
	5.10	5.20	6	29
	5.20	5.30	12	35
	5.30	5.40	11	37
	5.40	5.50	12	41
	5.50	5.60	14	49
	5.60	5.70	15	51
	5.70	5.80	20	42
	5.80	5.90	16	36
	5.90	6.00	6	41
	6.00	6.10	14	59
	6.10	6.20	21	58
	6.20	6.30	24	50
	6.30	6.40	13	41
	6.40	6.50	13	43
	6.50	6.60	15	41
	6.60	6.70	15	40
	6.70	6.80	11	38
	6.80	6.90	14	57
	6.90	7.00	13	58
	7.00	7.10	30	60
	7.10	7.20	15	46
	7.20	7.30	15	57
	7.30	7.40	16	92
	7.40	7.50	26	76
	7.50	7.60	50	57



Northern Foundations Ltd

Super Heavy Dynamic Probe Test

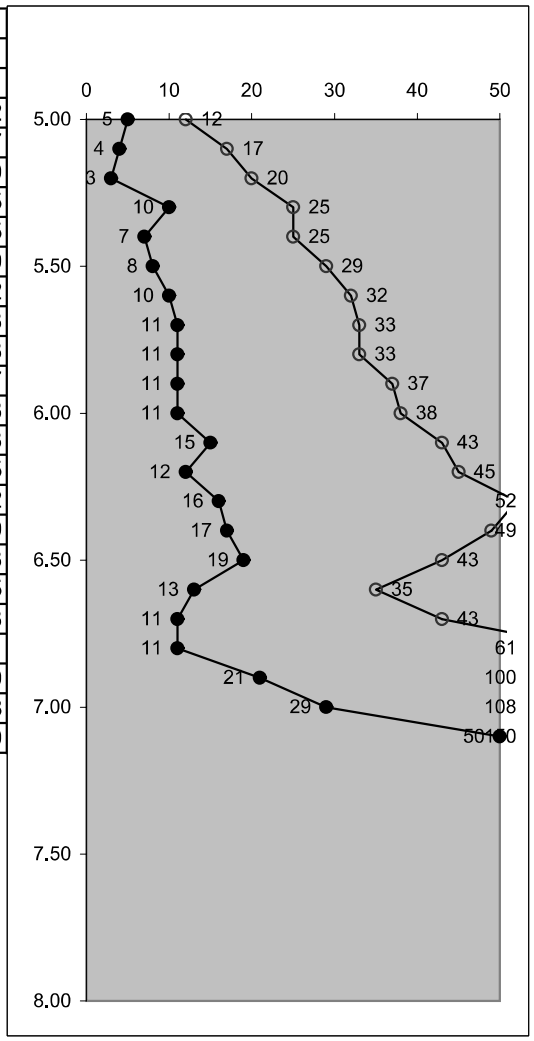
Title: Premier Inn, Cleckheaton, Bradford South Job No. 9231

Borehole DP5 Date 27/03/2009

Test Type Super Heavy Duty

NOTE: Dynamic Probe Test started from base of Borehole WS5 at a depth of 5.00m

Torque (Nm)	Depth from	to	Blow count	Approximate SPT correlation (for information only)
	5.00	5.10	5	12
	5.10	5.20	4	17
	5.20	5.30	3	20
	5.30	5.40	10	25
	5.40	5.50	7	25
	5.50	5.60	8	29
	5.60	5.70	10	32
	5.70	5.80	11	33
	5.80	5.90	11	33
	5.90	6.00	11	37
	6.00	6.10	11	38
	6.10	6.20	15	43
	6.20	6.30	12	45
	6.30	6.40	16	52
	6.40	6.50	17	49
	6.50	6.60	19	43
	6.60	6.70	13	35
	6.70	6.80	11	43
	6.80	6.90	11	61
	6.90	7.00	21	100
	7.00	7.10	29	108
	7.10	7.20	50	150



FIELD TESTING

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** March 2009

STANDARD PENETRATION TEST RESULTS

BH	Ref.	D(m)	150mm	75mm	75mm	75mm	75mm	'N'
WS2	SP1	2.85	25/20	50/15			50/15	50/0.150
WS5	SP1	1.00	2	2	2	2	2	8
	SP2	2.00	4	3	2	1	2	8
	SP3	3.00	6	3	3	4	6	16
	SP4	4.00	12	5	5	5	5	20

Northern Foundations Ltd

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** March 2009

FIELD TESTING

BH/TH	Depth (m)	Vane (kN/m^2)	Mackintosh Penetration Test	Penetrometer (kN/m^2)	BH/TH	Depth (m)	Vane (kN/m^2)	Penetrometer (kN/m^2)
TH2	1.55	41			WS3	1.35	56	
	2.20		8			1.60		49
	2.70	48				2.45		68
	3.00		24					
					WS4	1.50	32	
WS1	0.50	99				2.30		88
	2.50	31				2.90		135
	2.80			125				
					WS5	0.70		220
WS2	1.20	64				1.30		106
	2.60	39				2.40		91
						3.70		241

Northern Foundations Ltd

LABORATORY TESTING

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

SHEAR STRENGTH TEST RESULTS

BH/TH	Depth (m)	Moisture Content (%)	Bulk Unit Weight (kN/m^3)	Vane (kN/m^2)	Unconfined Compressive strength (kN/m^2)	Undrained Triaxial (kN/m^2)
WS3	2.50	27	20.1			75
WS4	2.50	28	19.1			55

Northern Foundations Ltd

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

ATTERBERG LIMIT TEST RESULTS

BH/TH No	Depth (m)	Natural Moisture Content %	% passing 425µ	Liquid Limit %	Plastic Limit %	Plasticity Index %	Modified Plasticity Index %	Volume Change Potential (NHBC Chapter 4.2 : 2003)
WS1	2.80	17	78	39	19	20	16	Low to Medium
WS4	2.90	20	79	42	19	23	18	Low to Medium

Northern Foundations Ltd

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

LABORATORY CBR TEST RESULTS

BH/TH	Depth (m)	CBR 2.5mm penetration (%)	CBR 5.0mm penetration (%)	Moisture Content (%)	Bulk Density (Mg/m^3)	Dry Density (Mg/m^3)	CBR (%)
WS1	0.40	7.1	7.1	19	2.22	1.87	7.1
		6.9	7.7	20			7.7

Northern Foundations Ltd

Site	Premier Inn, Cleckheaton, Bradford South	**Job No**	9231
Client	Simpson Associates	**Date**	April 2009

CALORIFIC VALUE

WS	Depth (m)	Loss on Ignition at 450°C (%)	Calorific Value (MJ/kg)
WS1	0.60	7.5	
WS3	0.70	24.7	
	1.70		4.45

NORTHERN FOUNDATIONS

Site	Premier Inn, Cleckheaton, Bradford South	**Job No**	9231
Client	Simpson Associates	**Date**	April 2009

ORGANIC CONTENT

BH/TH	Depth (m)	Fraction of Organic Carbon (%)	Organic Content (%)
WS1	0.60	2.15	3.74 (estimated)
WS3	0.70	16.34	28.43 (estimated)

Northern Foundations Ltd

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

SULPHATE TEST RESULTS

BH/TH No.	Depth (m)		mg/litre (2:1 water: Soil ext)	mg/litre (groundwater)	Design sulphate class (BRE Special) Digest 1)	pH
TH1	0.25		78		DS – 1	10.3
WS1	2.74			253	DS – 1	6.8
WS2	0.20		11		DS – 1	7.7
WS3	0.40		82		DS – 1	7.1
WS4	0.90		20		DS – 1	8.1
	Design sulphate class for site				**DS-1**	
	ACEC class for site				**AC-1**	

ACEC – Aggressive Chemical Environment for Concrete (BRE Special Digest 1)

Northern Foundations Ltd

CHEMICAL ANALYTICAL RESULTS

TEST REPORT
SOIL SAMPLE ANALYSIS

1252

TES Report No. EFS/091829 (Ver. 1)

Northern Foundations Ltd
18 Ashbourne Drive
High Lane
Stockport
SK6 8DB

Site: Cleckheaton

The 7 samples described in this report were logged for analysis by TES Bretby on 01-Apr-2009.
The analysis was completed by: 21-Apr-2009

Tests where the accreditation is set to N or No, and any individual data items marked with a * are not UKAS accredited
Any opinions or interpretations expressed herein are outside the scope of any UKAS accreditation held by TES Bretby Laboratories.

The following tables are contained in this report:

On behalf of
TES Bretby :
Jane Colbourne Project Co-ordinator

Date of Issue: 21-Apr-2009

Tests marked '^' have been subcontracted to another laboratory.

TES Bretby accepts no responsibility for any sampling not carried out by our personnel.

Where individual results are flagged see report notes for for status.

Units :		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/l	mg/kg	%	mg/kg	pH Units
Method Codes :		ELESULP	ICPBOR	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPMSS	ICPWSS	PAHMSUS	TMSS	TPHFIDUS	WSLM3
Method Reporting Limits :		20	0.5	0.5	0.1	0.5	0.5	0.5	0.10	0.5	0.5	3.0	10	0.08	0.2	10.0	
UKAS Accredited :		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
TES ID Number CL/	**Client Sample Description**	**Elemental Sulphur**	**Boron (H20 Soluble)**	**Arsenic (MS)**	**Cadmium (MS)**	**Chromium (MS)**	**Copper (MS)**	**Lead (MS)**	**Mercury (MS)**	**Nickel (MS)**	**Selenium (MS)**	**Zinc (MS)**	**SO4-- (H2O sol) mg/l**	**PAH by MS.17(0.08)**	**Tot.Moisture @ 105C**	**TPH by GCFID (AR)**	**pH units**
0907788	TH1 0.25	<20	<0.5	7.0	0.25	24.6	19.1	27.1	<0.1	16.6	<0.5	72.2	78				10.3
0907789	WS1 0.6													Req	20.9	64	8.0
0907790	WS2 0.2	<20	<0.5	13.8	0.44	45.7	32.6	57.9	0.21	14.8	<0.5	134.7	11				7.7
0907791	WS3 0.4	41	0.6	13.6	0.12	11.1	27.5	17	<0.1	19.8	0.9	60.7	82				7.1
0907792	WS3 0.7													Req	13.2	313	6.7
0907793	WS3 1.7																
0907794	WS4 0.9	<20	<0.5	19	0.15	15.0	38	22.5	<0.1	27.3	1.1	86.1	20				8.1

TES Bretby

PO Box 100, Bretby Business Park,

Burton-on-Trent, Staffordshire, DE15 0XD

Tel +44 (0) 1283 554400

Fax +44 (0) 1283 554422

Client Name Northern Foundations Ltd

Contact Mr P Jackson

Cleckheaton

Soils Sample Analysis

Date Printed	17-Apr-09
Report Number	**EFS/091829**
Table Number	**1**

TES Bretby

Where individual results are flagged see report notes for for status.

Units :		Mol/kg	MJ/kg	mg/kg	%	mg/kg	ug/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	% M/M				
Method Codes :		ANC	CL12	KONECR	LOI450	PAHSCUV	PCBUSECD	SFAPI	SFAPI	SFAPI	SFAPI	SFAS	WSLM59				
Method Reporting Limits :		0.01	0.1	0.1	0.2	10	5	0.5	0.5	0.5	2	0.5	0.02				
UKAS Accredited :		no	no	no	no	no	no	no	no	no	no	no	no				
TES ID Number CL/	**Client Sample Description**	**Acid Neut. Capacity**	**^Gross CV MJ/kg**	**Chromium vi:**	**^LOI % @ 450C**	**PAH (screening)**	**PCB (7 Congeners)**	**Cyanide(Free) (AR)**	**Cyanide(Total) (AR)**	**Phenol Index.(AR)**	**Thiocyanate(SCN)(AR)**	**Sulphide as S (AR)**	**F.O.C. %**				
0907788	TH1 0.25			<0.1		18		<0.5	<0.5	0.5	<2.0	<0.5					
0907789	WS1 0.6	1.07			7.5		Req						2.15				
0907790	WS2 0.2			<0.1		32		<0.5	<0.5	<0.5	<2.0	<0.5					
0907791	WS3 0.4			<0.1		15		<0.5	<0.5	<0.5	<2.0	<0.5					
0907792	WS3 0.7	0.54			24.7		Req						16.34				
0907793	WS3 1.7		4.45														
0907794	WS4 0.9			<0.1		25		<0.5	<0.5	<0.5	<2.0	<0.5					

TES Bretby

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Client Name Northern Foundations Ltd

Contact Mr P Jackson

Cleckheaton

Soils Sample Analysis

Date Printed	17-Apr-09
Report Number	**EFS/091829**
Table Number	**1**

TES Bretby

Where individual results are flagged see report notes for for status.

Units :		ug/kg	ug/kg	ug/kg	ug/kg												
Method Codes :		BTEXHSA	BTEXHSA	BTEXHSA	BTEXHSA												
Method Reporting Limits :		10	10	10	20												
UKAS Accredited :		no	no	no	no												
TES ID Number CL/	**Client Sample Description**	**Benzene**	**Toluene**	**Ethyl Benzene**	**Xylenes**												
0907788	TH1 0.25																
0907789	WS1 0.6	<10	<10	<10	<20												
0907790	WS2 0.2																
0907791	WS3 0.4																
0907792	WS3 0.7	<10	<10	<10	<20												

TES Bretby
PO Box 100, Bretby Business Park,
Burton-on-Trent, Staffordshire, DE15 0XD
Tel +44 (0) 1283 554400
Fax +44 (0) 1283 554422

Client Name Northern Foundations Ltd

Contact Mr P Jackson

Cleckheaton

Soils Sample Analysis

Date Printed	17-Apr-09
Report Number	**EFS/091829**
Table Number	**1**

Where individual results are flagged see report notes for for status.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Northern Foundations Ltd: Cleckheaton		
Sample Details:	WS1 0.6	**Job Number:**	S09_1829
LIMS ID Number:	CL0907789	**Date Booked in:**	01-Apr-09
QC Batch Number:	1216	**Date Extracted:**	15-Apr-09
Quantitation File:	Initial Calibration	**Date Analysed:**	15-Apr-09
Directory:	0415PAH.MS5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	-	< 0.08	-
Acenaphthylene	208-96-8	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7	-	< 0.08	-
Phenanthrene	85-01-8	5.78	0.15	98
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.13	0.48	100
Pyrene	129-00-0	7.42	0.41	97
Benzo[a]anthracene	56-55-3	9.11	0.26	94
Chrysene	218-01-9	9.16	0.27	97
Benzo[b]fluoranthene	205-99-2	10.64	0.37	97
Benzo[k]fluoranthene	207-08-9	10.68	0.15	96
Benzo[a]pyrene	50-32-8	11.07	0.27	98
Indeno[1,2,3-cd]pyrene	193-39-5	12.45	0.22	74
Dibenzo[a,h]anthracene	53-70-3	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	12.76	0.20	83
Coronene	191-07-1 *	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 3.26	-

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	77
Acenaphthene-d10	76
Phenanthrene-d10	78
Chrysene-d12	83
Perylene-d12	90

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	94
Terphenyl-d14	102

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polycyclic Aromatic Hydrocarbons
GC/MS (SIM)

Customer and Site Details:	Northern Foundations Ltd: Cleckheaton		
Sample Details:	WS3 0.7	**Job Number:**	S09_1829
LIMS ID Number:	CL0907792	**Date Booked in:**	01-Apr-09
QC Batch Number:	1216	**Date Extracted:**	15-Apr-09
Quantitation File:	Initial Calibration	**Date Analysed:**	15-Apr-09
Directory:	0415PAH.MS5\	**Matrix:**	Soil
Dilution:	1.0	**Ext Method:**	Ultrasonic

UKAS accredited?: Yes

Target Compounds	CAS #	R.T. (min)	Concentration mg/kg	% Fit
Naphthalene	91-20-3	3.37	0.17	99
Acenaphthylene	208-96-8	-	< 0.08	-
Acenaphthene	83-32-9	-	< 0.08	-
Fluorene	86-73-7	-	< 0.08	-
Phenanthrene	85-01-8	5.78	1.11	99
Anthracene	120-12-7	-	< 0.08	-
Fluoranthene	206-44-0	7.13	0.19	100
Pyrene	129-00-0	7.42	0.29	97
Benzo[a]anthracene	56-55-3	-	< 0.08	-
Chrysene	218-01-9	9.16	0.28	87
Benzo[b]fluoranthene	205-99-2	10.64	0.10	79
Benzo[k]fluoranthene	207-08-9	-	< 0.08	-
Benzo[a]pyrene	50-32-8	-	< 0.08	-
Indeno[1,2,3-cd]pyrene	193-39-5	-	< 0.08	-
Dibenzo[a,h]anthracene	53-70-3	-	< 0.08	-
Benzo[g,h,i]perylene	191-24-2	-	< 0.08	-
Coronene	191-07-1 *	-	< 0.08	-
Total (USEPA16) PAHs	-	-	< 2.94	-

* Denotes compound is not UKAS accredited

"M" denotes that % fit has been manually interpreted

Internal Standards	% Area
1,4-Dichlorobenzene-d4	NA
Naphthalene-d8	78
Acenaphthene-d10	78
Phenanthrene-d10	81
Chrysene-d12	86
Perylene-d12	91

Surrogates	% Rec
Nitrobenzene-d5	NA
2-Fluorobiphenyl	91
Terphenyl-d14	96

Concentrations are reported on a wet weight basis.

The Total PAH result is the sum of non-rounded individual PAH results and therefore may differ to the sum of the rounded individual PAH results printed above. By convention, where any one or more result is a "less than", the total is expressed as a "less than" and includes the "less than" concentration within the total.

Polychlorinated Biphenyls (congeners)

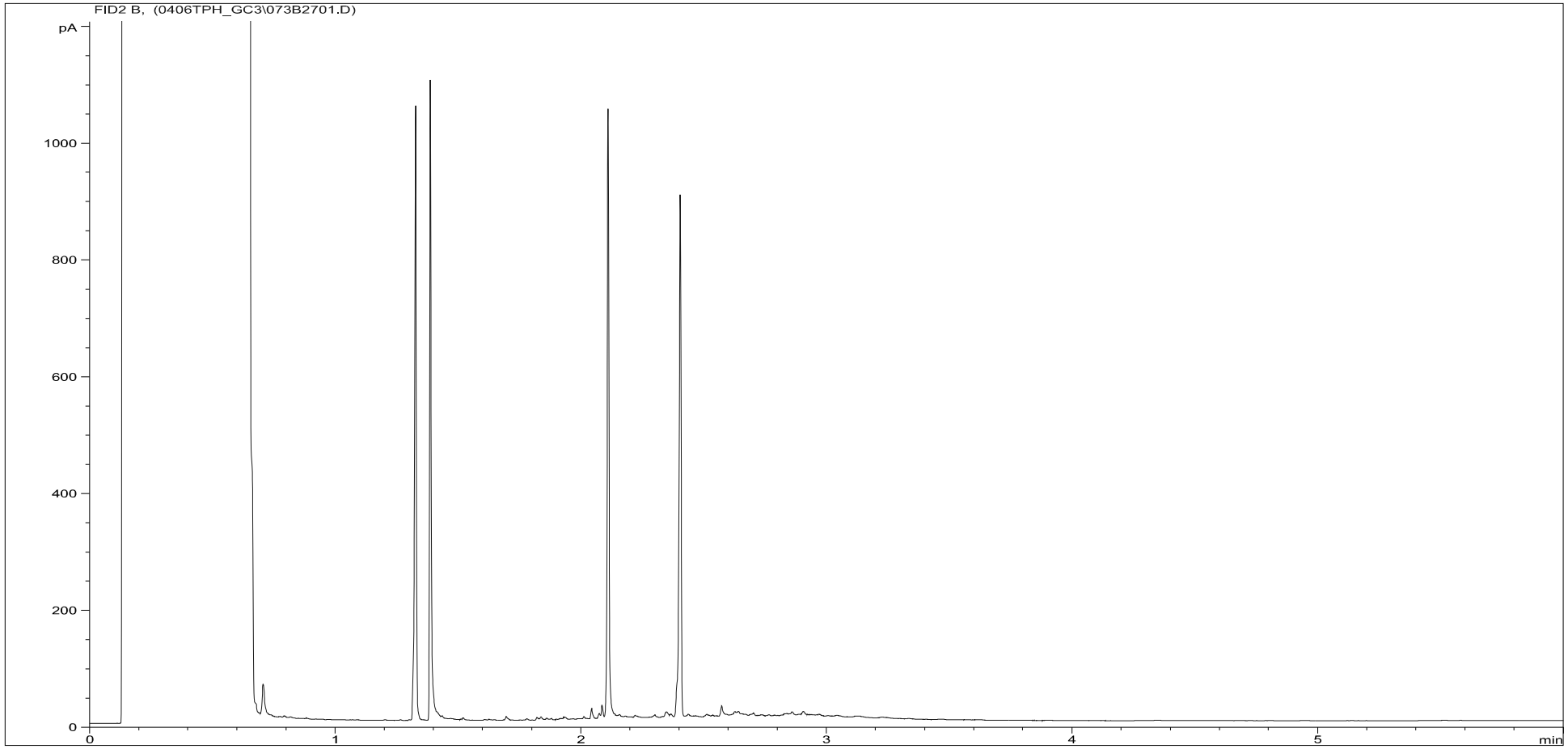
Customer and Site Details:	Northern Foundations Ltd: Cleckheaton	**Matrix:**	SOIL
Job Number:	S09_1829	**Date Booked in:**	01-Apr-09
QC Batch Number:	091141	**Date Extracted:**	03-Apr-09
Directory:	0407PCB.GC8	**Date Analysed:**	08-Apr-09
Method:	Ultrasonic		

*** This sample data is not UKAS accredited.**

			Concentration, (µg/kg)						
	Sample ID	**Customer ID**	**PCB28**	**PCB52**	**PCB101**	**PCB118**	**PCB153**	**PCB138**	**PCB180**
*	CL0907789	WS1 0.6	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
*	CL0907792	WS3 0.7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0

Where individual results are flagged see report notes for for status.

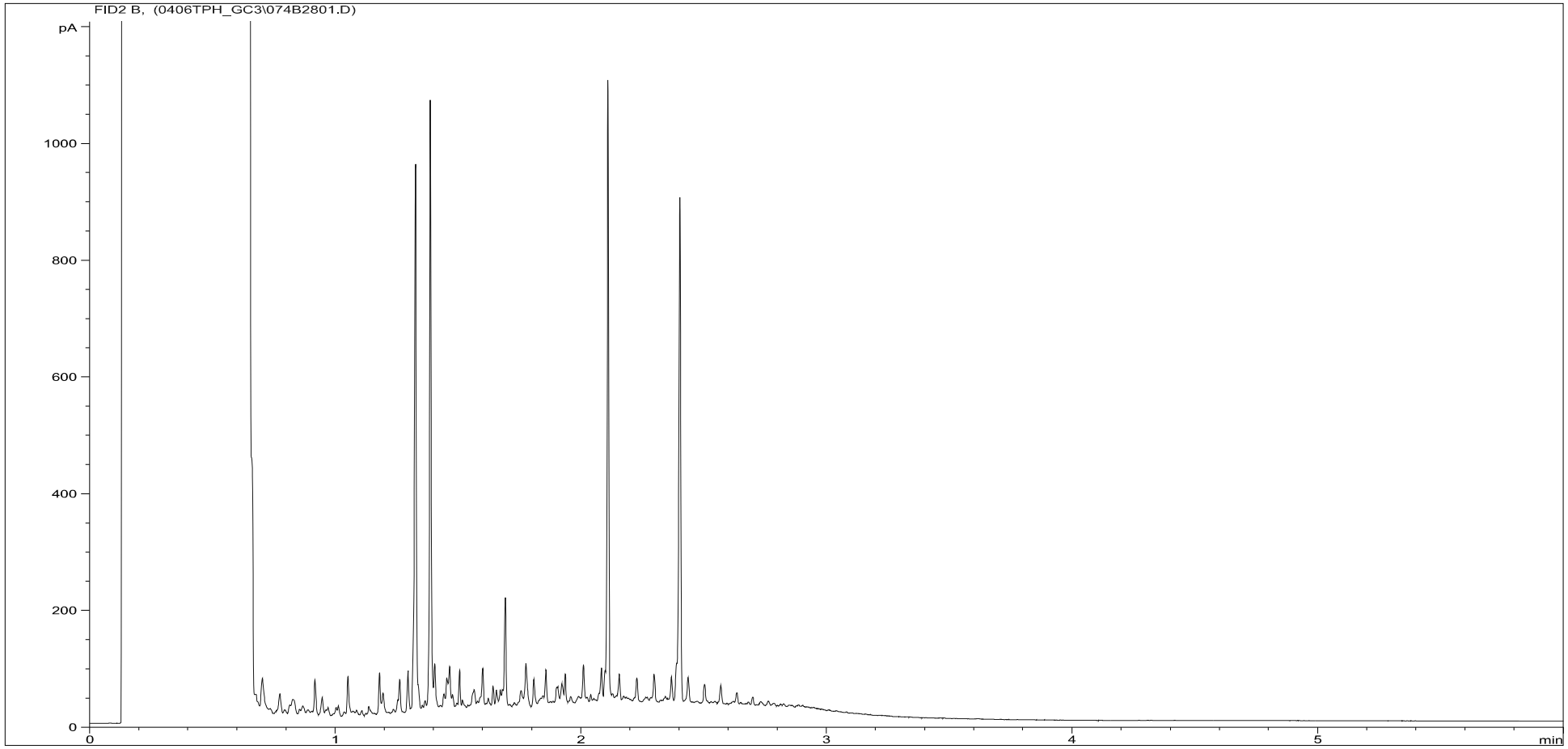
Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL0907789	**Job Number:**	S09_1829
Multiplier:	8	**Client:**	Northern Foundations Ltd
Dilution:	1	**Site:**	Cleckheaton
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS1 0.6
Acquisition Date/Time:	06-Apr-09		
Datafile:	D:\TES\DATA\Y2009\0406TPH_GC3\073B2701.D		

Where individual results are flagged see report notes for for status.

Petroleum Hydrocarbons (C8 to C40) by GC/FID



Sample ID:	CL0907792	**Job Number:**	S09_1829
Multiplier:	8	**Client:**	Northern Foundations Ltd
Dilution:	1	**Site:**	Cleckheaton
Acquisition Method:	5UL_RUNF.M	**Client Sample Ref:**	WS3 0.7
Acquisition Date/Time:	06-Apr-09		
Datafile:	D:\TES\DATA\Y2009\0406TPH_GC3\074B2801.D		

Where individual results are flagged see report notes for for status.

Report Notes

Soil/Solid analysis specific:
Results expressed as mg/kg on an air dried basis unless stated otherwise
S04 analysis not conducted in accordance with BS1377 unless otherwise stated
Water Soluble Sulphate on 2:1 water:soil extract
AR denotes analysis conducted on the As Received sample

Water analysis specific:
Results expressed as mg/l unless stated otherwise

Oil analysis specific:
Results expressed as mg/kg unless stated otherwise
S.G. expressed as g/cm^3 @ 15^oC

Filter analysis specific:
Results expressed as mg on filter unless stated otherwise

VOC analysis specific:
Explanatory notes for data flagging
U = undetected above reporting limit
J = concentration at instrument was below lowest calibration standard
E = concentration at instrument was above top calibration standard
B = compound was detected in method blank

Gas (Tedlar bag) analysis specific:
Results expressed as ug/l unless stated otherwise

Air (Carbon tube) analysis specific:
Results expressed as ug on tube unless stated otherwise

Asbestos analysis specific:
CH denotes Chrysotile
CR denotes Crocidolite
AM denotes Amosite
NADIS denotes No Asbestos Detected in Sample
NBFO denotes No Bulk fibres Observed

General notes:
^ this analysis was subcontracted to another laboratory
$ Within laboratory tolerances
$$ unable to analyse due to nature of sample
¥ Results for guidance only, possible interference
& Blank corrected
I.S insufficient sample for analysis
Intf Unable to analyse due to interferences
N.D Not determined
N.R Not recorded
N.Det Not detected
Req Analysis Requested, see attached sheets for results
Þ Raised detection limit due to nature of sample
* denotes that all accreditation has been removed by the laboratory for this result.
‡ denotes that Mcerts accreditation has been removed by the laboratory for this result.
Note: The Laboratory may only claim that data is accredited when all of the requirements of our Quality System have been met. Where these requirements have not been met the laboratory may elect to include the data in its final report and remove the accreditation from individual data items if it believes that the validity of the data has not been affected.

If you require further details of the circumstances leading to the removal of the accreditation from any data item please do not hesitate to contact the laboratory

END OF REPORT

Where individual results are flagged see report notes for for status.

WASTE ACCEPTANCE CRITERIA
TESTING RESULTS

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/3

					Leaching Data	
Client	Northern Foundations Ltd				Weight of sample (kg)	0.225
Contact	Mr P Jackson				Moisture content @ 105℃ (%)	20.9
					Equivalent Weight based on drying at 105℃ (kg)	0.178
Site	Cleckheaton				Volume of water required to carry out 2:1 stage (litres)	0.309
					Weight of Sieved Soil to carry out 2:1 stage (kg)	0.284
Sample Description		**Report No**	**Sample No**	**Issue Date**	Weight of Deionised water to carry out 2:1 stage (kg)	0.391
WS1 0.6		s09_1829	CL/0907789	21-Apr-09	Volume to undertake analysis (2:1 Stage) (litres)	0.300
					Weight of Deionised water to carry out 8:1 stage (kg)	1.368

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Fraction of Organic Carbon (% M/M)	3.1	3	5	6
N	LOI450	Loss on Ignition (%)	10.8			10
N	BTEXHSA	Sum of BTEX (mg/kg)	<0.06	6		
N	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.049	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	81	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<4.22	100		
U	WSLM3	pH (pH units)	8		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	1.54		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	2:1 Leachate	8:1 Leachate	Calculated amount leached @ 2:1	Calculated cumulative amount leached @ 10:1	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/3 @ L/S 10 litre kg-1 mg/kg (dry weight)		
			mg/l except ºº		mg/kg (dry weight)				
U	WSLM3	pH (pH units) ºº	8.1	8.2	Calculated data not UKAS Accredited				
U	WSLM2	Conductivity (µs/cm) ºº	404	156					
U	ICPMSW	Arsenic	<0.001	<0.001	<0.002	<0.01	0.5	2	25
N	ICPWATVAR	Barium	0.39	0.49	0.78	4.7	20	100	300
U	ICPMSW	Cadmium	<0.0001	<0.0001	<0.0002	<0.001	0.04	1	5
U	ICPMSW	Chromium	0.003	0.002	0.006	0.02	0.5	10	70
U	ICPMSW	Copper	0.009	0.003	0.018	0.04	2	50	100
U	ICPMSW	Mercury	<0.0001	<0.0001	<0.0002	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	<0.001	0.002	<0.002	<0.02	0.5	10	30
U	ICPMSW	Nickel	0.001	<0.001	0.002	<0.01	0.4	10	40
U	ICPMSW	Lead	0.005	<0.001	0.01	<0.02	0.5	10	50
U	ICPMSW	Antimony	<0.001	0.001	<0.002	<0.01	0.06	0.7	5
U	ICPMSW	Selenium	<0.001	<0.001	<0.002	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.188	0.069	0.376	0.89	4	50	200
U	KONENS	Chloride	19	2	38	49	800	15000	25000
U	ISEF	Fluoride	0.7	0.9	1.4	9	10	150	500
U	ICPWATVAR	Sulphate as SO4	61	9	122	178	1000	20000	50000
N	WSLM27	Total Dissolved Solids	315	122	630	1545	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.05	<0.1	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	4.4	4.1	8.8	42	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Where individual results are flagged see report notes for for status.

WASTE ACCEPTANCE CRITERIA TESTING
BSEN 12457/3

Client	Northern Foundations Ltd				**Leaching Data**	
					Weight of sample (kg)	0.225
Contact	Mr P Jackson				Moisture content @ 105℃ (%)	13.2
					Equivalent Weight based on drying at 105℃ (kg)	0.195
Site	Cleckheaton				Volume of water required to carry out 2:1 stage (litres)	0.361
					Weight of Sieved Soil to carry out 2:1 stage (kg)	0.259
Sample Description		**Report No**	**Sample No**	**Issue Date**	Weight of Deionised water to carry out 2:1 stage (kg)	0.416
WS3 0.7		s09_1829	CL/0907792	21-Apr-09	Volume to undertake analysis (2:1 Stage) (litres)	0.300
					Weight of Deionised water to carry out 8:1 stage (kg)	1.472

Accreditation	Method Code	Solid Waste Analysis (Dry Basis)	Concentration in Solid (Dry Weight Basis)	Landfill Waste Acceptance Criteria Limit Values		
				Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill
N	WSLM59	Fraction of Organic Carbon (% M/M)	16.77	3	5	6
N	LOI450	Loss on Ignition (%)	25.4			10
N	BTEXHSA	Sum of BTEX (mg/kg)	<0.05	6		
N	PCBUSECD	Sum of 7 Congener PCB's (mg/kg)	<0.035	1		
U	TPHFIDUS	Mineral Oil (mg/kg)	361	500		
N	PAHMSUS	PAH Sum of 17 (mg/kg)	<3.48	100		
U	WSLM3	pH (pH units)	6.7		>6	
N	ANC	Acid Neutralisation Capacity (mol/kg) @pH 7	0.55		To be evaluated	To be evaluated

Accreditation	Method Code	Leachate Analysis	2:1 Leachate	8:1 Leachate	Calculated amount leached @ 2:1	Calculated cumulative amount leached @ 10:1	Landfill Waste Acceptance Criteria Limit Values for BSEN 12457/3 @ L/S 10 litre kg-1 mg/kg (dry weight)		
			mg/l except ºº		mg/kg (dry weight)				
U	WSLM3	pH (pH units) ºº	7.9	8.2	Calculated data not UKAS Accredited				
U	WSLM2	Conductivity (µs/cm) ºº	640	170					
U	ICPMSW	Arsenic	0.002	0.002	0.004	0.02	0.5	2	25
N	ICPWATVAR	Barium	0.32	0.29	0.64	2.9	20	100	300
U	ICPMSW	Cadmium	0.0001	<0.0001	0.0002	<0.001	0.04	1	5
U	ICPMSW	Chromium	0.005	0.004	0.01	0.04	0.5	10	70
U	ICPMSW	Copper	0.008	0.004	0.016	0.05	2	50	100
U	ICPMSW	Mercury	0.0002	<0.0001	0.0004	<0.001	0.01	0.2	2
U	ICPMSW	Molybdenum	0.002	0.004	0.004	0.04	0.5	10	30
U	ICPMSW	Nickel	0.004	0.001	0.008	0.01	0.4	10	40
U	ICPMSW	Lead	0.004	0.002	0.008	0.02	0.5	10	50
U	ICPMSW	Antimony	0.002	0.003	0.004	0.03	0.06	0.7	5
U	ICPMSW	Selenium	0.004	<0.001	0.008	<0.01	0.1	0.5	7
U	ICPMSW	Zinc	0.21	0.052	0.42	0.76	4	50	200
U	KONENS	Chloride	13	1	26	28	800	15000	25000
U	ISEF	Fluoride	0.9	1.3	1.8	12	10	150	500
U	ICPWATVAR	Sulphate as SO4	292	27	584	677	1000	20000	50000
N	WSLM27	Total Dissolved Solids	499	133	998	1892	4000	60000	100000
U	SFAPI	Phenol Index	<0.05	<0.05	<0.1	<0.5	1		
N	WSLM13	Dissolved Organic Carbon	2.6	1.9	5.2	20	500	800	1000

Template Ver. 1

Landfill Waste Acceptance Criteria limit values correct as of 11th March 2009.

Where individual results are flagged see report notes for for status.

GAS & WATER LEVEL MONITORING RESULTS

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

STANDPIPE WATER LEVELS

BH	Response zone	Pipe Diameter	Date: 23/04/09			
WS1	1.00m – 4.00m	50mm	2.76m			
		Levels measured from existing ground level at each location				

Northern Foundations Ltd

Site Premier Inn, Cleckheaton, Bradford South **Job No** 9231

Client Simpson Associates **Date** April 2009

IN-GROUND GAS TESTS

BH	Methane %volume	Carbon Dioxide %volume	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Oxygen %volume	Flow l/hr High	Flow l/hr Low	Absolute Atmospheric Pressure (mbar)
	Highest value	Highest value	Highest value	Highest value	Lowest value			
Date: 23/04/09								
WS1	BDL*	2.8	BDL	BDL	18.4	0.1	0.0	1007/08

* A lower explosive limit (LEL%) for methane was measured at 0.1% on 23/04/09
The lower explosive limit corresponds to 5% concentration of methane-in-air

Northern Foundations Ltd

Northern Foundation Ltd

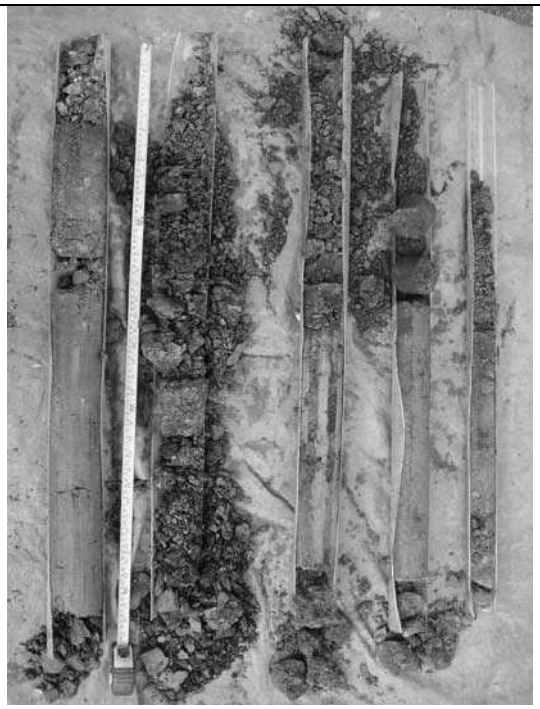
Gas Detector LMSxi G3 Specifications

General			
Ex. Rating to:		EEx ib IIB T2	
Ambient Temp Range		-10 to 40 C	
Battery Life		10 hours typical	
Aspiration Rate		300 ml/min typical	
Storage Capacity		>1000 Readings	
Protection Rating		IP65	
Dimensions		150 x 200 x 190 mm (approx)	
Weight		<2.0 Kg	
Standard Channels			
	Range	Typical Accuracy	Typical Response
Methane	0 to 100%	0.2% @ 5%	20s
		1.0% @ 30%	
		3.0% @ 100%	
	0 to 100% LEL	4% LEL	30s
Carbon Dioxide	0 to 100%	0.1% @ 10%	20s
		3.0% @ 50%	
		3% @ 100%	
Oxygen	0 to 25%	0.5%	20s
Atmospheric Pressure	800 to 1200 mbar	5 mbar, 1 mbar resolution	20s
Other Gas Channels			
H2S low	200 ppm	5% of fs	30s
CO (minimal cross gas effects)	1000ppm	5% of fs	30s
Other Channels			
Flow Monitoring	**Bore hole Flow & Pressure Expansion (low flow)**		
Flow Range	+30/-10 l/hour		
Flow Resolution	0.1 l/hour		
Differential Pressure		+300/-30 Pa (Typical)	
Static Pressure		-200mbar - +200mbar	

SITE PHOTOGRAPHS

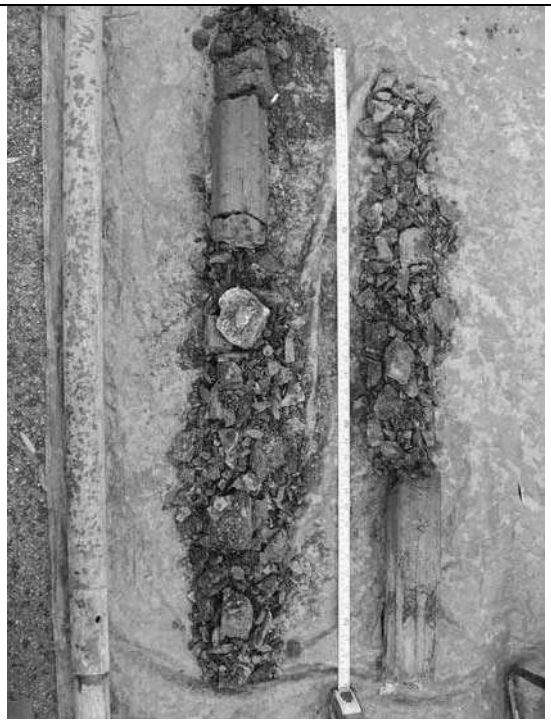
Site	Premier Inn, Cleckheaton, Bradford South	**Job No**	9231
Client	Simpson Associates	**Date**	April 2009

Site Photographs (Sheet 1 of 2)



WS1

WS2 (0.0m to 1.0m)



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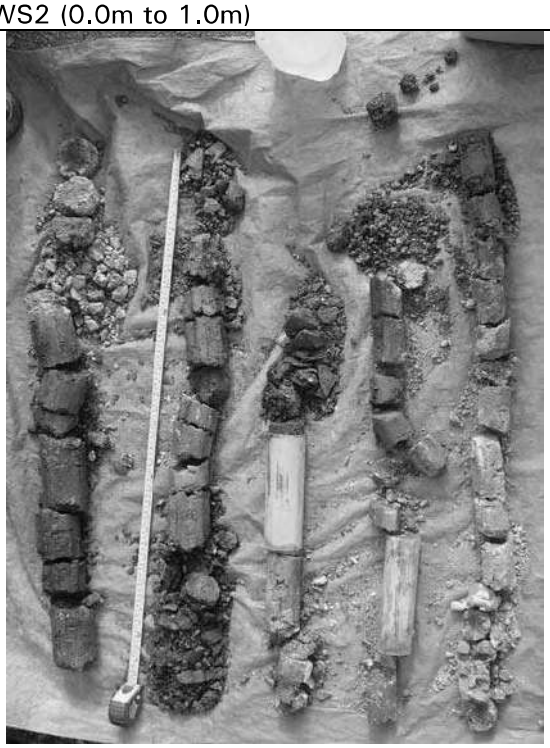


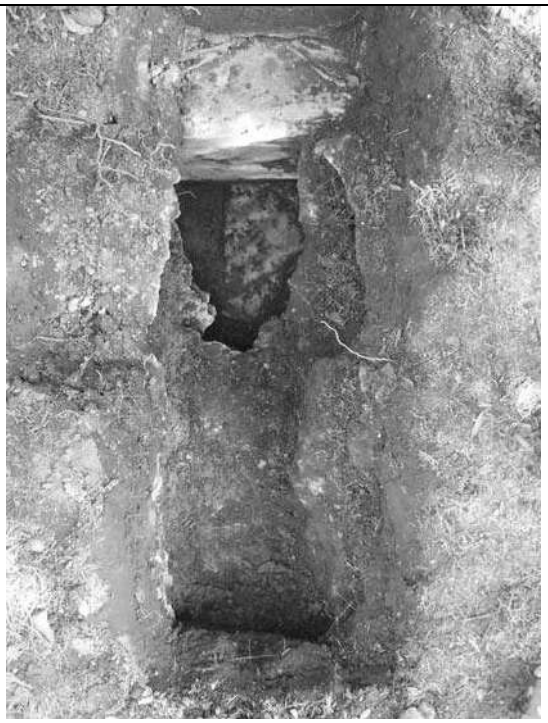
WS3

Site	Premier Inn, Cleckheaton, Bradford South	**Job No**	9231
Client	Simpson Associates	**Date**	April 2009

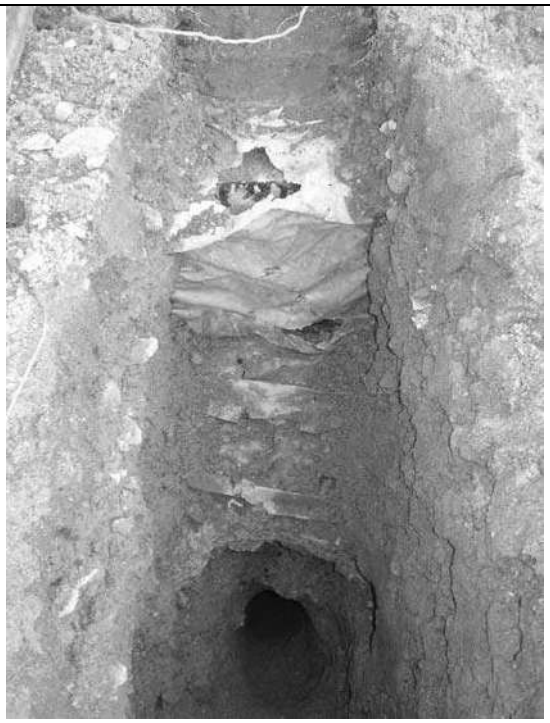
Site Photographs (Sheet 2 of 2)

WS4

WS5



TH1

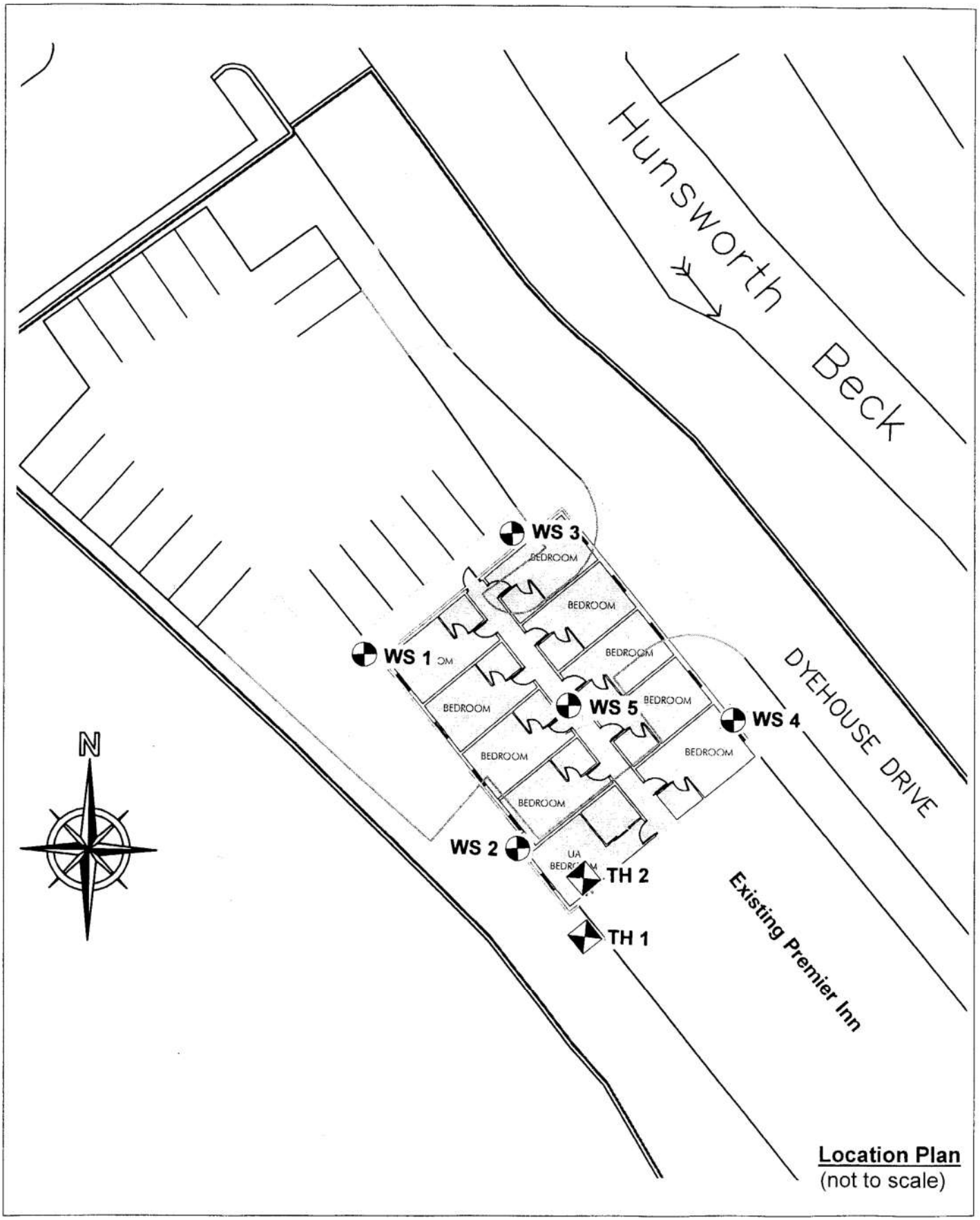


TH2

LOCATION PLAN

Site	Premier Inn, Cleckheaton, Bradford South	**Job No**	9231
Client	Simpson Associates	**Date**	April 2009

LOCATION PLAN



Northern Foundations Ltd

COAL AUTHORITY REPORT

Issued by:
The Coal Authority, Mining Reports Office, 200 Lichfield Lane, Berry Hill, Mansfield, Nottinghamshire NG18 4RG
On-Line Service: www.coalminingreports.co.uk - Phone: 0845 762 6848 - DX 716176 MANSFIELD 5

SIMPSON ASSOCIATES,
8 FRIDAY STREET,
HENLEY-ON-THAMES,
OXFORDSHIRE,
RG9 1AH

Person dealing with this matter:	**Darren Moody**
Our reference:	**00019788-09**
Your reference:	DES 10686
Electronic Ref:	
RRUID:	007.00025213500001
Date of your enquiry:	**06 May 2009**
Date we received your enquiry:	**11 May 2009**
Date of issue:	**11 May 2009**

This report is for the property described in the address below and the attached plan.

Coal and Brine Report

Proposed Travel Inn At Hunsworth Ph, Cleckheaton, West Yorkshire

This report is based on and limited to the records held by, the Coal Authority, and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Coal mining	Yes
Brine extraction	No

Information from the Coal Authority

Underground Coal Mining

Past

The property is in the likely zone of influence from workings in 2 seams of coal at 90m to 130m depth, and last worked in 1864.

Any ground movement from these coal workings should have stopped by now.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past.

Present

The property is not in the likely zone of influence of any present underground coal workings.

Future

The property is not in an area for which the Coal Authority is determining whether to grant a licence to remove coal using underground methods.

The property is not in an area for which a licence has been granted to remove coal using underground methods.

The property is not in an area that is likely to be affected at the surface from any planned future workings.

However reserves of coal exist in the local area which could be worked at some time in the future.

No notice of the risk of the land being affected by subsidence has been given under section 46 of the Coal Mining Subsidence Act 1991.

Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

Records may be incomplete. Consequently, there may exist in the local area mine entries of which the Coal Authority has no knowledge.

Coal-mining geology

At the surface, there are no known faults or other lines of weakness due to coal mining that have made the property unstable.

Opencast Coal Mining

Past

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

Present

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

Future

The property is not within 800 metres of the boundary of an opencast site for which the Coal Authority is determining whether to grant a licence to remove coal by opencast methods.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

Coal-mining subsidence

The Coal Authority has not received a damage notice or claim for the property since 1 January 1984. There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority has not received a request to carry out preventive work before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

There is no record of a mine gas emission requiring action by the Coal Authority within the boundary of the property.

Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

Withdrawal of Support

The property is not in an area for which a notice of entitlement to withdraw support has been published.

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

Working Facilities Orders

The property is not in an area for which an Order has been made under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

Payments to Owners of Former Copyhold Land

The property is not in an area for which a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Comments on Coal Authority information

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/ former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Information from the Cheshire Brine Subsidence Compensation Board

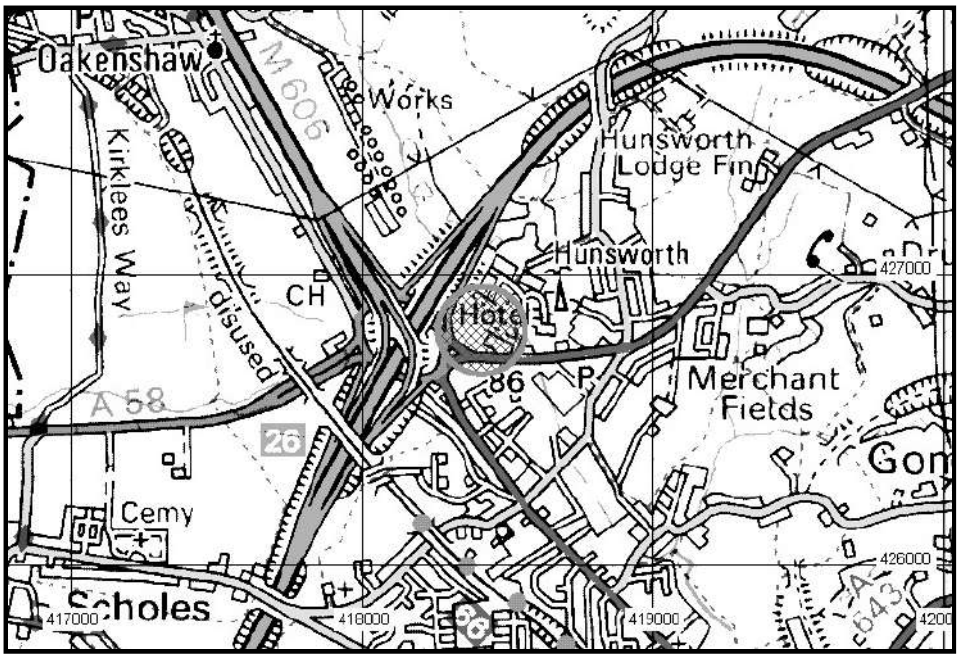
The property lies outside the Cheshire Brine Compensation District.

Additional remarks

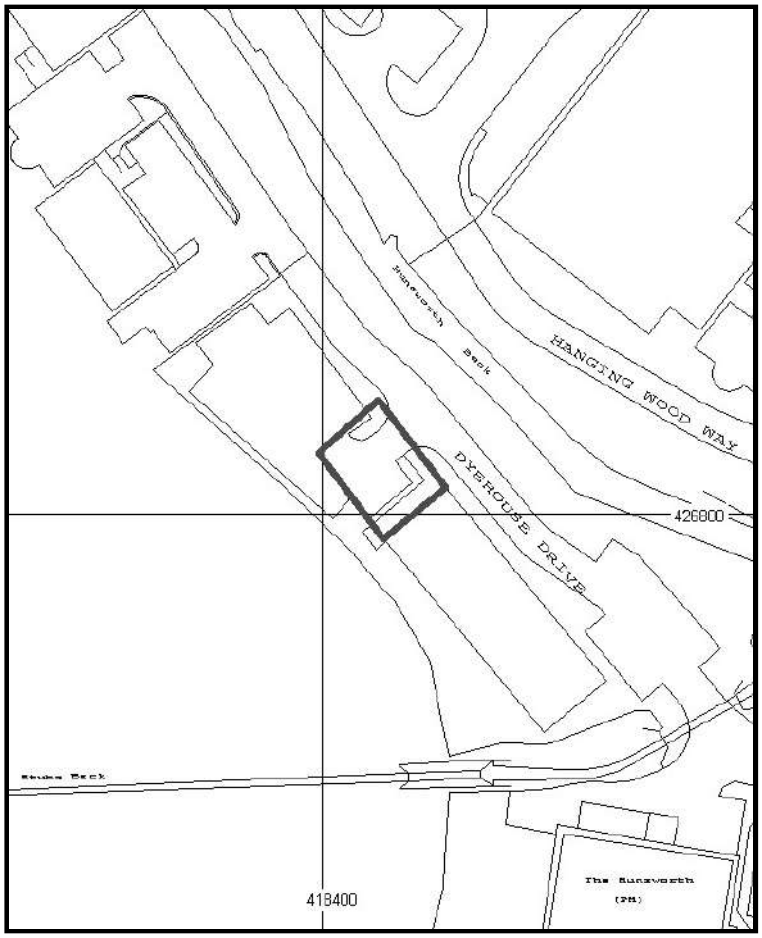
This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions 2006. The report is compliant with Home Information Pack requirements.

Location map

Approximate position of property



Enquiry boundary



Key

Approximate position of enquiry boundary shown

Mapping sourced from Ordnance Survey

DESK STUDY

Enzygo specialise in a wide range of technical services:

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Waste and Mineral Planning
Flooding, Drainage and Hydrology
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Please visit our website for more information.

enzygo.com