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Phase 1 Desk Study Site Investigation Report

LOCATION	Bell Cabin, Long Lane, Earlsheaton, Dewsbury, WF12 8LG
ISSUE DATE	October 2023
FOR	Mr P. Audsley
CLIENT REF.	
OUR REF.	G23326

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Executive Summary

The major conclusions of this desk-based Phase one study are summarised in the table below:

Site Suitability	Desk Study Finding	Preliminary Assessment
Normal Foundations	Bedrock expected to be present at shallow depth with possible thin drift deposits. Consideration should be made to vegetation influence if clay soils are encountered.	Borehole investigation to confirm strength of ground with regard to supporting building loads. Soil analysis might also be included to stablish risk with regard to shrink-swell clay to rule out vegetation influence or assess strength of any potentially weaker soils.
Soakaways	Sandstone bedrock may offer sufficient permeability.	Potentially suitable

Potential Risks	Desk Study Finding	Preliminary Risk Assessment
Radon Gas	Between 3% and 5% of properties affected	Low to Moderate
Chemical Contamination	Historical nearby and on-site land uses potentially giving rise to a range of inorganic and organic contaminants including asbestos, metals/metalloids, PAHs and petroleum hydrocarbons.	Low to Moderate
Hazardous Gas	Potential for hazardous gas to migrate from possible coal legacy features. Potential for hazardous gas to be generated in made/infilled ground deposits.	Moderate
Ground Instability/ subsidence	Potential for vegetation influence on shrink-swell clays which may be present, including risk of soil heave.	Low
Ground Instability/ subsidence	Potential for significant deposits of compressible made/infilled ground.	Low
Ground Instability/ subsidence	Coal mining legacy features	Low

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

1. Introduction

In accordance with your instruction, Geoinvestigate Ltd. has carried out a Phase 1 Desk Study Investigation of the land at Bell Cabin, Long Lane, Dewsbury, WF12 8LG. The location of the site is shown on the Groundsure Enviro+Geo Insight report presented in Appendix 2.

The site currently comprises an area of land some 0.14 ha in size with access from Long Lane to the east. The site has varying degrees of construction with a static caravan on the west side. Vegetation surrounds the edges of the site, to the north, west and south. The site appears to be a cut platform into the slope dipping westwards. The site itself overall slightly sloped south-westward with some flat plateaus.

It is understood that it is proposed to construct a new dwelling on the lower platform at the far south end of the site.

The purpose of the Phase 1 Desk Study investigation was to review the historical land use and geological information for the site in order to provide an assessment of the potential geotechnical/foundation problems together with a qualitative contamination and ground gas risk assessment.

2. Scope of Works

The investigation comprised a review of the following information;

- An extract from the 1:50,000 BGS geological mapping.
- Historical OS maps of various scales dating back to 1855 (presented in Appendix 1).
- Observations from a walkover study carried out by Jack Harper of Geoinvestigate
- A GroundSure Enviro+Geo Insight Report. This is included in Appendix 2.
- A Drilling investigation report is included in Appendix 3.

3. Findings of Phase 1 Investigation

3.1 Anticipated Geology

The extract of the 1: 50,000 BGS geological mapping indicates that the site will be underlain by bedrock of Thornhill Rock – Sandstone with no superficial geology recorded though some thin drift may be present.

There are no BGS borehole records located close to the site but other more distant boreholes (SE22SE935, SE22SE392) in areas of similar mapped geology generally found bedrock geology commencing at depths between 1.30m-2.10m. The drift here was primarily recorded as silty clay with sandstone fragments.

3.2 Historical OS Maps and Historical Land Use

Copies of historical OS maps were obtained for the site covering the period 1855 to 2023. Historical land uses and major features located within the site boundary and externally but potentially within influencing distance are summarised in Table 1 on the following page. The earliest OS map of 1855 shows the site to contain part of the Earls Henton Colliery.

Table 1: Summary of Historical OS Map Land Use & Potential Hazard Identification

Map Feature	Location	Appears	Absent	Notes
Earl Henton Colliery	Onsite	1855	1892	A pit and chimney are noted on site, though are levelled and removed by 1892. No further mention is made of the Earl Henton Colliery
Sands Mill (Woollen)	60m W	1855	2010	Contamination from arsenic if used to dye any wool. Though the mill is down slope from the site so contamination is less likely.
Residential Houses	10m E (Closest)	1892	Recent	New dwellings are erected to the east by 1892, further development occurs in all directions from 1933 to present
Unspecified tanks	90m W	1907	1954	Contamination from tank contents is it ever spilt.

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

A review of the historical OS maps has highlighted the land uses most likely to present (or have presented) a hazard or source of potentially harmful contamination to the study area. The primary feature of interest

is the possible mine workings onsite, which could have led to contamination or hazards regarding ground stability.

3.3 GroundSure Enviro + Geo Insight Report

The GroundSure Enviro+Geo Insight Report presented in Appendix 2 provides listings of potentially contaminative current and past land uses together with possible pathway and receptor information. It also covers other potential risks to the site including ground hazards associated with the area's natural geological setting and man-made hazards such as those arising from development activities. A summary of the relevant Report findings is presented in Table 2 below and on the following pages.

Table 2: GroundSure Enviro+Geo Insight Summary:

Details	Feature	Location relative to site
Past land use		
Historical industrial land uses	Unspecified Mill (13)	31m SW (Closest)
	Unspecified Disused Mill	53m W
	Sands Mill (2)	66m W (Closest)
	Cuttings (13)	167m N (Closest)
	Unspecified Pit (7)	179m E (Closest)
	Tunnel (3)	183m N (Closest)
	Colliery	187m E
	Unspecified Mills (14)	201m NW (Closest)
	Unspecified Ground Workings (9)	209m E (Closest)
	Unspecified Heap (4)	209m E (Closest)
	Railway Sidings (9)	217m NE (Closest)
	Unspecified Heaps	217m E
	Refuse Heap (6)	219m E (Closest)
	Railway Station (5)	227m NE (Closest)
	Old Coal Pit	235m E
	Unspecified Old Shafts (6)	248m E (Closest)
	Chimney	260m E
	Railway Buildings	263m E
	Unspecified Shaft (2)	273m E (Closest)
	Infectious Diseases Hospital (3)	290m SE (Closest)
	Hospital	295m SE
	Mental Hospital	295m SE
	Unspecified Quarry	296m E
	Unspecified Warehouses	313m NE
	Unspecified Tank (4)	320m S (Closest)
	Unspecified Commercial/Industrial (4)	321m N (Closest)
	Goods Shed (2)	322m NE (Closest)
	Railway Building (6)	328m NE (Closest)
	Sludge Bed	411m SE
	Sewage Farm (2)	435m S (Closest)
	Gas Works (2)	451m SW (Closest)
	Pumping Station (4)	455m SE (Closest)
	Mortuary	458m SE
	Unspecified Works (9)	466m SW (Closest)
	Sewage Works (6)	467m S (Closest)
	Glass Works (2)	469m SW (Closest)
	Unspecified Tanks (3)	474m SW (Closest)
	Gasometer	480m SW

Table 2 is continued on the following page

NB Arbitrary potential hazard assessment: potentially significant (yellow), or unlikely to be significant (uncoloured). Potential receptors for contamination are highlighted blue.

Table 2 (ctd.): GroundSure Enviro+Geo Insight Summary:

Details	Feature	Location relative to site
Historical Tanks	Tanks (3) Unspecified Tank (12) Gas Holder Gasholder	120m SW (Closest) 134m SW (Closest) 476m SW 476m SW
Historical Energy Features	Electrical Substation (4) Gas Holder (2)	196m SE (Closest) 476m SW (Closest)
Landfill and Other Waste Sites		
Historical landfill (LA/mapping records)	Refuse Tip	405m NW
Historical landfill (BGS)	Risk to minor aquifer	420m S
Historical landfill (EA/NRW records)	Environmental Inert, Commercial and Environmental	197m S 371m NW
Historical waste sites	Ground Workings and Refuse Heap (3) Waste Mills Waste Reclamation Crown Mills Waste Transfer Station	303m SE (Closest) 435m NW 435m NW 444m SW
Licensed waste sites	75000 Tonnes (2) 25000 Tonnes (2) Unknown	461m SE (Closest) 468m SW (Closest) 469m NW
Waste exemptions	Storing waste exemption (5) Using waste exemption (2) Treating waste exemption (3)	116m SW (Closest) 292m S (Closest) 361m S (Closest)
Current Land uses		
Recent industrial land uses	None	N/A
Control of Major Accident Hazards (COMAH)	British Gas	421m W
Licensed pollutant release (Part A(2)/B)	Manufacturing of Clay (2)	372m NW (Closest)
Licensed Discharges to controlled waters	SEWAGE DISCHARGES (13)	155m S (Closest)
Pollution Incidents (EA/NRW)	Metal Waste Other atmosphere pollutant or effect Crude sewage Unidentified Oil Commercial waste	123m SW 229m N 289m NE 453m N 475m SW
Hydrogeology - Superficial aquifer		
Superficial aquifer	Secondary A (2)	54m SW (Closest)
Bedrock aquifer	Secondary A (2)	Onsite (Closest)
Groundwater vulnerability	Medium	Onsite
Groundwater Abstractions	Active (3) Historical (4)	771m NW (Closest) 771m NW (Closest)
Surface Water Abstractions	Active (2) Historical (5)	927m NW (Closest) 927m NW (Closest)
Hydrology		
Water Network (OS MasterMap)	Water year round (2)	178m S (Closest)
WFD Surface water body catchments	Calder from River Colone to River Chald	On Site
WFD Surface water bodies	River	181m S
WFD Groundwater bodies	Aire & Calder Carb Limestone / Millstone Grit / Coal Measures	Onsite
Table 2 is continued on the following page		

NB Arbitrary potential hazard assessment: potentially significant (yellow), or unlikely to be significant (uncoloured). Potential receptors for contamination are highlighted blue.

Table 2 (ctd.): GroundSure Enviro+Geo Insight Summary:

Details	Feature	Location relative to site
River and coastal flooding		
Historical Flood Events	Main River (4) Unclassified (3) Drainage (2)	52m W (Closest) 117m W (Closest) 119m W (Closest)
Flood Defences	Update – 08/11/2022 (2)	156m SW (Closest)
Flood storage area	Flood storage area (2)	42m SW (Closest)
Flood Zone 2	Zone 2 - (Fluvial /Tidal Models)	38m W
Flood Zone 3	Zone 3 - (Fluvial Models)	41m W
Surface water flooding		
Surface water flooding	Highest risk on site Highest risk within 50m	Negligible 1 in 1000 year, Greater than 1.0m
Groundwater flooding		
Groundwater flooding	Highest risk on site Highest risk within 50m	Negligible Negligible
Environmental designations		
Local Nature Reserves (LNR)	Sparrow Wood	1036m SW
Green Belt	South and West Yorkshire (5)	Onsite (Closest)
SSSI Impact Risk Zone	Commercial uses	Onsite
Visual and cultural designations		
Listed Buildings	None	N/A
Agricultural and Habitat designations		
Agricultural Land Classification	Grade 3 Urban	Onsite 113m N
Countryside Stewardship designations	Middle tier	229m S
Priority Habitat Inventory	Deciduous woodland (10) No main habitat but additional habitats present (2)	36m W (Closest) 204m NE (Closest)
Geology 1:10,000 scale		
Artificial and made ground (10k)	Infilled Ground (3) Made Ground (Undivided) (9) Worked Ground	59m SW (Closest) 110m E (Closest) 170m N
Superficial geology (10k)	Alluvium – Gravel, sand, and clay (2)	52m SW (Closest)
Bedrock geology (10k)	Thornhill Rock – Sandstone (2) Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone (5) Emley Rock – Sandstone	Onsite (Closest) 6m S (Closest) 459m NW
Bedrock faults and other linear features (10k)	Rock (3) Fault	84m W (Closest) 348m SE
Geology 1:50,000 scale		
Artificial and made ground (50k)	Made Ground (Undivided) (5) Infilled Ground (2)	111m E (Closest) 157m S (Closest)
Superficial geology (50k)	Alluvium	54m SW
Bedrock geology (50k)	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone Thornhill Rock – Sandstone	Onsite Onsite
Bedrock permeability (50k)	Fracture (high to moderate) Fracture (moderate to low)	Onsite Onsite
Bedrock faults and other linear features (50k)	Rock (2) Fault	82m W (Closest) 348m SE

Table 2 is continued on the following page

NB Arbitrary potential hazard assessment: potentially significant (yellow), or unlikely to be significant (uncoloured). Potential receptors for contamination are highlighted blue.

Table 2 (ctd.): GroundSure Enviro+Geo Insight Summary:

Details	Feature	Location relative to site
Natural ground subsidence		
Shrink swell clays	Negligible Very low	Onsite Onsite
Running sands	Negligible	Onsite
Compressible deposits	Negligible	Onsite
Collapsible deposits	Very low	Onsite
Landslides	Very Low Moderate	Onsite Onsite
Ground dissolution of soluble rocks	Negligible	Onsite
Mining, ground workings and natural cavities		
Surface ground workings	Reservoir (2) Cuttings (8) Unspecified Pit (3) Colliery Unspecified Ground Workings (4) Unspecified Heap Unspecified Heaps Refuse Heap Old Coal Pit	149m SW (Closest) 167m N (Closest) 179m E (Closest) 187m E 209m E (Closest) 209m E 217m E 219m E 235m E
Coal mining	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.	Onsite
Radon Risk		
Radon Risk	Between 3%-5%. Basic protection required	Onsite
Soil chemistry		
Mostly near normal levels recorded though slightly elevated arsenic and Lead might be expected.		
Railway infrastructure and projects		
Historical railway and tunnel features	Railway (2) Tunnel (25) Railway Sidings (7)	180n N (Closest) 183n N (Closest) 217m NE (Closest)
Historical Railways	Abandoned Dismantled	195m N 235m NE

NB Arbitrary potential hazard assessment: potentially significant (yellow), or unlikely to be significant (uncoloured). Potential receptors for contamination are highlighted blue.

The GeoInsight report has highlighted no additional potential risks to the site or the intended development arising due to historical or current land uses and the site's geological setting beyond those already discussed save for the Moderate risk to landslides onsite., though this risk is noted at the very extreme west of the site, only just intersecting the boundary of the site.

3.4 Drilling Investigation Report Summary

A Drilling investigation report was undertaken by Geoinvestigate (report ref - G21038) and was published on 13th of August 2021.

The drilling investigation report (See Appendix 3) states that:

- There is a shaft onsite that is uncapped.
- The shaft itself demonstrates signs of instability and downward movement.
- A collapse of the shaft could destabilize the set of local retaining walls.
- The proposed position of the new house within the site is safe with respect to mine shaft related ground instability issues and planning permission should not be withheld in respect of this aspect of the development.

3.5 Walkover Survey Observations

A site reconnaissance visit was undertaken on the 6th of September 2023 by Jack Harper of Geoinvestigate.

The site currently comprises an area of land some 0.14 ha in size with access from Long Lane to the east. The site has varying degrees of construction and a static caravan on the west side. Vegetation surrounds the edges of the site, to the north, west and south. The site appears to be a cut platform into the slope dipping westwards. The site itself overall slightly sloped south-westward with some flat plateaus.

Access to the site is possible via an entrance in the northeast corner of the site with adequate space for vehicles/ plant.

The perimeter of the site, to the north, west and south is surrounded by thick vegetation/ trees small bushes and shrubs across the site along with grassed areas.

The inspection of the surface of the site found evidence of physical hazards or odours, staining, or residues that might be indicative of the presence of chemical (including hydrocarbon) contamination. On the basis of the walkover inspection only, the risk of a serious contamination hazard occurring at this site would be assessed to be low given the current condition of the site and use. The hazardous gas risk at the site, based solely on the findings of the walkover survey, would be assessed to be moderate given the potential made ground underlying the site due to levelling. The evidence of groundworks indicates that significant made ground might be present.

The presence of trees might indicate a potential for vegetation influence on shrink-swell clays (if clay soils are present) and potentially soil heave following vegetation removal that has taken / may take place.

It is noted however that despite the evidence of possible contamination encountered during the visual inspection described above, any planning application is likely to require confirmation that no contamination is likely to have occurred. Photographs taken during the walkover survey are presented below and on the following page:

Photograph 1: Site access road leading south.



Photograph 2: Flat plateau southwest of the site Looking northeast.



Photograph 3: Vegetation center north, side of site with brick outhouse.



Photograph 4: Southwest plateau with, groundworks.



Photograph 5: Retaining wall northeast, of the site.



Photograph 6: Ash pile with burnt materials.



4. Qualitative Risk Assessment

4.1 Method

In order to assess the potential risks to the site, information obtained on the potential sources of hazard identified in Section 3 have been reviewed and applied to a model of the site. This allows an assessment of the potential sources of contamination to be made by examining the potential pollutant linkages between these and the receptors at the site.

The risk assessment presented comprises a source-pathway-receptor model developed in the context of the intended end use of the site (Residential use).

It is noted that an alternative land use would present different pollutant linkages with more or less vulnerable receptors and differing pathways for exposure. Were the intended land use to be changed at the site, a revised risk assessment would be required.

Identified potential sources of hazard or contamination, vulnerable receptors, and possible pathways by which they may be exposed are presented in the Conceptual Ground Hazard Model (CGHM) presented in Figure 1, see Section 4.2.

In addition to risks to human health and controlled waters and aquifers posed by contamination and ground gas, the CGHM examines the potential risks to the construction of the development including its buildings from geological or geotechnical hazards.

It allows an overall assessment to be made of the potential hazards and risks to the site and the proposed development with respect to “fitness for purpose”. Bedrock geology which is anticipated to underlie the site is assumed to exhibit potentially variable permeability and only limited superficial geology is expected.

4.2 Risk Assessment

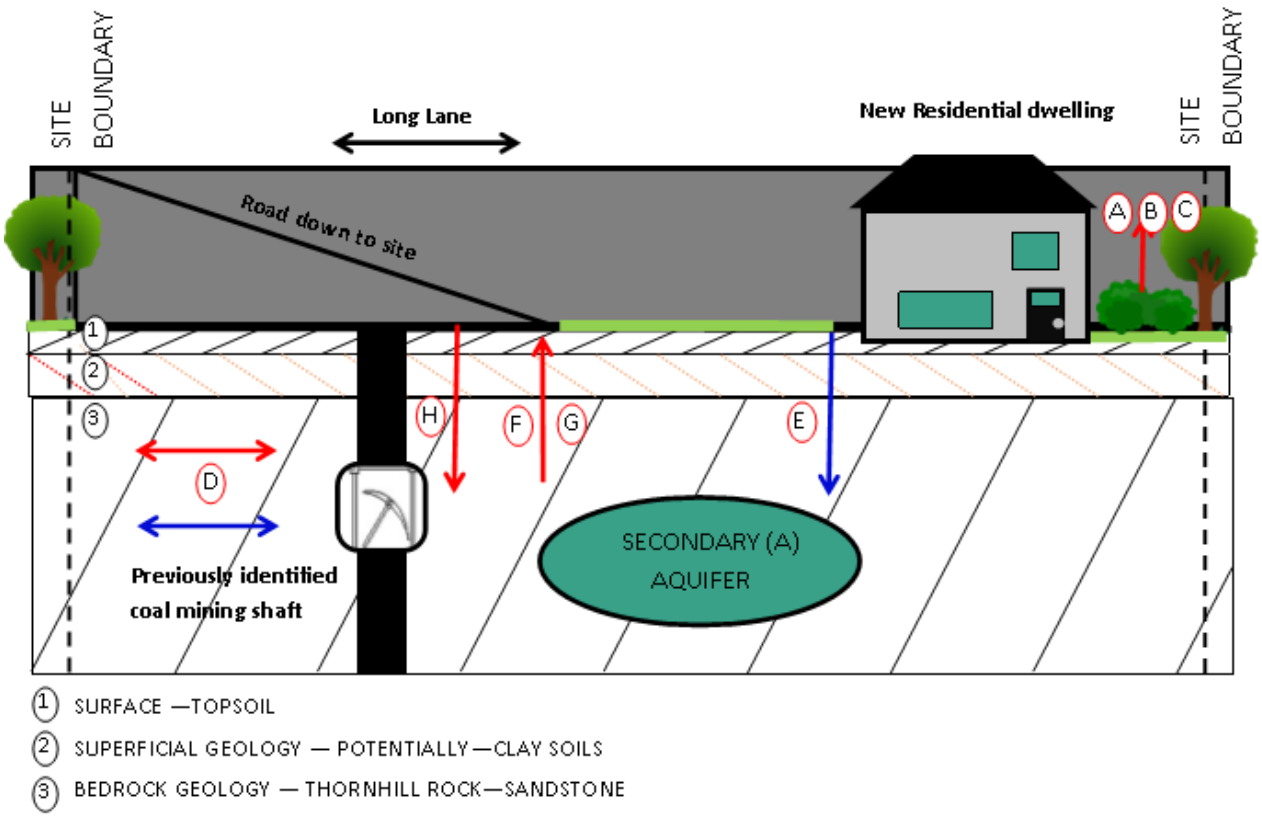
The desk study has highlighted the presence of possible sources of contamination which could potentially affect (or have affected) the site, primarily comprising the historical onsite colliery and nearby construction works.

Contamination from external sources would require a favourable pathway for migration into the site and the majority of external sources of contamination are likely to be too distant or minor to pose any significant risk.

BGS mapping and borehole records both suggest that the superficial deposits will primarily comprise clay soils which would have intrinsically low permeability. As such, it is quite unlikely that a plausible pathway for contamination migration into or out of the site could exist and thus the risk of contamination migration is probably low.

Potential receptors at the site would include the end users of the site (residents), workers employed in the construction of the new development, the buildings themselves and their services, plants and vegetation, neighbouring sites (and their users/occupants), nearby surface water and ground water at depth. A representation of the potential hazards and pollutant linkages is shown in Figure 1 overleaf.

Figure 1 – Conceptual Ground Hazard Model of site including a Source, Pathway and Receptor Model



IDENTIFIED HAZARDS Including Potential CONTAMINATION SOURCES

-Construction (materials) from previous land use.

-Contamination from traffic on nearby Long Lane.

-Potential hazardous gases sourced from mine workings and/or made ground on site.

IDENTIFIED RECEPTORS and ASSOCIATED PATHWAY

A— End Users through Direct Contact / Inhalation / Ingestion. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

B— Plants and Trees through uptake, possible given the intended use of the site.

C— End Users through cultivation and consumption of vegetables / fruit. Possible given the intended end use of the site.

D— Neighbouring Sites through lateral migration (in soil and water, including surface water run off).

E— Ground water through leaching of sub-soil.

F— Buildings and services through direct contact. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

G— End users and buildings through ground gas migration. Buildings and hard standing will encompass some of the site, removing any pathway to end users through direct contact in these areas.

H— Ground surface instability due to the presence of unrecorded, underground, coal and non-coal mine workings beneath the site.

The CGHM and the summary table below (Table 3) present the most likely potential sources of contamination, gas or geotechnical risk that are considered to be possible either within or near to the study site.

The identified potential contamination sources could feasibly have given rise to harmful and potentially mobile contamination of made ground and/or natural deposits which might underlie the site. No superficial geology is recorded for the site. Nearby BGS boreholes show that any superficial deposits are anticipated to primarily comprise low permeability clay soils and so significant contamination migration into or out of the site is currently thought unlikely to be possible / have occurred. However, it is expected that significant made ground of unknown composition may be encountered at site given the groundworks and levelling.

Note that, due to the potentially contaminative historical land uses / features that have been identified within the study site boundary (Historical Colliery), the risk *to* external sites or ground/surface waters through contamination migration *from* the study site is currently expected to be more significant/likely than any risks posed *to* the study site from external sources.

Therefore, assuming the worst-case scenario, the potential for harmful contamination to exist at the site from historical sources is assessed to be Low to Moderate (as opposed to very low) owing to the potentially contaminative activities located near to and/or within the study area (primarily concerning the historical colliery and possible construction waste onsite).

The hazardous gas risk is assessed to be Moderate due to the potential for unrecorded shallow coal mining beneath the site and potential deep (>1.00m) made ground, though the true depth is currently unknown.

The hazardous gas risk is assessed to be Moderate due to the potential for significant Coal Legacy features /infilled ground to be present.

The actual current level of risk to the development and its users can only be ascertained for certain through confirmation of the ground conditions by a Phase 2 intrusive investigation, including a contamination survey and potentially a gas monitoring survey.

Table 3: Summary of Conceptual Ground Hazard Model

Potential Source	Nature of Hazard	Associated Contaminants	Pathway	Receptor	Preliminary Risk Rating
Historical land use and development. Possible made ground / infilled ground. Local wool mill.	Inorganic and organic chemical contaminants within soil.	-Trace metals -PAHs -Petroleum hydrocarbons -Asbestos -Pesticides -Pathogens (microbiology) -Arsenic	-Direct human contact -Ingestion of soil -Ingestion of dust -Inhalation of vapour -Leaching into ground or surface waters -Overground migration to external sites (soil and water)	-Site Operatives -End Users -Vegetation -Controlled waters -Structures and services -Neighbouring sites/users	Low to Moderate
Possible made ground /coal legacy features	Hazardous ground gas migration.	Landfill-type gases (CO_2, CH_4 etc.)	-Inhalation -Explosion risk	-Site Operatives -End Users -Structures	Moderate
Local Geology	Radon gas migration	Radon gas	-Inhalation	-End Users	Low to Moderate
Coal legacy features	Ground instability via risk of settlement / collapse	N/A	Direct	-End Users -Structures	Low
Shrink-swell clays	Ground instability vegetation influence / heave	N/A	Direct	-End Users -Structures	Low
Infilled ground	Ground instability via risk of settlement	N/A	Direct	-End Users -Structures	Low
Landslides	Ground Instability via direct movement	N/A	Direct	-End Users -Structures	Low - moderate

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

5. Conclusions

A summary of the anticipated ground conditions, risks and implications based on the findings of Sections 3 and 4 of this report is presented in Table 4 below:

Table 4: Summary of Phase 1 Desk Study Findings

Concern	Desk Study Finding	Initial Risk Assessment	Potentially Useful Action in a Phase 2 Site Investigation
Normal Foundations	Bedrock expected to be present at shallow depth with possible thin drift deposits. Consideration should be made to vegetation influence if clay soils are encountered.	Likely to be suitable	Borehole investigation to confirm strength of ground with regard to supporting building loads. Soil analysis might also be included to stablish risk with regard to shrink-swell clay to rule out vegetation influence, or assess strength of any potentially weaker soils.
Soakaways	Sandstone bedrock may offer sufficient permeability.	Potentially suitable	Water infiltration testing to quantify permeability of superficial deposits if granular strata are encountered.
Radon Gas	Between 3% and 5% of properties affected	Low to Moderate	Basic radon protection required.
Chemical Contamination	Historical nearby and on-site land uses potentially giving rise to a range of inorganic and organic contaminants including asbestos, metals/metalloids, PAHs and petroleum hydrocarbons.	Low to Moderate	Chemical analysis for potential contaminants in soil samples (and potentially leachate). Samples should be recovered from made ground (if found) and topsoil, and also potentially underlying natural sub soils to check for potential leaching and/or migration into the site from possible external sources.
Hazardous Gas	Potential for hazardous gas to migrate from possible coal legacy features. Potential for hazardous gas to be generated in made/infilled ground deposits.	Moderate	Ground gas monitoring wells in shallow boreholes to monitor CO_2, CH_4 content etc.
Ground Instability/ subsidence	Potential for vegetation influence on shrink-swell clays which may be present, including risk of soil heave.	Low	Borehole investigation to confirm strength of both natural and made ground and shrinkage potential of any cohesive soils.
	Potential for significant deposits of compressible made/infilled ground.	Low	
	Landslides	Low	Higher landslide risk to west extreme west of site, most of the site is noted as very low risk.
	Coal mining legacy features	Low	Report referenced that there is a risk of ground stability, locally to the shaft. Concluded that any development would need to be away from development area.

NB. Arbitrary potential hazard assessment: High (Red), Moderate (Amber), Low (Yellow), Very Low (Green), Negligible (uncoloured)

The initial risk assessment provided above is tentative as it is based only on the Phase 1 desk study. The risks will need to be reassessed and may perhaps change significantly becoming higher or lower depending on the results of the Phase 2 intrusive investigation and contamination/gas survey, should these be undertaken.

6. Recommendations

In light of the Phase 1 desk study findings it is recommended that a Phase 2 investigation be undertaken at the site to better explore the possible risks that have been identified. This should include contamination analyses and ground gas monitoring together with a geotechnical appraisal of the site to establish correct foundation requirements. As there are relative uncertainties, this work is recommended in order to establish the actual site conditions and to properly assess both geotechnical and environmental risks.

The Phase 2 investigation should be designed to focus on the potential contaminants highlighted in the CGHM (Figure 1 and Table 4). As there is a potential hazardous gas risk, a gas survey is recommended.

Table 5: Proposed Phase 2 Site Investigation Specification

Action	Quantities	Justification/Details
Window Sampling Boreholes	Up to 6 boreholes. (up to 4-5m in depth – if achievable)	Establish actual ground conditions and confirm strength of ground. Retrieve samples of possible made ground and natural soils for geotechnical testing and contamination analysis. Potentially recover ground water samples if encountered. Installation of ground gas monitoring wells (if appropriate).
Hand excavated trial pits	Up to 4 (up to 1m in depth – if achievable)	Further inspect condition and composition of soils and recover additional samples for contamination analyses, including in locations which may be difficult for plant to access.
Chemical Contamination Analysis of Soils and Leachate (and possibly ground water if pertinent)	Up to 7 No. samples from topsoil and/or made ground at shallow depth (<1m) and potentially also deeper natural strata or made ground (if encountered).	Quantify risk posed to receptors identified in CGHM (see Figure 1) for revised risk assessment. Determinands should include a range of metals/metalloids, speciated PAH content, petroleum hydrocarbon content, BTEX, asbestos presence, and soil organic matter content (to aid in revised risk assessment).
Gas monitoring	Up to 6 No. visits over 3 months. Preferably including occasions of <1000mb and after sharp drop (may only be required in made ground encountered at site).	Quantify risk posed by potential hazardous gas from made/in-filled ground. Possible analysis of Total Organic Carbon (TOC) to support gas measure recommendations (or in the absence of gas monitoring data) using guidance published in CL:AIRE research bulletin RB17.
Provision of Factual and Interpretive Report	N/A	Presentation of findings and implications including: • Site plan • Borehole and trial pit logs • Contamination analysis results • Ground gas measurements (if appropriate) • Revised CGHM and chemical contamination risk assessment including appropriate soil assessment criteria. • Advice regarding any necessary remediation/validation • Advice regarding foundation design etc.

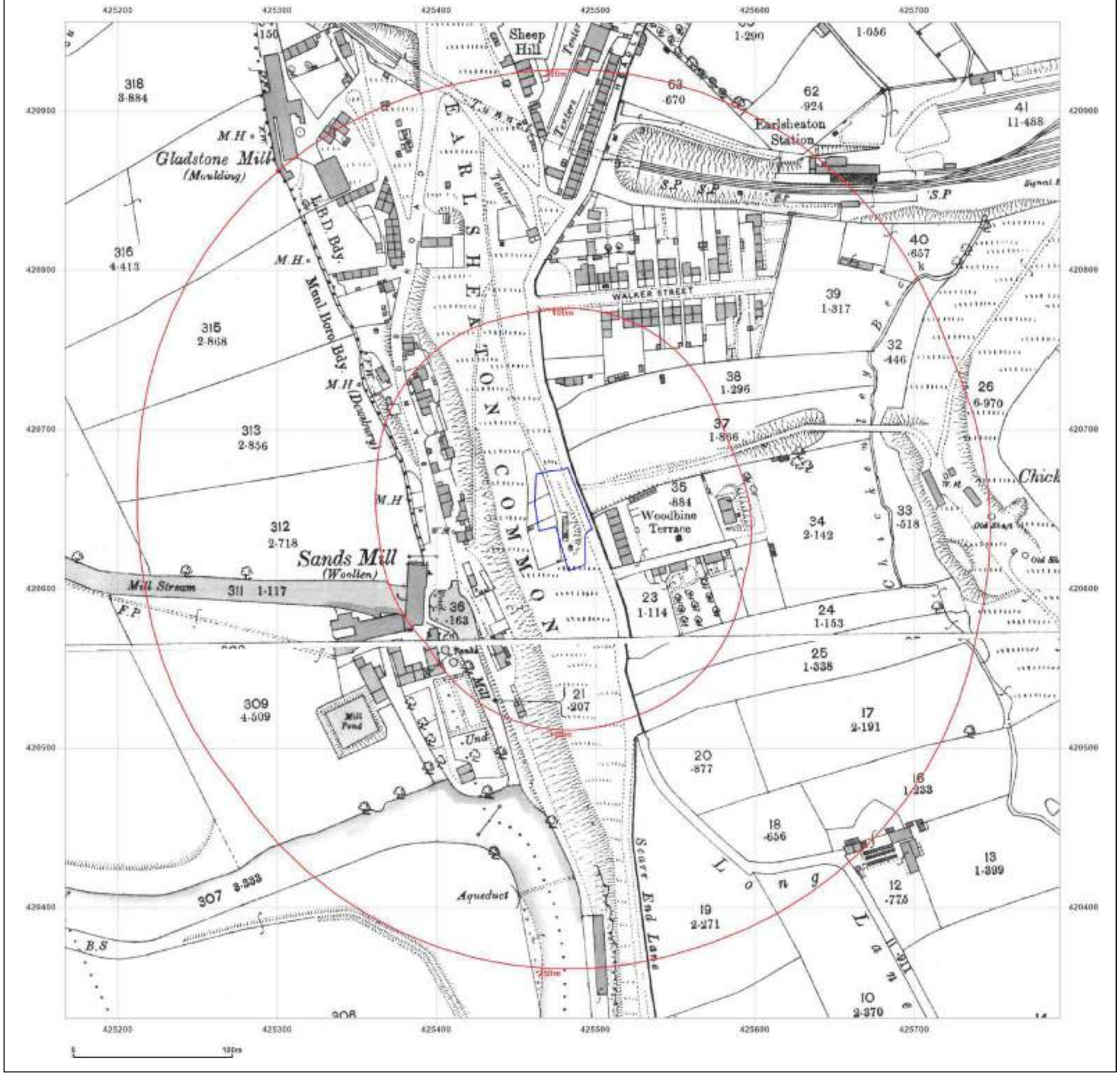
It should be noted that the scope, extent and cost of the Phase 2 work may increase if extensive ground contamination, or extensive amounts of made ground or drift deposits were found to exist at the site and/or the Local Authority, Coal Authority or the Environment Agency require additional information.

END OF REPORT

Units 3a and 4 Terry Dicken Industrial Estate
Ellerbeck Way
Stokesley
North Yorkshire
TS9 7AE

Tel. 01642 713779
Fax 01642713923
Email enquiries@geoinvestigate.co.uk

APPENDIX 1
HISTORICAL MAP RECORD



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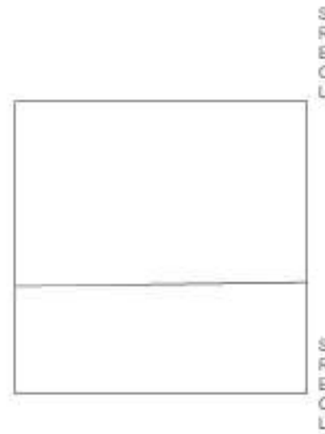
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BELL CABIN, LONG LANE,
EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series
Map date: **1893**
Scale: 1:2,500
Printed at: 1:2,500

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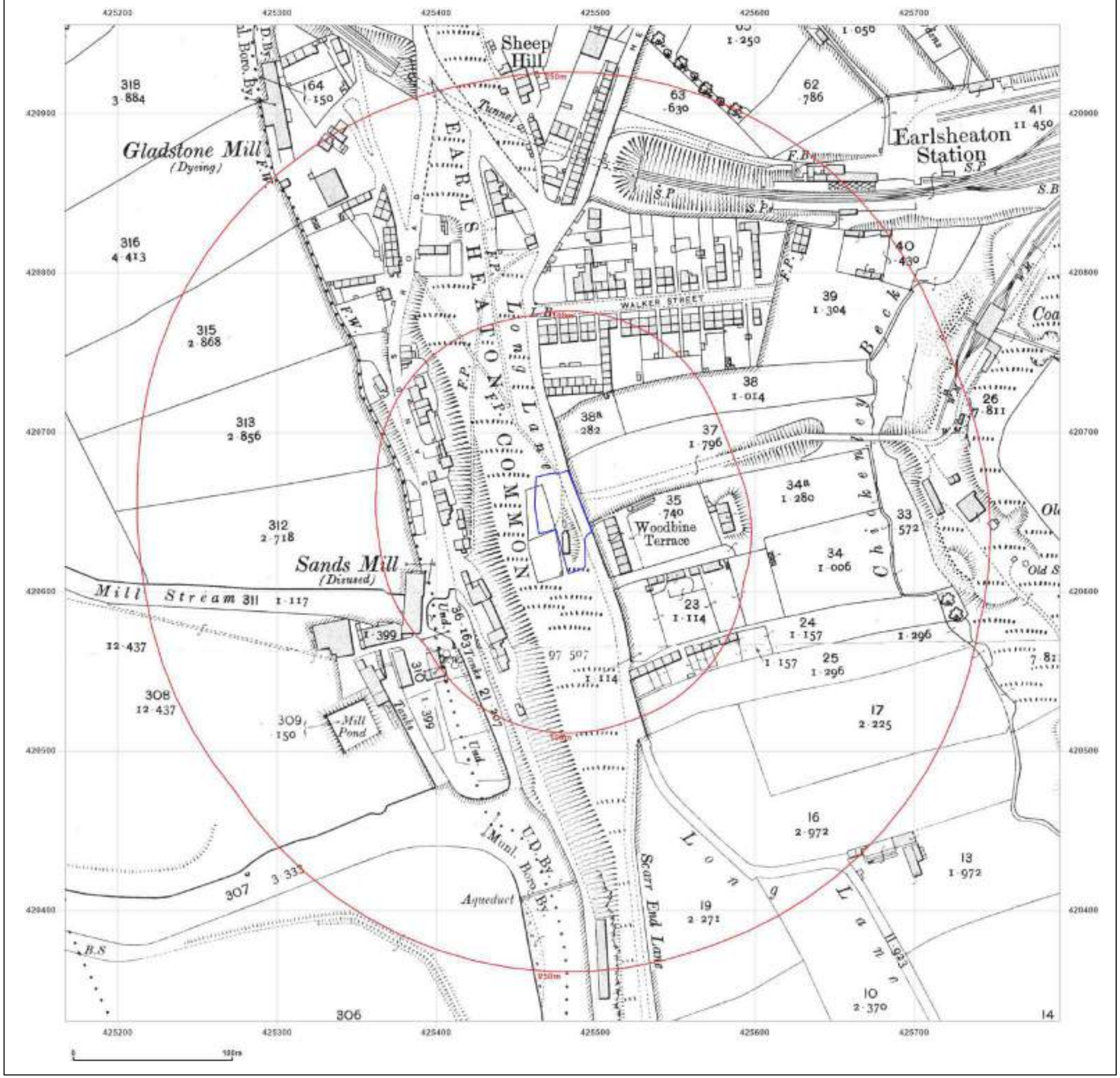
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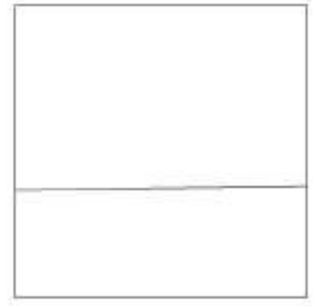
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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series
Map date: **1907**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1907
Revised 1907
Edition N/A
Copyright N/A
Levelled N/A

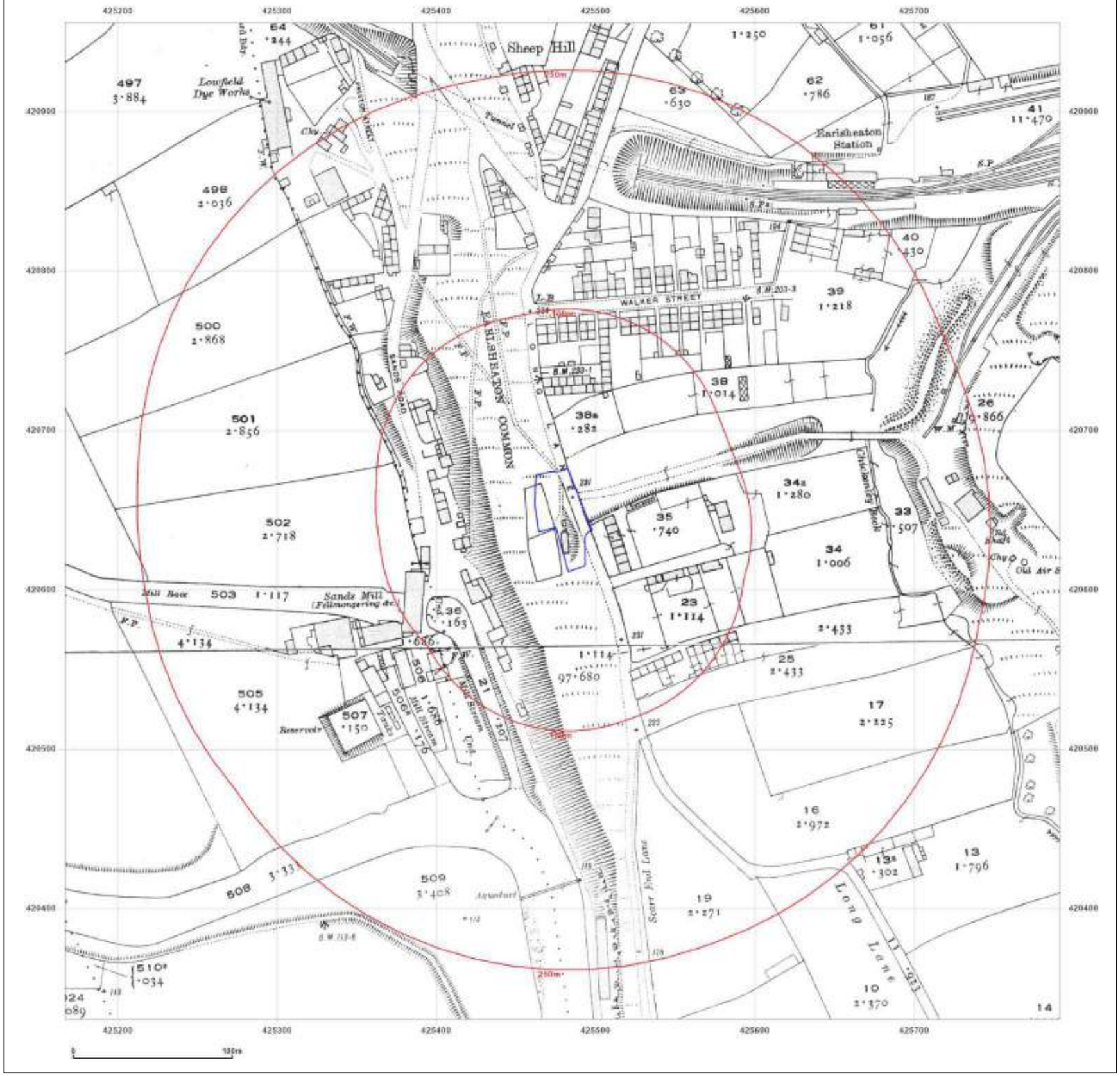
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
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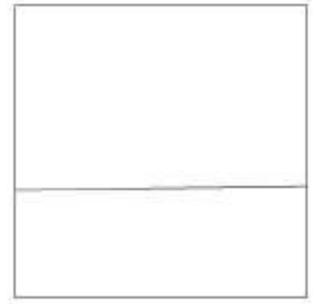
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Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1922
Revised 1922
Edition N/A
Copyright N/A
Levelled N/A

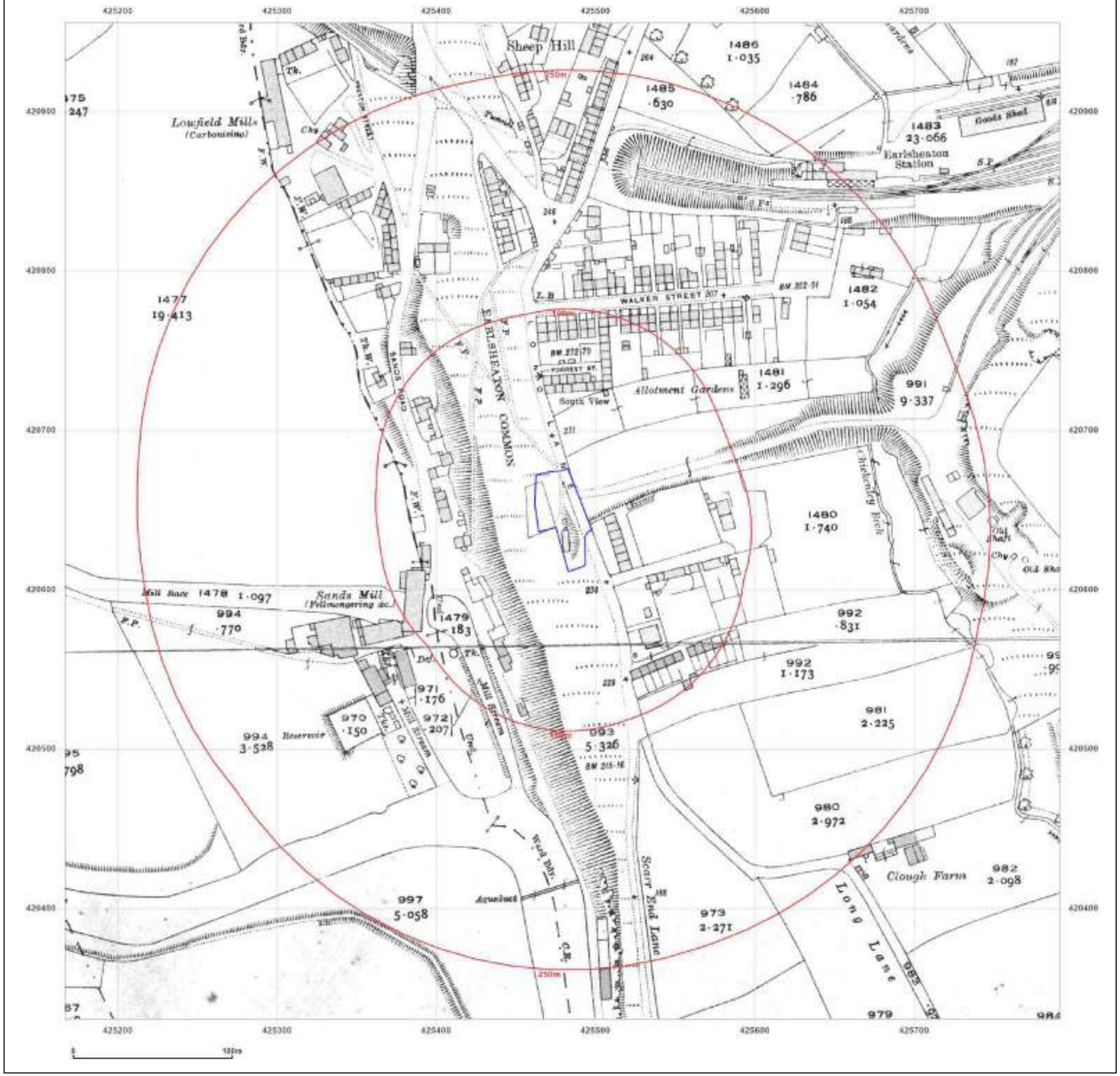
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series
Map date: **1933**
Scale: 1:2,500
Printed at: 1:2,500

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Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1933
Revised 1933
Edition N/A
Copyright N/A
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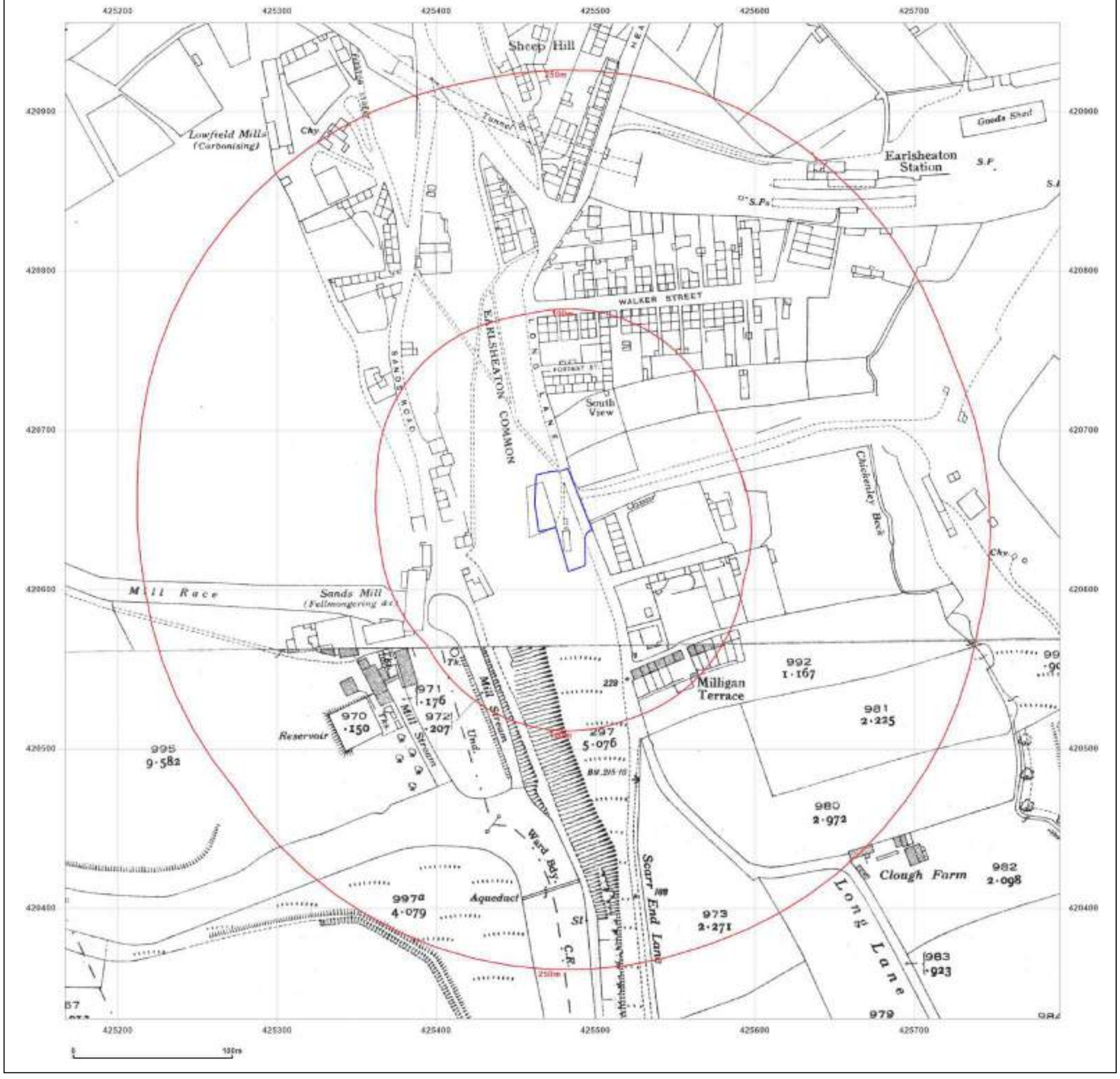
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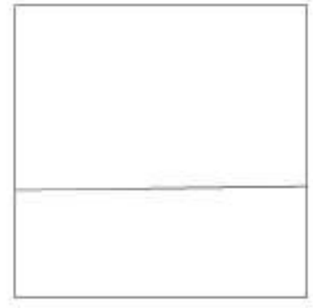
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Surveyed 1938
Revised 1938
Edition N/A
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Revised 1939
Edition N/A
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1953-1954**
Scale: 1:1,250
Printed at: 1:2,000

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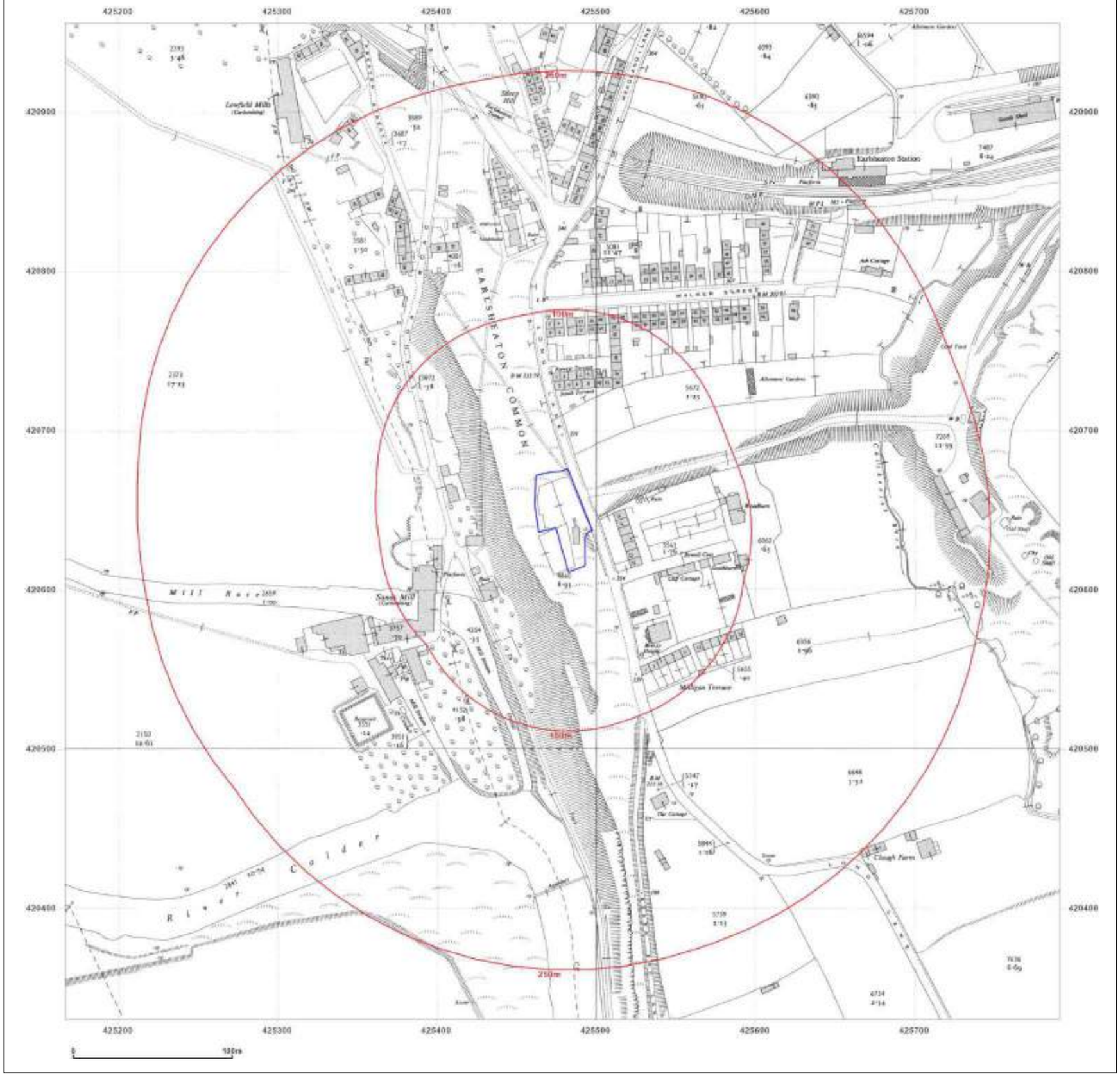
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid

Map date: **1954**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1954
Revised 1954
Edition 1955
Copyright N/A
Levelled 1931

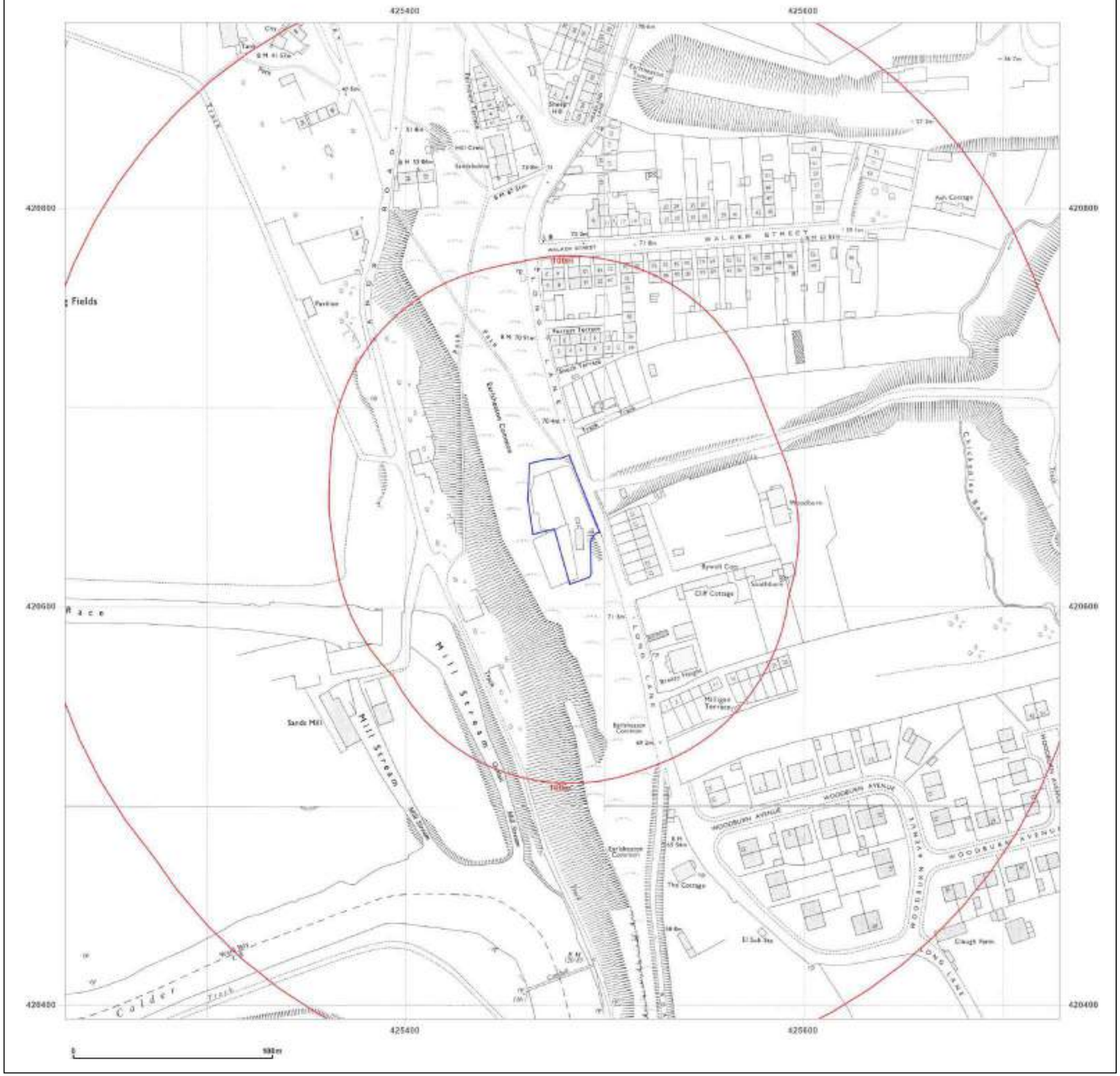
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Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1968-1971**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed 1953 Revised 1971 Edition N/A Copyright 1971 Levelled 1963	Surveyed 1954 Revised 1971 Edition N/A Copyright 1971 Levelled 1963
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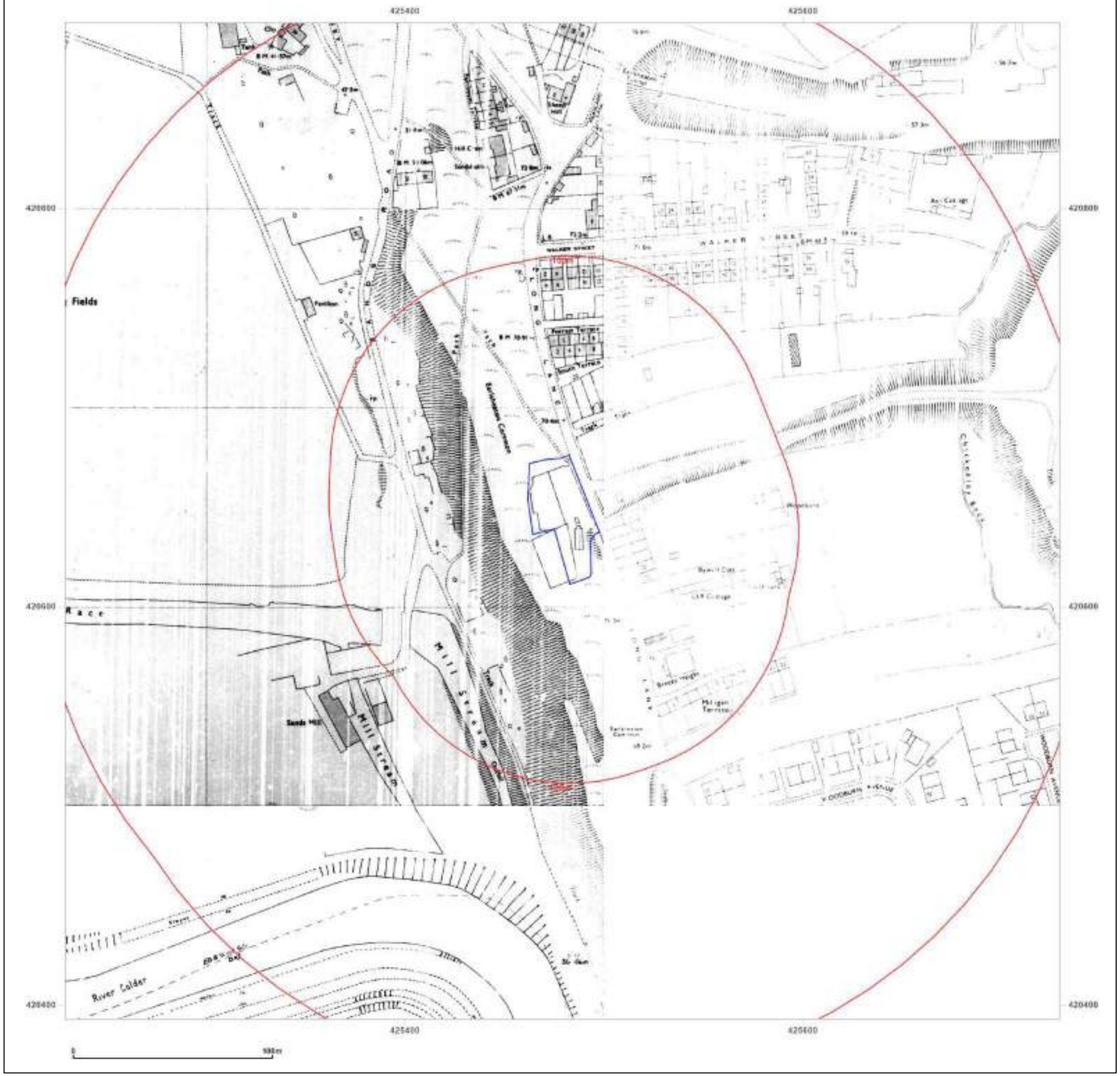
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Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1973-1978**
Scale: 1:1,250
Printed at: 1:2,000

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Edition N/A
Copyright N/A
Levelled N/A

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Grid Ref: 425479, 420643

Map Name: National Grid
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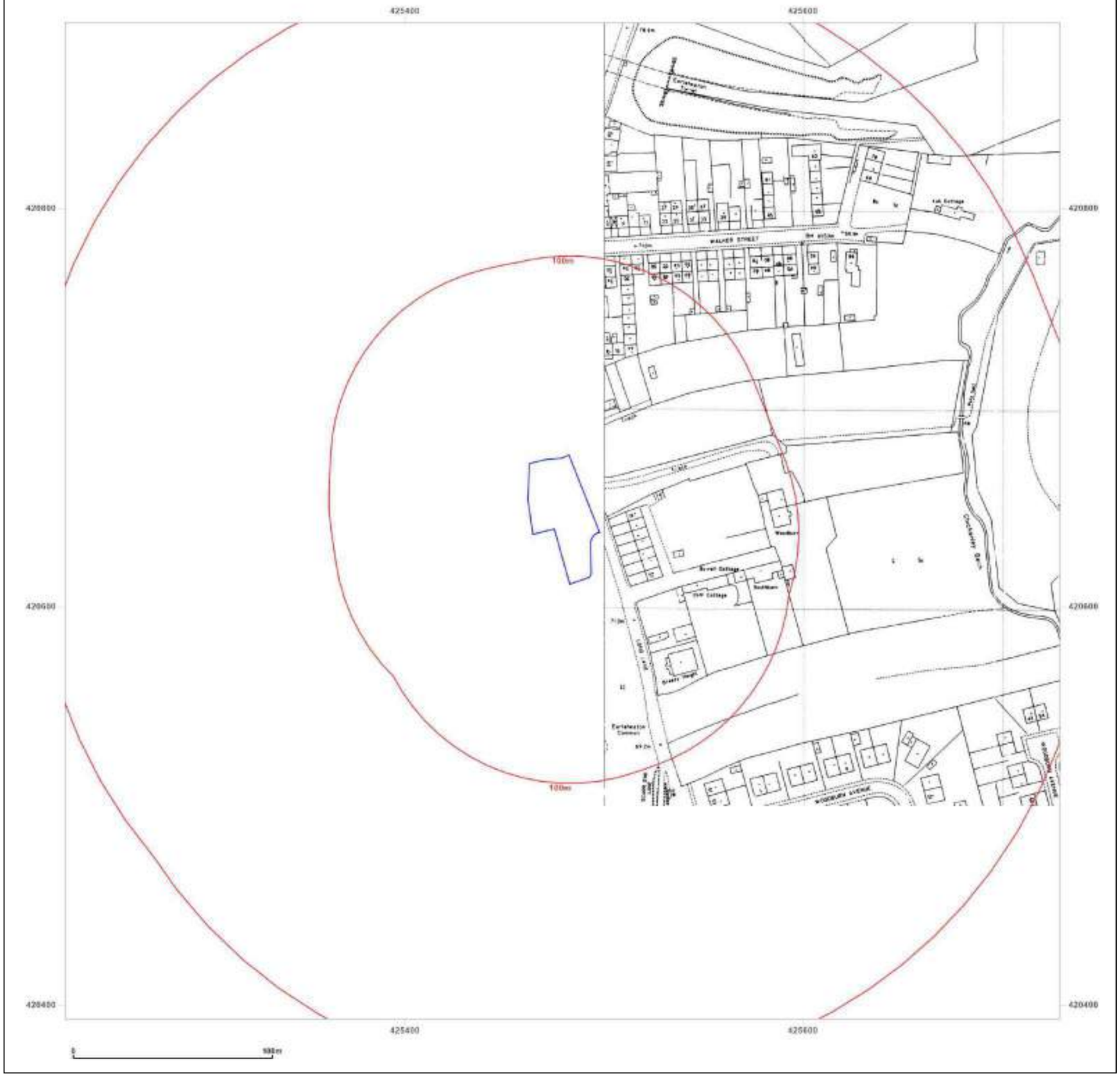
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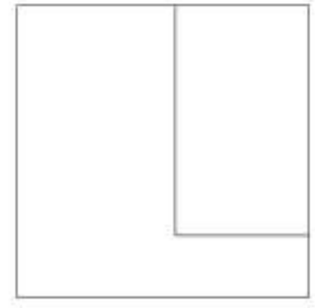
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Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1992**
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Surveyed 1992
Revised N/A
Edition N/A
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Levelled N/A

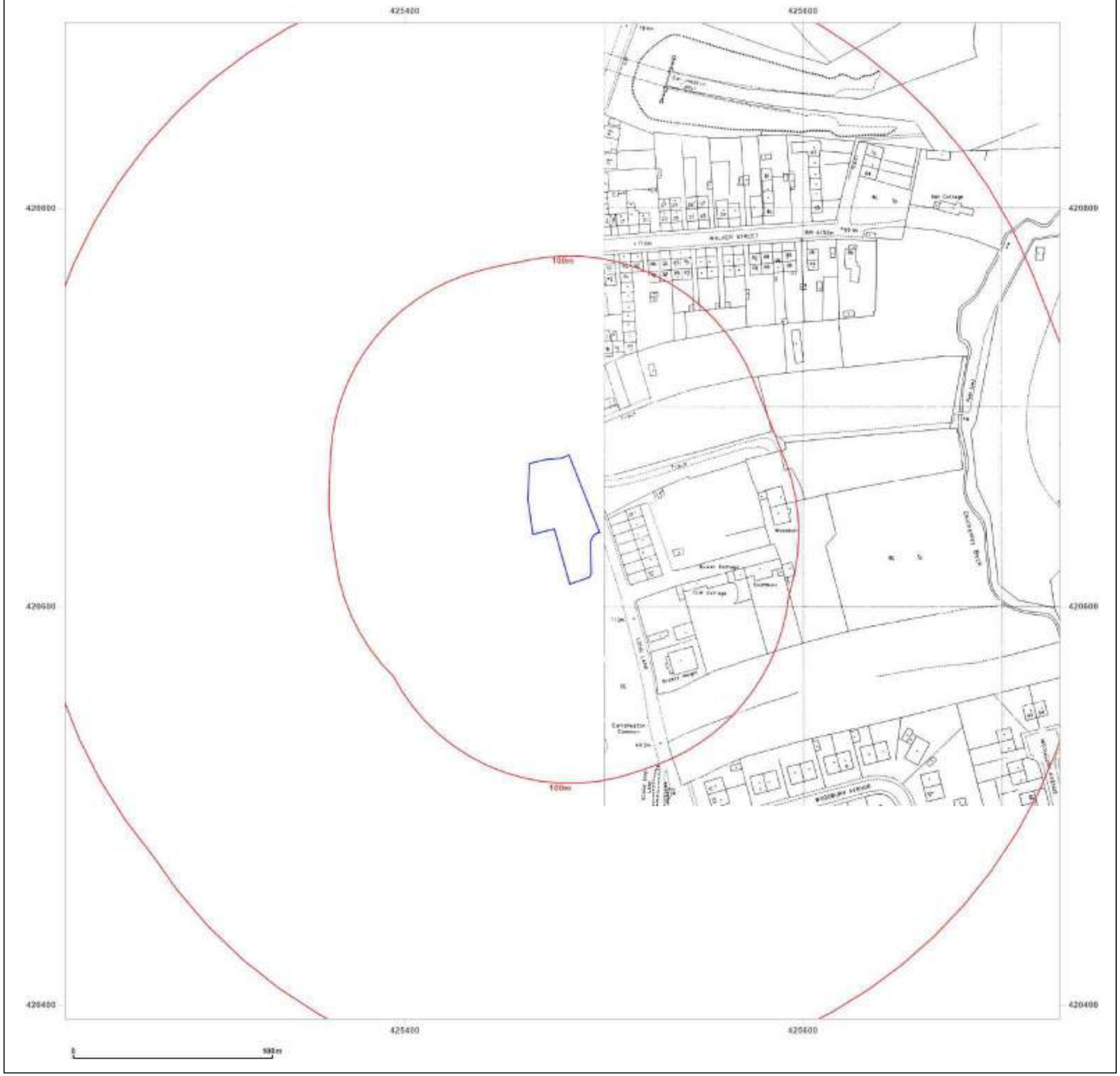
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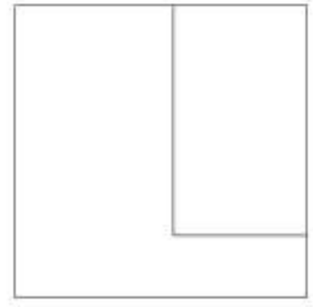
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Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1994**
Scale: 1:1,250
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Revised N/A
Edition N/A
Copyright 1994
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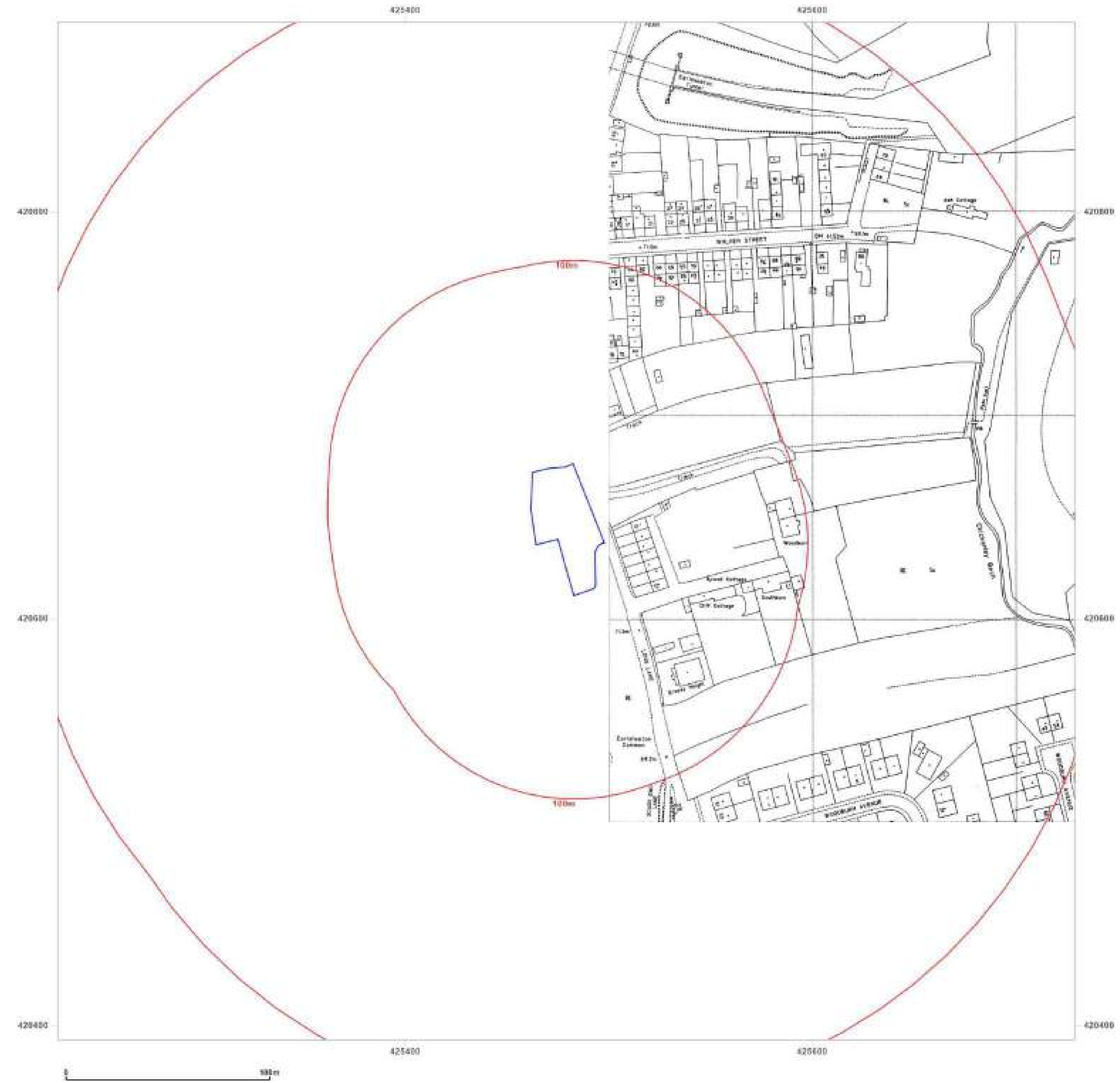
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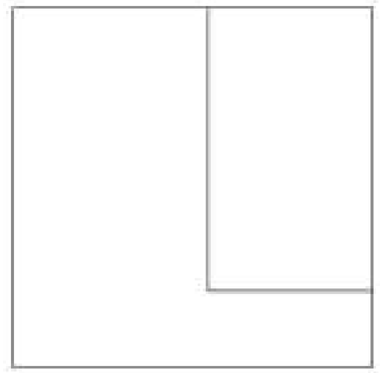
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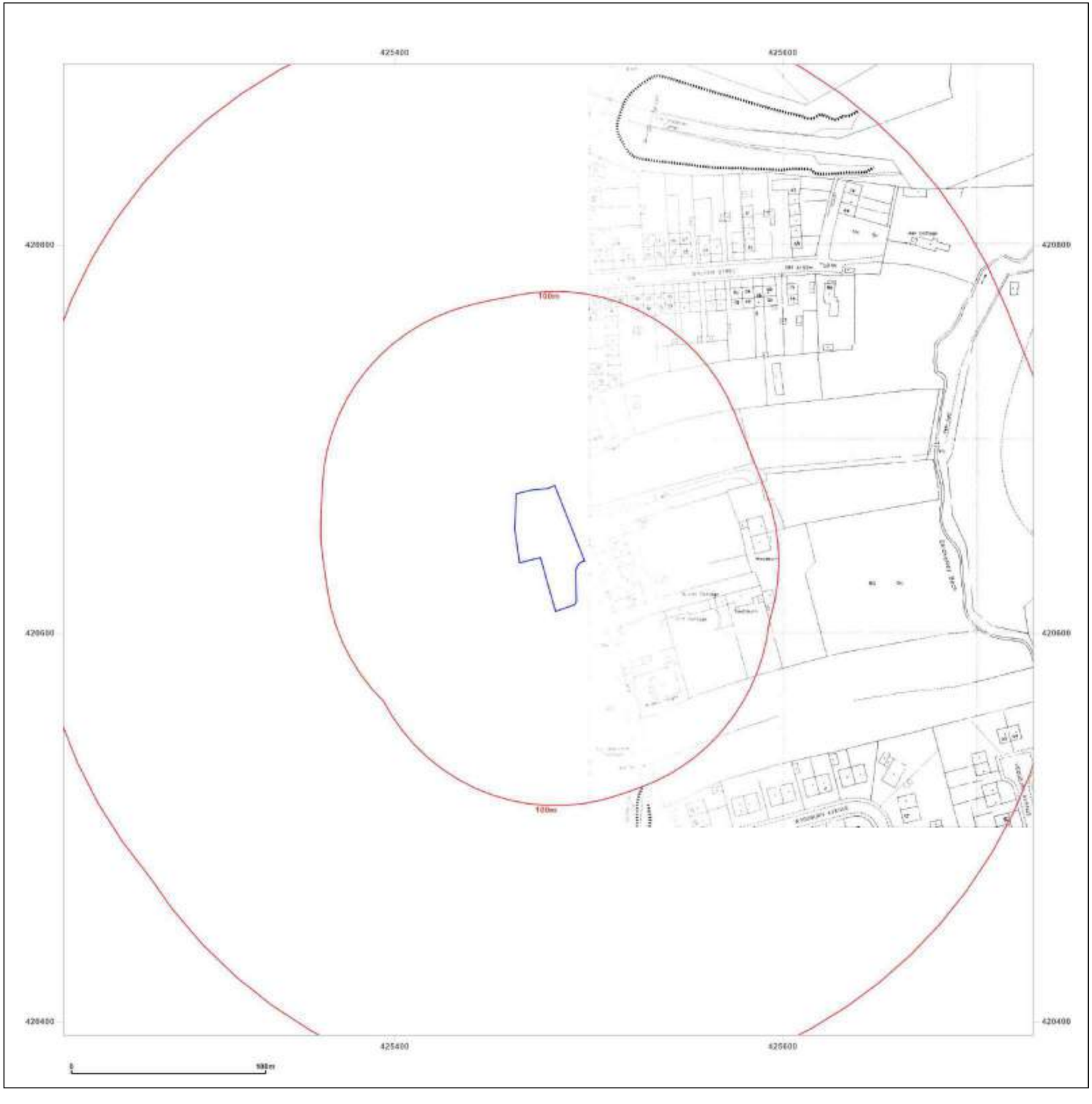
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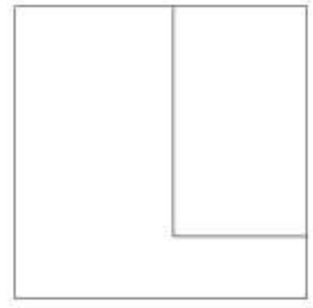
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Map Name: National Grid
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Printed at: 1:2,000

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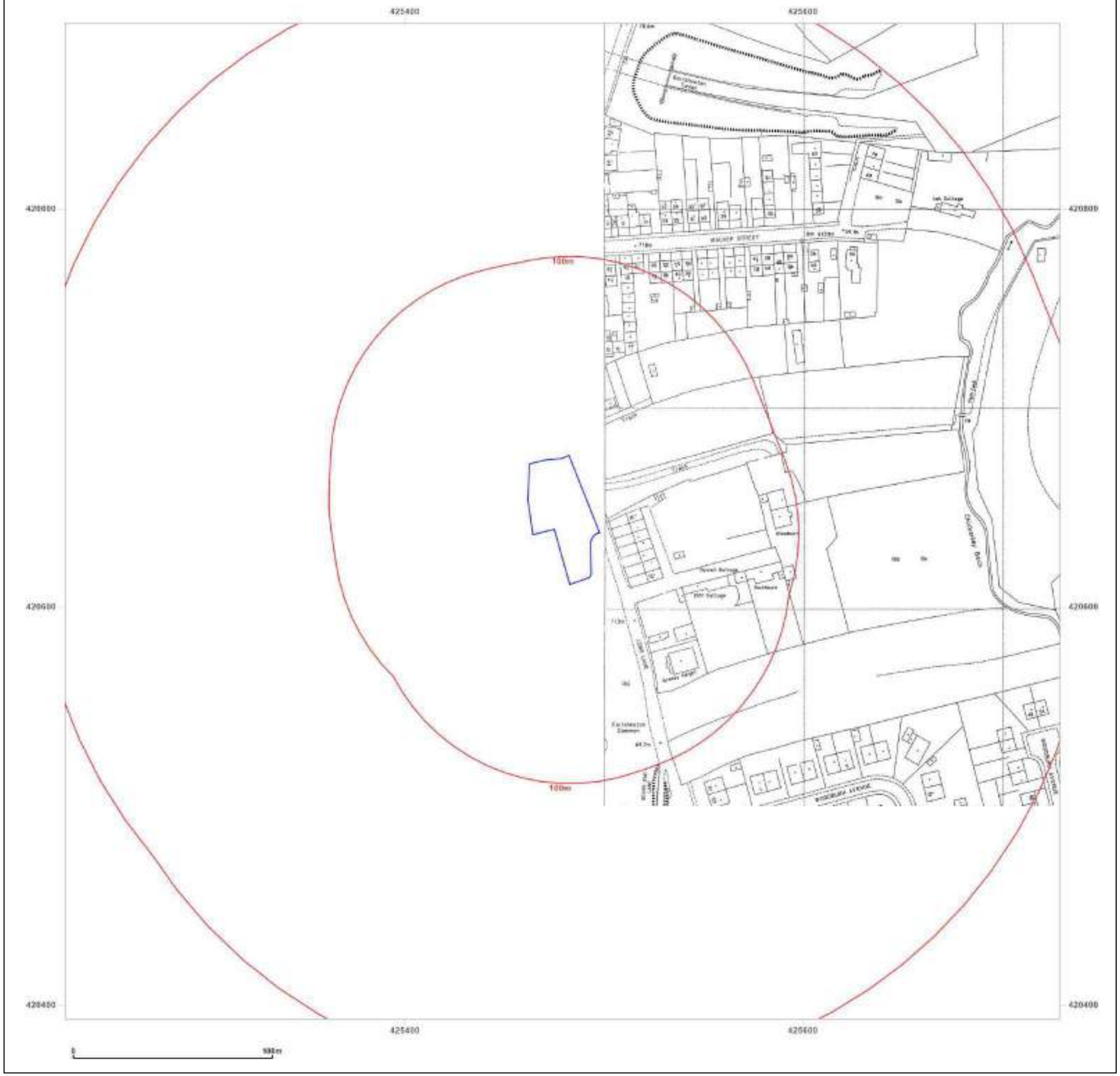
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WF12 8LG

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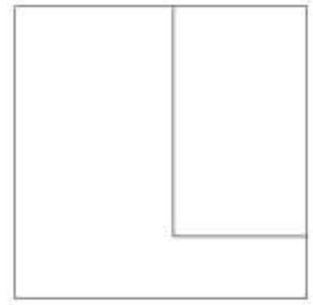
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Printed at: 1:2,000

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Edition N/A
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
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Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

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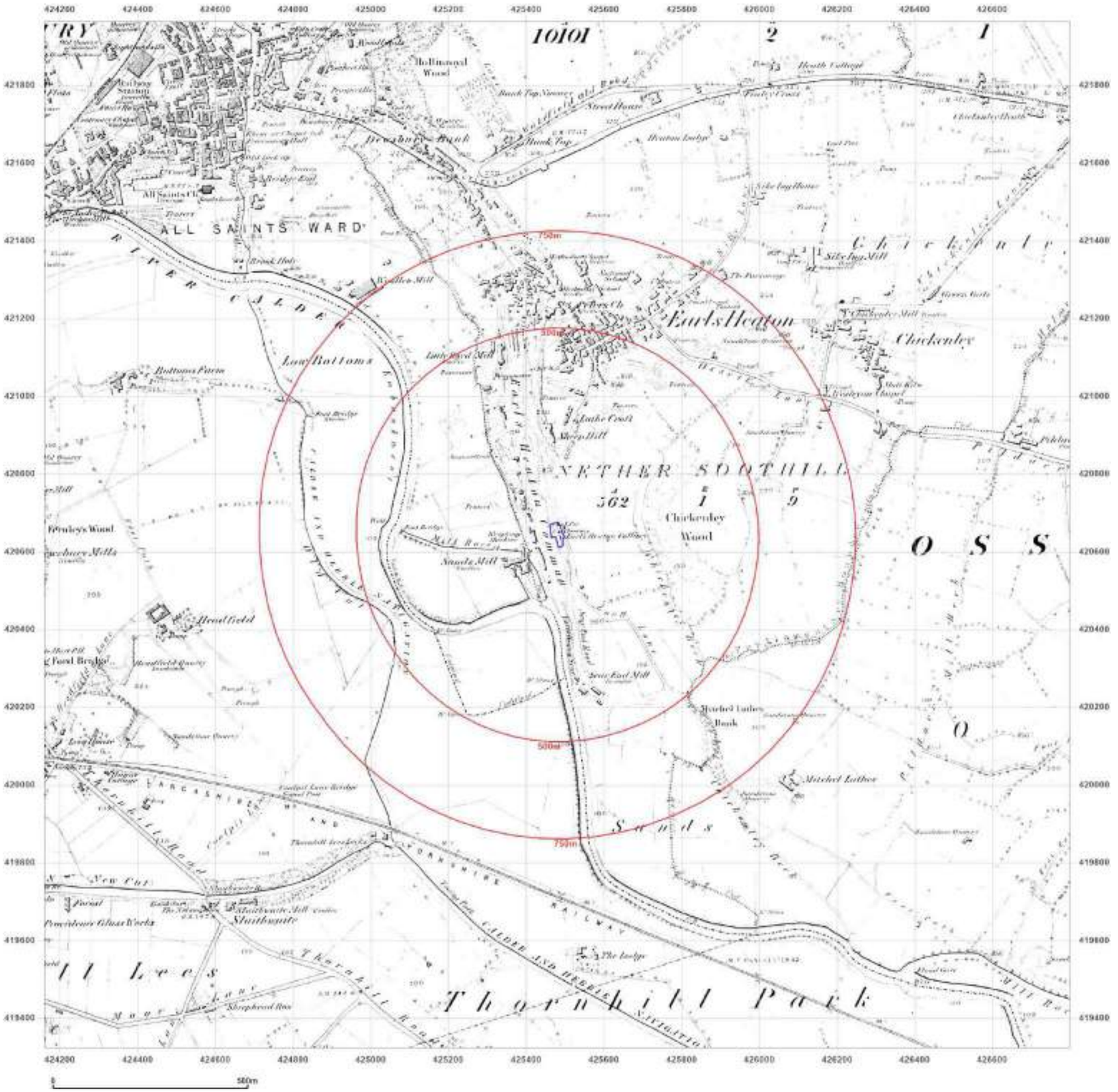
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WF12 8LG

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Grid Ref: 425479, 420643

Map Name: County Series
Map date: **1855**
Scale: 1:10,560
Printed at: 1:10,560

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Surveyed 1851
Revised N/A
Edition 1855
Copyright N/A
Levelled N/A

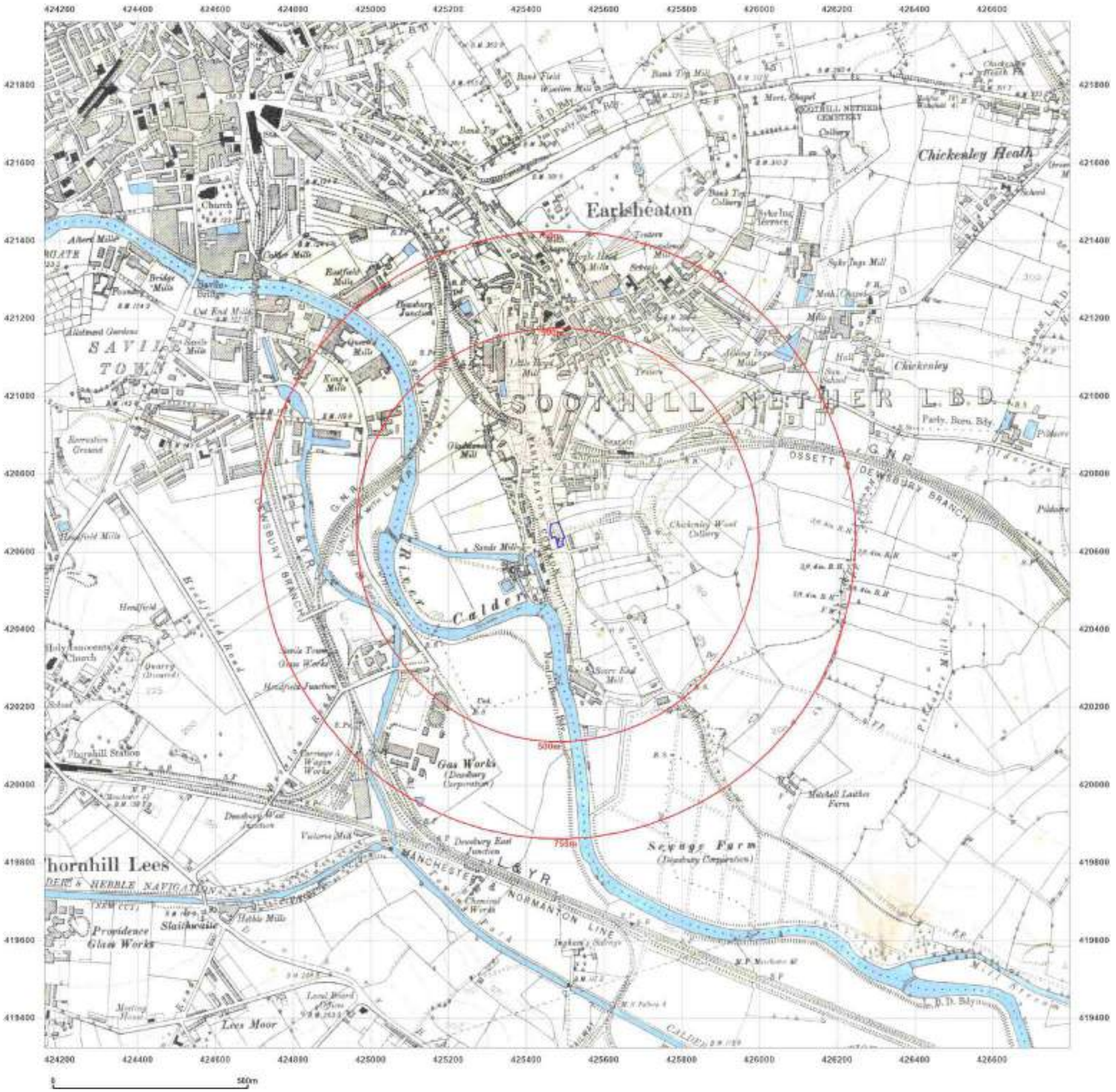
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WF12 8LG

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Grid Ref: 425479, 420643

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Map date: **1892**

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Printed at: 1:10,560

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

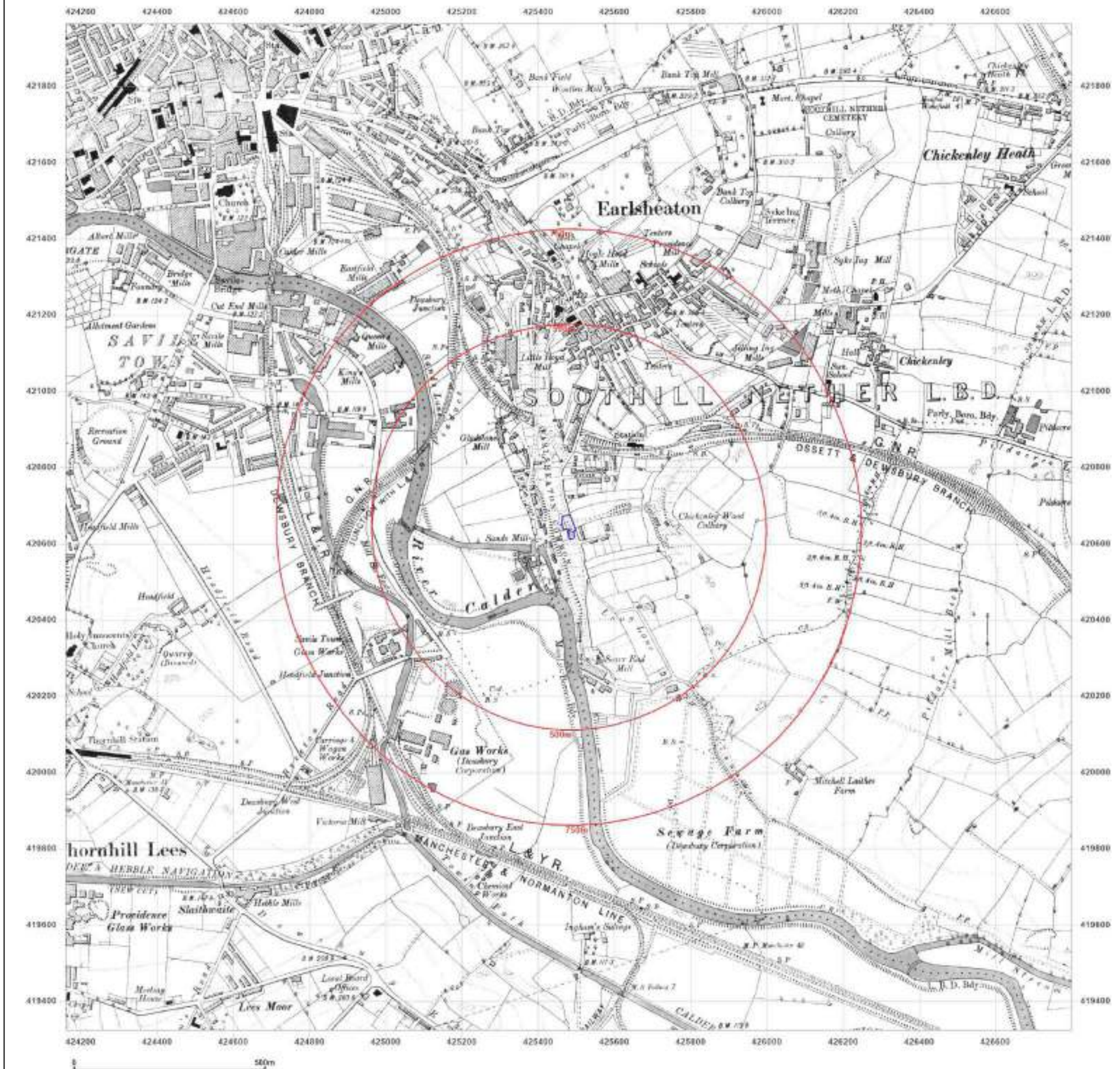
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Production date: 22 August 2023

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Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series
Map date: **1894**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1892
Revised N/A
Edition 1894
Copyright N/A
Levelled N/A

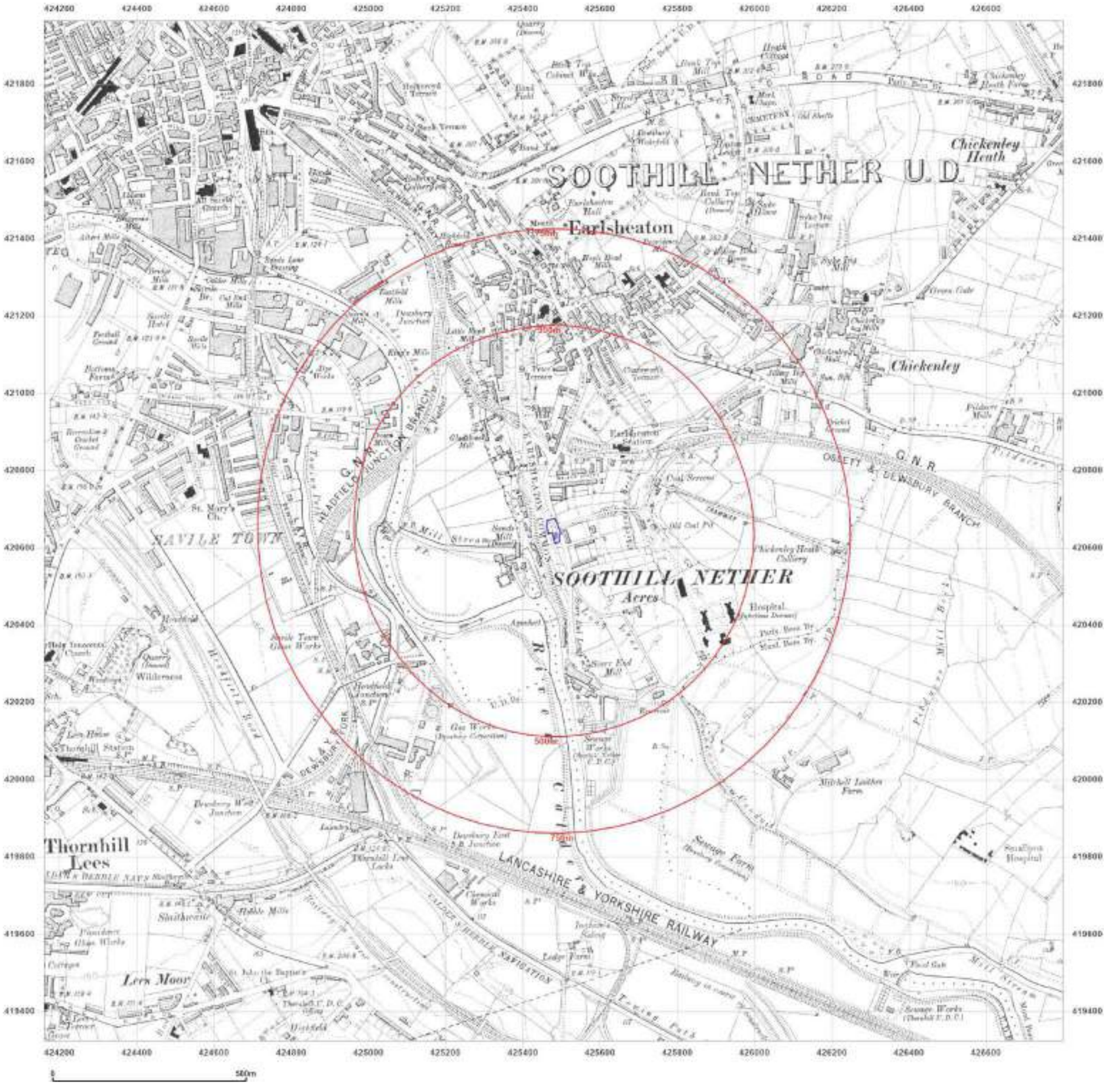
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series

Map date: **1905**

Scale: 1:10,560

Printed at: 1:10,560

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

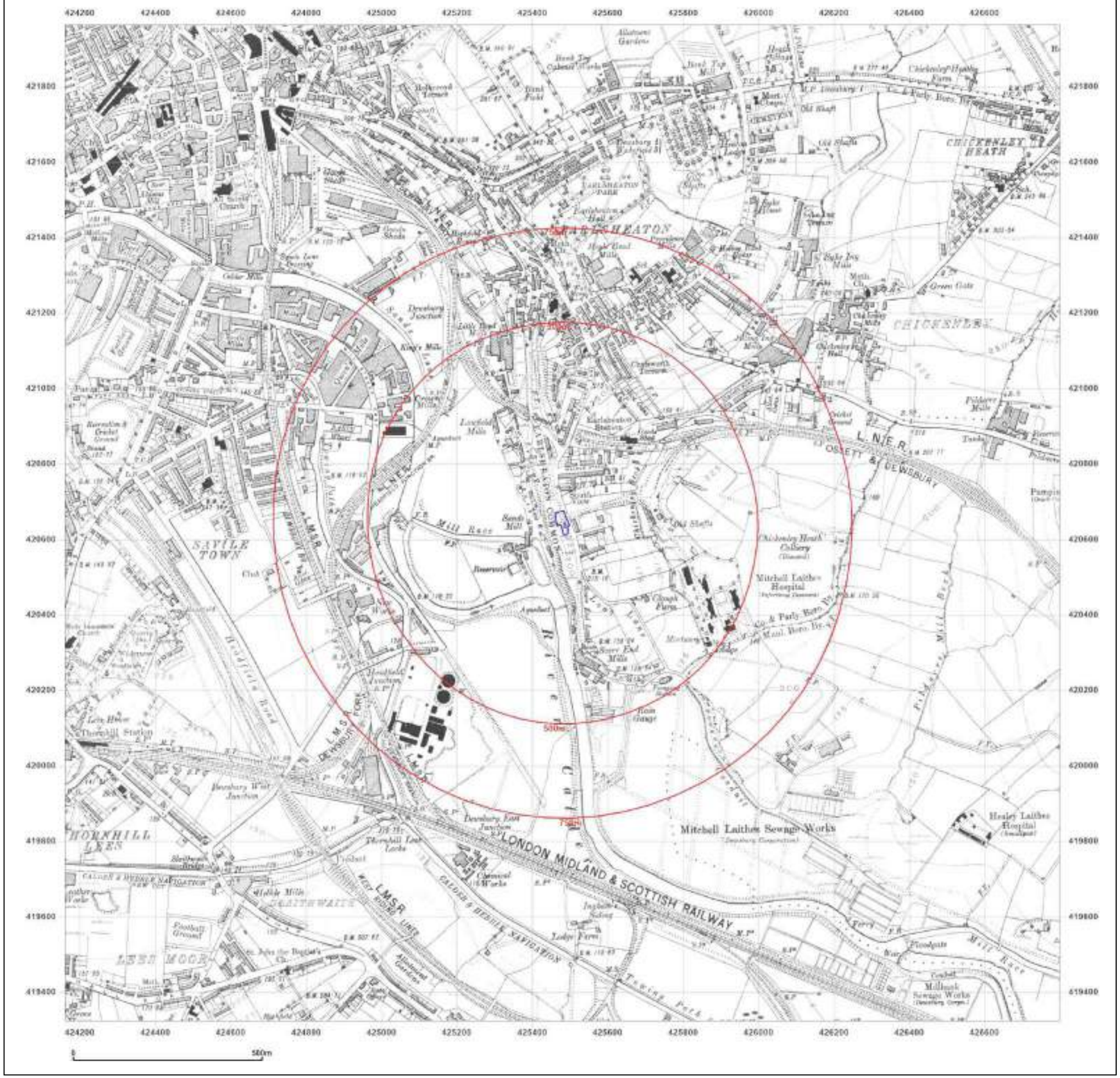
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series

Map date: **1931**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1931
Edition N/A
Copyright N/A
Levelled N/A

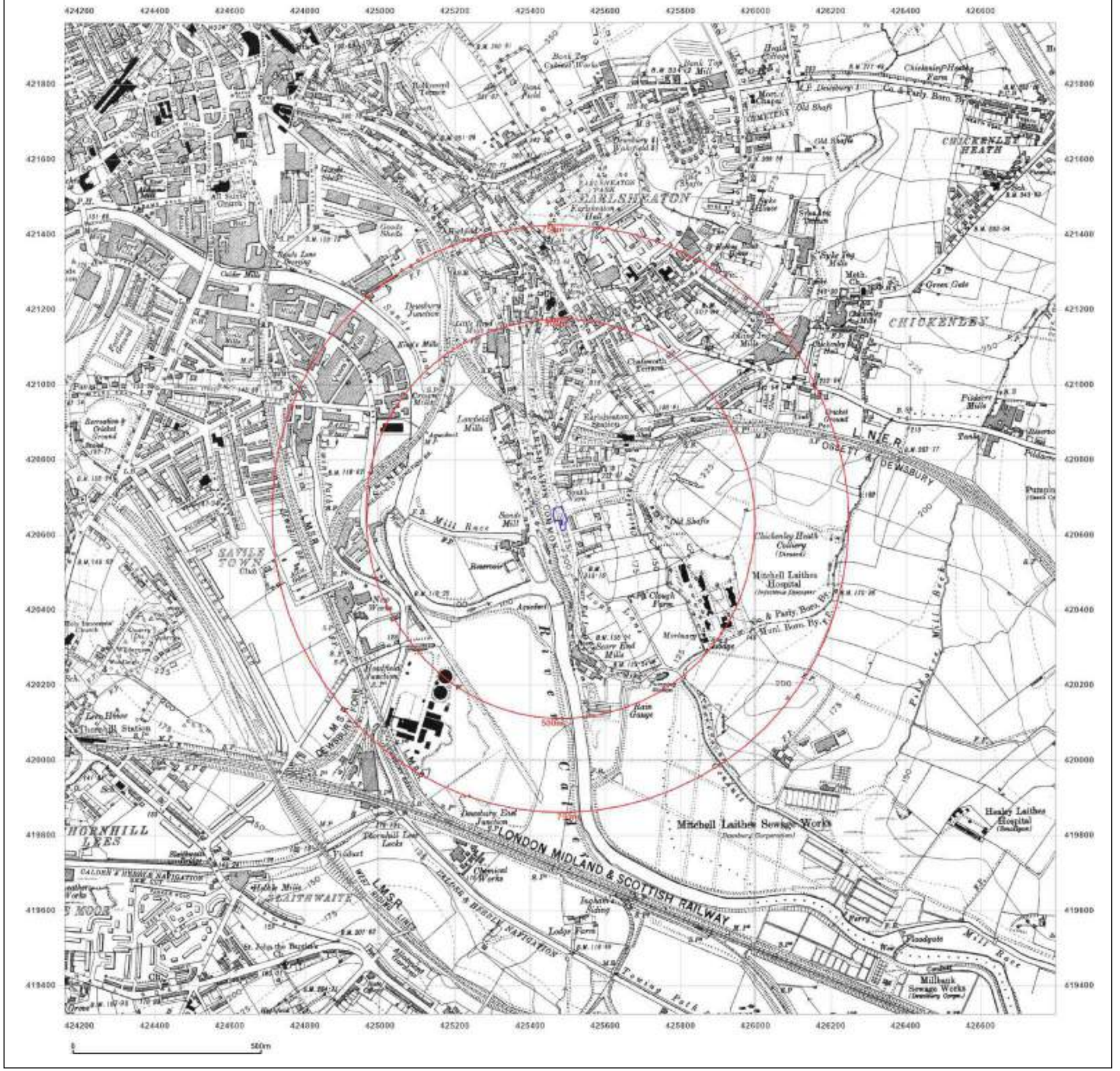
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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1851
Revised 1938
Edition N/A
Copyright N/A
Levelled 1931

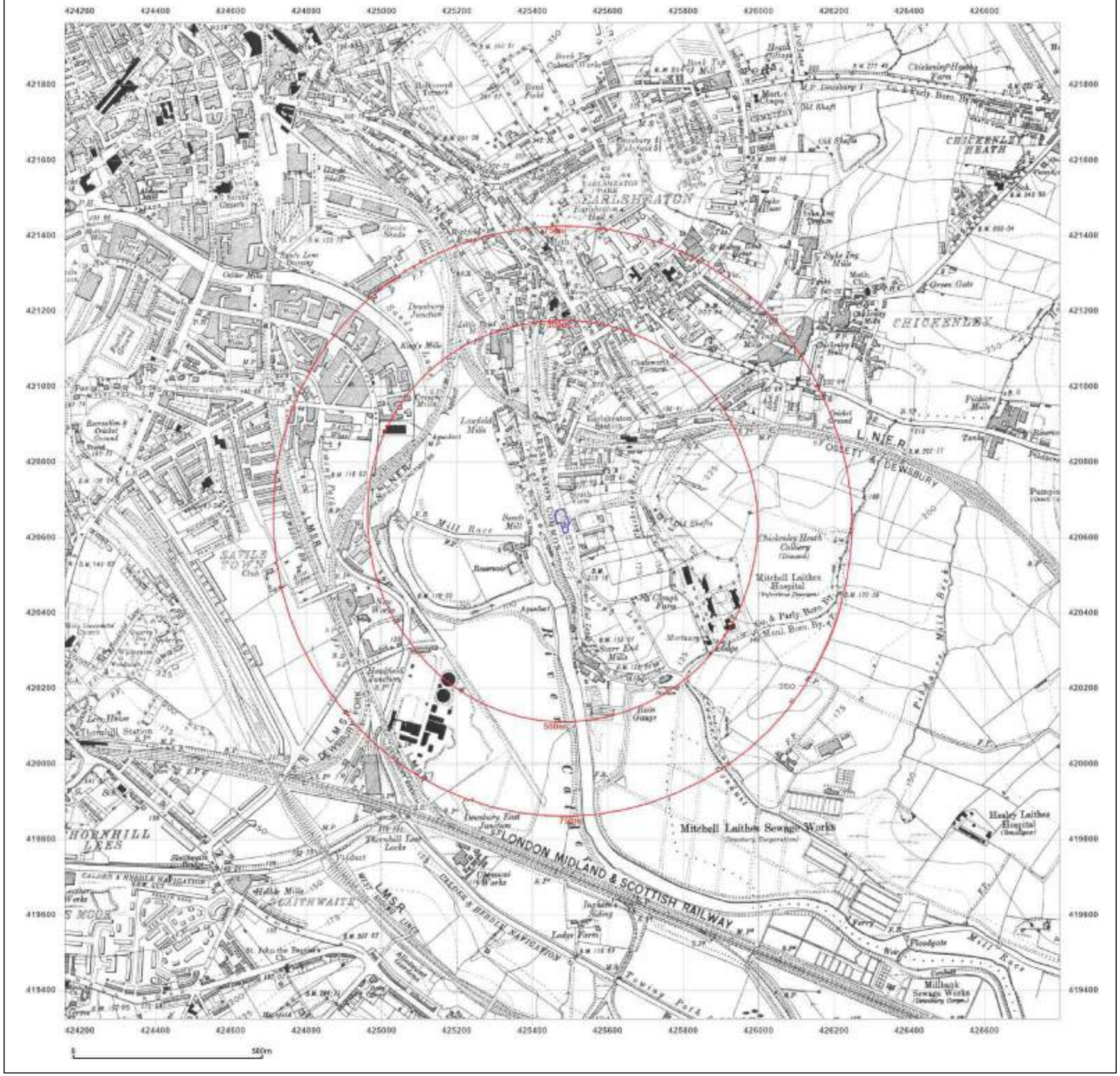
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Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series

Map date: **1938**

Scale: 1:10,560

Printed at: 1:10,560

N
W E
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Surveyed 1851
Revised 1938
Edition 1938
Copyright N/A
Levelled N/A

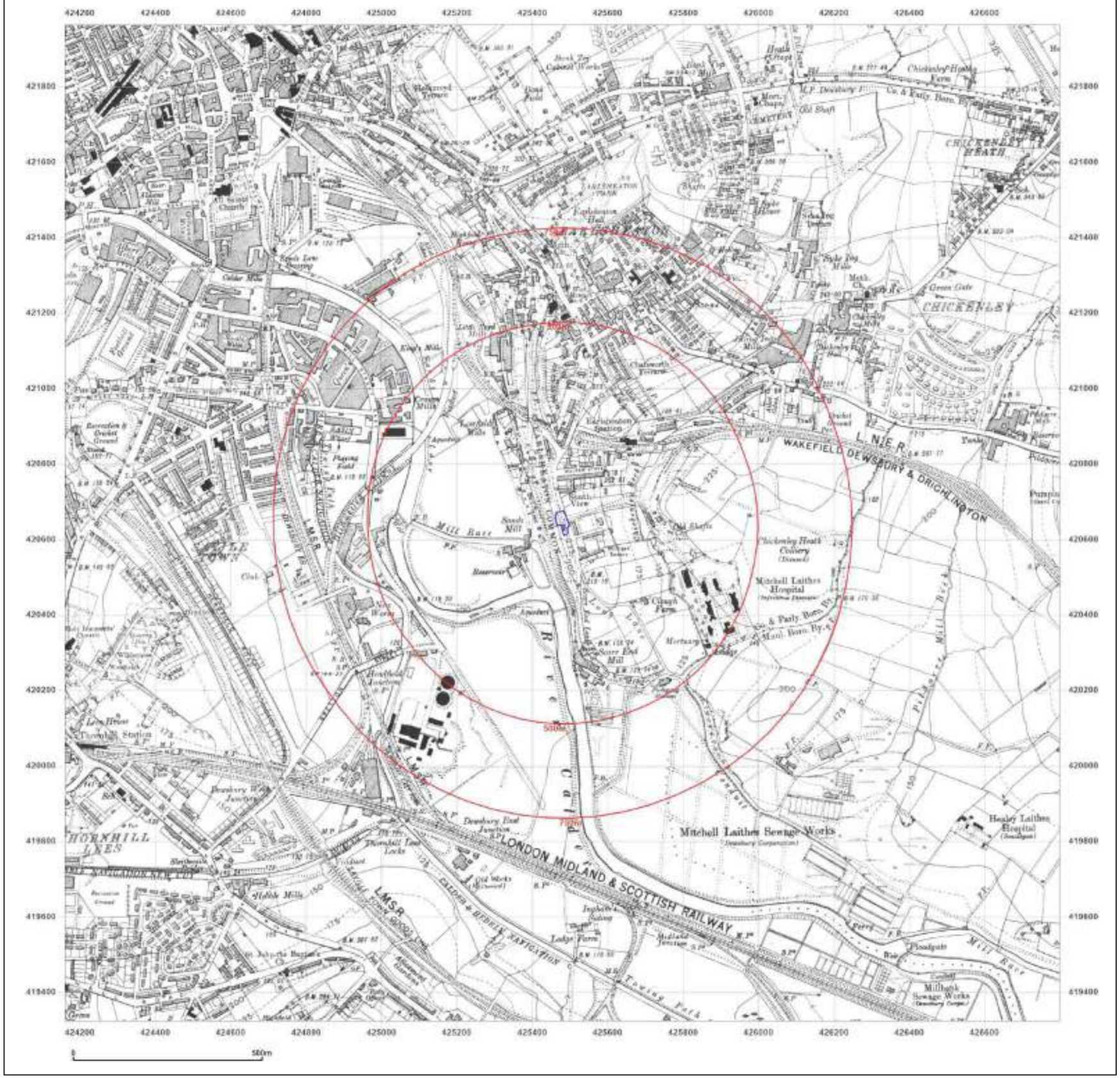
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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: County Series

Map date: **1948**

Scale: 1:10,560

Printed at: 1:10,560

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

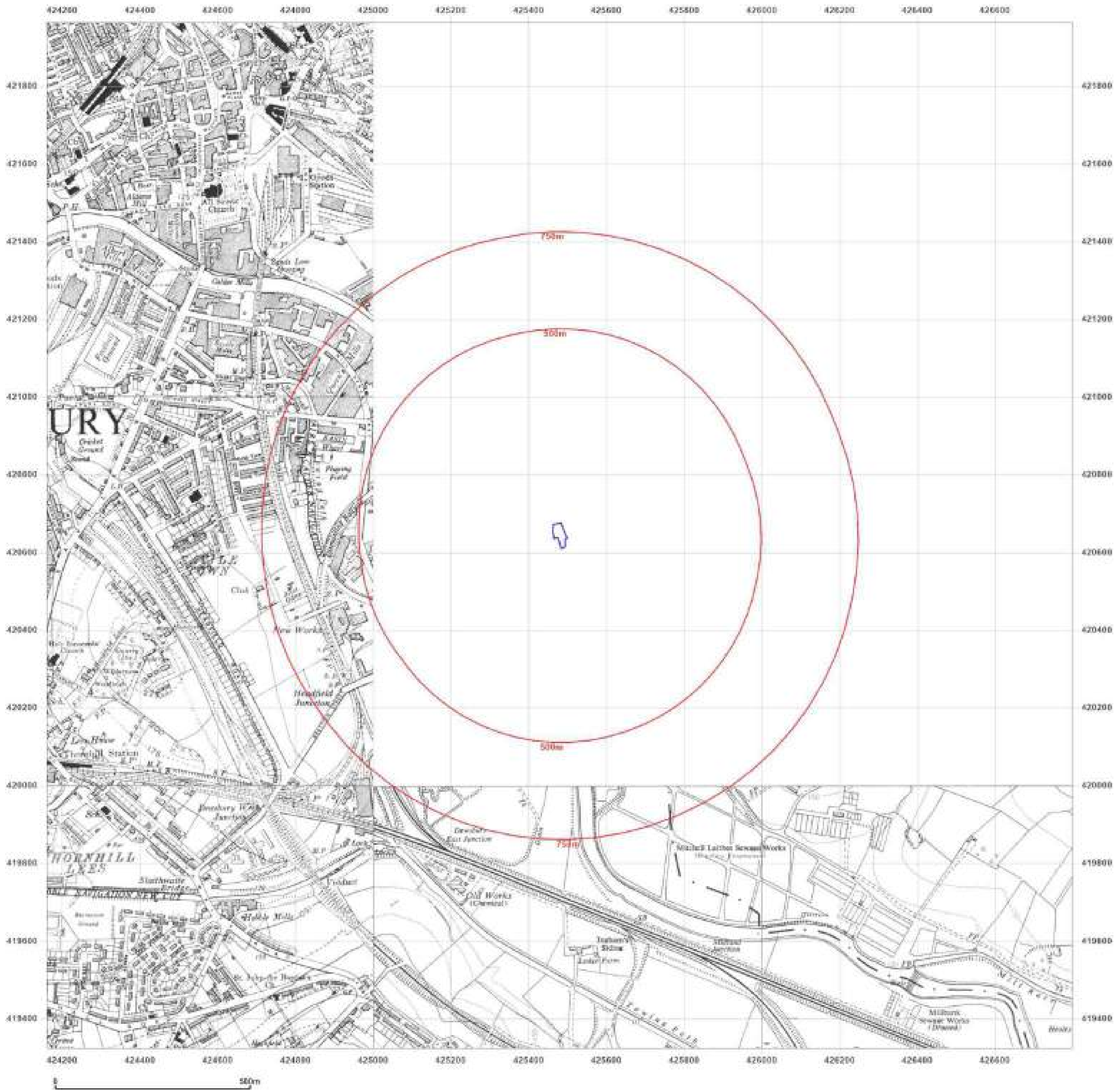
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Site Details:

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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: Provisional

Map date: **1951-1955**

Scale: 1:10,560

Printed at: 1:10,560

N
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Surveyed 1951
Revised 1955
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1951
Revised 1951
Edition N/A
Copyright N/A
Levelled N/A

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

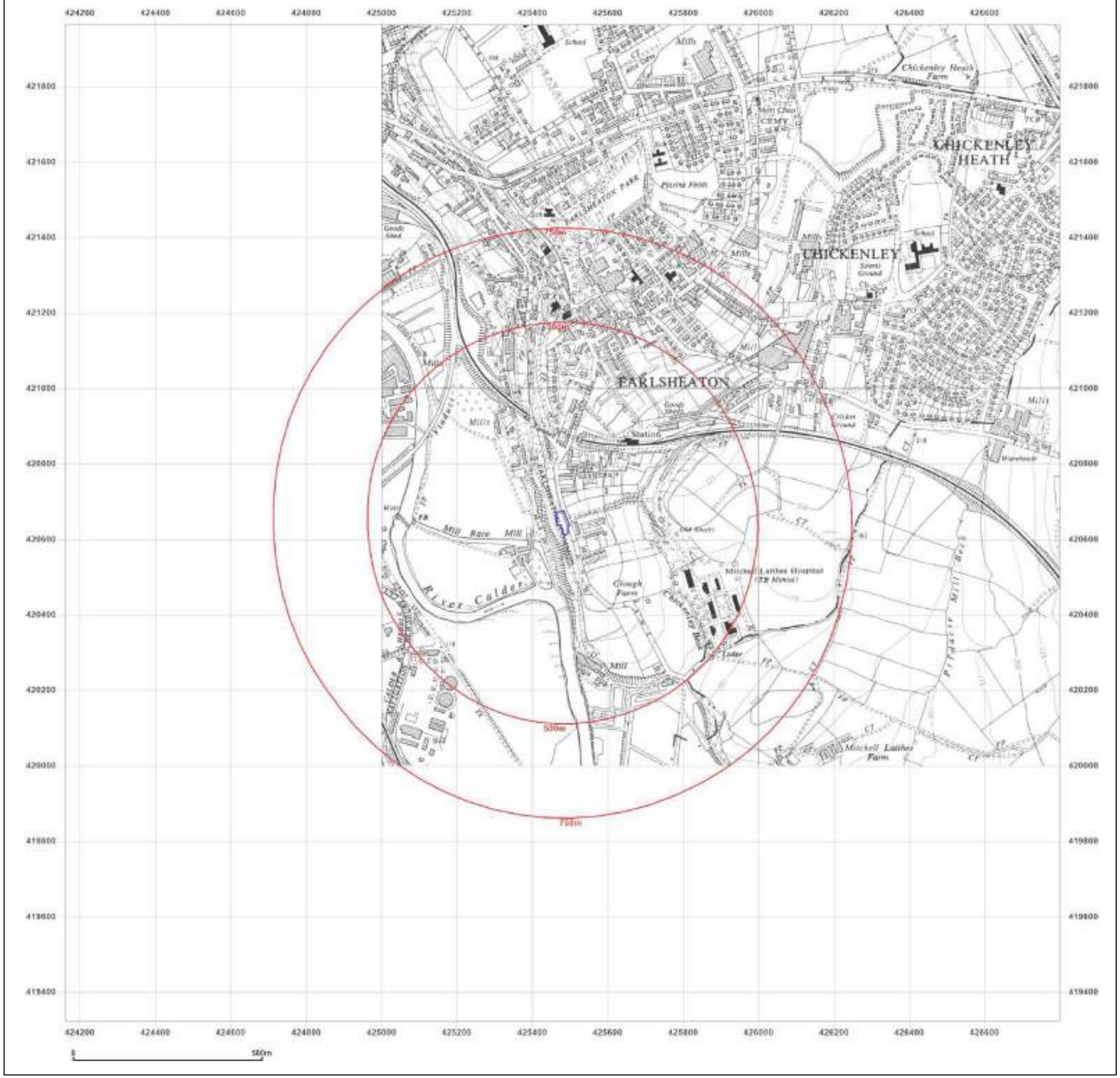
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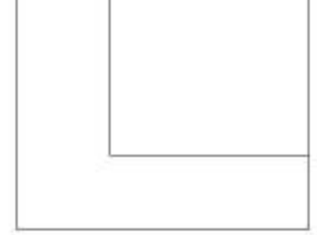
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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: Provisional
Map date: **1957**
Scale: 1:10,560
Printed at: 1:10,560

N
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Surveyed 1957
Revised 1957
Edition N/A
Copyright N/A
Levelled N/A



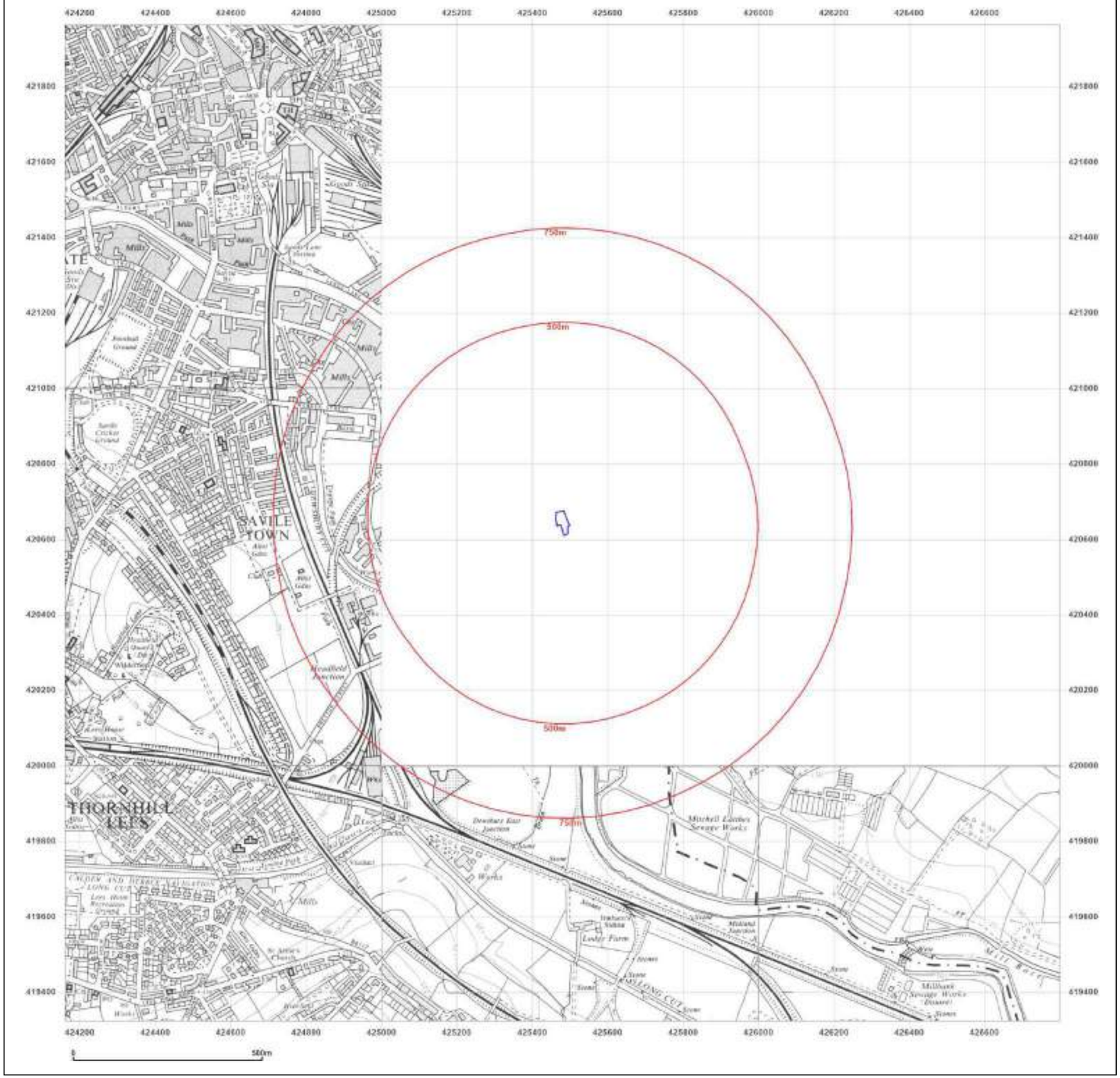
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Production date: 22 August 2023

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Groundsure INSIGHTS

Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: Provisional
Map date: **1966-1967**
Scale: 1:10,560
Printed at: 1:10,560

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

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

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

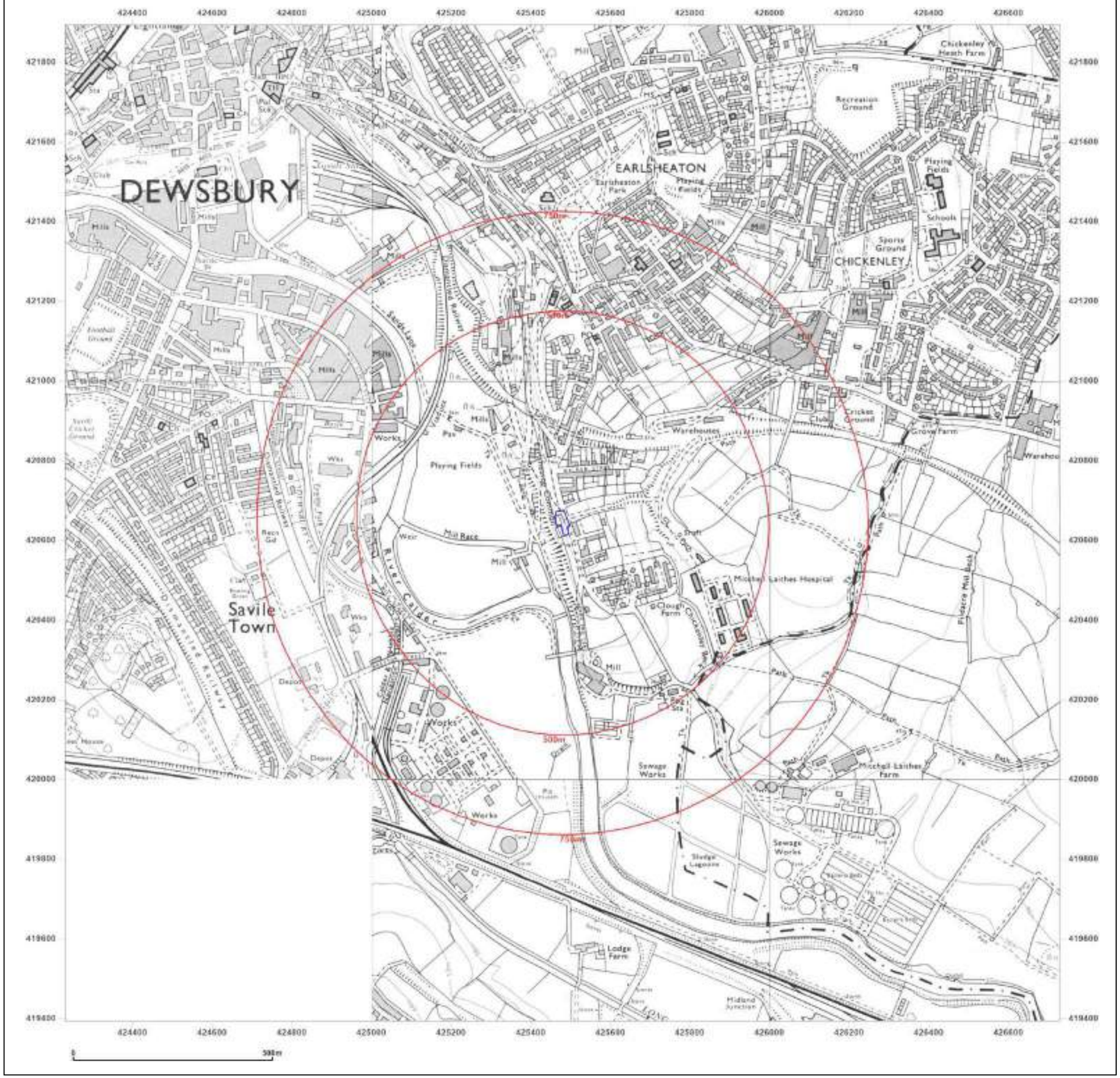
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Site Details:

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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid

Map date: **1971-1974**

Scale: 1:10,000

Printed at: 1:10,000

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

Surveyed 1971
Revised 1971
Edition N/A
Copyright N/A
Levelled N/A

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

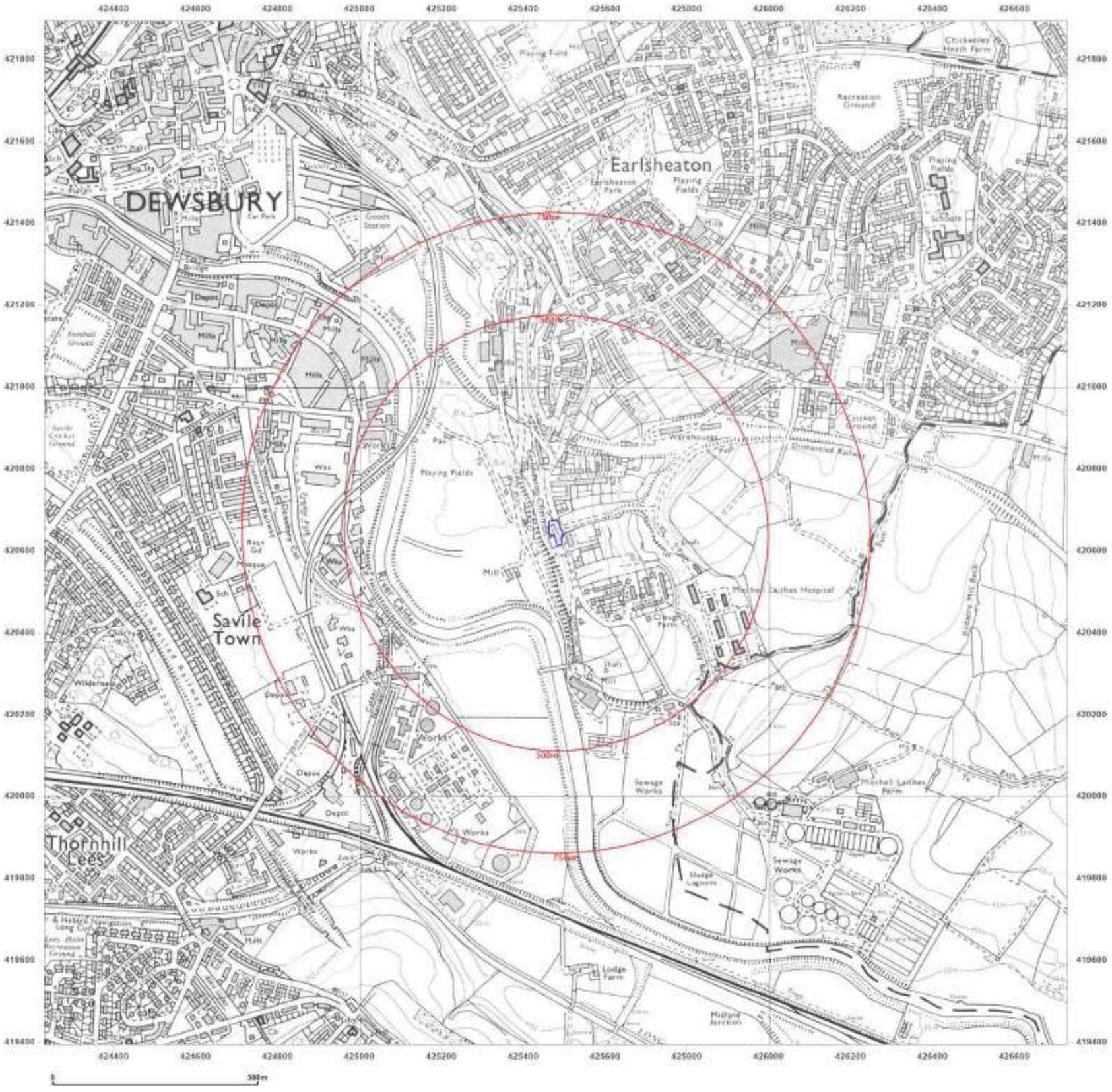
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Site Details:

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WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **1980-1983**
Scale: 1:10,000
Printed at: 1:10,000

N
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Surveyed 1977
Revised 1981
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1979
Revised 1980
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1977
Revised 1982
Edition N/A
Copyright N/A
Levelled N/A

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

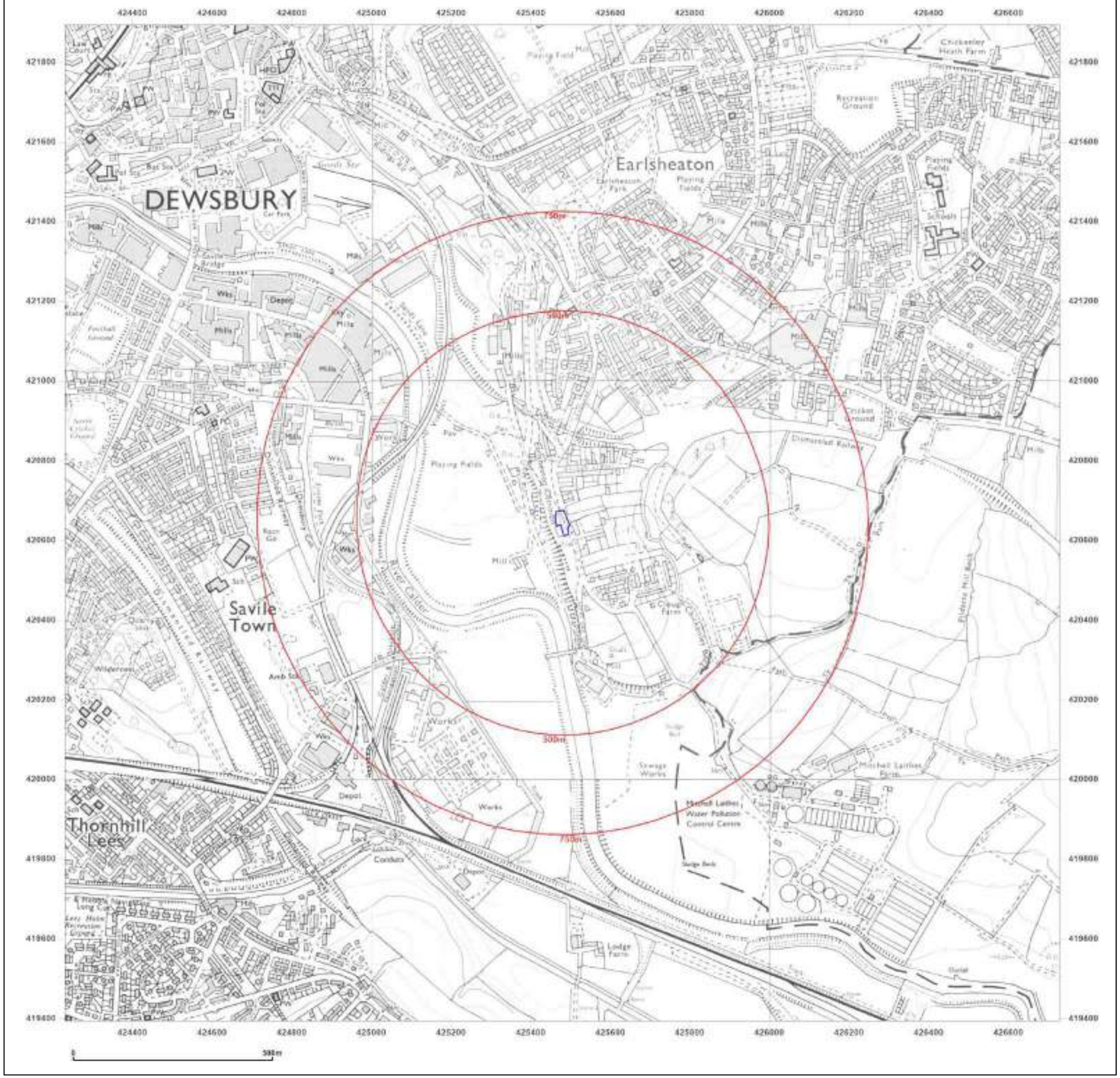
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Groundsure INSIGHTS

Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid

Map date: **1988-1993**

Scale: 1:10,000

Printed at: 1:10,000

N
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Surveyed 1985
Revised 1988
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1989
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1991
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1990
Revised 1992
Edition N/A
Copyright N/A
Levelled N/A

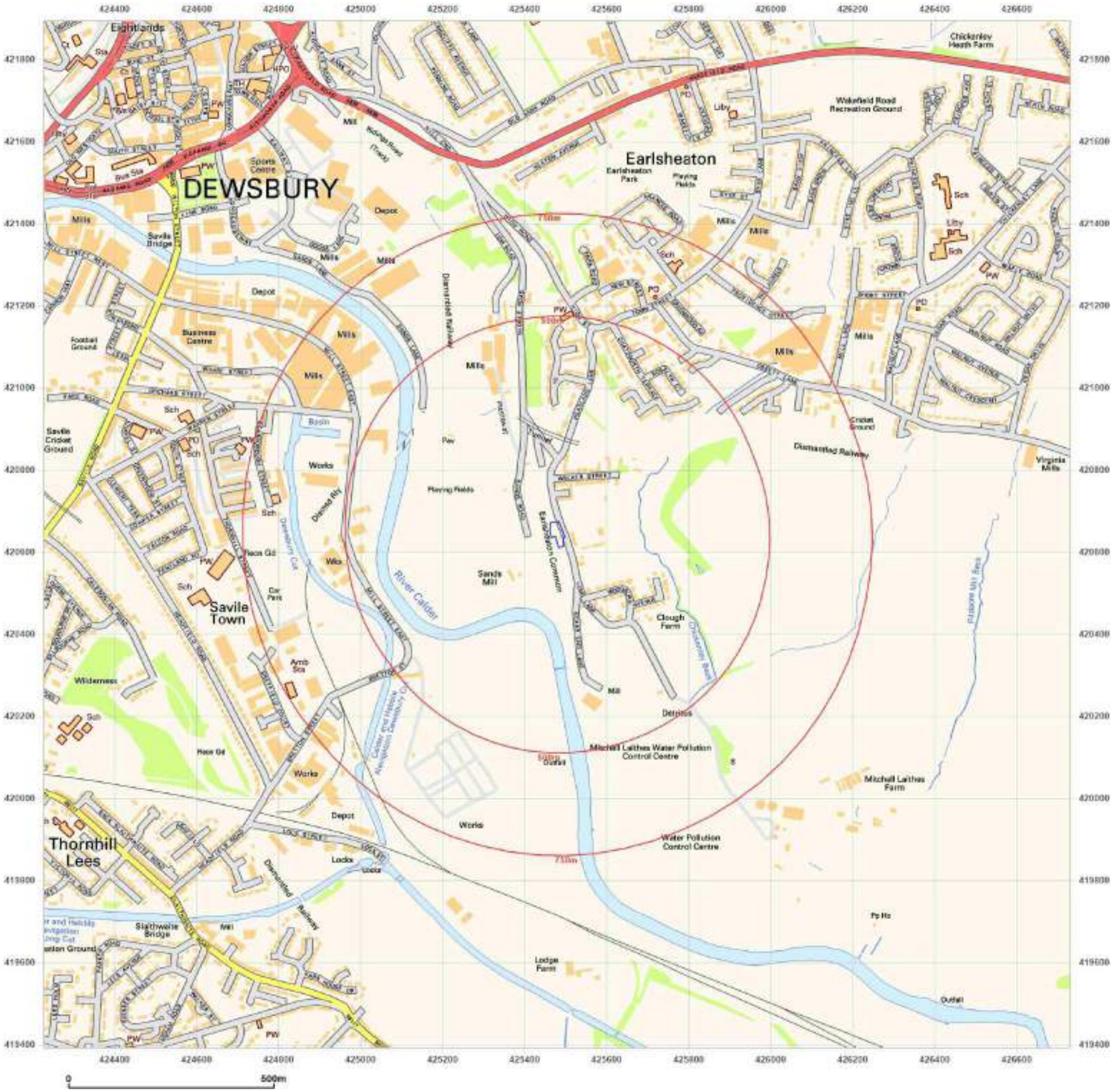
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Groundsure INSIGHTS

Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **2001**
Scale: 1:10,000
Printed at: 1:10,000

N
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2001

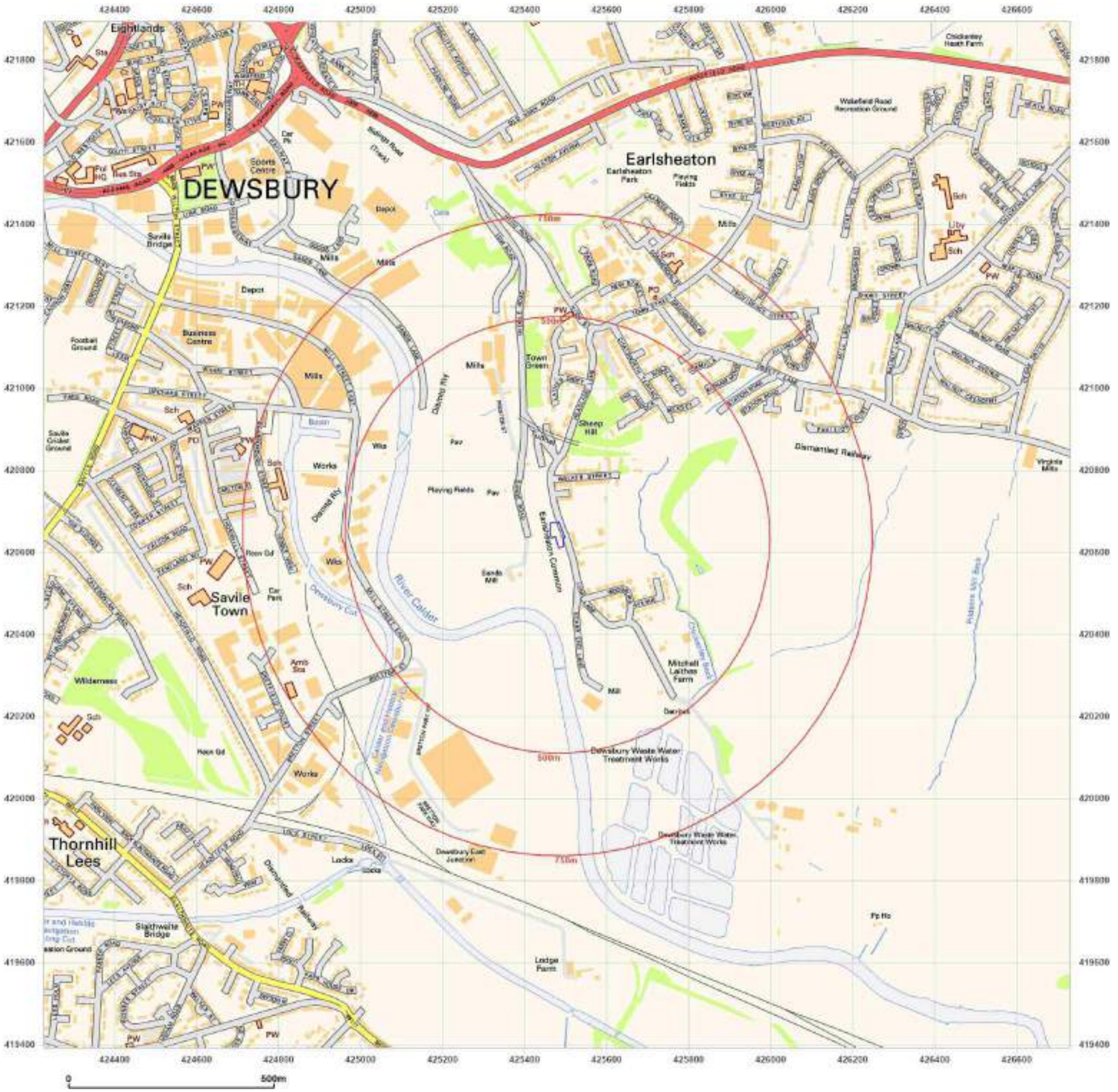
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Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **2010**
Scale: 1:10,000
Printed at: 1:10,000

N
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2010

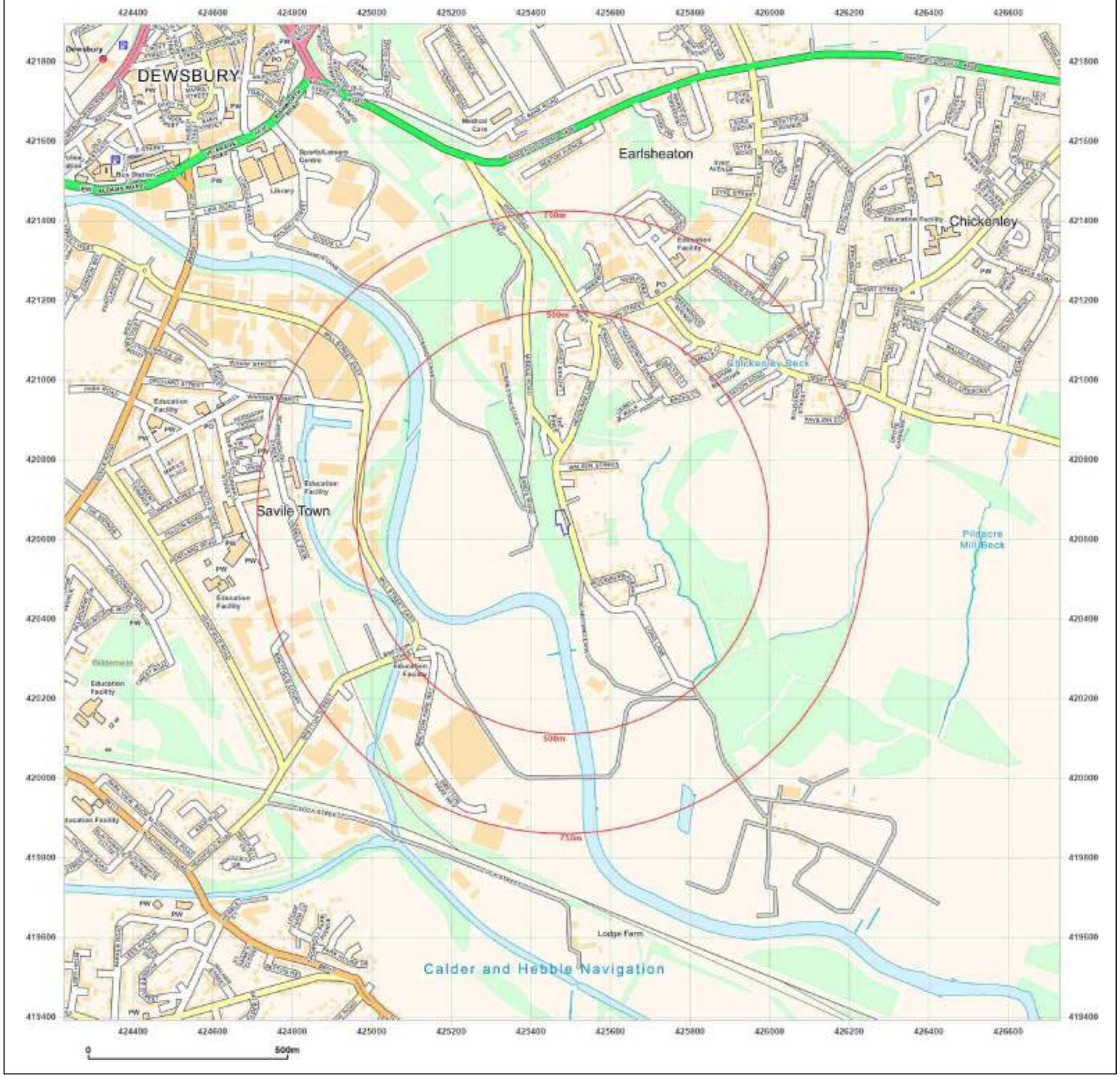
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Groundsure INSIGHTS

Site Details:

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EARLSHEATON, DEWSBURY,
WF12 8LG

Client Ref: G23326
Report Ref: GS-E9E-EWY-1IP-V7P
Grid Ref: 425479, 420643

Map Name: National Grid
Map date: **2023**
Scale: 1:10,000
Printed at: 1:10,000

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2023

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APPENDIX 2

GROUNDSURE ENVIRO + GEO INSIGHT REPORT

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

BELL CABIN, LONG LANE, EARLSHEATON, DEWSBURY, WF12 8LG

Order Details

Date: 22/08/2023

Your ref: G23326

Our Ref: GS-79C-X75-BSX-CCP

Site Details

Location: 425486 420655

Area: 0.14 ha

Authority: Kirklees Council ↗



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Summary of findings p. 2 >

OS MasterMap site plan p.13 >

Aerial image p. 9 >

groundsure.com/insightuserguide ↗

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

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 >	0	1	39	113	-
20 >	1.2 >	Historical tanks >	0	0	3	14	-
21 >	1.3 >	Historical energy features >	0	0	1	5	-
22	1.4	Historical petrol stations	0	0	0	0	-
22	1.5	Historical garages	0	0	0	0	-
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 >	0	1	51	147	-
31 >	2.2 >	Historical tanks >	0	0	6	20	-
32 >	2.3 >	Historical energy features >	0	0	2	8	-
32	2.4	Historical petrol stations	0	0	0	0	-
33	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
34	3.1	Active or recent landfill	0	0	0	0	-
34 >	3.2 >	Historical landfill (BGS records) >	0	0	0	1	-
35 >	3.3 >	Historical landfill (LA/mapping records) >	0	0	0	1	-
35 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	1	1	-
36 >	3.5 >	Historical waste sites >	0	0	0	6	-
37 >	3.6 >	Licensed waste sites >	0	0	0	5	-
38 >	3.7 >	Waste exemptions >	0	0	1	9	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
40	4.1	Recent industrial land uses	0	0	0	-	-
40	4.2	Current or recent petrol stations	0	0	0	0	-
41	4.3	Electricity cables	0	0	0	0	-
41	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-

41 >	4.6 >	Control of Major Accident Hazards (COMAH) >	0	0	0	1	-
41	4.7	Regulated explosive sites	0	0	0	0	-
42	4.8	Hazardous substance storage/usage	0	0	0	0	-
42	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
42	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
42 >	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	12	-
45	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
45	4.15	Pollutant release to public sewer	0	0	0	0	-
45	4.16	List 1 Dangerous Substances	0	0	0	0	-
45	4.17	List 2 Dangerous Substances	0	0	0	0	-
46 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	2	3	-
46	4.19	Pollution inventory substances	0	0	0	0	-
47	4.20	Pollution inventory waste transfers	0	0	0	0	-
47	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
48 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
50 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
52 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
53	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
53	5.5	Groundwater vulnerability- local information	None (within 0m)				
54 >	5.6 >	Groundwater abstractions >	0	0	0	0	7
56 >	5.7 >	Surface water abstractions >	0	0	0	0	7
58	5.8	Potable abstractions	0	0	0	0	0
59	5.9	Source Protection Zones	0	0	0	0	-
59	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
60 >	6.1 >	Water Network (OS MasterMap) >	0	0	2	-	-

61 >	6.2 >	Surface water features >	0	0	2	-	-
61 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
61 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
62 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
63 >	7.1 >	Risk of flooding from rivers and the sea >	High (within 50m)				
64 >	7.2 >	Historical Flood Events >	0	0	9	-	-
65 >	7.3 >	Flood Defences >	0	0	2	-	-
65	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
65 >	7.5 >	Flood Storage Areas >	0	1	1	-	-
66 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
67 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
68 >	8.1 >	Surface water flooding >	1 in 1000 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
70 >	9.1 >	Groundwater flooding >	Negligible (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
71	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
72	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
72	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
72	10.4	Special Protection Areas (SPA)	0	0	0	0	0
72	10.5	National Nature Reserves (NNR)	0	0	0	0	0
73 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	0	1
73	10.7	Designated Ancient Woodland	0	0	0	0	0
73	10.8	Biosphere Reserves	0	0	0	0	0
73	10.9	Forest Parks	0	0	0	0	0
74	10.10	Marine Conservation Zones	0	0	0	0	0
74 >	10.11 >	Green Belt >	1	0	0	1	3
74	10.12	Proposed Ramsar sites	0	0	0	0	0

74	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
75	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
75	10.15	Nitrate Sensitive Areas	0	0	0	0	0
75	10.16	Nitrate Vulnerable Zones	0	0	0	0	0
76 >	**10.17 >**	**SSSI Impact Risk Zones >**	1	-	-	-	-
77	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
78	11.1	World Heritage Sites	0	0	0	-	-
78	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
78	11.3	National Parks	0	0	0	-	-
78	11.4	Listed Buildings	0	0	0	-	-
79	11.5	Conservation Areas	0	0	0	-	-
79	11.6	Scheduled Ancient Monuments	0	0	0	-	-
79	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	**Agricultural designations >**	On site	0-50m	50-250m	250-500m	500-2000m
80 >	**12.1 >**	**Agricultural Land Classification >**	Urban (within 250m)				
81	12.2	Open Access Land	0	0	0	-	-
81	12.3	Tree Felling Licences	0	0	0	-	-
81	12.4	Environmental Stewardship Schemes	0	0	0	-	-
81 >	**12.5 >**	**Countryside Stewardship Schemes >**	0	0	1	-	-
Page	Section	**Habitat designations >**	On site	0-50m	50-250m	250-500m	500-2000m
82 >	**13.1 >**	**Priority Habitat Inventory >**	0	1	11	-	-
83	13.2	Habitat Networks	0	0	0	-	-
83	13.3	Open Mosaic Habitat	0	0	0	-	-
83	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
85 >	**14.1 >**	**10k Availability >**	Identified (within 500m)				
86 >	**14.2 >**	**Artificial and made ground (10k) >**	0	0	4	9	-
88 >	**14.3 >**	**Superficial geology (10k) >**	0	0	1	1	-

89	14.4	Landslip (10k)	0	0	0	0	-
90 >	14.5 >	Bedrock geology (10k) >	1	1	2	4	-
91 >	14.6 >	Bedrock faults and other linear features (10k) >	0	0	1	3	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
92 >	15.1 >	50k Availability >	Identified (within 500m)				
93 >	15.2 >	Artificial and made ground (50k) >	0	0	2	5	-
94	15.3	Artificial ground permeability (50k)	0	0	-	-	-
95 >	15.4 >	Superficial geology (50k) >	0	0	1	0	-
96	15.5	Superficial permeability (50k)	None (within 50m)				
96	15.6	Landslip (50k)	0	0	0	0	-
96	15.7	Landslip permeability (50k)	None (within 50m)				
97 >	15.8 >	Bedrock geology (50k) >	2	0	3	2	-
98 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
98 >	15.10 >	Bedrock faults and other linear features (50k) >	0	0	1	2	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
99 >	16.1 >	BGS Boreholes >	0	0	7	-	-
Page	Section	Natural ground subsidence >					
101 >	17.1 >	Shrink swell clays >	Very low (within 50m)				
102 >	17.2 >	Running sands >	Negligible (within 50m)				
103 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
104 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
105 >	17.5 >	Landslides >	Moderate (within 50m)				
107 >	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
109	18.1	BritPits	0	0	0	0	-
110 >	18.2 >	Surface ground workings >	0	0	22	-	-
111 >	18.3 >	Underground workings >	0	0	9	7	5
112	18.4	Underground mining extents	0	0	0	0	-
112	18.5	Historical Mineral Planning Areas	0	0	0	0	-

112	18.6	Non-coal mining	0	0	0	0	0
112	18.7	JPB mining areas	None (within 0m)				
112	18.8	The Coal Authority non-coal mining	0	0	0	0	-
113	18.9	Researched mining	0	0	0	0	-
113	18.10	Mining record office plans	0	0	0	0	-
113	18.11	BGS mine plans	0	0	0	0	-
113 >	**18.12 >**	**Coal mining >**	Identified (within 0m)				
114	18.13	Brine areas	None (within 0m)				
114	18.14	Gypsum areas	None (within 0m)				
114	18.15	Tin mining	None (within 0m)				
114	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
115	19.1	Natural cavities	0	0	0	0	-
115	19.2	Mining cavities	0	0	0	0	0
115	19.3	Reported recent incidents	0	0	0	0	-
115	19.4	Historical incidents	0	0	0	0	-
116	19.5	National karst database	0	0	0	0	-
Page	Section	**Radon >**					
117 >	**20.1 >**	**Radon >**	Between 3% and 5% (within 0m)				
Page	Section	**Soil chemistry >**	On site	0-50m	50-250m	250-500m	500-2000m
119 >	**21.1 >**	**BGS Estimated Background Soil Chemistry >**	2	1	-	-	-
119	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
119	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
120	22.1	Underground railways (London)	0	0	0	-	-
120	22.2	Underground railways (Non-London)	0	0	0	-	-
121	22.3	Railway tunnels	0	0	0	-	-
121 >	**22.4 >**	**Historical railway and tunnel features >**	0	0	34	-	-
122	22.5	Royal Mail tunnels	0	0	0	-	-

123 >	**22.6 >**	**Historical railways >**	0	0	2	-	-
123	22.7	Railways	0	0	0	-	-
123	22.8	Crossrail 1	0	0	0	0	-
123	22.9	Crossrail 2	0	0	0	0	-
124	22.10	HS2	0	0	0	0	-

Recent aerial photograph



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Capture Date: 30/05/2021

Site Area: 0.14ha

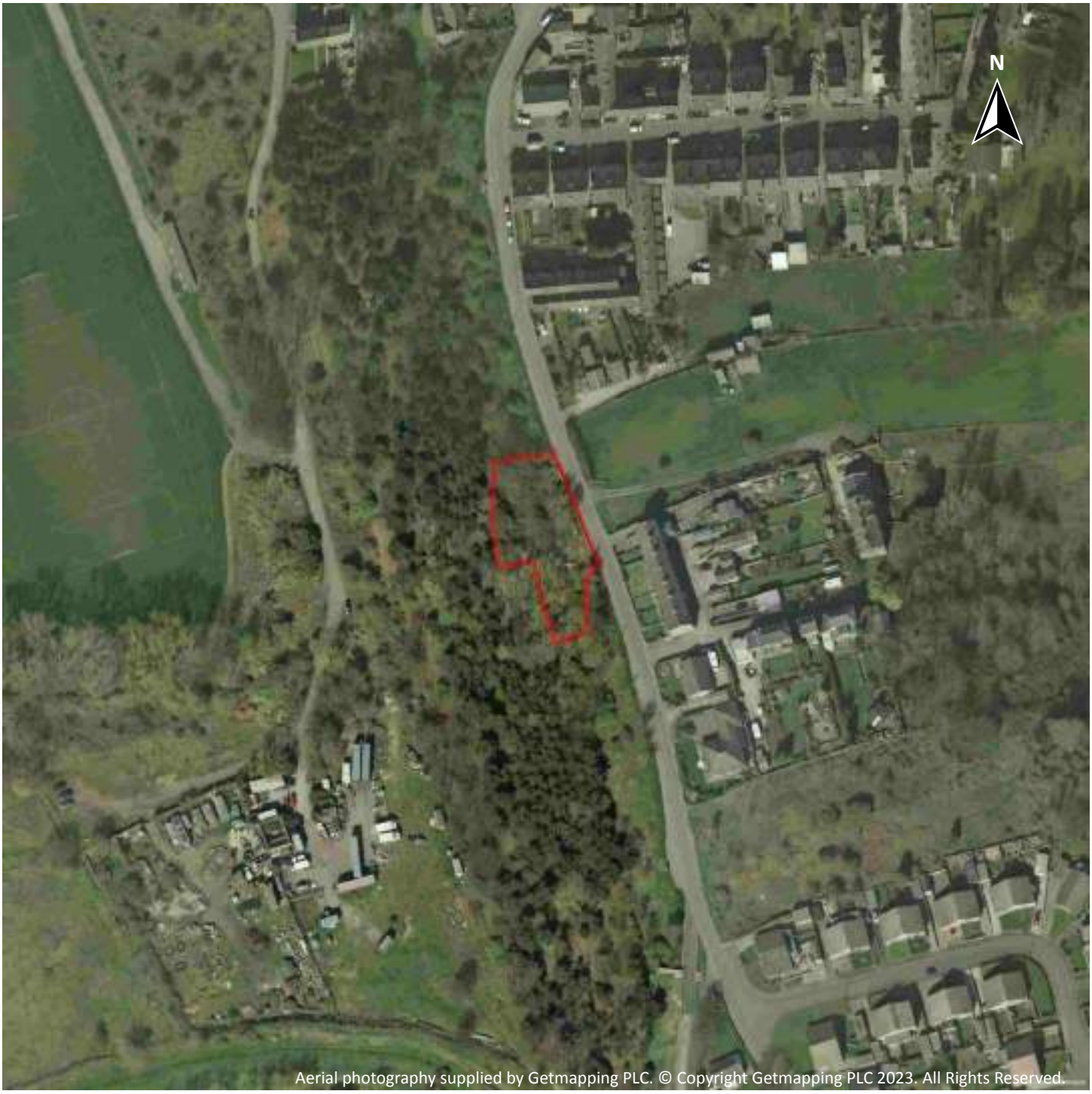
Recent site history - 2018 aerial photograph



Capture Date: 01/07/2018

Site Area: 0.14ha

Recent site history - 2012 aerial photograph



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Capture Date: 26/03/2012

Site Area: 0.14ha

Recent site history - 1999 aerial photograph



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Capture Date: 10/07/1999

Site Area: 0.14ha

OS MasterMap site plan



Site Area: 0.14ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

1.1 Historical industrial land uses

Records within 500m	153

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	31m SW	Unspecified Mill	1957	1557994

ID	Location	Land use	Dates present	Group ID
A	53m W	Unspecified Disused Mill	1905	1435610
A	66m W	Sands Mill	1938	1478343
A	77m SW	Sands Mill	1892	1478634
A	78m W	Unspecified Mill	1948	1508847
A	85m SW	Unspecified Mill	1971	1524829
A	112m SW	Unspecified Mill	1980 - 1992	1552552
B	167m N	Cuttings	1892	1469607
B	168m N	Cuttings	1971 - 1992	1544105
B	171m N	Cuttings	1957	1558059
B	172m N	Cuttings	1938 - 1948	1510655
B	172m N	Cuttings	1905	1555873
C	179m E	Unspecified Pit	1957 - 1971	1544445
D	183m N	Tunnel	1892	1499775
D	185m N	Tunnel	1948 - 1992	1554249
E	187m E	Colliery	1892	1411990
D	190m N	Tunnel	1938	1484864
F	201m NW	Unspecified Mills	1938 - 1948	1470787
F	206m NW	Unspecified Mill	1892	1486821
E	209m E	Unspecified Heap	1905	1417475
E	209m E	Unspecified Ground Workings	1948	1478848
E	211m E	Unspecified Ground Workings	1938	1461466
G	217m NE	Railway Sidings	1957	1493253
E	217m E	Unspecified Heaps	1957	1439535
C	219m E	Refuse Heap	1905	1436681
F	220m NW	Unspecified Mills	1957 - 1971	1525156
G	220m E	Railway Sidings	1948	1519680
G	220m E	Railway Sidings	1905	1525126
H	227m NE	Railway Station	1892	1513160

ID	Location	Land use	Dates present	Group ID
H	232m NE	Railway Station	1948	1503258
H	232m NE	Railway Station	1905	1539506
H	233m NE	Railway Station	1938	1518196
G	234m E	Railway Sidings	1938	1488984
E	235m E	Unspecified Ground Workings	1948	1414263
E	235m E	Old Coal Pit	1905	1442994
2	236m SE	Unspecified Mill	1957	1511526
H	237m NE	Railway Station	1957	1497442
E	239m E	Unspecified Pit	1892	1452046
E	248m E	Unspecified Old Shafts	1948	1482110
E	249m E	Unspecified Old Shafts	1938	1540899
F	255m NW	Unspecified Mill	1905	1515567
E	260m E	Unspecified Old Shafts	1957	1408941
E	260m E	Chimney	1948	1448238
E	262m E	Unspecified Old Shafts	1938	1526399
C	263m E	Railway Buildings	1905	1442125
I	266m SW	Unspecified Ground Workings	1938	1549051
E	270m E	Unspecified Old Shafts	1948	1408942
I	270m SW	Unspecified Ground Workings	1948	1510861
E	273m E	Unspecified Shaft	1971 - 1980	1479552
E	281m E	Unspecified Old Shafts	1957	1408943
J	290m SE	Infectious Diseases Hospital	1905	1483509
J	290m SE	Infectious Diseases Hospital	1948	1491712
K	291m S	Unspecified Mill	1892	1522824
K	292m S	Unspecified Mill	1971 - 1992	1466296
C	292m NE	Refuse Heap	1905	1436682
J	293m SE	Infectious Diseases Hospital	1938	1484947
K	293m S	Unspecified Ground Workings	1957	1414262

ID	Location	Land use	Dates present	Group ID
J	295m SE	Mental Hospital	1957	1436310
J	295m SE	Hospital	1971 - 1980	1482726
3	296m E	Unspecified Quarry	1938	1427967
K	297m S	Unspecified Mills	1938	1419287
G	300m NE	Railway Sidings	1892	1501999
L	308m N	Unspecified Mills	1971	1538348
K	311m S	Unspecified Mill	1948	1482412
K	311m S	Unspecified Mill	1905	1549488
G	313m NE	Unspecified Warehouses	1971 - 1980	1461419
K	320m S	Unspecified Tank	1957 - 1992	1480592
L	321m N	Unspecified Commercial/Industrial	1957	1410938
K	322m S	Unspecified Tank	1905	1483279
K	322m S	Unspecified Shaft	1980 - 1992	1540806
G	322m NE	Goods Shed	1938 - 1948	1490690
K	325m S	Unspecified Tank	1892	1499686
G	328m NE	Railway Building	1957	1429117
L	333m N	Unspecified Mills	1980 - 1992	1539373
4	338m W	Unspecified Heap	1938	1466287
G	339m NE	Railway Building	1892	1429118
G	359m NE	Railway Building	1948	1429116
L	383m NW	Unspecified Mill	1892	1524030
L	388m NW	Cuttings	1971	1409819
L	390m N	Unspecified Mill	1905	1552539
L	391m N	Unspecified Mills	1938	1477593
L	395m N	Unspecified Mills	1948	1494124
5	403m E	Unspecified Heap	1938	1479934
G	406m NE	Railway Building	1892	1518367
M	411m SE	Sludge Bed	1992	1424864

ID	Location	Land use	Dates present	Group ID
6	412m SW	Unspecified Ground Workings	1992	1414259
G	412m NE	Railway Building	1938 - 1948	1491225
G	412m NE	Railway Building	1905	1551887
L	414m NW	Refuse Heap	1957	1543189
L	414m NW	Refuse Heap	1905	1512500
N	416m S	Sewage Works	1971	1498341
N	416m S	Sewage Works	1980	1510797
N	416m S	Sewage Works	1992	1515433
G	418m NE	Goods Shed	1957	1443470
P	421m NW	Unspecified Works	1980 - 1992	1466376
P	421m NW	Unspecified Works	1971	1534539
7	424m NW	Unspecified Mills	1955 - 1957	1521463
N	432m S	Sewage Works	1938	1509665
N	435m S	Sewage Farm	1905	1493234
N	435m S	Sewage Works	1948	1496995
R	446m SW	Unspecified Commercial/Industrial	1938	1497863
S	446m NE	Cuttings	1905	1469423
S	446m NE	Cuttings	1948	1552494
P	447m NW	Unspecified Mills	1905	1459465
R	447m SW	Unspecified Commercial/Industrial	1957	1514226
P	448m NW	Unspecified Mills	1938	1458805
P	448m NW	Unspecified Mills	1948	1494559
S	449m NE	Cuttings	1892	1493217
R	451m SW	Gas Works	1905	1483192
8	451m SW	Unspecified Works	1966 - 1992	1478772
R	451m SW	Unspecified Works	1971 - 1973	1531170
R	452m SW	Gas Works	1892	1542638
N	454m SE	Sewage Farm	1892	1517896

ID	Location	Land use	Dates present	Group ID
M	455m SE	Pumping Station	1980	1490318
M	456m SE	Pumping Station	1938	1479235
M	456m SE	Pumping Station	1948	1505707
9	458m SE	Mortuary	1938 - 1948	1506376
T	458m SW	Unspecified Pit	1892	1452048
S	458m NE	Cuttings	1957	1516529
S	460m NE	Cuttings	1971 - 1980	1555032
M	461m SE	Pumping Station	1971	1498612
S	466m NE	Cuttings	1938	1488059
U	466m SW	Unspecified Works	1938 - 1948	1502994
10	467m S	Sewage Works	1905	1479715
V	467m NW	Cuttings	1992	1409818
T	468m SW	Unspecified Pit	1938	1473039
V	468m NW	Unspecified Pit	1957 - 1971	1497482
U	469m SW	Glass Works	1905	1477025
U	470m SW	Refuse Heap	1905	1436684
U	470m SW	Railway Sidings	1938	1556445
U	471m SW	Glass Works	1892	1525994
T	474m SW	Unspecified Tanks	1938 - 1948	1492627
U	474m SW	Railway Sidings	1948	1513453
U	474m SW	Railway Sidings	1905	1521913
T	476m SW	Unspecified Tanks	1957	1536680
T	477m SW	Unspecified Tanks	1905	1530481
W	478m W	Unspecified Works	1981 - 1988	1503395
W	478m W	Unspecified Works	1967	1524730
T	480m SW	Unspecified Tank	1971 - 1992	1505533
T	480m SW	Gasometer	1892	1420674
U	487m SW	Railway Sidings	1892	1542311

ID	Location	Land use	Dates present	Group ID
T	491m SW	Unspecified Pit	1892	1502696
T	491m SW	Unspecified Pit	1905	1500928
12	493m NW	Unspecified Mills	1980 - 1988	1496184
X	493m NW	Unspecified Mills	1971 - 1992	1501098
X	496m NW	Unspecified Mills	1938 - 1948	1474858
U	497m W	Unspecified Commercial/Industrial	1988	1410977
U	497m W	Unspecified Works	1955	1539382
U	497m W	Unspecified Works	1967 - 1981	1557692
U	498m SW	Refuse Heap	1892	1436685
Y	498m SW	Unspecified Ground Workings	1938	1464437
Y	499m SW	Unspecified Ground Workings	1905	1471386
Y	500m SW	Unspecified Heap	1892	1417473

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**17**

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

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

ID	Location	Land use	Dates present	Group ID
A	120m SW	Tanks	1954	242842
A	134m SW	Unspecified Tank	1954	233911
A	142m SW	Unspecified Tank	1954	249579
F	251m NW	Unspecified Tank	1954	223586
F	255m NW	Unspecified Tank	1954 - 1971	239898
F	257m NW	Unspecified Tank	1893	239933

ID	Location	Land use	Dates present	Group ID
F	298m NW	Unspecified Tank	1933	223589
O	419m SE	Unspecified Tank	1954	240767
O	419m SE	Unspecified Tank	1953	241588
U	469m SW	Unspecified Tank	1954	241083
U	470m SW	Unspecified Tank	1953 - 1968	243385
T	476m SW	Unspecified Tank	1954	223585
T	476m SW	Gasholder	1968	230024
T	476m SW	Tanks	1953	230600
T	476m SW	Gas Holder	1992	233030
11	481m W	Tanks	1954 - 1981	245811
U	488m SW	Unspecified Tank	1953 - 1954	246497

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**6**

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	196m SE	Electricity Substation	1971 - 1992	135556
Q	422m N	Electricity Substation	1954	139489
Q	423m N	Electricity Substation	1981 - 1990	143512
Q	423m N	Electricity Substation	1976	136870
T	476m SW	Gasholder	1968	131732
T	476m SW	Gas Holder	1992	131992

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	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

2.1 Historical industrial land uses

Records within 500m	199

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	31m SW	Unspecified Mill	1957	1557994
A	53m W	Unspecified Disused Mill	1905	1435610
A	66m W	Sands Mill	1938	1478343

ID	Location	Land Use	Date	Group ID
A	77m SW	Sands Mill	1892	1478634
A	78m W	Unspecified Mill	1948	1508847
A	85m SW	Unspecified Mill	1971	1524829
A	112m SW	Unspecified Mill	1992	1552552
A	112m SW	Unspecified Mill	1980	1552552
B	167m N	Cuttings	1892	1469607
B	168m N	Cuttings	1980	1544105
B	168m N	Cuttings	1992	1544105
B	168m N	Cuttings	1971	1544105
B	171m N	Cuttings	1957	1558059
B	172m N	Cuttings	1948	1510655
B	172m N	Cuttings	1905	1555873
B	177m N	Cuttings	1938	1510655
C	179m E	Unspecified Pit	1971	1544445
C	179m E	Unspecified Pit	1957	1544445
D	183m N	Tunnel	1892	1499775
D	185m N	Tunnel	1980	1554249
D	185m N	Tunnel	1992	1554249
D	185m N	Tunnel	1971	1554249
E	187m E	Colliery	1892	1411990
D	188m N	Tunnel	1948	1554249
D	190m N	Tunnel	1938	1484864
D	191m N	Tunnel	1957	1554249
G	201m NW	Unspecified Mills	1938	1470787
G	206m NW	Unspecified Mill	1892	1486821
E	209m E	Unspecified Ground Workings	1948	1478848
E	209m E	Unspecified Heap	1905	1417475
E	211m E	Unspecified Ground Workings	1938	1461466

ID	Location	Land Use	Date	Group ID
E	211m E	Unspecified Ground Workings	1938	1461466
H	217m NE	Railway Sidings	1957	1493253
E	217m E	Unspecified Heaps	1957	1439535
C	219m E	Refuse Heap	1905	1436681
G	220m NW	Unspecified Mills	1971	1525156
G	220m NW	Unspecified Mills	1957	1525156
H	220m E	Railway Sidings	1948	1519680
H	220m E	Railway Sidings	1905	1525126
I	227m NE	Railway Station	1892	1513160
I	232m NE	Railway Station	1948	1503258
I	232m NE	Railway Station	1905	1539506
I	233m NE	Railway Station	1938	1518196
H	234m E	Railway Sidings	1938	1488984
E	235m E	Unspecified Ground Workings	1948	1414263
E	235m E	Old Coal Pit	1905	1442994
1	236m SE	Unspecified Mill	1957	1511526
I	237m NE	Railway Station	1957	1497442
E	239m E	Unspecified Pit	1892	1452046
E	248m E	Unspecified Old Shafts	1948	1482110
E	249m E	Unspecified Old Shafts	1938	1540899
E	249m E	Unspecified Old Shafts	1938	1540899
G	255m NW	Unspecified Mills	1948	1470787
G	255m NW	Unspecified Mill	1905	1515567
E	260m E	Unspecified Old Shafts	1957	1408941
E	260m E	Chimney	1948	1448238
E	262m E	Unspecified Old Shafts	1938	1526399
E	262m E	Unspecified Old Shafts	1938	1526399
C	263m E	Railway Buildings	1905	1442125

ID	Location	Land Use	Date	Group ID
J	266m SW	Unspecified Ground Workings	1938	1549051
J	266m SW	Unspecified Ground Workings	1938	1549051
E	270m E	Unspecified Old Shafts	1948	1408942
J	270m SW	Unspecified Ground Workings	1948	1510861
E	273m E	Unspecified Shaft	1971	1479552
E	273m E	Unspecified Shaft	1980	1479552
E	281m E	Unspecified Old Shafts	1957	1408943
K	290m SE	Infectious Diseases Hospital	1948	1491712
K	290m SE	Infectious Diseases Hospital	1905	1483509
L	291m S	Unspecified Mill	1892	1522824
L	292m S	Unspecified Mill	1980	1466296
L	292m S	Unspecified Mill	1992	1466296
L	292m S	Unspecified Mill	1971	1466296
C	292m NE	Refuse Heap	1905	1436682
K	293m SE	Infectious Diseases Hospital	1938	1484947
L	293m S	Unspecified Ground Workings	1957	1414262
K	295m SE	Hospital	1971	1482726
K	295m SE	Mental Hospital	1957	1436310
K	295m SE	Hospital	1980	1482726
2	296m E	Unspecified Quarry	1938	1427967
L	297m S	Unspecified Mills	1938	1419287
H	300m NE	Railway Sidings	1892	1501999
M	308m N	Unspecified Mills	1971	1538348
L	311m S	Unspecified Mill	1948	1482412
L	311m S	Unspecified Mill	1905	1549488
H	313m NE	Unspecified Warehouses	1971	1461419
H	313m NE	Unspecified Warehouses	1980	1461419
L	320m S	Unspecified Tank	1992	1480592

ID	Location	Land Use	Date	Group ID
L	320m S	Unspecified Tank	1971	1480592
L	320m S	Unspecified Tank	1957	1480592
L	320m S	Unspecified Tank	1980	1480592
M	321m N	Unspecified Commercial/Industrial	1957	1410938
L	322m S	Unspecified Tank	1905	1483279
L	322m S	Unspecified Shaft	1992	1540806
L	322m S	Unspecified Shaft	1980	1540806
H	322m NE	Goods Shed	1948	1490690
H	324m NE	Goods Shed	1938	1490690
L	325m S	Unspecified Tank	1892	1499686
H	328m NE	Railway Building	1957	1429117
M	333m N	Unspecified Mills	1992	1539373
M	333m N	Unspecified Mills	1980	1539373
N	338m W	Unspecified Heap	1938	1466287
N	338m W	Unspecified Heap	1938	1466287
H	339m NE	Railway Building	1892	1429118
H	359m NE	Railway Building	1948	1429116
M	383m NW	Unspecified Mill	1892	1524030
M	388m NW	Cuttings	1971	1409819
M	390m N	Unspecified Mill	1905	1552539
M	391m N	Unspecified Mills	1938	1477593
M	395m N	Unspecified Mills	1948	1494124
O	403m E	Unspecified Heap	1938	1479934
O	403m E	Unspecified Heap	1938	1479934
H	406m NE	Railway Building	1892	1518367
P	411m SE	Sludge Bed	1992	1424864
3	412m SW	Unspecified Ground Workings	1992	1414259
H	412m NE	Railway Building	1948	1491225

ID	Location	Land Use	Date	Group ID
H	412m NE	Railway Building	1905	1551887
M	414m NW	Refuse Heap	1957	1543189
M	414m NW	Refuse Heap	1905	1512500
H	414m NE	Railway Building	1938	1491225
Q	416m S	Sewage Works	1992	1515433
Q	416m S	Sewage Works	1971	1498341
Q	416m S	Sewage Works	1980	1510797
H	418m NE	Goods Shed	1957	1443470
S	421m NW	Unspecified Works	1992	1466376
S	421m NW	Unspecified Works	1971	1534539
S	421m NW	Unspecified Works	1980	1466376
S	424m NW	Unspecified Mills	1957	1521463
Q	432m S	Sewage Works	1938	1509665
Q	432m S	Sewage Works	1938	1509665
Q	435m S	Sewage Works	1948	1496995
Q	435m S	Sewage Farm	1905	1493234
U	446m SW	Unspecified Commercial/Industrial	1938	1497863
V	446m NE	Cuttings	1948	1552494
V	446m NE	Cuttings	1905	1469423
S	447m NW	Unspecified Mills	1905	1459465
U	447m SW	Unspecified Commercial/Industrial	1957	1514226
S	448m NW	Unspecified Mills	1938	1458805
S	448m NW	Unspecified Mills	1948	1494559
V	449m NE	Cuttings	1892	1493217
U	451m SW	Gas Works	1905	1483192
U	451m SW	Unspecified Works	1971	1531170
W	451m SW	Unspecified Works	1992	1478772
W	451m SW	Unspecified Works	1980	1478772

ID	Location	Land Use	Date	Group ID
U	452m SW	Gas Works	1892	1542638
Q	454m SE	Sewage Farm	1892	1517896
P	455m SE	Pumping Station	1980	1490318
P	456m SE	Pumping Station	1938	1479235
P	456m SE	Pumping Station	1948	1505707
X	458m SE	Mortuary	1938	1506376
Y	458m SW	Unspecified Pit	1892	1452048
V	458m NE	Cuttings	1957	1516529
V	460m NE	Cuttings	1980	1555032
V	460m NE	Cuttings	1971	1555032
X	460m SE	Mortuary	1948	1506376
P	461m SE	Pumping Station	1971	1498612
V	466m NE	Cuttings	1938	1488059
Z	466m SW	Unspecified Works	1938	1502994
4	467m S	Sewage Works	1905	1479715
AA	467m NW	Cuttings	1992	1409818
Y	468m SW	Unspecified Pit	1938	1473039
Y	468m SW	Unspecified Pit	1938	1473039
AA	468m NW	Unspecified Pit	1971	1497482
AA	468m NW	Unspecified Pit	1957	1497482
Z	469m SW	Unspecified Works	1948	1502994
Z	469m SW	Glass Works	1905	1477025
Z	470m SW	Refuse Heap	1905	1436684
Z	470m SW	Railway Sidings	1938	1556445
Z	471m SW	Glass Works	1892	1525994
Y	474m SW	Unspecified Tanks	1938	1492627
Z	474m SW	Railway Sidings	1948	1513453
Z	474m SW	Railway Sidings	1905	1521913

ID	Location	Land Use	Date	Group ID
Y	476m SW	Unspecified Tanks	1957	1536680
Y	477m SW	Unspecified Tanks	1948	1492627
Y	477m SW	Unspecified Tanks	1905	1530481
AB	478m W	Unspecified Works	1988	1503395
AB	478m W	Unspecified Works	1981	1503395
AB	478m W	Unspecified Works	1967	1524730
Y	480m SW	Unspecified Tank	1992	1505533
Y	480m SW	Unspecified Tank	1971	1505533
Y	480m SW	Unspecified Tank	1980	1505533
Y	480m SW	Gasometer	1892	1420674
Z	487m SW	Railway Sidings	1892	1542311
Y	491m SW	Unspecified Pit	1892	1502696
Y	491m SW	Unspecified Pit	1905	1500928
AD	493m NW	Unspecified Mills	1992	1501098
AD	493m NW	Unspecified Mills	1971	1501098
AD	493m NW	Unspecified Mills	1980	1496184
AD	496m NW	Unspecified Mills	1938	1474858
Z	497m W	Unspecified Commercial/Industrial	1988	1410977
Z	497m W	Unspecified Works	1981	1557692
Z	497m W	Unspecified Works	1974	1557692
Z	497m W	Unspecified Works	1967	1557692
Z	497m W	Unspecified Works	1955	1539382
Z	498m SW	Refuse Heap	1892	1436685
AD	498m NW	Unspecified Mills	1948	1474858
AE	498m SW	Unspecified Ground Workings	1938	1464437
AE	498m SW	Unspecified Ground Workings	1938	1464437
AE	499m SW	Unspecified Ground Workings	1905	1471386
AE	500m SW	Unspecified Heap	1892	1417473

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	26

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
A	120m SW	Tanks	1954	242842
A	120m SW	Tanks	1954	242842
A	134m SW	Unspecified Tank	1954	233911
A	135m SW	Unspecified Tank	1954	233911
A	142m SW	Unspecified Tank	1954	249579
A	142m SW	Unspecified Tank	1954	249579
G	251m NW	Unspecified Tank	1954	223586
G	255m NW	Unspecified Tank	1954	239898
G	255m NW	Unspecified Tank	1971	239898
G	257m NW	Unspecified Tank	1893	239933
G	298m NW	Unspecified Tank	1933	223589
R	419m SE	Unspecified Tank	1954	240767
R	419m SE	Unspecified Tank	1953	241588
Z	469m SW	Unspecified Tank	1954	241083
Z	470m SW	Unspecified Tank	1953	243385
Z	470m SW	Unspecified Tank	1968	243385
Y	476m SW	Unspecified Tank	1954	223585
Y	476m SW	Gasholder	1968	230024
Y	476m SW	Tanks	1953	230600
Y	476m SW	Gas Holder	1992	233030
AC	481m W	Tanks	1954	245811
AC	481m W	Tanks	1954	245811
AC	481m W	Tanks	1971	245811

ID	Location	Land Use	Date	Group ID
AC	481m W	Tanks	1981	245811
Z	488m SW	Unspecified Tank	1953	246497
Z	497m SW	Unspecified Tank	1954	246497

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**10**

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
F	196m SE	Electricity Substation	1992	135556
F	196m SE	Electricity Substation	1971	135556
T	422m N	Electricity Substation	1954	139489
T	422m N	Electricity Substation	1954	139489
T	423m N	Electricity Substation	1990	143512
T	423m N	Electricity Substation	1976	136870
T	424m N	Electricity Substation	1981	143512
T	424m N	Electricity Substation	1990	143512
Y	476m SW	Gasholder	1968	131732
Y	476m SW	Gas Holder	1992	131992

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.

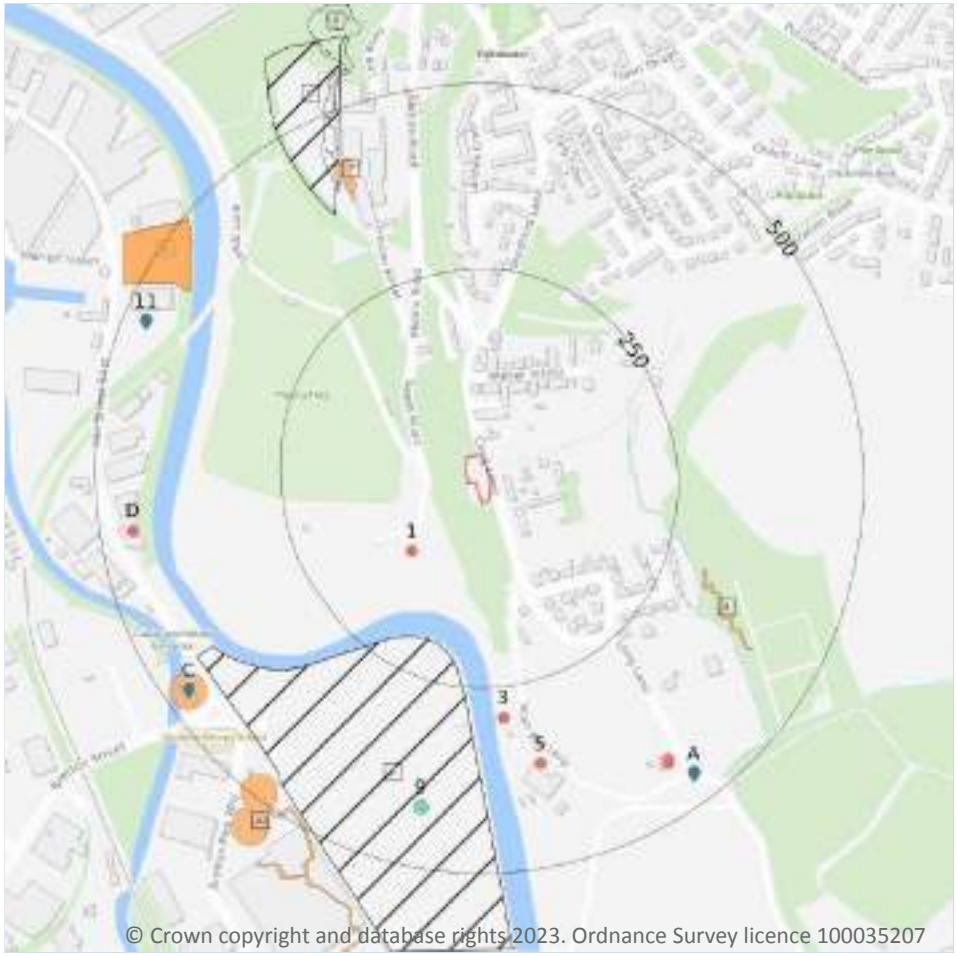
2.5 Historical garages

Records within 500m	0

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'.

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Historical landfill (EA/NRW)

Historical landfill (BGS)

Historical landfill (LA/OS)

Historical waste sites

Licensed waste sites

Waste exemptions

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	1

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.

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Address	BGS Number	Risk	Waste Type
9	420m S	Bretton Street, Dewsbury, Yorks	636	Risk to minor aquifer	N/A

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	**1**

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

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Site address	Source	Data type
8	405m NW	Refuse Tip	1975 mapping	Polygon

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 34 >**

ID	Location	Details		
2	197m S	Site Address: Tipping Site, Dewsbury, Yorkshire Licence Holder Address: -	Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: - Licence Surrender: -	Operator: Hoveringham Gravels Limited Licence Holder: - First Recorded 31/05/1970 Last Recorded: -
6	371m NW	Site Address: Land adjacent to Little Royd Mill, Low Road, Earlsheaton, Dewsbury Licence Holder Address: Low Road, Earlsheaton, Dewsbury	Waste Licence: Yes Site Reference: 4700/0218 Waste Type: Inert, Commercial Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 05/02/1980 Licence Surrender: 10/05/1993	Operator: - Licence Holder: Hotwork Limited First Recorded 31/12/1980 Last Recorded: 31/12/1982

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

3.5 Historical waste sites

Records within 500m	6

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

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Address	Further Details	Date
4	303m SE	Site Address: N/A	Type of Site: Ground Workings and Refuse Heap Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1954
7	373m NW	Site Address: N/A	Type of Site: Ground Workings and Refuse Heap Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1954
B	435m NW	Site Address: N/A	Type of Site: Waste Mills Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1954
B	435m NW	Site Address: N/A	Type of Site: Waste Reclamation Crown Mills Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1954
C	444m SW	Site Address: Mill Street, East, Bretton Street, DEWSBURY, West Yorkshire, WF12 9	Type of Site: Waste Transfer Station Planning application reference: 90655 Description: Scheme comprises the installation of a new waste transfer station & re-cycling depot. This will also include an office and a 17 space Tarmac car park. Scheme comprises the installation of a new waste transfer station & re-cycling depot. This will a include an office and a 17 space Tarmac car park. Data source: Historic Planning Application Data Type: Point	-
10	466m SW	Site Address: N/A	Type of Site: Ground Workings and Refuse Heap Planning application reference: N/A Description: N/A Data source: Historic Mapping Data Type: Polygon	1954

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

3.6 Licensed waste sites

Records within 500m	**5**

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

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Details		
A	461m SE	Site Name: Mitchell Laithes Wwtw Site Address: Clough Lane, Earlsheaton, Dewsbury, West Yorkshire, WF12 8LL Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: YWS010 EPR reference: EA/EPR/LP3492SG/V003 Operator: Yorkshire Water Services Ltd Waste Management licence No: 65554 Annual Tonnage: 75000	Issue Date: 19/09/2007 Effective Date: - Modified: 31/03/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC
A	461m SE	Site Name: Mitchell Laithes Wwtw Site Address: Clough Lane, Earlsheaton, Dewsbury, West Yorkshire, WF12 8LL Correspondence Address: -	Type of Site: Biological Treatment Facility Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: YWS010 EPR reference: EA/EPR/LP3492SG/V003 Operator: Yorkshire Water Services Ltd Waste Management licence No: 65554 Annual Tonnage: 75000	Issue Date: 19/09/2007 Effective Date: - Modified: 31/03/2016 Surrendered Date: - Expiry Date: - Cancelled Date: - Status: To PPC
C	468m SW	Site Name: Mill Street East Side Site Address: Canal Works, Mill Street East, Dewsbury, West Yorkshire, WF12 7BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KMM001 EPR reference: EA/EPR/HB3504MN/T001 Operator: K & M Metals Limited Waste Management licence No: 65186 Annual Tonnage: 4999	Issue Date: 27/10/2003 Effective Date: 16/07/2019 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred

ID	Location	Details		
C	468m SW	Site Name: Mill Street East Side Site Address: Canal Works, Mill Street East, Dewsbury, West Yorkshire, WF12 7BQ Correspondence Address: -	Type of Site: Household, Commercial & Industrial Waste T Stn Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: WIL004 EPR reference: EA/EPR/QP3794ZU/A001 Operator: John And Dennis Wilkinson Waste Management licence No: 65186 Annual Tonnage: 4999	Issue Date: 27/10/2003 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued
11	469m NW	Site Name: Dewsbury Depot Site Address: NORTHERN POWERGRID (YORKSHIRE) PLC, Dewsbury Depot, Mill Street East, West Yorkshire, WF12 9BD Correspondence Address: -	Type of Site: Storage of electrical insulating oils Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: - EPR reference: EA/EPR/WE2033AA/A001 Operator: NORTHERN POWERGRID (YORKSHIRE) PLC Waste Management licence No: 120021 Annual Tonnage: -	Issue Date: 23/01/2019 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued

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

3.7 Waste exemptions

Records within 500m **10**

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

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	116m SW	SANDS MILL, SANDS ROAD, EARLSHEATON, DEWSBURY, WF12 8JZ	WEX092245	Storing waste exemption	Not on a farm	Storage of waste in secure containers
3	292m S	Scarr End Mill Scarr End Lane DEWSBURY West Yorkshire WF12 8LN	EPR/HF0709CQ/A001	Using waste exemption	Non-Agricultural Waste Only	Use of waste in construction

ID	Location	Site	Reference	Category	Sub-Category	Description
5	361m S	Scarr End Mill Scarr End Lane DEWSBURY West Yorkshire WF12 8LN	EPR/ZH0472BG/A001	Treating waste exemption	Non-Agricultural Waste Only	Recovery of textiles
A	426m SE	Mitchell Laithes WwTW (Dewsbury), Long Lane, Mitcell Laithes Farm, Dewsbury, West Yorkshire, WF12 8LL	WEX180874	Treating waste exemption	Not on a farm	Recovery of waste at a waste water treatment works
A	429m SE	Yorkshirewater, Dewsbury Waste Water Treatment Works (Mitchell Laithes), Long Lane (Track off), Dewsbury, WF12 8LL	WEX231376	Using waste exemption	Not on a farm	Use of sludge for the purposes of re-seeding a waste water treatment plant
D	457m W	Canal Works, Mill Street East, DEWSBURY, WF12 9BQ	WEX201264	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	457m W	Canal Works, Mill Street East, DEWSBURY, WF12 9BQ	WEX201264	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	457m W	Canal Works, Mill Street East, DEWSBURY, WF12 9BQ	WEX326706	Storing waste exemption	Not on a farm	Storage of waste in secure containers
D	457m W	Canal Works, Mill Street East, DEWSBURY, WF12 9BQ	WEX326706	Storing waste exemption	Not on a farm	Storage of waste in a secure place
D	457m W	Canal Works, Mill Street East, DEWSBURY, WF12 9BQ	WEX310833	Treating waste exemption	Not on a farm	Recovery of scrap metal

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

4 Current industrial land use



4.1 Recent industrial land uses

Records within 250m	0

Current potentially contaminative industrial sites.

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	1

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.

Features are displayed on the Current industrial land use map on **page 40 >**

ID	Location	Company	Address	Operational status	Tier
5	421m W	British Gas	British Gas, Dewsbury Gasworks, Mill Street East,Dewsbury	Historical NIHHS Site	-

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	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 40 >**

ID	Location	Address	Details	
B	372m NW	Magma Ceramics, Dewsbury Works, Low Road, Earlsheaton, Dewsbury, WF12 8BU	Process: Manufacture of Clay Status: Current Permit Permit Type: Part A2	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
B	379m NW	Zedmark Refractories Ltd, Little Royd Mills, Low Rd, Earlsheaton, WF12 8BU	Process: Manufacture of Clay 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	13

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 40 >**

ID	Location	Address	Details	
2	155m S	SCARR END CSO, DEWSBURY, WEST YORKSHIRE, WF12 8JZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WADC1309 Permit Version: 3 Receiving Water: RIVER CALDER	Status: SURRENDERED UNDER EPR 2010 Issue date: 09/06/2017 Effective Date: 09/06/2017 Revocation Date: 17/10/2019
A	324m N	SCARR END CSO, DEWSBURY, WEST YORKSHIRE, WF12 8JZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WADC1309 Permit Version: 2 Receiving Water: RIVER CALDER	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 14/04/2009 Effective Date: 14/04/2009 Revocation Date: 08/06/2017
A	324m N	SCARR END CSO, DEWSBURY, WEST YORKSHIRE, WF12 8JZ	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WADC1309 Permit Version: 1 Receiving Water: RIVER CALDER	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 18/09/1989 Effective Date: 18/09/1989 Revocation Date: 13/04/2009
C	374m S	THORNHILL DEWSBURY NO1 CSO, SCARR END LANE (TRACK OFF), EARLSHEATON, DEWSBURY, WEST YORKSHIRE, WF12 8LN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA8568 Permit Version: 2 Receiving Water: RIVER CALDER	Status: VARIED UNDER EPR 2010 Issue date: 28/08/2020 Effective Date: 28/08/2020 Revocation Date: -
C	389m S	THORNHILL DEWSBURY NO1 CSO, SCARR END LANE (TRACK OFF), EARLSHEATON, DEWSBURY, WEST YORKSHIRE, WF12 8LN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA8568 Permit Version: 1 Receiving Water: RIVER CALDER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 18/03/2005 Effective Date: 31/03/2005 Revocation Date: 27/08/2020

ID	Location	Address	Details	
C	389m S	THORNHILL DEWSBURY NO1 CSO, SCARR END LANE (TRACK OFF), EARLSHEATON, DEWSBURY, WEST YORKSHIRE, WF12 8LN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: YWUCD2/29 Permit Version: 1 Receiving Water: RIVER CALDER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 12/11/1997 Effective Date: 12/11/1997 Revocation Date: 30/03/2005
C	421m S	YWS UNKNOWN SITES DEFAULT	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/48 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 10/05/1963 Effective Date: 10/05/1963 Revocation Date: 10/06/1993
C	421m S	YWS UNKNOWN SITES DEFAULT	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/48 Permit Version: 2 Receiving Water: VARIES WITH OUTLET	Status: REVISED CONSENT, BY NOTICE (SECTION 37(1)) Issue date: 11/06/1993 Effective Date: 11/06/1993 Revocation Date: 24/01/1995
C	421m S	THORNHILL SYPHON CSO, SCARR END LANE (TRACK OFF), EARLSHEATON, DEWSBURY, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WRA9169 Permit Version: 1 Receiving Water: RIVER CALDER	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 22/08/2007 Effective Date: 22/08/2007 Revocation Date: -
D	458m SE	LONG LANE CSO, LONG LANE, EARLSHEATON, DEWSBURY, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WADC1090 Permit Version: 1 Receiving Water: CHICKENLEY BECK	Status: TRANSFERRED FROM WATER ACT 1989 Issue date: 18/09/1989 Effective Date: 18/09/1989 Revocation Date: 13/04/2009
D	458m SE	LONG LANE CSO, LONG LANE, EARLSHEATON, DEWSBURY, WEST YORKSHIRE	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: WADC1090 Permit Version: 2 Receiving Water: CHICKENLEY BECK	Status: SURRENDERED UNDER EPR 2010 Issue date: 14/04/2009 Effective Date: 14/04/2009 Revocation Date: 01/12/2010
E	463m SE	YWS UNKNOWN SITES DEFAULT	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/48 Permit Version: 1 Receiving Water: VARIES WITH OUTLET	Status: TRANSFERRED FROM R(PP)A 1951-1961 Issue date: 10/05/1963 Effective Date: 10/05/1963 Revocation Date: 10/06/1993

ID	Location	Address	Details	
E	463m SE	YWS UNKNOWN SITES DEFAULT	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: S/CB/48 Permit Version: 2 Receiving Water: VARIES WITH OUTLET	Status: REVISED CONSENT, BY NOTICE (SECTION 37(1)) Issue date: 11/06/1993 Effective Date: 11/06/1993 Revocation Date: 24/01/1995

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	**0**

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

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

4.15 Pollutant release to public sewer

Records within 500m	**0**

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	**0**

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

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

4.17 List 2 Dangerous Substances

Records within 500m	**0**

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	5

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 40 >**

ID	Location	Details	
1	123m SW	Incident Date: 11/01/2002 Incident Identification: 51944 Pollutant: Specific Waste Materials Pollutant Description: Metal Wastes	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
3	229m N	Incident Date: 01/10/2011 Incident Identification: 928404 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Other Atmospheric Pollutant or Effect	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 2 (Significant)
4	289m NE	Incident Date: 03/06/2013 Incident Identification: 1118208 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 2 (Significant) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
6	453m N	Incident Date: 06/10/2003 Incident Identification: 194593 Pollutant: Oils and Fuel Pollutant Description: Unidentified Oil	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
7	475m SW	Incident Date: 15/05/2002 Incident Identification: 78897 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 2 (Significant) 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.

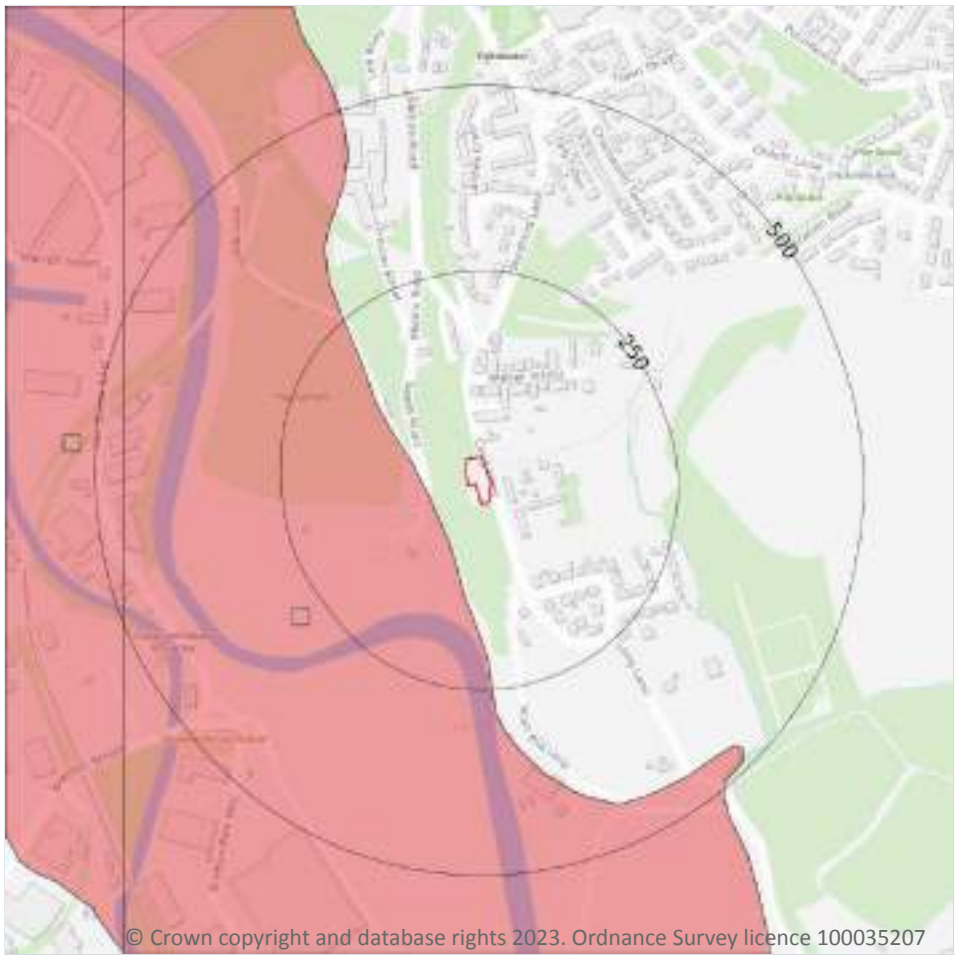
4.21 Pollution inventory radioactive waste

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



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m	2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 48 >**

ID	Location	Designation	Description
1	54m SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	462m W	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



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	2

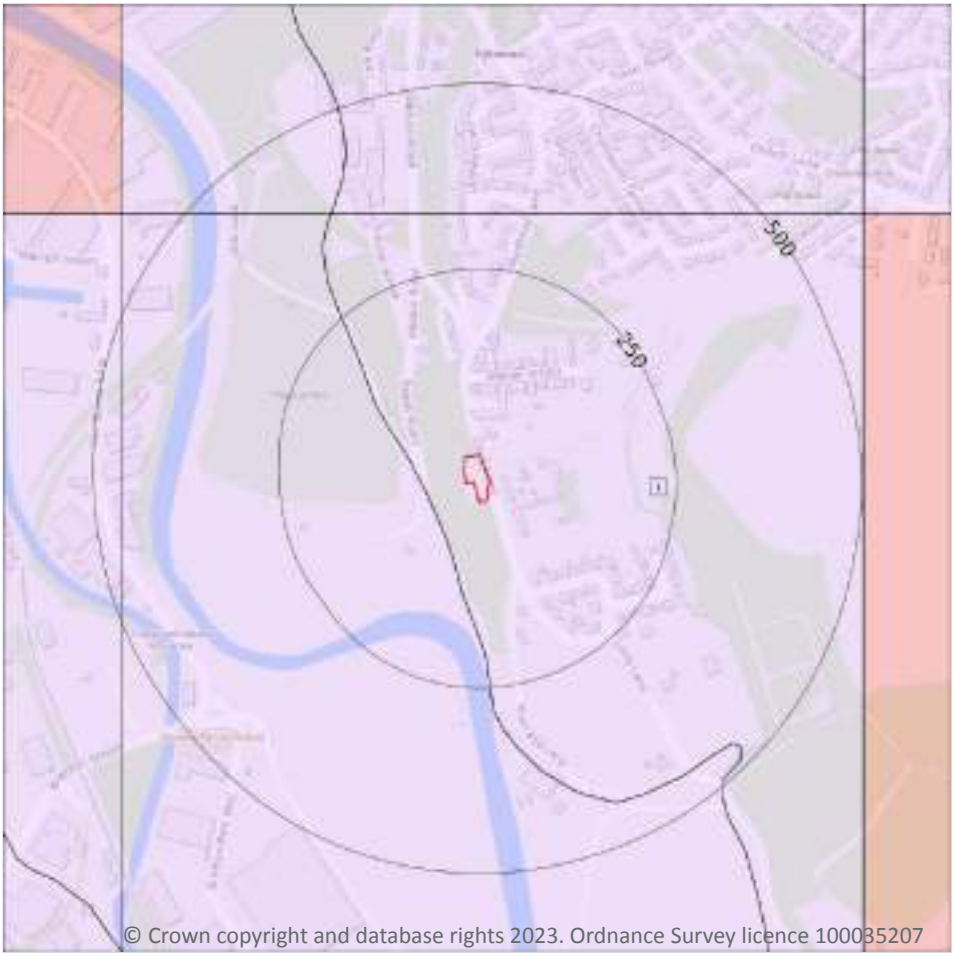
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 50 >**

ID	Location	Designation	Description
1	**On site**	**Secondary A**	**Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers**
2	462m W	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	1

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

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

Features are displayed on the Groundwater vulnerability map on **page 52 >**

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: High**	**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 54 >**

ID	Location	Details	
A	771m NW	Status: Active Licence No: 2/27/13/169 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - DEWSBURY Data Type: Point Name: THOMAS CHADWICK & SONS LTD Easting: 424900 Northing: 421200	Annual Volume (m^3): 140000 Max Daily Volume (m^3): 576 Original Application No: 6451 Original Start Date: 26/01/1993 Expiry Date: - Issue No: 100 Version Start Date: 25/04/1997 Version End Date: -
A	771m NW	Status: Historical Licence No: 2/27/13/169 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: THOMAS CHADWICK & SONS LIMITED Easting: 424900 Northing: 421200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/01/1993 Expiry Date: - Issue No: 100 Version Start Date: 25/04/1997 Version End Date: -
-	779m NW	Status: Active Licence No: 2/27/13/169 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - DEWSBURY Data Type: Point Name: THOMAS CHADWICK & SONS LTD Easting: 425000 Northing: 421300	Annual Volume (m^3): 140000 Max Daily Volume (m^3): 576 Original Application No: 6451 Original Start Date: 26/01/1993 Expiry Date: - Issue No: 100 Version Start Date: 25/04/1997 Version End Date: -
-	779m NW	Status: Historical Licence No: 2/27/13/169 Details: General use relating to Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE Data Type: Point Name: THOMAS CHADWICK & SONS LIMITED Easting: 425000 Northing: 421300	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 26/01/1993 Expiry Date: - Issue No: 100 Version Start Date: 25/04/1997 Version End Date: -

ID	Location	Details	
-	1383m W	Status: Active Licence No: 2/27/13/226/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - DEWSBURY Data Type: Point Name: CALDER DYEING LTD Easting: 424093 Northing: 420451	Annual Volume (m^3): 115000 Max Daily Volume (m^3): 500 Original Application No: NPS/WR/033441 Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 2 Version Start Date: 15/05/2020 Version End Date: -
-	1385m W	Status: Historical Licence No: 2/27/13/226 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - DEWSBURY Data Type: Point Name: CALDER DYEING LTD Easting: 424090 Northing: 420460	Annual Volume (m^3): 75000 Max Daily Volume (m^3): 330 Original Application No: - Original Start Date: 19/10/2007 Expiry Date: 31/03/2015 Issue No: 1 Version Start Date: 19/10/2007 Version End Date: -
-	1385m W	Status: Historical Licence No: 2/27/13/226/R01 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: GROUNDWATERS Point: BOREHOLE - COAL MEASURES - DEWSBURY Data Type: Point Name: CALDER DYEING LTD Easting: 424090 Northing: 420460	Annual Volume (m^3): 75000 Max Daily Volume (m^3): 330 Original Application No: - Original Start Date: 01/04/2015 Expiry Date: 31/03/2027 Issue No: 1 Version Start Date: 01/04/2015 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**7**

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 54 >**

ID	Location	Details	
-	927m NW	Status: Active Licence No: 2/27/13/191 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: RIVER CALDER - DEWSBURY X 2 ABSTRACTION POINTS Data Type: Point Name: CALDER MASONARY Easting: 424700 Northing: 421200	Annual Volume (m^3): 9720 Max Daily Volume (m^3): 36 Original Application No: 6812 Original Start Date: 23/05/1997 Expiry Date: - Issue No: 101 Version Start Date: 01/04/2008 Version End Date: -
-	927m NW	Status: Historical Licence No: 2/27/13/191 Details: General use relating to Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: RIVER CALDER Data Type: Point Name: CALDER MASONARY Easting: 424700 Northing: 421200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/05/1997 Expiry Date: - Issue No: 100 Version Start Date: 23/05/1997 Version End Date: -
-	1093m NW	Status: Active Licence No: 2/27/13/163 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: RIVER CALDER - DEWSBURY Data Type: Point Name: HENRY DAY & SONS LTD Easting: 424560 Northing: 421290	Annual Volume (m^3): 15000 Max Daily Volume (m^3): 90.92 Original Application No: 6210 Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 Version End Date: -
-	1093m NW	Status: Historical Licence No: 2/27/13/163 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: SURFACE WATER Point: RIVER CALDER Data Type: Point Name: HENRY DAY & SONS LTD Easting: 424560 Northing: 421290	Annual Volume (m^3): 15000 Max Daily Volume (m^3): 90.92 Original Application No: - Original Start Date: 01/06/1989 Expiry Date: - Issue No: 100 Version Start Date: 01/06/1989 Version End Date: -

ID	Location	Details	
-	1174m NW	Status: Historical Licence No: 2/27/13/129 Details: Boiler Feed Direct Source: SURFACE WATER Point: RIVER CALDER Data Type: Point Name: ARONSTEAD LIMITED Easting: 424510 Northing: 421360	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 24/02/1971 Expiry Date: - Issue No: 100 Version Start Date: 16/03/1978 Version End Date: -
-	1623m W	Status: Historical Licence No: 2/27/13/230 Details: Mineral Washing Direct Source: SURFACE WATER Point: RIVER CALDER - DEWSBURY Data Type: Point Name: LAFARGE AGGREGATES LTD Easting: 423890 Northing: 420240	Annual Volume (m^3): 680000 Max Daily Volume (m^3): 2520 Original Application No: - Original Start Date: 07/07/2008 Expiry Date: 31/03/2015 Issue No: 2 Version Start Date: 26/09/2013 Version End Date: -
-	1623m W	Status: Historical Licence No: 2/27/13/230 Details: Dust Suppression Direct Source: SURFACE WATER Point: RIVER CALDER - DEWSBURY Data Type: Point Name: LAFARGE AGGREGATES LTD Easting: 423890 Northing: 420240	Annual Volume (m^3): 680000 Max Daily Volume (m^3): 2520 Original Application No: - Original Start Date: 07/07/2008 Expiry Date: 31/03/2015 Issue No: 2 Version Start Date: 26/09/2013 Version End Date: -

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	2

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

Features are displayed on the Hydrology map on **page 60 >**

ID	Location	Type of water feature	Ground level	Permanence	Name
B	178m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	River Calder

ID	Location	Type of water feature	Ground level	Permanence	Name
3	184m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	Chickenley 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 60 >**

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 60 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River**	**Calder from River Colne to River Chald**	**GB104027062631**	**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 60 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
1	181m S	River	Calder from River Colne to River Chald	GB104027062631 ↗	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**

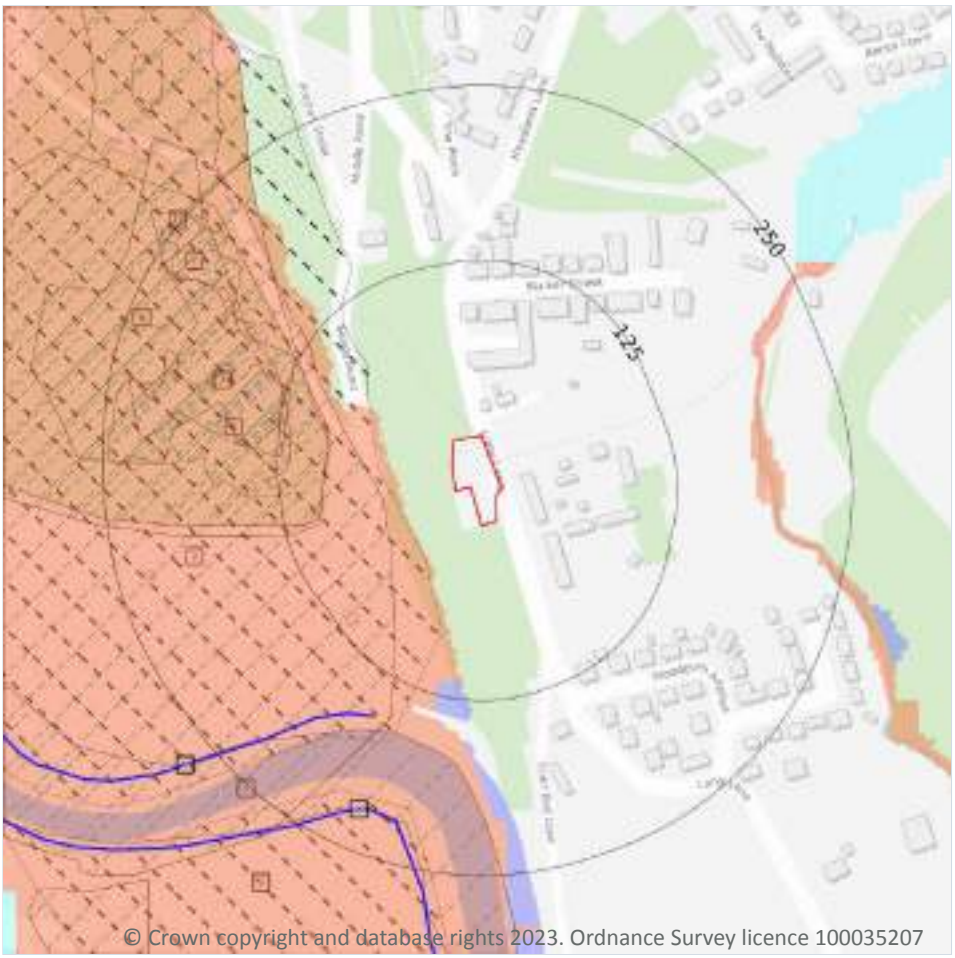
Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

Features are displayed on the Hydrology map on **page 60 >**

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	1

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 63 >**

Distance	Flood risk category
On site	**N/A**
0 - 50m	High

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

7.2 Historical Flood Events

Records within 250m	**9**

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 63 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
2	52m W	December 2015 Flood Event	2015-12-25 2015-12-29	Main river	Channel capacity exceeded (no raised defences)	Fluvial
B	88m W	December 2015 Flood Event	2015-12-25 2015-12-29	Main river	Channel capacity exceeded (no raised defences)	Fluvial
B	89m W	River Calder. Horbury	2002-02-10 2002-02-13	Main river	Channel capacity exceeded (no raised defences)	Fluvial
A	117m W	Yorkshire	2015-12-29 2015-12-29	Unclassified	Unclassified	No data
3	119m W	2020 February Flood Incident - Storm Dennis	2020-02-15 2020-03-19	Drainage	Local drainage/surface water	No data
B	120m W	2020 February Flood Incident - Storm Ciara	2020-02-08 2020-02-14	Drainage	Local drainage/surface water	No data
6	160m S	2020 February Flood Incident - Storm Ciara/dennis	2020-02-08 2020-03-19	Main river	Channel capacity exceeded (no raised defences)	Fluvial
7	164m NW	Yorkshire	2015-12-29 2015-12-29	Unclassified	Unclassified	No data
11	250m NW	Yorkshire	2015-12-29 2015-12-29	Unclassified	Unclassified	No data

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

7.3 Flood Defences

Records within 250m	2

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.

Features are displayed on the River and coastal flooding map on **page 63 >**

ID	Location	Update
5	156m SW	08/11/2022
10	218m S	08/11/2022

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	2

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.

Features are displayed on the River and coastal flooding map on **page 63 >**

ID	Location	Update
A	42m SW	Flood Storage Area
9	209m S	Flood Storage Area

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 63 >**

Location	Type
38m W	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

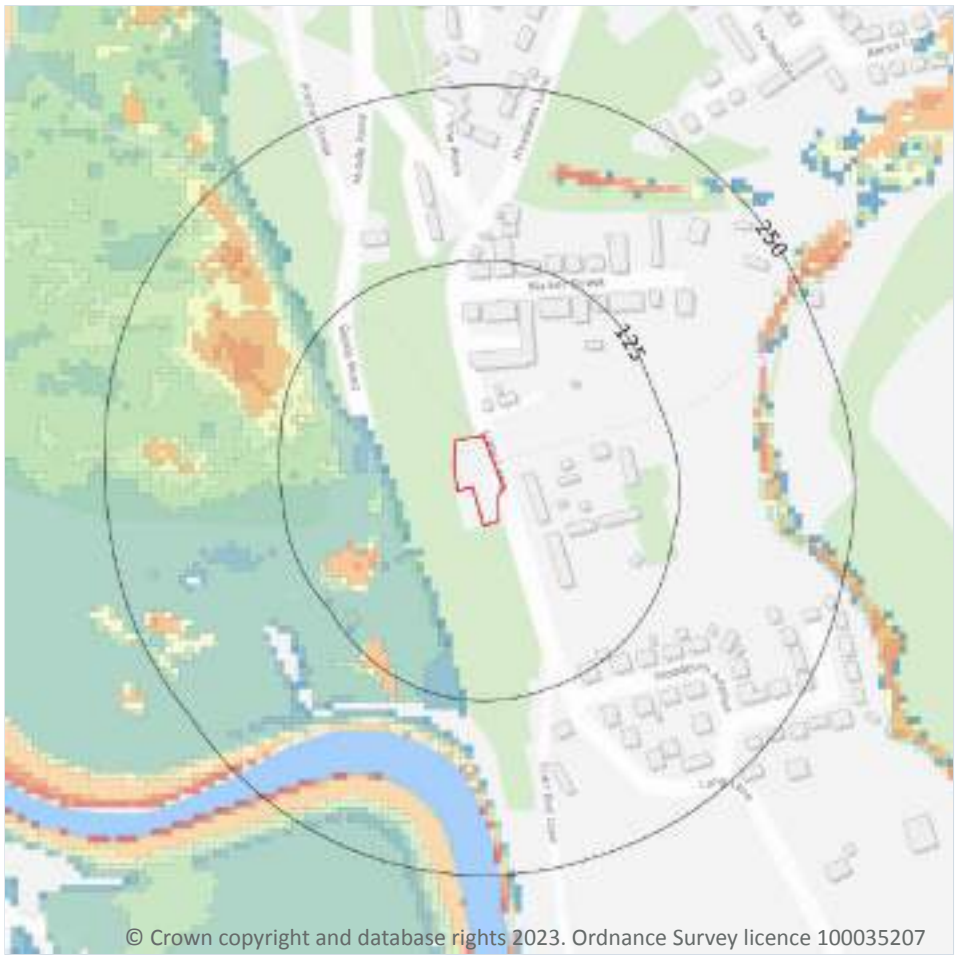
Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

Features are displayed on the River and coastal flooding map on **page 63 >**

Location	Type
41m W	Zone 3 - (Fluvial /Tidal 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	**Negligible**
Highest risk within 50m	**1 in 1000 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 68 >**

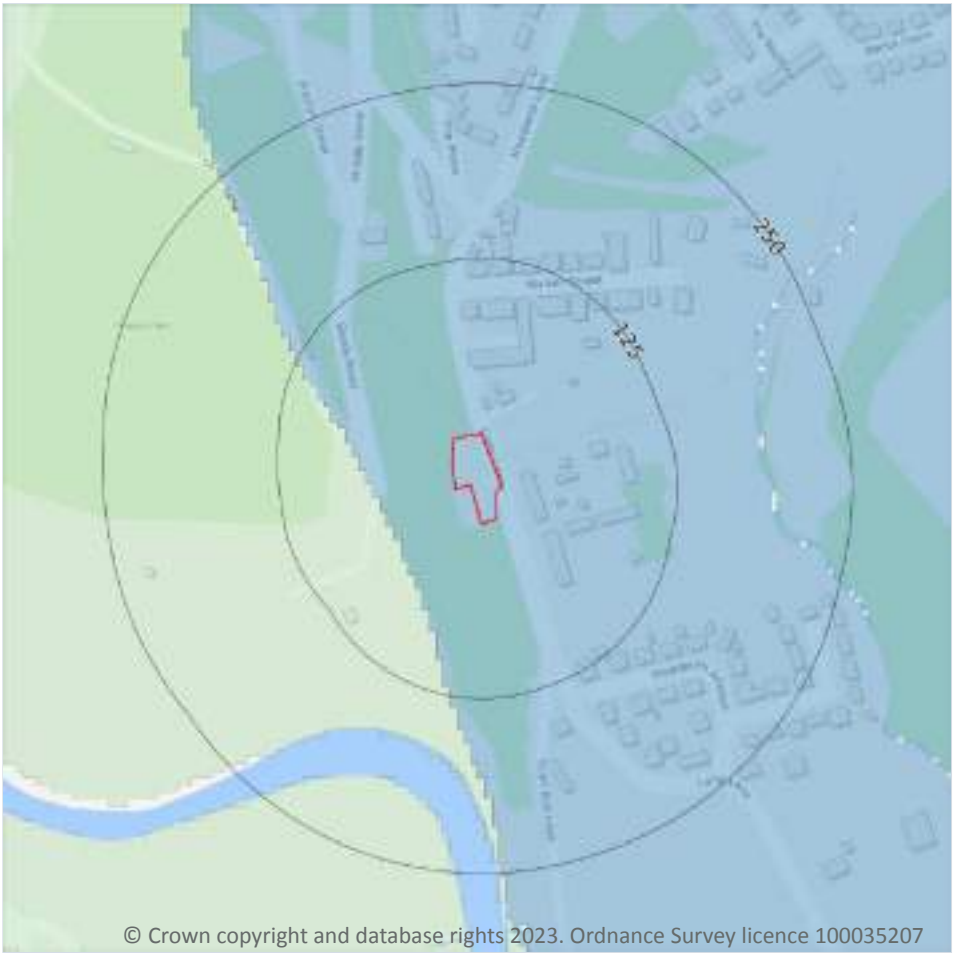
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Negligible
1 in 250 year	Negligible
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	**Negligible**

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

Features are displayed on the Groundwater flooding map on **page 70 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Local Nature Reserves (LNR)

Green Belt

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	1

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

Features are displayed on the Environmental designations map on **page 71 >**

ID	Location	Name	Data source
3	1036m SW	Sparrow Wood	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	0

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

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	5

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

Features are displayed on the Environmental designations map on **page 71 >**

ID	Location	Name	Local Authority name
1	**On site**	**South and West Yorkshire**	**Kirklees**
2	412m S	South and West Yorkshire	Wakefield
4	1316m E	South and West Yorkshire	Kirklees
5	1393m NE	South and West Yorkshire	Kirklees
-	1488m N	South and West Yorkshire	Kirklees

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.

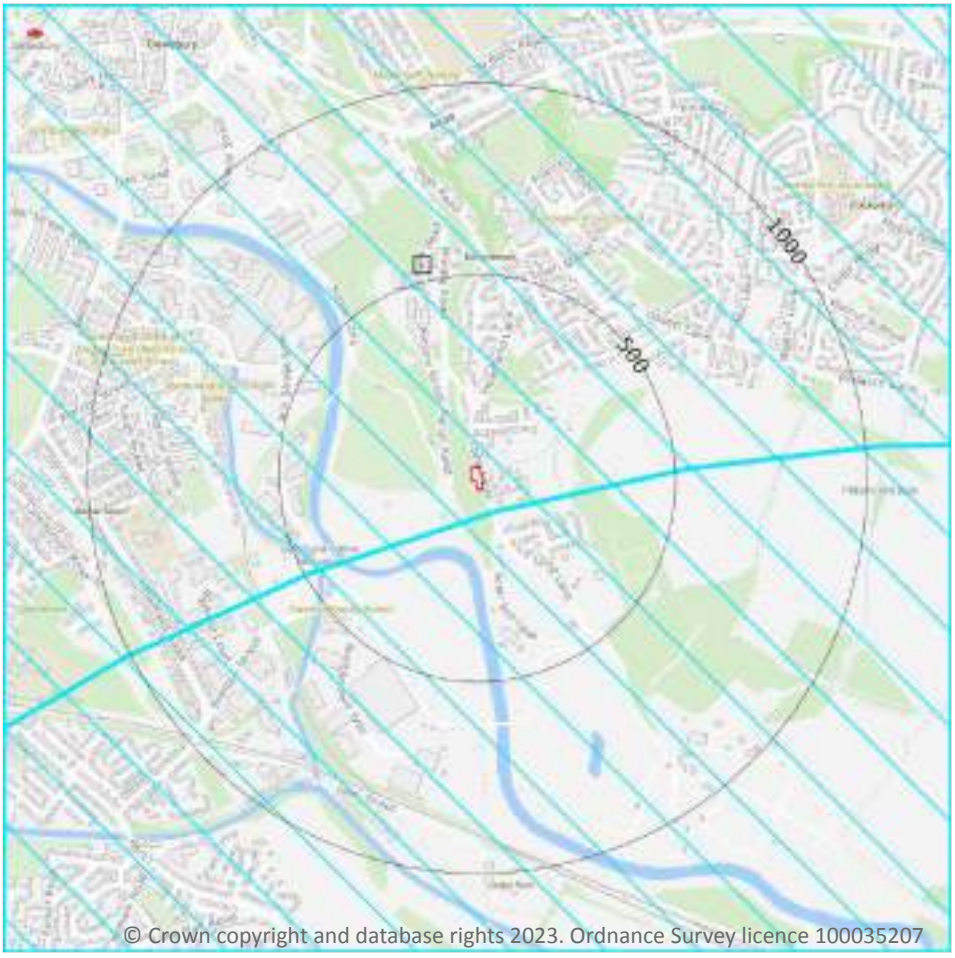
10.16 Nitrate Vulnerable Zones

Records within 2000m	0

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.

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	1

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

Features are displayed on the SSSI Impact Zones and Units map on **page 76 >**

ID	Location	Type of developments requiring consultation
1	On site	**Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m². Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

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.

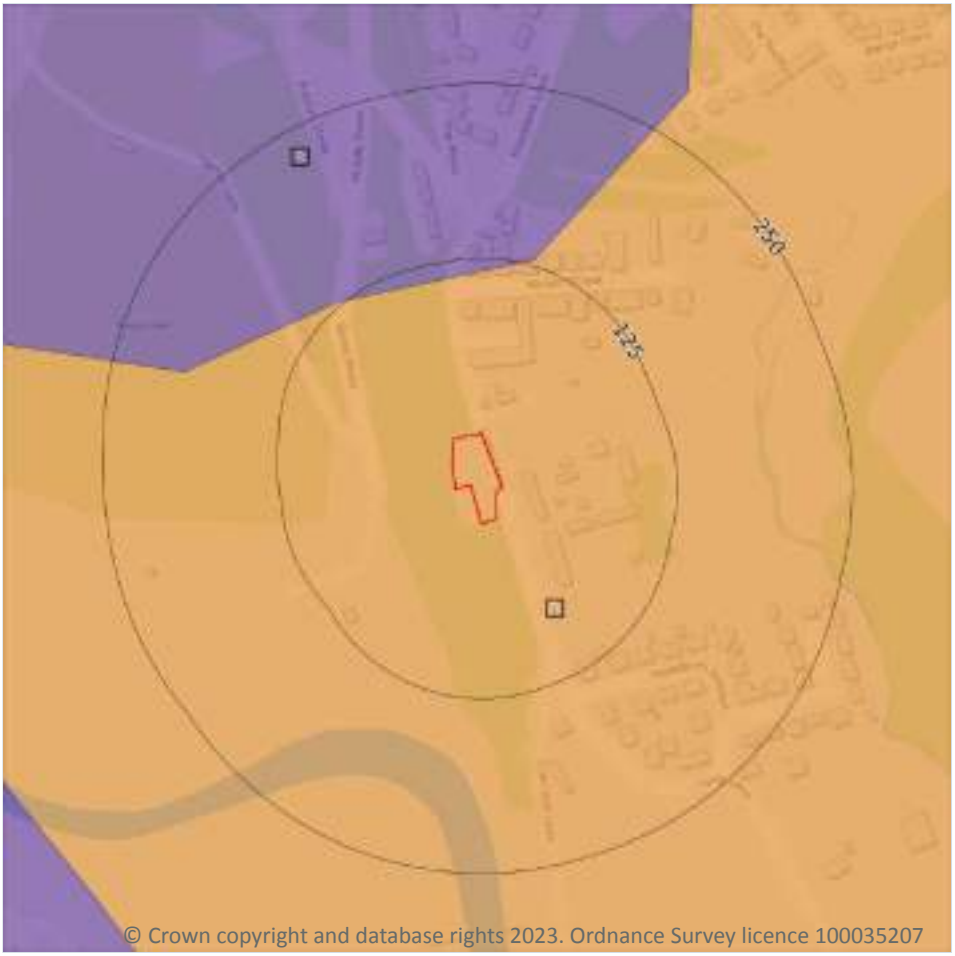
11.7 Registered Parks and Gardens

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 80 >**

ID	Location	Classification	Description
1	**On site**	**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.**
2	113m N	Urban	-

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

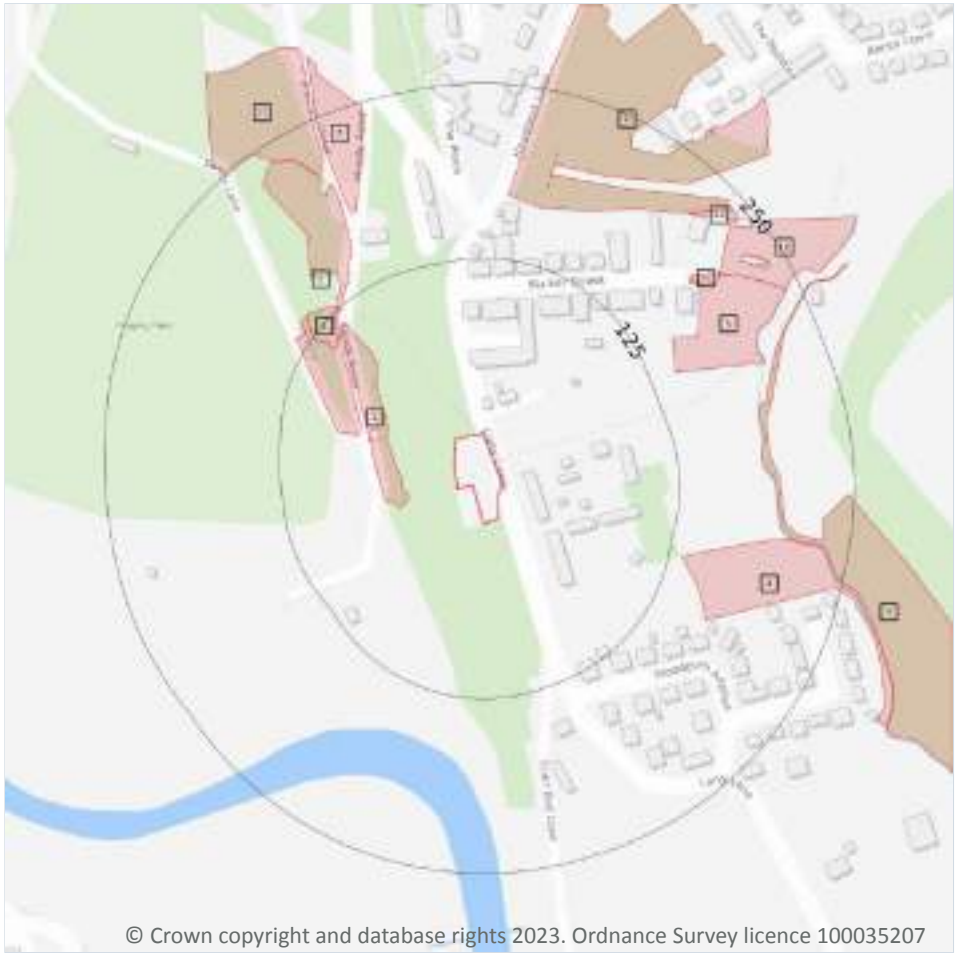
Records within 250m	1

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.

Location	Reference	Scheme	Start Date	End Date
229m S	827037	Countryside Stewardship (Middle Tier)	01/01/2020	31/12/2024

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	12

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 82 >**

ID	Location	Main Habitat	Other habitats
1	36m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	68m W	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	106m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	134m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	144m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
6	166m N	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
7	177m NW	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
8	183m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
9	185m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
10	204m NE	No main habitat but additional habitats present	Main habitat: DWOOD (INV > 50%)
11	213m NW	No main habitat but additional habitats present	Additional: DWOOD (INV 50%)
12	214m NE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	**0**

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

This data is sourced from Natural England.

13.3 Open Mosaic Habitat

Records within 250m	**0**

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

This data is sourced from Natural England.

13.4 Limestone Pavement Orders

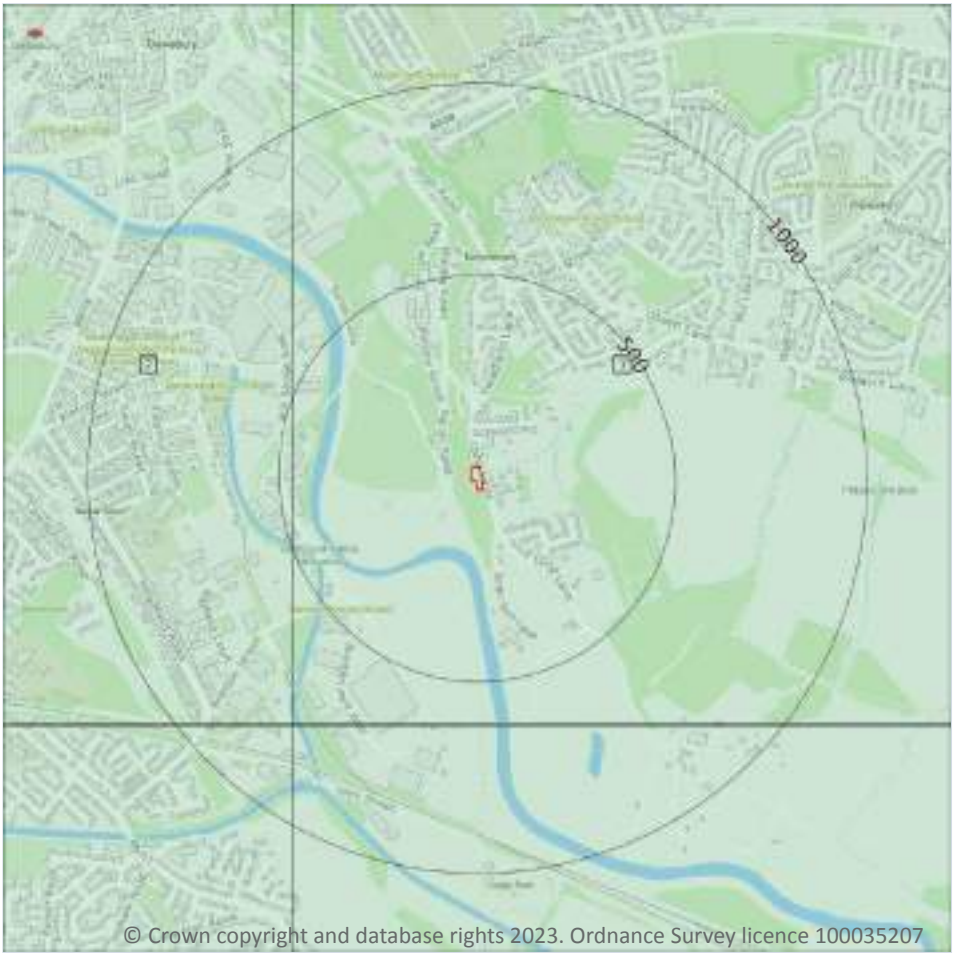
Records within 250m	**0**

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

Biodiversity Action Plan priority habitat in England.

This data is sourced from Natural England.

14 Geology 1:10,000 scale - Availability



Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

14.1 10k Availability

Records within 500m	2

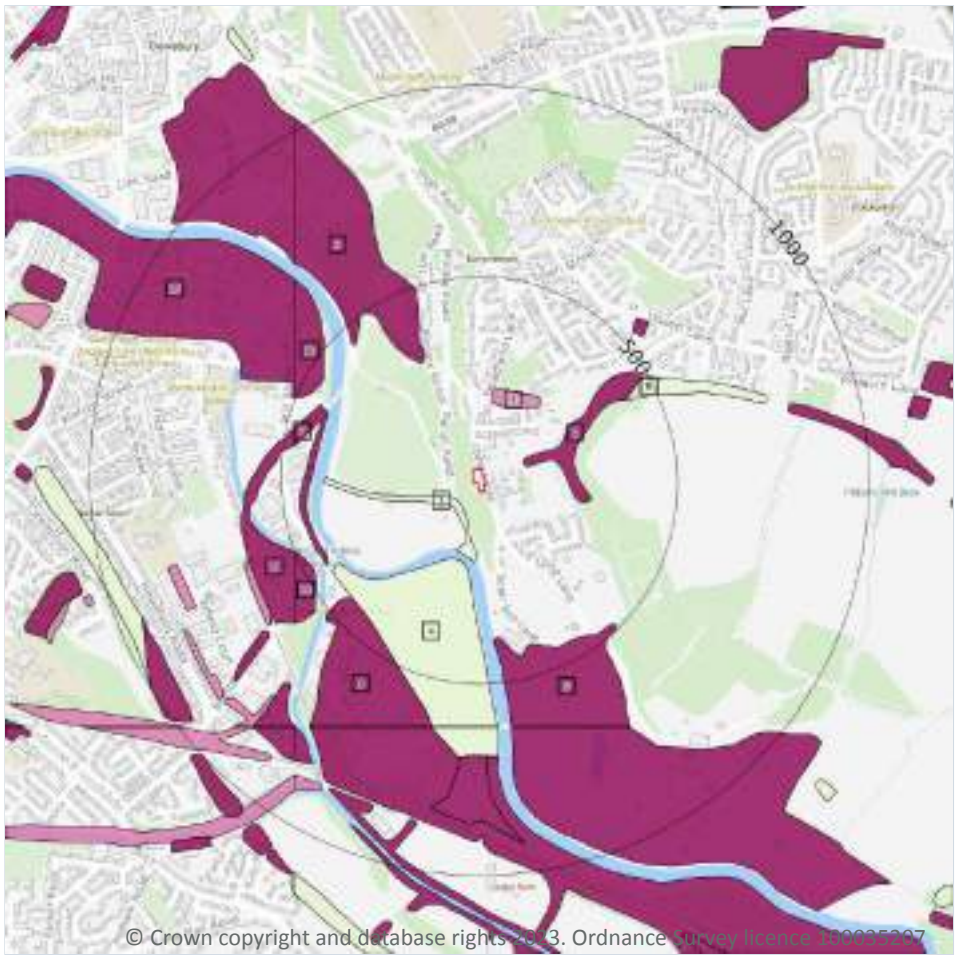
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 85 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SE22SE**
2	462m W	Full	Full	Full	Full	SE22SW

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

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

14.2 Artificial and made ground (10k)

Records within 500m	13

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.

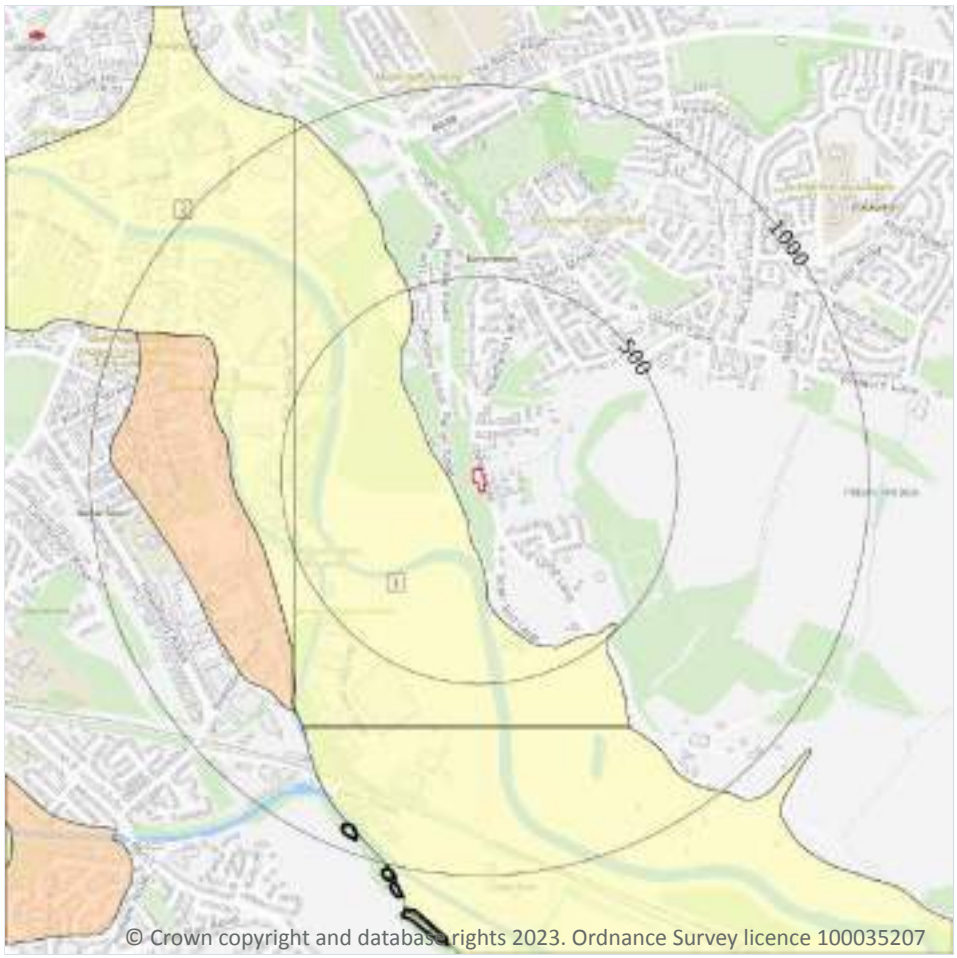
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 86 >**

ID	Location	LEX Code	Description	Rock description
1	59m SW	WMGR-ARTDP	Infilled Ground	Artificial Deposit
2	110m E	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
3	170m N	WGR-VOID	Worked Ground (Undivided)	Void
4	184m S	WMGR-ARTDP	Infilled Ground	Artificial Deposit

ID	Location	LEX Code	Description	Rock description
5	310m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	381m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
7	404m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
8	420m NE	WMGR-ARTDP	Infilled Ground	Artificial Deposit
9	434m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
10	455m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
11	467m W	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
12	474m SW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
13	499m NW	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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	2

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 88 >**

ID	Location	LEX Code	Description	Rock description
1	52m SW	ALV-XCSV	Alluvium - Clay, Sand And Gravel	Clay, Sand And Gravel
2	462m W	ALV-XCSV	Alluvium - Clay, Sand And Gravel	Clay, 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	8

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 90 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**TR-SDST**	**Thornhill Rock - Sandstone**	**Duckmantian Sub-age**
2	6m SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
3	83m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And Sandstone	Langsettian Sub-age

ID	Location	LEX Code	Description	Rock age
5	147m E	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
7	348m SE	TR-SDST	Thornhill Rock - Sandstone	Duckmantian Sub-age
9	361m SE	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian Sub-age - Duckmantian Sub-age
10	459m NW	ER-SDST	Emley Rock - Sandstone	Langsettian Sub-age
11	462m W	PLCM-MDSS	Pennine Lower Coal Measures Formation - Mudstone, Siltstone And 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	**4**

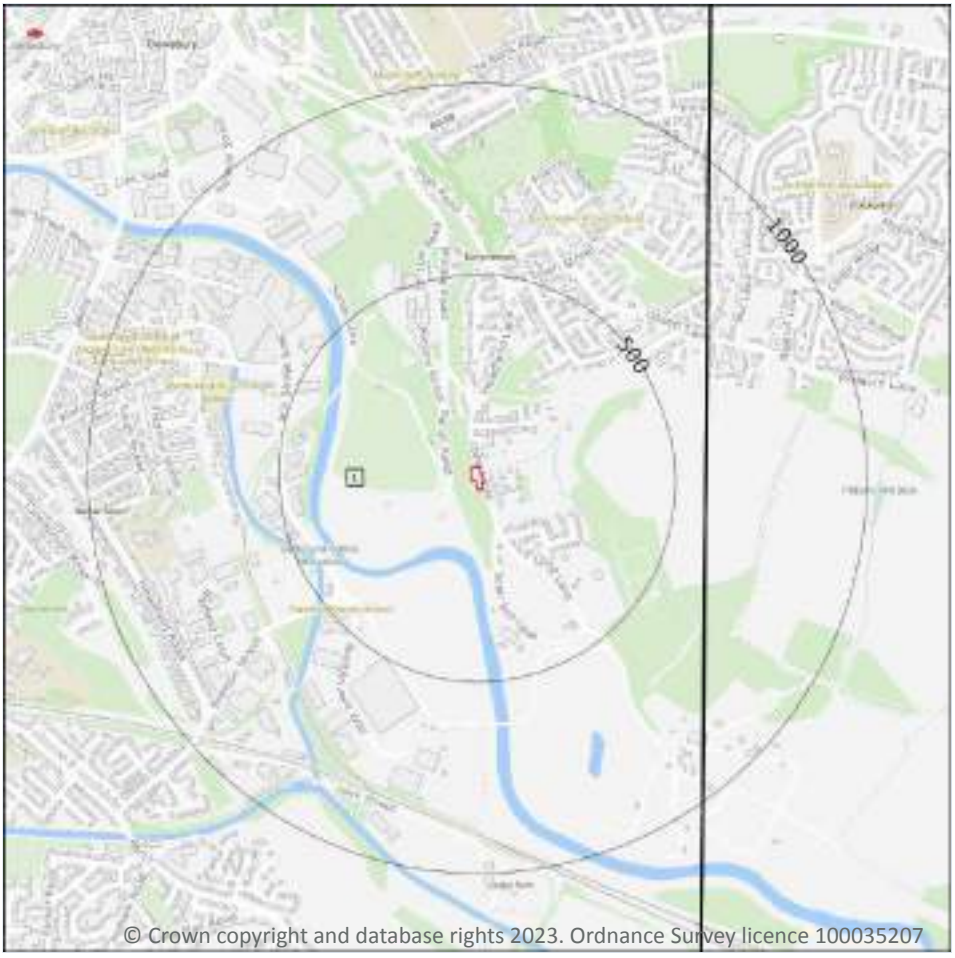
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 90 >**

ID	Location	Category	Description
4	84m W	ROCK	Coal seam, inferred
6	286m NW	ROCK	Coal seam, inferred
8	348m SE	FAULT	Normal fault, inferred
12	464m W	ROCK	Coal seam, inferred

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

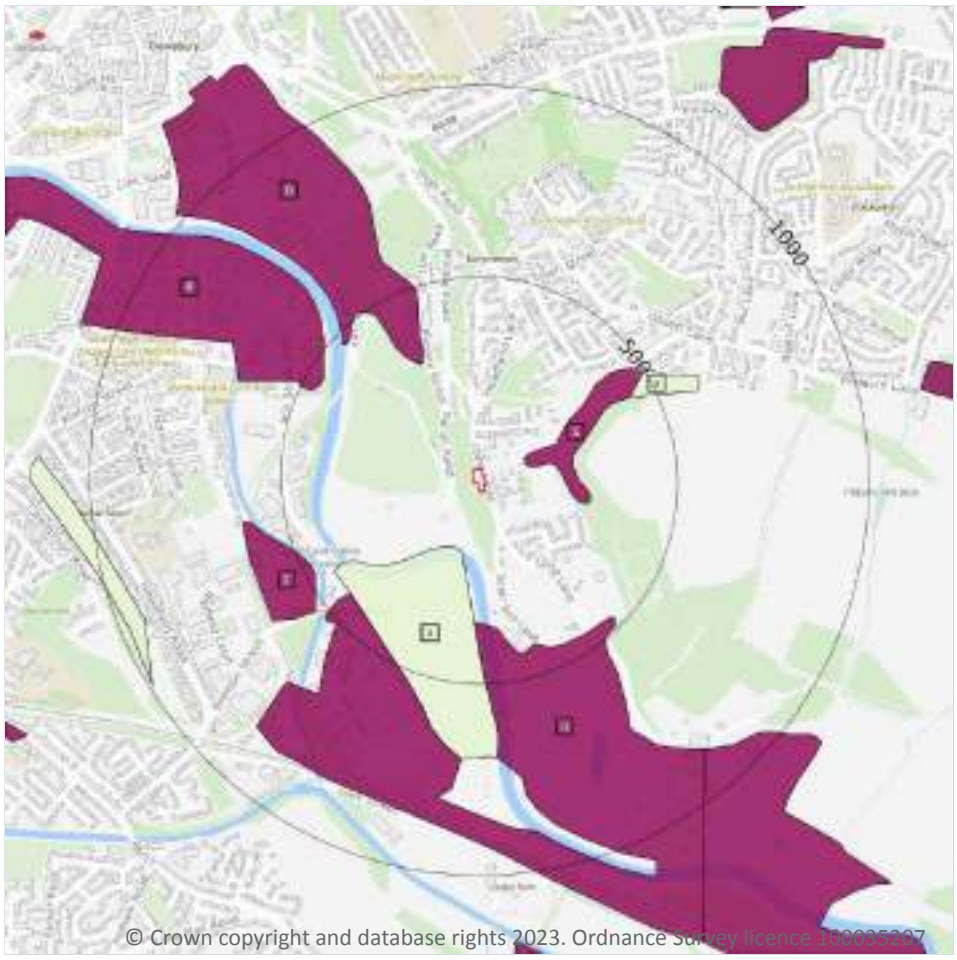
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 92 >**

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 **7**

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 93 >**

ID	Location	LEX Code	Description	Rock description
1	111m E	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
2	157m S	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
3	307m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
4	338m S	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

ID	Location	LEX Code	Description	Rock description
5	430m NE	WMGR-ARTDP	INFILLED GROUND	ARTIFICIAL DEPOSIT
6	455m NW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT
7	476m SW	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

This data is sourced from the British Geological Survey.

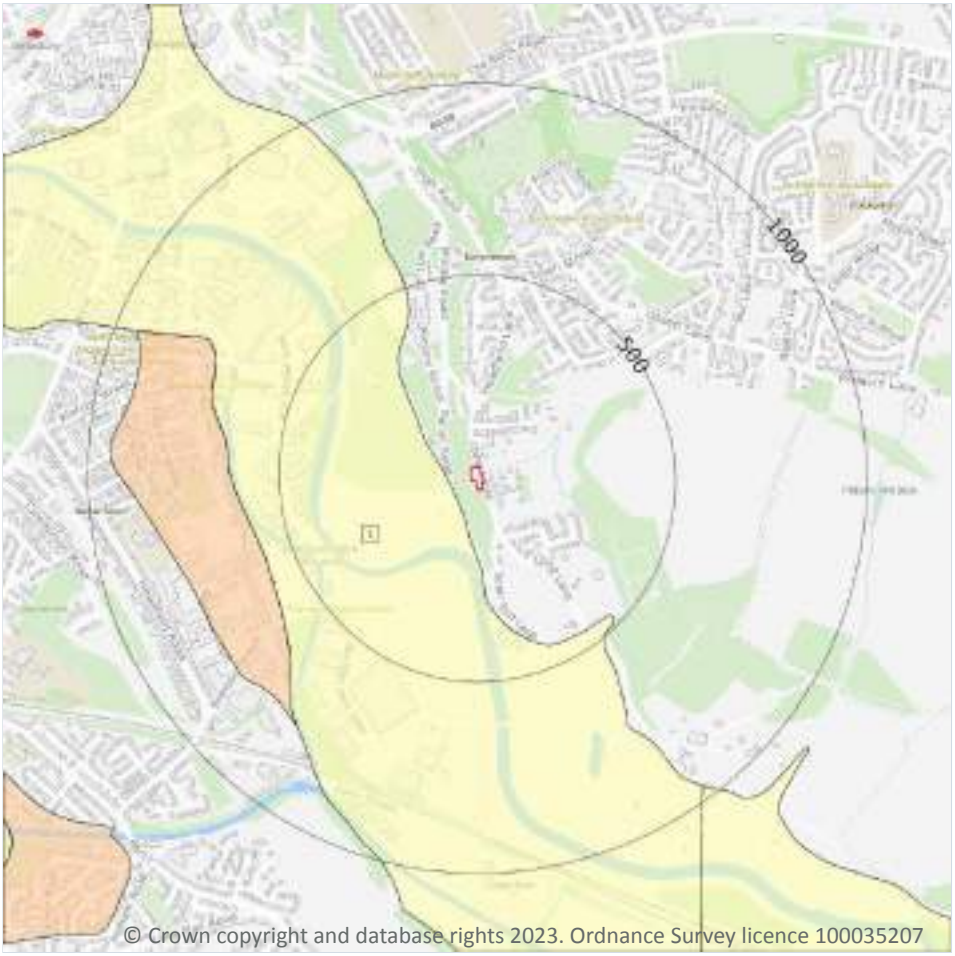
15.3 Artificial ground permeability (50k)

Records within 50m	**0**

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).

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 95 >**

ID	Location	LEX Code	Description	Rock description
1	54m SW	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	0

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **7**

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

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

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PMCM-MDSS**	**PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
2	**On site**	**TR-SDST**	**THORNHILL ROCK - SANDSTONE**	**WESTPHALIAN**
3	82m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

ID	Location	LEX Code	Description	Rock age
5	151m E	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
6	231m E	TR-SDST	THORNHILL ROCK - SANDSTONE	WESTPHALIAN
8	348m SE	TR-SDST	THORNHILL ROCK - SANDSTONE	WESTPHALIAN
10	361m SE	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND 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**	**High**	**Moderate**
On site	**Fracture**	**Moderate**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m **3**

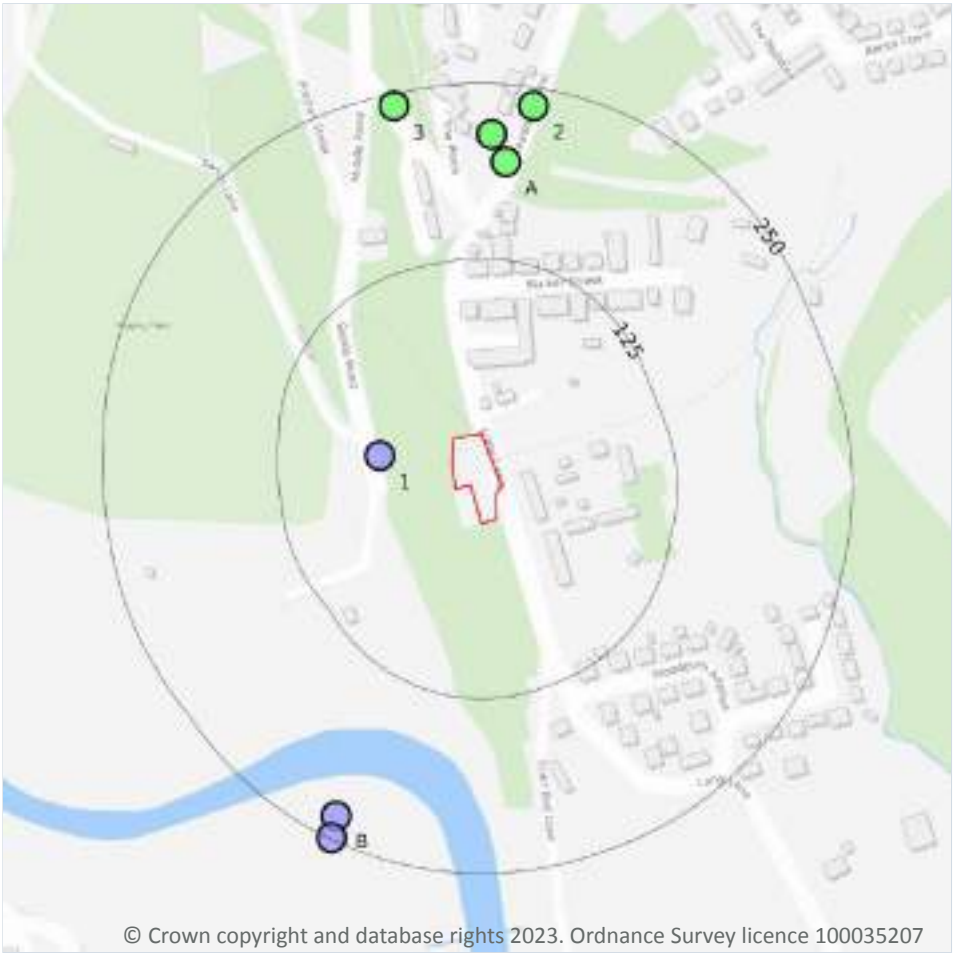
Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

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

ID	Location	Category	Description
4	82m W	ROCK	Coal seam, inferred
7	290m NW	ROCK	Coal seam, inferred
9	348m SE	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	7

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 99 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	52m W	425410 420660	BATLEY SEWERAGE 2	4.0	N	105132 ↗
A	195m N	425500 420870	A638 DIVERSION OSSETT BHP7	27.0	N	105082 ↗
A	214m N	425490 420890	A638 DIVERSION OSSETT BHP7A	22.0	N	105083 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
B	233m S	425379 420403	MITCHELL LAITHES ACCESS ROAD, DEWSBURY WS104	4.0	N	20725904 ↗
2	237m N	425520 420910	A638 DIVERSION OSSETT BHP8	25.0	N	105084 ↗
3	241m N	425420 420910	A638 DIVERSION OSSETT BHP5	22.0	N	105079 ↗
B	249m S	425375 420387	MITCHELL LAITHES ACCESS ROAD, DEWSBURY TP103	4.0	N	20725893 ↗

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

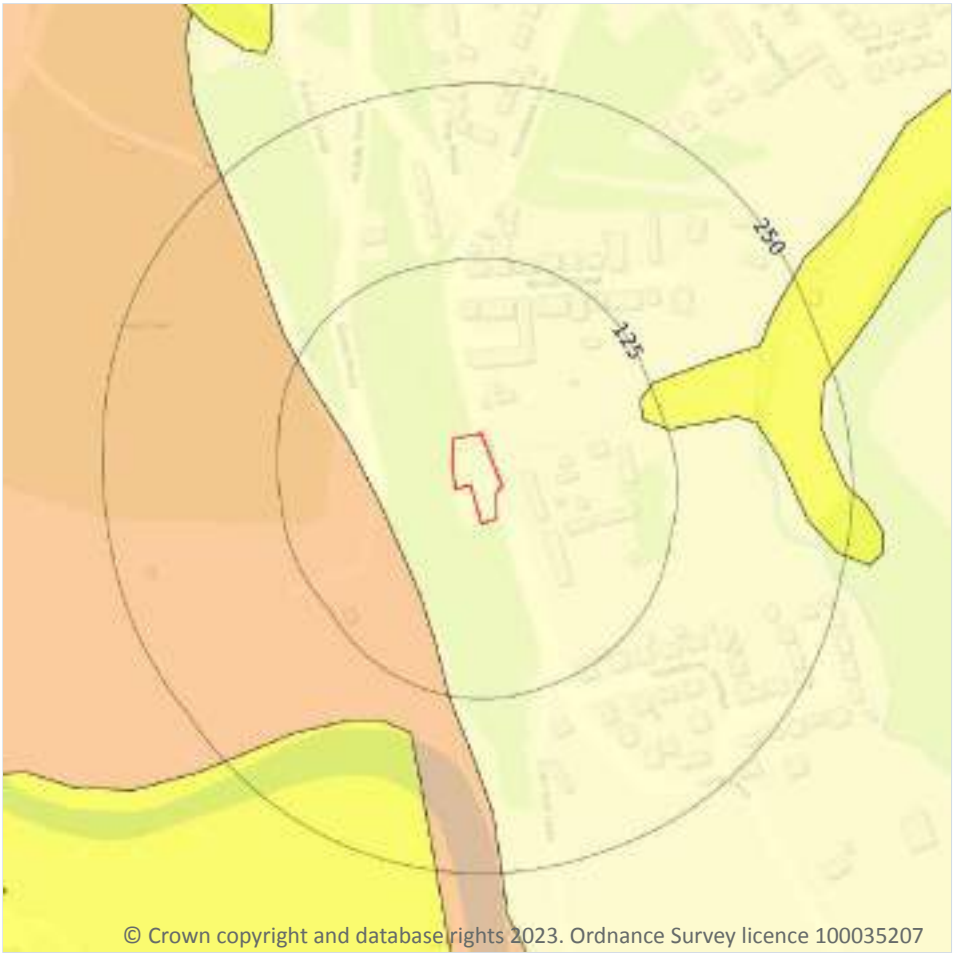
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 101 >**

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

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

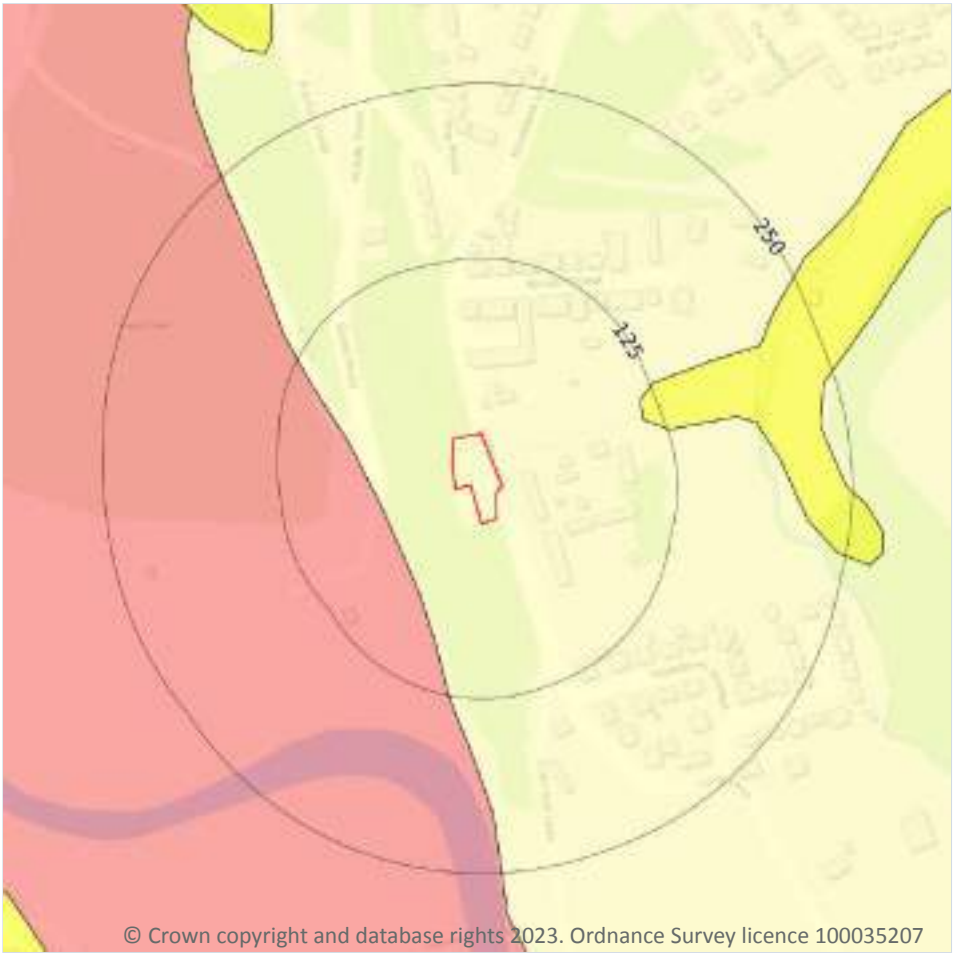
The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

Features are displayed on the Natural ground subsidence - Running sands map on **page 102 >**

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

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

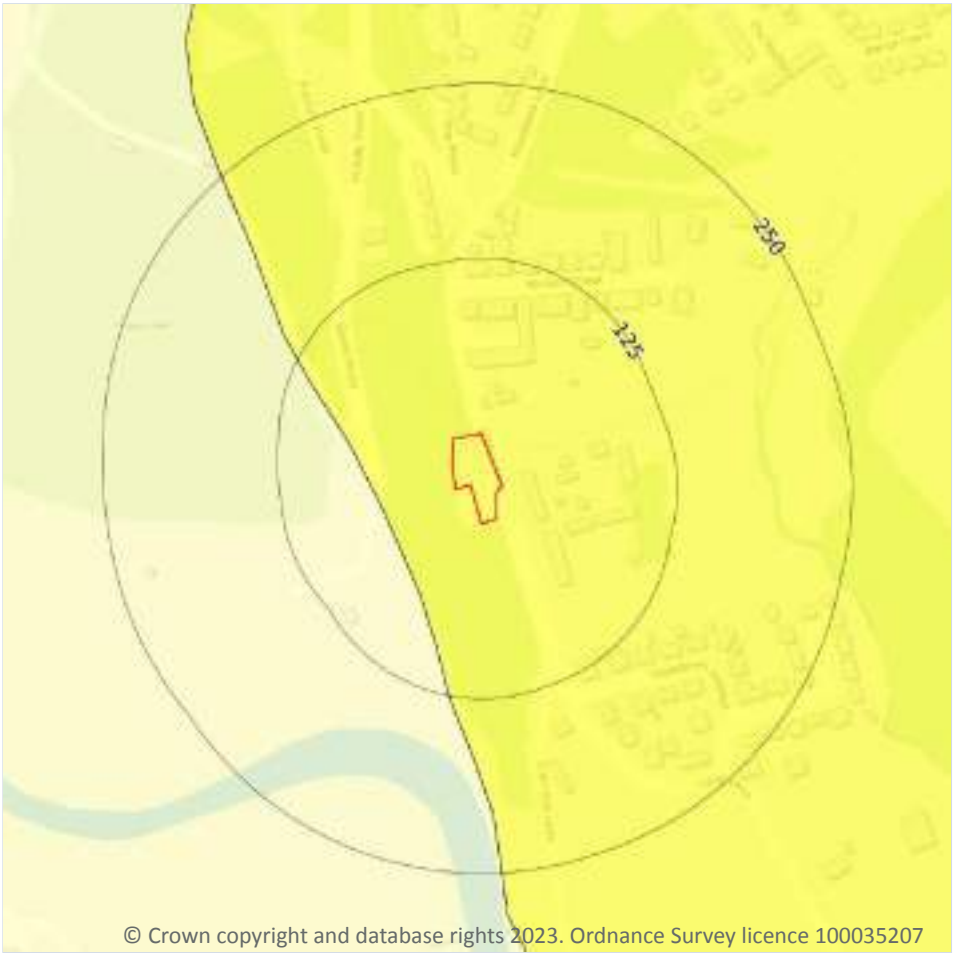
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 103 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

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	1

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

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 104 >**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Landslides



Site Outline

Search buffers in metres (m)

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

17.5 Landslides

Records within 50m	2

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

Features are displayed on the Natural ground subsidence - Landslides map on **page 105 >**

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

Location	Hazard rating	Details
On site	**Moderate**	**Slope instability problems are probably present or have occurred in the past. Land use should consider specifically the stability of the site.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Ground dissolution of soluble rocks



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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 107 >**

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	0

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.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	22

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 109 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	149m SW	Reservoir	1938	1:10560
A	150m SW	Reservoir	1948	1:10560
B	167m N	Cuttings	1892	1:10560
B	168m N	Cuttings	1992	1:10000
B	168m N	Cuttings	1971	1:10000
B	168m N	Cuttings	1980	1:10000
B	171m N	Cuttings	1957	1:10560
B	172m N	Cuttings	1948	1:10560
B	172m N	Cuttings	1905	1:10560
B	177m N	Cuttings	1938	1:10560
C	179m E	Unspecified Pit	1971	1:10000
C	179m E	Unspecified Pit	1957	1:10560
E	187m E	Colliery	1892	1:10560
E	209m E	Unspecified Ground Workings	1948	1:10560
E	209m E	Unspecified Heap	1905	1:10560
E	211m E	Unspecified Ground Workings	1938	1:10560
E	211m E	Unspecified Ground Workings	1938	1:10560
E	217m E	Unspecified Heaps	1957	1:10560
C	219m E	Refuse Heap	1905	1:10560
E	235m E	Unspecified Ground Workings	1948	1:10560
E	235m E	Old Coal Pit	1905	1:10560
E	239m E	Unspecified Pit	1892	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 109 >**

ID	Location	Land Use	Year of mapping	Mapping scale
D	183m N	Tunnel	1892	1:10560
D	185m N	Tunnel	1992	1:10000
D	185m N	Tunnel	1971	1:10000
D	185m N	Tunnel	1980	1:10000
E	187m E	Colliery	1892	1:10560
D	188m N	Tunnel	1948	1:10560
D	191m N	Tunnel	1957	1:10560
E	235m E	Old Coal Pit	1905	1:10560
E	248m E	Unspecified Old Shafts	1948	1:10560
E	260m E	Unspecified Old Shafts	1957	1:10560
E	270m E	Unspecified Old Shafts	1948	1:10560
E	273m E	Unspecified Shaft	1971	1:10000
E	273m E	Unspecified Shaft	1980	1:10000
E	281m E	Unspecified Old Shafts	1957	1:10560
G	322m S	Unspecified Shaft	1992	1:10000
G	322m S	Unspecified Shaft	1980	1:10000
-	676m E	Disused Colliery	1948	1:10560
-	676m E	Colliery	1905	1:10560
-	836m N	Colliery	1892	1:10560
-	956m N	Unspecified Old Shafts	1948	1:10560
-	958m N	Unspecified Old Shafts	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	0

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).

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	0

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.

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 117 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 3% and 5%**	**Basic**

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	3

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**25 - 35 mg/kg**	**No data**	**100 - 200 mg/kg**	**60 - 120 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
2m SE	25 - 35 mg/kg	No data	100 - 200 mg/kg	60 - 120 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

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

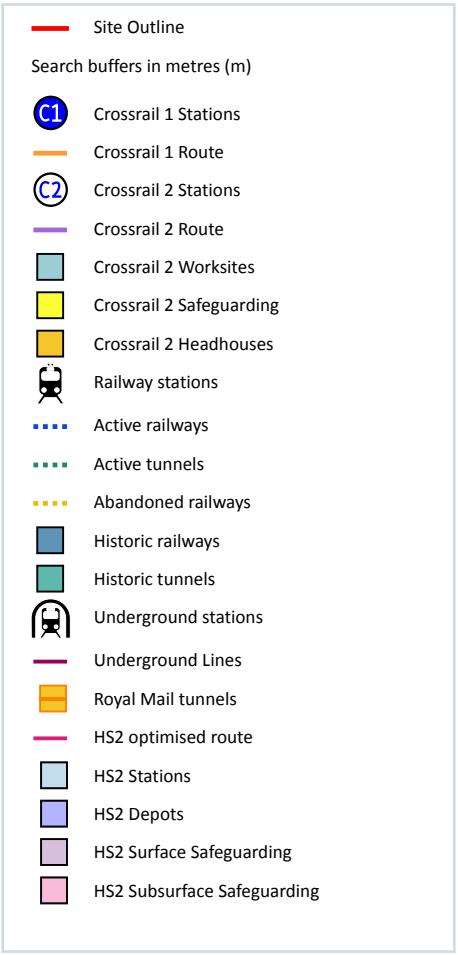
Records within 50m	0

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





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	34

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 120 >**

Location	Land Use	Year of mapping	Mapping scale
180m N	Railway	1893	-
181m N	Railway	1907	-
183m N	Tunnel	1892	10560
185m N	Tunnel	1992	10000
185m N	Tunnel	1971	10000
185m N	Tunnel	1980	10000
188m N	Tunnel	1948	10560
190m N	Tunnel	1954	1250
190m N	Tunnel	1971	1250
190m N	Tunnel	1938	10560
190m N	Tunnel	1990	1250
191m N	Tunnel	1954	2500
191m N	Tunnel	1957	10560
191m N	Tunnel	1995	1250
191m N	Tunnel	1994	1250
191m N	Tunnel	1992	1250
192m N	Tunnel	1907	2500

Location	Land Use	Year of mapping	Mapping scale
192m N	Tunnel	1893	2500
192m N	Tunnel	1922	2500
192m N	Tunnel	1933	2500
192m N	Tunnel	1938	2500
195m N	Tunnel	1954	1250
195m N	Tunnel	1971	1250
195m N	Tunnel	1992	1250
200m N	Tunnel	1933	-
205m N	Tunnel	1893	-
208m N	Tunnel	1907	-
217m NE	Railway Sidings	1957	10560
220m E	Railway Sidings	1948	10560
220m E	Railway Sidings	1905	10560
223m E	Railway Sidings	1907	2500
223m E	Railway Sidings	1922	2500
223m E	Railway Sidings	1933	2500
234m E	Railway Sidings	1938	10560

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	2

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

Features are displayed on the Railway infrastructure and projects map on **page 120 >**

Location	Description
195m N	Abandoned
235m NE	Dismantled

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: https://www.groundsure.com/terms-and-conditions-april-2023/ ↗.

APPENDIX 3

DRILLING INVESTIGATION REPORT

GEOLOGICAL
GEOTECHNICAL
GEOENVIRONMENTAL
DATA ACQUISITION
CONSULTANCY



Mine Shaft Drilling Investigation Report

LOCATION	Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG
ISSUE DATE	13 August 2021
FOR	Mr P Audsley c/o Lucy Buckley – Client's Agent
CLIENT REF.	
OUR REF.	G21038

Prepared by

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Geotechnical Engineer

Checked by

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Engineering Geologist

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1. Introduction

This report describes the drilling investigation carried out on 1 March 2021 to locate CA mine entry 425420-004 at Bell Cabin, Long Lane Earlsheaton, Dewsbury WF12 8LG.

A previous trenching investigation was caried out by Geoinvestigate at the site on 27th October 2020 ref our Draft Report G20347 issued to the client 25th November 2020. This investigation tentatively located the mine shaft within the site. The report is yet to be submitted to the Coal Authority but shortly will. The 2020 intrusive SI works were permitted by the CA.

Some of the following images provided early in Geoinvestigate's report are from the 27th October 2020 trenching investigation. Later images are from the 18th March 2021 drilling and trial pit investigation.

The approximate site centre lies at coordinates E 425478, N 420643. The site occupies a platform at about 61m AOD on a hillside falling from 71m AOD on Long Lane to the east, to 34m AOD to the west on the flood plain of the River Calder. It is proposed to erect a new dwelling at the site at the approximate position shown on the 2nd image below and to improve the site access from Long Lane.

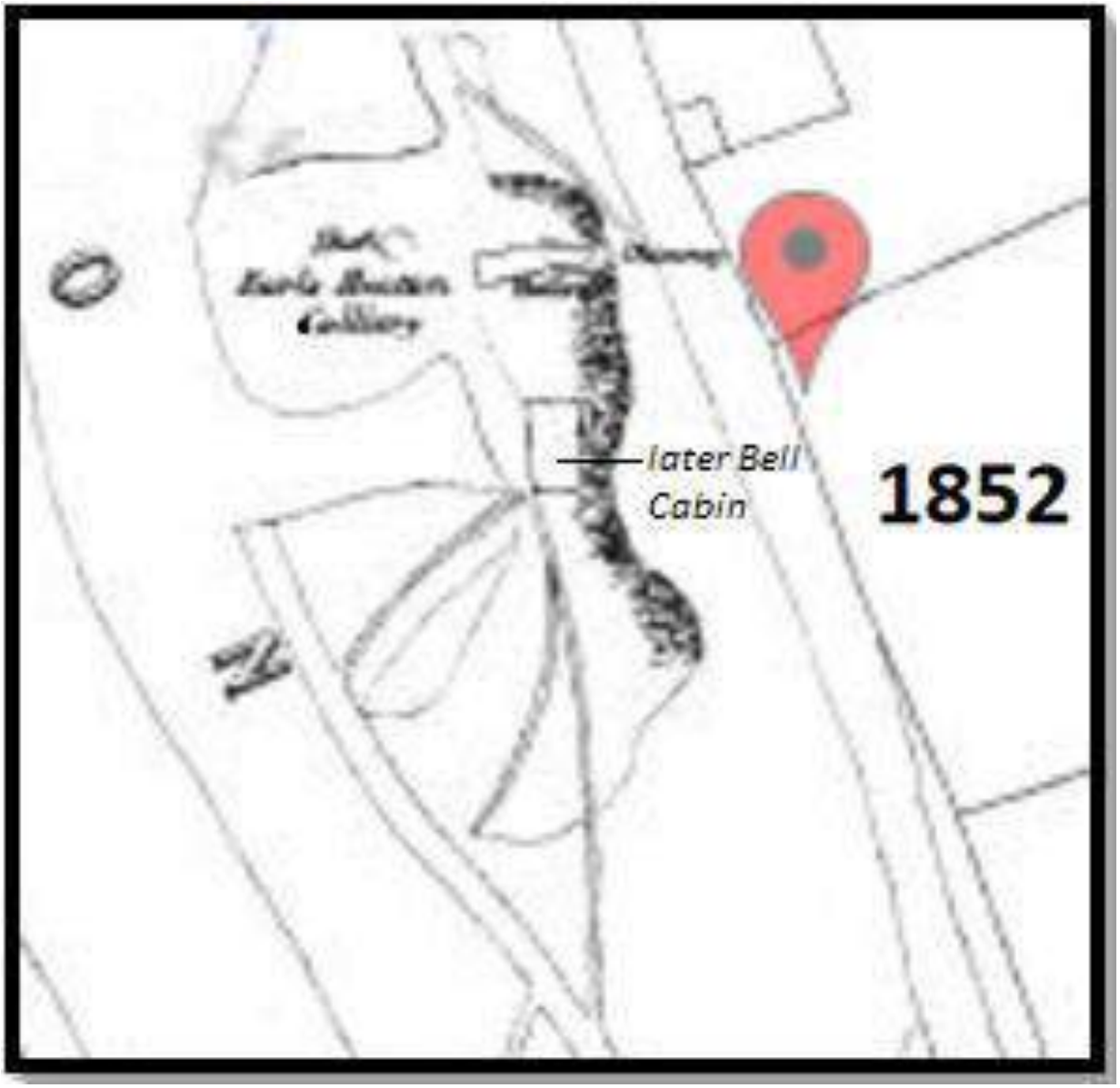



Proposed new dwelling

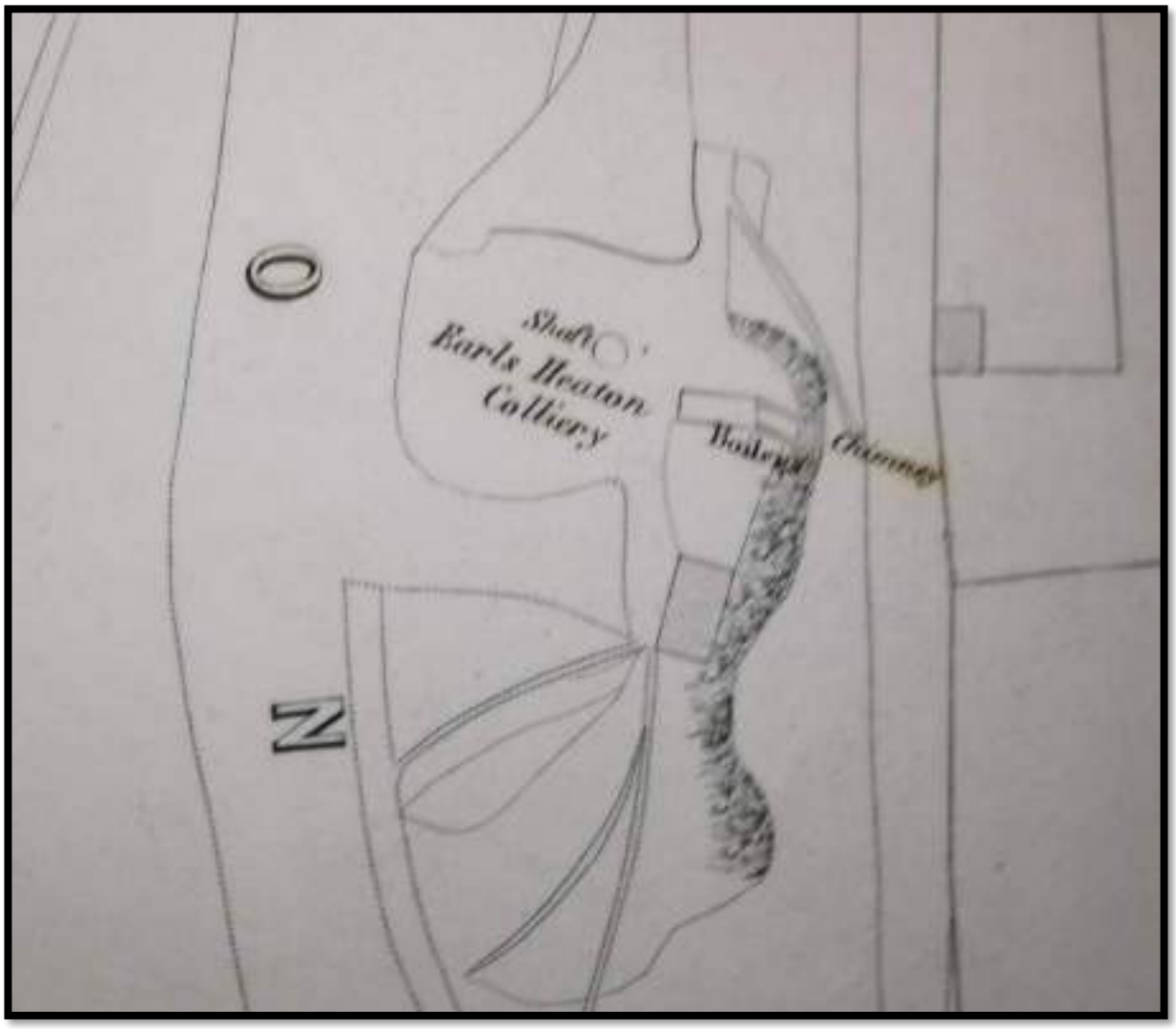




It is believed the original site platform on this steep slope on which the mobile home stands today was formed by cut and fill pre 1850 to provide space for a Earlsheaton Colliery mine shaft, engine house and chimney. The outline of Bell Cabin (named so by the previous site owner Alan Yates) is shown on the earliest OS map of 1852. The remnants of Bell Cabin can still be seen at site today. This building proved a useful reference feature for locating the shaft using old maps.



Subsequently Lucy Buckley provided a clearer image of this early map obtained from a local contact. Unexpectedly, it is understood that this map was also provided to Alan Yates the previous site owner many years ago by Lucy's recent contact.



Several years ago, during Mr Yates tenure the site looked different as shown by the image below.



It is understood that subsequently, the previous property owner Mr Alan Yates carried out significant alterations to the site, which included installing three major RTWs on the left side of the image and creating a lower platform on the right, supported on three sides by a 4th RTW.

It is perhaps doubtful whether Mr Yates had planning permission for these significant engineering works or that a structural engineer or Building Control designed or checked them, respectively.

According to the CAs earlier plotted position, the mine shaft lay somewhere between the lower wall and the mobile home. On 27th October 2020 Geoinvestigate found what appeared to be this mine shaft by trenching at the approximate position indicated by the RED clip board propped against the RTW wall on the 2nd image below. The shaft lies very close to and perhaps even extending a little way under the wall.

In some respects, Geoinvestigate were surprised to find the shaft so quickly, almost right from the start of the trenching exercise though it was found more or less, where expected using off-set measurements from Bell Cabin. Because of this uncertainty and because of concerns about de-stabilising the adjacent wall, slope drilling was considered necessary to locate the shaft with certainty and to investigate its condition at depth.





2. Proposed Development

The current owner Paul Audsley proposes to erect a new dwelling on the lower platform in the lower platform at the south end of the site and to improve the current very steep access track from Long Lane.

In addition, it is understood that since taking ownership of the site a few years ago he has strengthened the upper RTW below the access track entrance with installation of gabion baskets as well as rebuilding a section of the lower wall which recently collapsed during his occupancy.

It is Geoinvestigate's opinion, that this recent wall collapse was due to the presence of a mine shaft beneath this section of wall, which Mr Audsley was apparently unaware of when he purchased the property and was even unaware of when he subsequently repaired the wall. It is only recently with the assistance of his planning agent Lucy Buckley that the current owner was made aware of the presence of this mine shaft.

3. October 2020 Trenching Investigation

A full discussion of the earlier trenching investigation is provided in Geoinvestigate's report G20347, issued initially as a draft report to the client on 25th November 2020.

Shaft 004 was tentatively found in Trench 1 on 27th October 2020 at the position indicated in the following images.



Between 5.80m and 7.80m distance along the tape (measured from the wall pillar/pier on the right) the trench conditions changed markedly and deep loose/unstable blackish grey coaly mine waste including occasional iron pipe, wire, bricks, and pottery was encountered. The fill extended below 2.50m depth and beyond the maximum reach of the mini-excavator. Because of this and because of concerns about the stability of the adjacent retaining wall and the slope in general, further shaft excavation was limited to a 2nd short pit, cut perpendicular to the wall.

Interestingly, a geofabric layer was found near surface between fill layers.



A trial pit was cut perpendicular to the wall at 6.50m distance along Trench 1 to further investigate the suspected shaft fill found at this position. It encountered dark coaly mine waste with some pipe bricks and clay fill extending below 2.50m.


Trial Pit cutting Trench 1



The images below taken on 27th October show minor crack damage to the wall and sagging of the ground surface adjacent to it. These features were present before the trenching exercised commenced and in Geoinvestigate's opinion are caused by subsidence of the mine shaft infill beneath this section of wall.

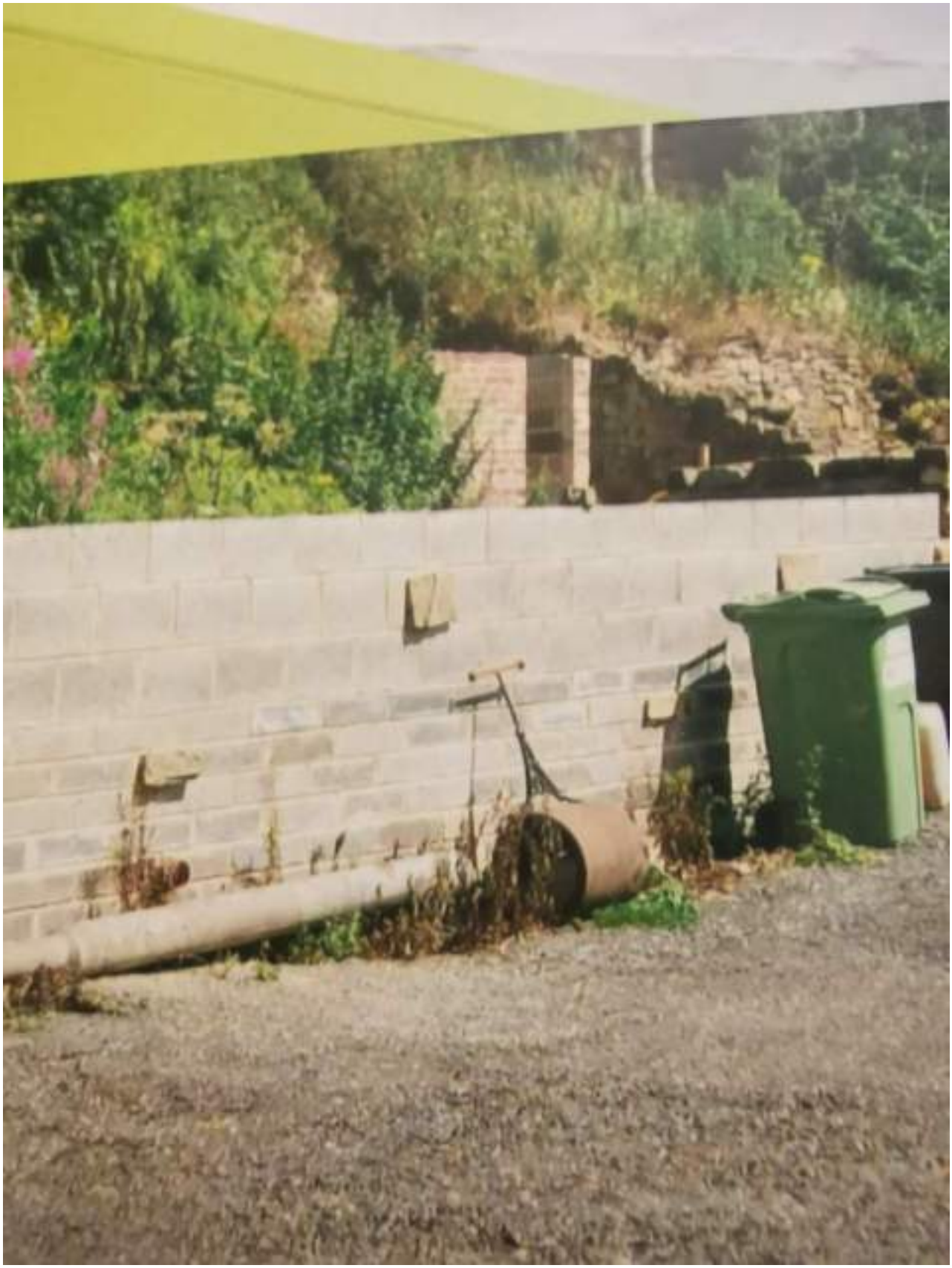


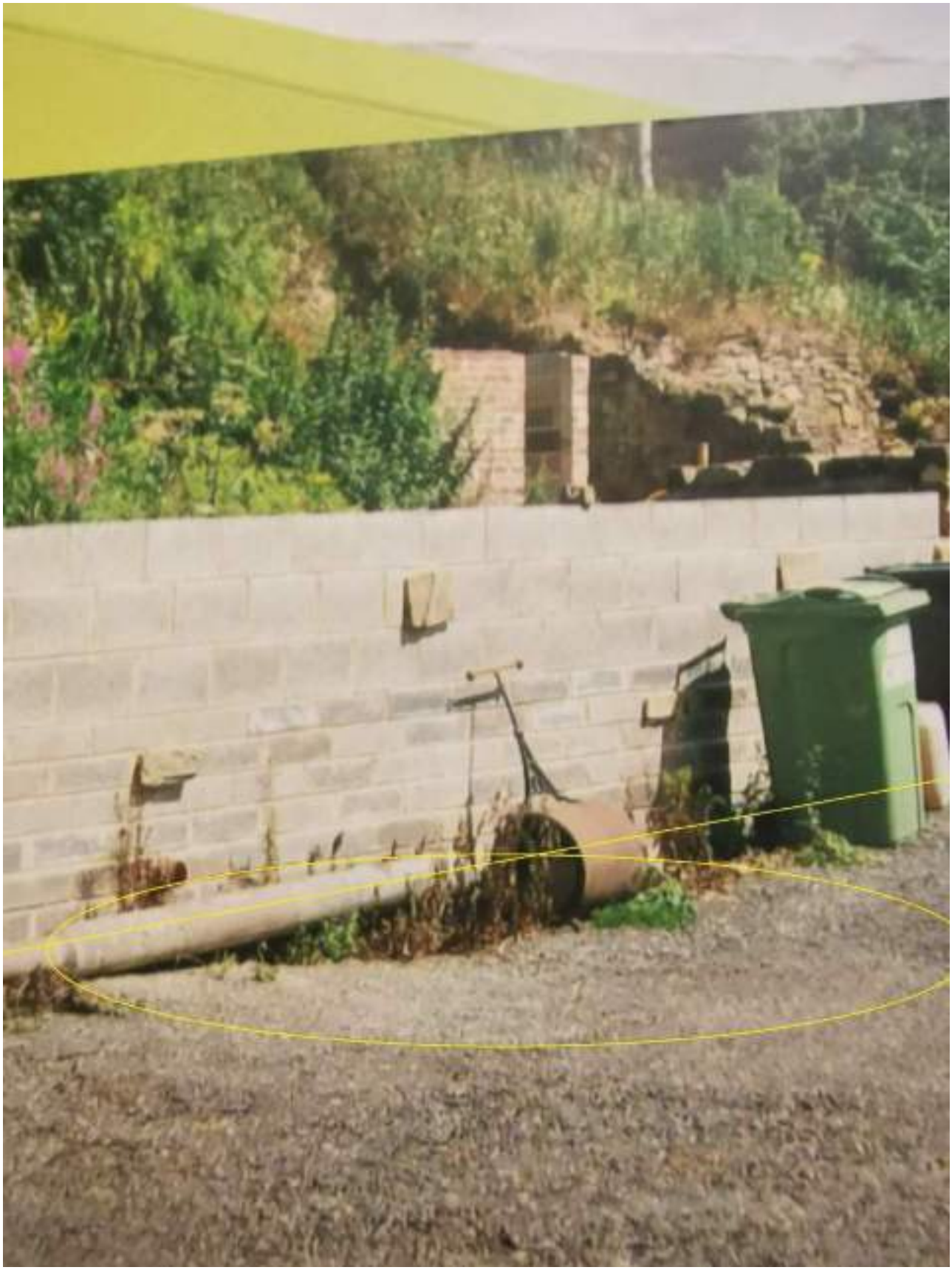




A while after the trenching investigation, the following image was provided by Lucy Buckley. It is understood to have been taken perhaps in 2017 by Alan Yates, the previous site owner. In our opinion, it shows a sinkhole/ground subsidence developing above mine shaft 004. The 2nd same image has been ringed by Geoinvestigate to show the possible approximate shaft position.

The original image was taken before or during the period of RTW construction prior to Paul Audsley's occupation of the site. Bell Cabin's ruined stone walls can be seen on the right side of the image.

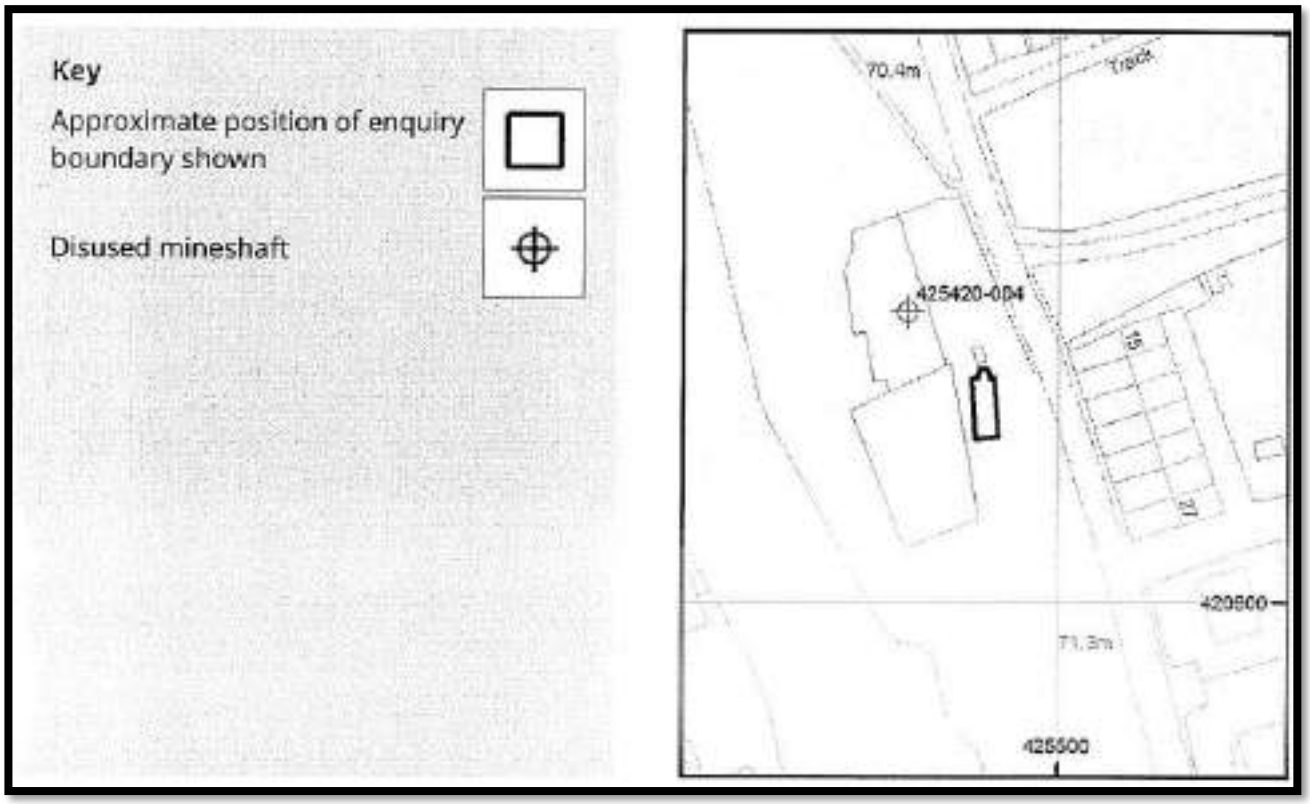




This section of wall appears different in the October 2020 image when compared to Alan Yates's earlier image because in the interim it collapsed. Movement of the rebuilt wall is continuing as evidenced by the wall cracking and ground subsidence shown in the October 2020 image. It is understood from Lucy Buckley that the condition of the wall has deteriorated further in 2021.

4. Coal Authority & Other Mining Information

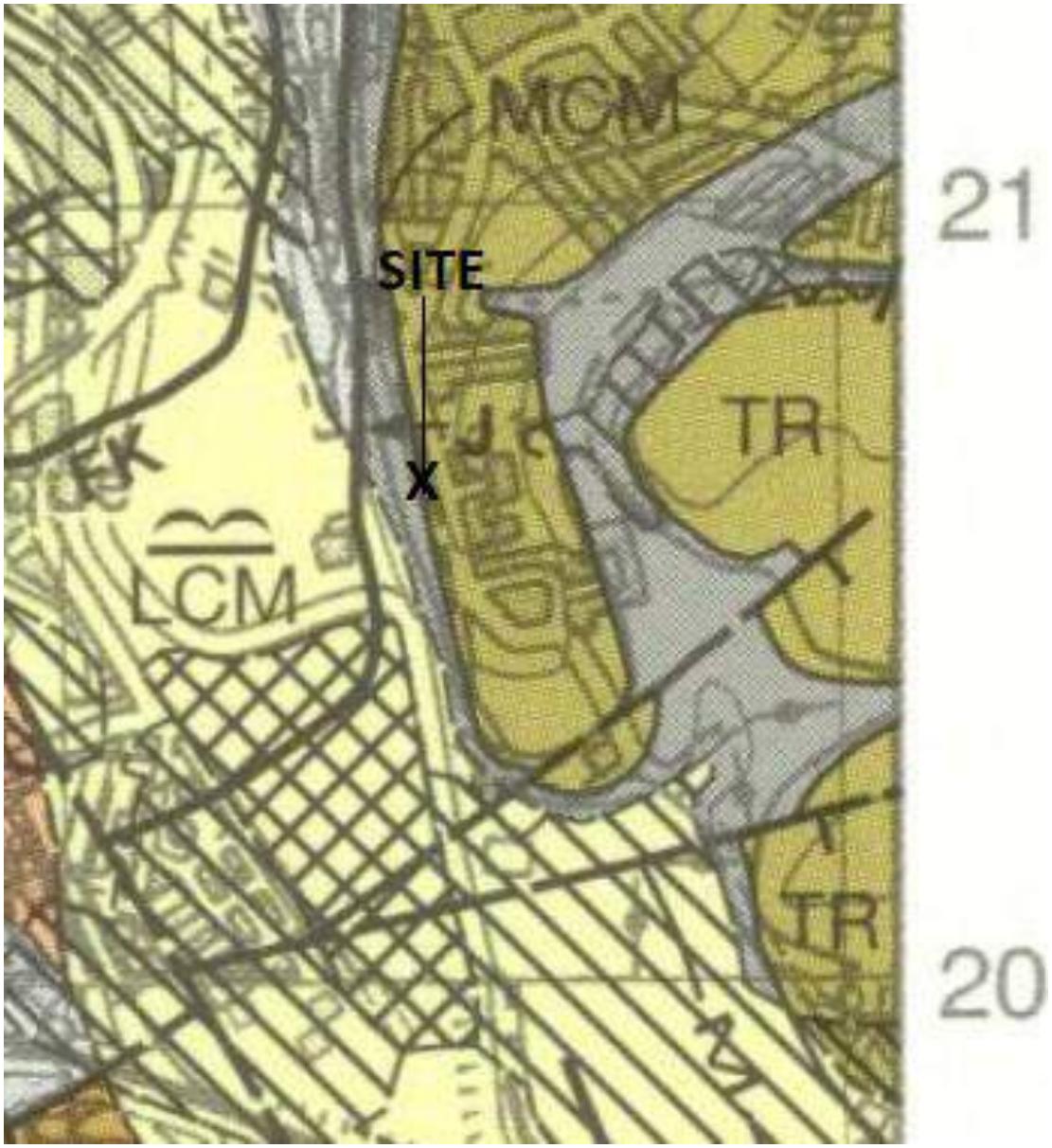
The coordinates obtained from the CAs earlier CON29M report of 5th July 2016 and the CAs current online interactive map service for mine shaft 425420-004 are identified as (425473, 420650) or (425473, 420653), respectively. Bell Cabin is identified by a thick outline.



CA online information gives a depth of 32m, assumed diameter of 2.5m and departure/positional uncertainty of 10m for shaft 004. No information is provided on shaft treatment. Therefore, initially the shaft was assumed to be untreated though perhaps haphazardly infilled, which is not uncommon.

Subsequently, the trenching and drilling investigations have shown the shaft to be > 35m depth and infilled with weak/loose materials over this depth. The increased depth of the shaft may reflect the presence of a shaft sump to collect water drained from the workings.

The site's location is shown on the extract of the BGS solid geology map Sheet 77 Huddersfield presented below. According to the map the uppermost section of site slope is underlain by Thornhill Rock (TR) - Sandstone.



The Joan Coal (J) seam is shown outcropping further down the slope to the west below alluvial deposit at an elevation perhaps around 30m AOD in the bed of the River Calder while the site occupies a platform at around 61m AOD. This broadly accords with the CAs depth for the shaft of 32m.

5. March 2021 Drilling Investigation

Four small diameter (45mm) rotary, full water flush Microdrilling probe holes (RH1 – RH4) were sunk at the site on 1st March 2021 to depths between 8m and 35m under CA permit 21450 issued 16th February 2021.

Images of boreholes RH1, 2, 3 and 4 are presented in order as follows. Both RH2 and RH3 penetrated mine shaft 004.






RH3
RH2



Borehole logs are included in Appendix 1.

RH2 was sunk vertically on the lower platform close to the shaft centre encountering weak shaft infill materials to a depth > 35m. The shaft was not bottomed in this hole.

RH3 was steeply raked/declined at 60 degrees initially encountering bedrock then penetrating the shaft. According to the drillers account, the slight resistance which occurred on penetrating the shaft may be indicative of the presence of a shaft lining, though this is speculation.

RH1 on the raised paved platform above the lower RTW located bedrock at a depth of 6.1m or around 4.5m below the lower platform adjacent to the shaft.

RH4 was sunk on the access track at the site entrance and above the highest RTW encountered bedrock at a depth of 6.40m or perhaps a little above this.

No hazardous gas concentrations were recorded in the boreholes during drilling.

6. March 2021 RTW Trial Pits

Information on the foundations and construction of the RTWs and the recent strengthening of the upper wall adjacent to the site entrance with gabion baskets was also obtained on 1st March 2020 by hand and machine dug trial pits as per the images which follow.





















The images below show the roadside wall and weathered mudstone bedrock exposed high up on the access track approaching the site entrance and Long Lane.





7. Ground Model & Findings

The 2020 trenching and 2021 shaft drilling and retaining wall trial pits results together with a brief generalised survey of the sites RTWs and slope by Geoinvestigate on 1st March 2021 are used to provide the ground model section, shown below in this section. The section is broadly representative of this section of slope.

Ground level at the site entrance at RH4 is higher and this is represented on the model. The model indicates that the RTW foundations comprise concrete strip footings located at shallow depth and supported on un-engineered fill materials. Backfilling behind the middle or 2nd RTW is incomplete. The walls themselves are 1.6m to 2m height and of slender thickness. The back of the 2nd wall is supported with partially exposed buttresses/pillars at 1.6m to 1.8m intervals along its length.

A 1.5m high gabion basket wall at the back of the top/ 3rd wall (presumably to reduce the earth pressure on this wall) was installed by Paul Audsley. There is evidence of slight further forward (perhaps rotational) movement of this wall as indicated by the open surface crack below the wall coping in the following image. The concrete footing of this wall is seated at shallow depth on very steep slope and is potentially underlain by un-engineered fill. The wall is essentially free-standing as a gap with a drain at the bottom has been constructed between it and the gabion basket retaining structure behind it.



The 1st / lower RTW has a history of movement caused by mine shaft instability below it. This caused the sudden collapse of a section of the wall straddling the top of the shaft in recent years and there is ongoing movement and cracking of the same rebuilt section first noted by Geoinvestigate on 27th October 2020, during our initial site investigation but, according to Lucy Buckley has subsequently worsened in 2021.

It is understood that the client's agent has submitted a damage notice to the Coal Authority in this regard and that the Authority's Regional Project Manager Malcolm Scott has recently visited the site also confirming the damage to the lower wall during a recent telephone call with Ross Nicolson earlier this week.

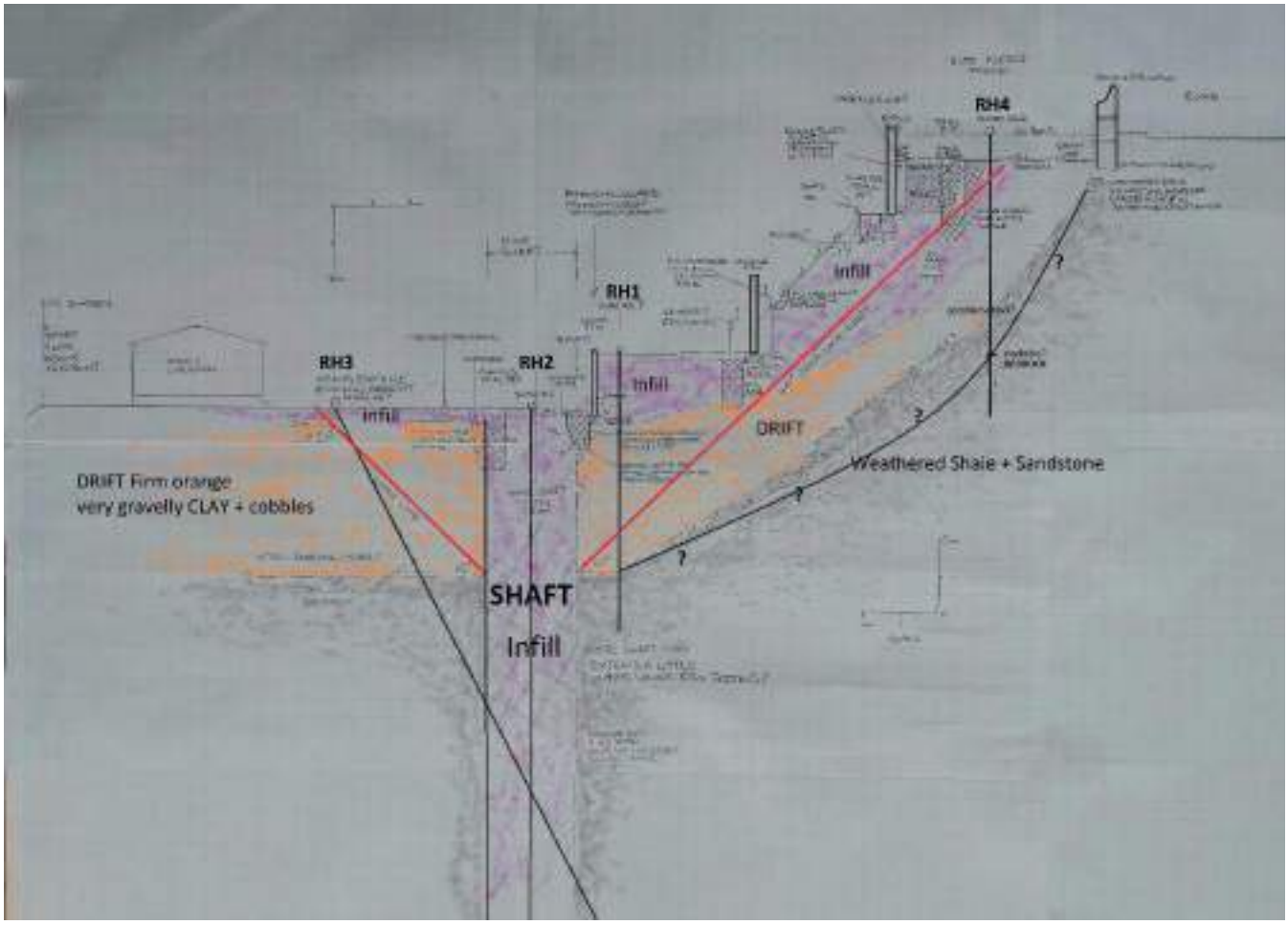
In our opinion, the sagging of the paving slabs along the front edge over much of the length of the 1st platform is due to inadequate compaction of the underlying fill materials and differential settlement.

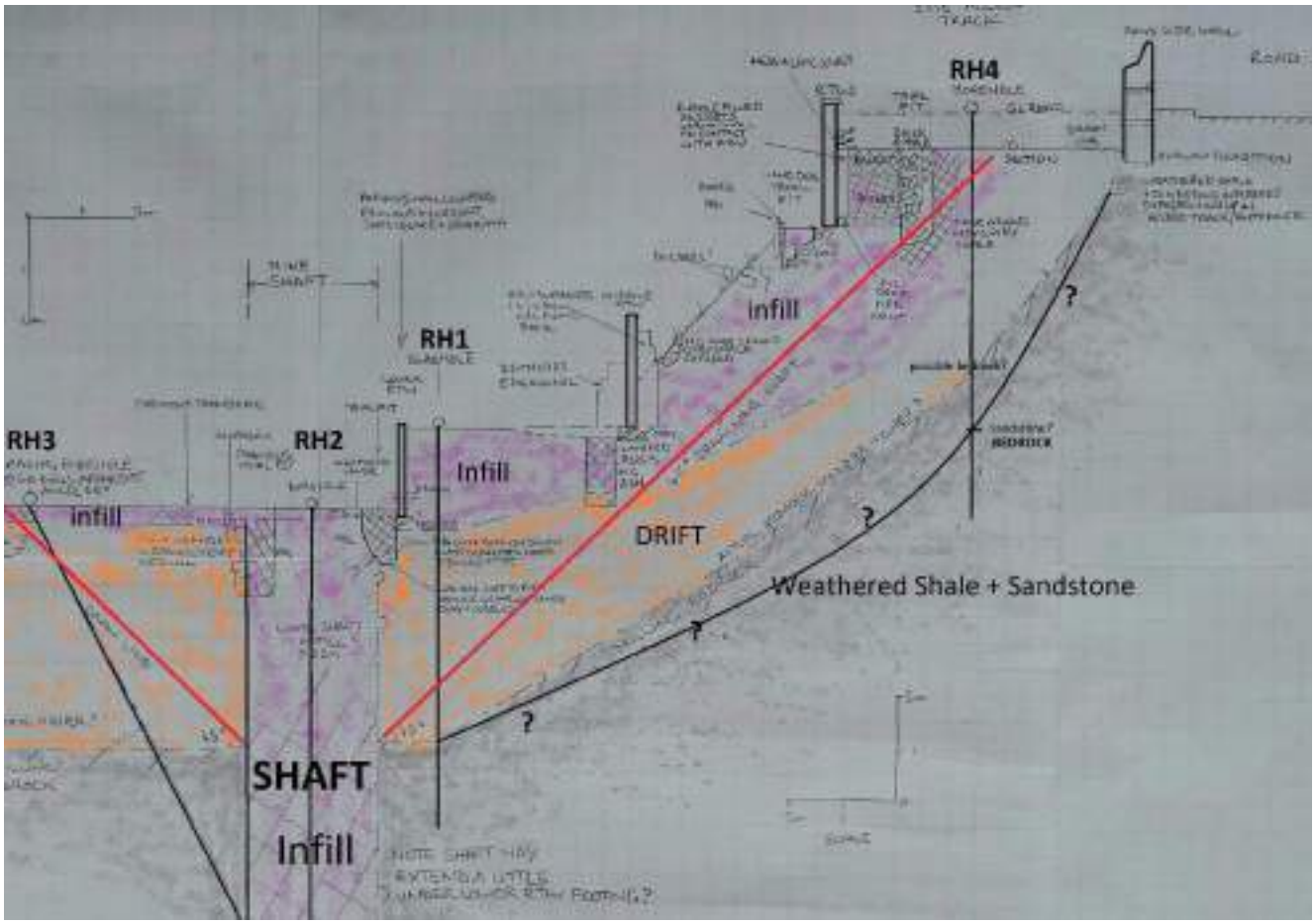
In our opinion, the existing RTW configuration at the site is a flimsy, jerry-built arrangement perhaps erected without proper structural design, checking or planning permission. Therefore, its longer-term stability cannot be relied upon especially since its lower support is built over a potentially unstable shaft, though perhaps Holloway Jennings Consulting Engineers, Wakefield who have inspected this slope in detail are better qualified to assess its condition.

In our opinion, Mr Audsley is to be commended for attempting to strengthen the upper wall with gabion baskets and which also indirectly supports the adjacent public highway on Long Lane.

The 45-degree angle of draw used by the CA and others to calculate mine shaft zone of influence (ZOI) with regard to its impact on ground stability is shown as a RED line on the model section. Other firms may use a draw angle as low as 24 degrees (presumably for longer term stability impact) in which case the draw line/stability line would run under the roadside wall and the public highway on Long Lane.

It is unknown whether bedrock lies at or near surface at the site entrance adjacent to RH4, but it may. If, it does it is likely to be highly weathered and weak and of perhaps of unreliable competency.


RH4
RH1
RH3
RH2
Infill
Infill
Infill
DRIFT
Weathered Shale + Sandstone
DRIFT Firm orange
very gravelly CLAY + cobbles
SHAFT
Infill


RH4
RH1
RH3
RH2
Infill
Infill
infill
DRIFT
Weathered Shale + Sandstone
SHAFT
Infill

The shaft is uncapped, around 2.5m diameter, circular, > 35m depth and haphazardly infilled with weak/loose material over its full depth. The shaft fill is subject to ongoing subsidence/settlement as evidenced by an earlier image showing possible sinkhole formation above it, the subsequent collapse of the section of wall above it, and ongoing cracking and subsidence of the rebuilt section of wall.

While according to the Coal Authority the risk of shaft collapse is statistically low, the recent ongoing movement of some 125-year-old or older shaft infill (presumably placed according to the OS map record sometime between 1855 and 1893) when the pit closed, is perhaps evidence of a recently changing/dynamic stability situation in this instance, perhaps adversely impacted by the UKs rapidly changing climate and exceptionally severe recent weather events.

According to the report on 2013 EU funded 'MISSTER' Project page 10 of 'The Handbook to best practices for mine shaft protection' identifies collapse the shaft infilling material as one collapse scenario. According to this guidance this collapse is caused by "*a rough and dynamic remobilisation of the filing material which propagates down abruptly and rushes in the old working generating a collapse of the surface is no structure or protection was installed at the head* (ie capping) *of the shaft"*. This document is available online for perusal.

In addition, page 11 of the report provides another scenario for shaft collapse namely "*failure of a deep closure structure whereby failure of a deep closure structure can occur allowing the filling material to spread into galleries resulting in a collapse of the shaft"*

With respect to the foregoing collapse scenario nothing is known about the underground condition of mine entry 004 though presumably its shaft connects with mine working tunnels in the Joan Coal perhaps at a depth of 32m. However, it is known that the shaft is not capped, and the shaft infill is weak and is subject to ongoing downward movement/instability.

So, if shaft 004 were to collapse it could in the worst-case scenario cause general instability of this steep slope, its flimsy retaining walls, the site access track, perhaps in the very worst situation leading to the loss of support of the highway wall (which also doubles as retaining wall) as well as undermining the public road on Long Lane.

However, shaft collapse would have no impact on ground stability within the proposed building area of new house which is located some 30m to the south of the recently found shaft centre and well beyond its zone of influence.

8. Mine shaft Zone of Influence (ZOI)

The March 2020 report on the trenching exercise tentatively identified a possible ZOI for shaft 004 shown in the image below together with several initial shaft targets A – F and the position of the earlier sinkhole/mine shaft subsidence image taken by Alan Yates as provided in section 3 of this report.



Based on the presence of bedrock outcrop on the east side of the upper platform and the trial pit information from the lower platform bedrock is expected to occur around 4.5m to perhaps 5m adjacent to the shaft and 2.5m below the lower platform where the house is located.

The estimated mine shaft ZOI on the upper platform is 6.5m radius from the probable shaft position encountered in Trench 1 at F. The tentative ZOI around F is shown on the following image.

The ZOI is not symmetrical on the east side of F because it potentially follows the sloping fill/bedrock interface which rises to Long Lane. Rising bedrock is also exposed following the access ramp up to the road.

Even were a much larger shaft target zone incorporating all 5 potential shaft positions A, B, C, D & E assumed then then the ZOI would still not extend within an influencing distance of the proposed new dwelling at the south end of the site.

In our opinion, the outcome of the intrusive investigation (March 2020) and the initial ZOI analysis that followed confirms that shaft 004 does not impact ground stability within the area of the proposed new dwelling at the south end of the site.

However, the 2020 ZOI does impact the east slope and the 3 retaining walls it currently supports as well as the current access ramp and future modifications to it at the northern end of the site.

Based on the results of the subsequent 2021 drilling investigation it is possible that the revised ZOI could (depending on bedrock depth at the site entrance) extend up to and beyond the roadside wall and into the public road at Long Lane. Even if bedrock is present at or near surface at the entrance because it is likely to be

weak weathered mudstone it is questionable whether it would meet the requirements of 'competent bedrock' (as shown by the last 2 images of section 6 of this report) thereby enabling an up-slope failure zone larger than that first identified in 2020 to be formed.

9. Other Matters

The retaining walls/structures installed at the site in recent years provide support to the slope in general and the public road and its retaining wall which run along the crest of steep slope and where it is understood there have been ground stability problems affecting the wall and the road in recent years.

During Geoinvestigate's October 2020 site inspection, the presence of drains which in wet weather are understood to freely discharge road run-off waters onto the unprotected grassy surface within the site were noted. Our concern was raised by evidence of ground instability and slippage of the surface soil layer probably caused by the discharge of this water on to the unprotected site slopes. In our opinion, unless the matter is rectified the situation is likely to deteriorate leading to further instability of the wall and the main road as well as perhaps endangering access to the Bell Cabin site.



10. Conclusions

The recent trenching and drilling investigations at the site in 2020 and 2021 found mine shaft 004.

The shaft is uncapped but filled with weak material placed perhaps haphazardly more than 125 years ago. In recent years the shaft infill show signs of instability and downward movement caused by reasons unknown but perhaps involving one or a combination of the following factors self-weight settlement, surface entry erosion much like a draining plughole, or progressive failure of a deep shaft closure structure.

The shaft is located very close to or perhaps even a little way under the lowest of 3 flimsy retaining walls stacked one above the other forming a steep slope potentially comprising un-engineered fill materials with deep natural drift below this and weak weathered mudstone rock exposed in the upper slope.

Photographic evidence from perhaps around 2017 has been provided by the previous site owner showing shaft instability namely surface sinkhole/crown hole development at the shaft head/top together with ground sag around the feature.

Because of mine shaft instability a section of the lower retaining wall straddling the shaft suddenly collapsed and has been rebuilt by the current site owner.

This movement is ongoing as evidenced by the subsidence and cracking of the rebuilt section of retaining wall recorded by Geoinvestigate in October 2020 and which according to the client's agent Lucy Buckley has deteriorated further in recent months.

In our opinion, though perhaps low risk this shaft has the potential to suddenly collapse de-stabilising the flimsy make-shaft/ jerry-built retaining structures on the steep slope on which they precariously stand together with the site access road and in the very worst case impacting the public highway on Long Lane.

While the shaft poses no danger to the proposed new house located some 30m to the south of it, it poses a potential future ground instability risk to the adjacent section of steep slope and the public highway and for this reason requires to be stabilised and capped. It is understood that the client's agent is currently in consultation with the Local Authority and the Coal Authority in this regard.

Notwithstanding the outcome of these ongoing consultations, it is our opinion that the proposed position of the new house within the site is safe with respect to mine shaft related ground instability issues and planning permission should not be withheld in respect of this aspect of the development.

In our opinion, it is quite possible that the previous site owner Alan Yates was aware of the presence of a mine shaft during his tenure of the property and that its presence was revealed to him before or, during the early part of the major engineering works carried out by him at the site.

On the other hand, Paul Audsley appears to have been unaware of the presence of this mine entry when he subsequently purchased the site, though we understand that perhaps documents indicating the presence of a mine shaft have subsequently come to light in the document bundle transferred to him as part of the conveyancing of the property. His agent Lucy Buckley is of this opinion.

END OF REPORT

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The findings and contents of this (intrusive) Site Investigation Report pertain solely to the study area(s) outlined herein and are based solely on the findings of the excavations undertaken as part of the current exercise unless otherwise stated. The findings and/or recommendations of this report do not take into account any ground conditions that may be present but have hitherto not been encountered and as such further investigation and/or a reconsideration of the findings of this report should be undertaken if such conditions are subsequently encountered or an alternative development plan or land use is subsequently proposed.

This report considers various environmental and/or geological risks posed to the site and/or proposed development and offers advice accordingly as guidance only. The findings of this report will remain valid provided no change of ground or groundwater conditions, either natural or anthropogenic, take place and no warrantee is offered or implied.

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APPENDIX 1

GEOINVESTIGATE Ltd.

Your Ref. **Our Ref.** G21038 **RH No.1** **Sheet No. 1 of 1**
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG **DATE:** 01/03/21

Depth (m)	Description of Strata	Thickness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
1.80	Dark brown DRIFT.	1800							
5.00	Light brown SANDSTONE.	3200					Full Flush		2.50 5.00
	Rotary hole terminated at 5.00m								

Remarks: Casing to 1.00m
Microdrill rotary open hole borehole to 5m
No cores recovered from borehole
No gas detected from borehole on completion
Full flush returned No voids encountered.

Key:
- Slotted Pipe
- Plain Pipe
- Bentonite
- Gravel Filler

- D Disturbed sample
- Cv Shear vane
- W Water sample
- S Standard Penetration Test
- C Cone Penetration Test

RH1

GEOINVESTIGATE Ltd.

Your Ref. **Our Ref.** G21038 **RH No.2** **Sheet No. 1 of 1**
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG **DATE:** 01/03/21

Depth (m)	Description of Strata	Thickness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
	Dark brown **DRIFT**.	6100					Lost flush at 2.10m		2.50
6.10									5.00
	SANDSTONE.	2300							7.60
8.40									
9.50	MUDSTONE with SANDSTONE inclusions.	900							9.50
	Rotary hole terminated at 9.50m								

Remarks: Casing to 2.00m
Microdrill rotary open hole borehole to 9.50m
No cores recovered from borehole
No gas detected from borehole on completion
Lost flush at 2.10m. No voids encountered

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

D Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

RH2

GEOINVESTIGATE Ltd.

Your Ref. **Our Ref.** G21038 **RH No.3** **Sheet No. 1 of 2**
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG **DATE:** 01/03/21

Depth (m)	Description of Strata	Thick-ness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
	Dark brown DRIFT.								
							Lost flush at 4.40m		2.50
									5.00
									7.50
									10.00
		35000							12.50
									15.00
									17.50
									20.00
									22.50
	Rotary hole continued on page 2								25.00

Remarks: Casing to 3.00m
Microdrill rotary open hole borehole to 35m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 4.40m. No voids encountered.

Key: Slotted Pipe; Plain Pipe; Bentonite; Gravel Filter
O Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

RH3

GEOINVESTIGATE Ltd.

Your Ref. Our Ref. G21038 RH No.3 Sheet No. 2 of 2
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG DATE: 01/03/21

Depth (m)	Description of Strata	Thickness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
	DRIFT.	35000							27.60 30.00 32.50
35.0	Rotary hole terminated at 35.00m								35.00

Remarks: Casing to 3.00m
Microdrill rotary open hole borehole to 35m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 4.40m No voids encountered.

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter
D Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

RH3

GEOINVESTIGATE Ltd.

Your Ref. **Our Ref.** G21038 **RH No.4** **Sheet No. 1 of 1**
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG **DATE:** 01/03/21

Depth (m)	Description of Strata	Thickness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
5.40	Dark brown DRIFT.	5400					Lost flush at 3.80m		2.50 5.00
9.40	SANDSTONE with MUDSTONE inclusions.	4000							7.50
14.6	DRIFT / INFILLED SHAFT. "Slight resistance on penetrating shaft, possible brick lining"	5200							10.00 12.50
17.0	MUDSTONE with SANDSTONE inclusions	2400							15.00 17.00
	Rotary hole terminated at 17.00m								

Remarks: Casing to 3.00m
45° Angled Microdrill rotary open hole borehole to 17m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 3.80m No voids encountered.

Key:
Slotted Pipe
Plain Pipe
Bentonite
Gravel Filter

D Disturbed sample
Cv Shear vane
W Water sample
S Standard Penetration Test
C Cone Penetration Test

RH4

GEOINVESTIGATE Ltd.

Your Ref. **Our Ref.** G21038 **RH No.5** **Sheet No. 1 of 1**
Location: Bell Cabin, Long Lane, Earlsheaton, Dewsbury WF12 8LG **DATE:** 01/03/21

Depth (m)	Description of Strata	Thickness	Legend	Gas Well	Sample	Test Type Result	Flush	Depth to Water	Depth (m)
	Dark brown DRIFT.	6400					Lost flush at 3.50m		2.50 5.00
6.40	SANDSTONE.	1600							7.50
8.00	Rotary hole terminated at 8.00m								8.00

Remarks: Casing to 3.00m
Microdrill rotary open hole borehole to 8m
No cores recovered from borehole
No gas detected from borehole on completion
Flush lost at 3.50m No voids encountered.

Key:
- Slotted Pipe
- Plain Pipe
- Bentonite
- Gravel Filter

- D Disturbed sample
- Cv Shear vane
- W Water sample
- S Standard Penetration Test
- C Cone Penetration Test

RH5