GEO Environmental Engineering

PHASE 1: DESK TOP STUDY REPORT

(PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT)

PROPOSED RESIDENTIAL DEVELOPMENT OF LAND AT:

INKERMAN TERRACE, WHITEHAVEN

CUMBRIA

FOR

MR I. LAUGHLIN

GEO Environmental Engineering

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Client:	Mr I. Laughlin
Consultant	Alpha Design

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1.0 Introduction

1.1 Instruction

Geo Environmental Engineering Ltd (GEO) have been commissioned by Consultant, Alpha Design on behalf of Mr I. Laughlin, herein referred to as the Client to undertake a Phase 1: Desk Top Study Report (Preliminary Environmental Risk Assessment) for land at Inkerman Terrace in Whitehaven, Cumbria to determine any potential geohazards that may affect the development of the site.

It is understood that the Client is considering the site for residential development. Further details relating to the scope of development are included in Section 2.1.

This Phase 1: Desk Top Study Report is suitable for submission to the Local Authority as part of a planning application.

1.2 Objectives

The main objective of this Phase 1: Desk Top Study (DTS) Report is to assess the geological and environmental sensitivity of the development area and the surrounding environs to determine any potential geohazards that may impact the proposed development. Particular attention made to any potentially contaminative industries or processes that may have taken place on site or on immediately adjacent sites, which may be considered as potentially posing a risk of ground/groundwater contamination and ground gas that could negatively affect the proposed end users, adjacent sites and controlled waters. This Phase 1: Desk Top Study Report has been completed in accordance with the following documents:

- Land Contamination Risk Management Stages 1 to 4 (LCRM – www.gov.uk).
- CLR11: Model Procedures for the Management of Land Contamination. DEFRA/EA, 2004.
- BS10175:2011: Code of Practice for the Investigation of Potentially Contaminated Sites.
- BS5930:2015: Code of Practice for Site Investigations.
- UK Specification for Ground Investigation, 2nd Edition. Site Investigation Steering Group, 2011.
- Effective Site Investigation. Site Investigation Steering Group, 2013.

1.3 Third Party Data Sources

During the completion of this DTS information has been obtained and reviewed from the following sources:

- British Geological Survey (BGS) Geological Mapping Data
- Environment Agency (EA).
- Enviro+Geo Insight Ground Sure Report – (GSR – Appendix II).
- Ordnance Survey Historical Maps (Appendix III).
- The Coal Authority Consultants Coal Mining Report (Appendix IV) and Online Database.

A site walkover was completed in June 2021. A summary of the site walkover is included in Section 2.0 and photographs of the site are presented in Appendix I.

1.4 Limitations of Use

The information, assessments, conclusions and recommendations presented within this Phase 1: Desk Top Study (DTS) Report are solely based on, and are limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) as described, with the approximate extent of the site marked on the Site Location Plan in Appendix I.

This DTS has been completed utilising information relating to the physical and environmental setting of the development area, highlighting, where possible, any potential geohazards that might be encountered with respect to the proposed Residential end use (i.e. “Best Fit” CLEA classification of *Residential*).

Therefore, if a change in the proposed end use is envisaged, then a reassessment of the development area should be carried out.

Consequently, any comments, opinions, diagrams, cross sections and/or sketches contained within the DTS, and/or any configuration of the findings is purely conjectural and given for guidance only as no intrusive investigation works have been completed by Geo Environmental Engineering Ltd and it is recommended that confirmation of the anticipated ground conditions should be considered before development proceeds.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders in order to seek their approval of the findings prior to undertaking any works on site.

Agreement for the use or copying of this report by any Third Party must be obtained in writing from Geo Environmental Engineering Ltd. Reliance on the report is strictly in accordance with the Geo Environmental Engineering Ltd Standard Terms and Conditions, copies of which are available on request.

2.0 Site Location and Development Proposals

2.1 Development Proposal

It is understood that the site will be developed for residential end use. A proposed site layout plan has not been provided, however, it is anticipated that the development will comprise a single house with private garden, general areas of soft landscaping, driveway/car parking and other associated infrastructure.

Further details relating to the proposed development should be obtained from the Consultant.

2.2 Site Location

The site, occupying an area of c.0.18ha is located within a suburban setting, c.1km south west of Whitehaven town centre as indicated on the site location plan included in Appendix I. Access to the site is from Inkerman Terrace to the north via an unlocked gate.

- National Grid Reference: 298139, 517194
- Post Code: CA28 7TY (approximate only)

2.3 Site Description and Levels

A site walkover was completed in June 2021 and a selection of photographs of the site are included in Appendix I.

The site is undeveloped land which was covered by dense scrub vegetation (brambles, bushes, etc…) and occasional trees. Access across the site during the walk over was limited by the dense vegetation. Occasional small mounds of gravel were noted at the surface near the entrance.

There was no evidence of any contamination sources (bulk fuel/oil or chemical storage) noted on the site during the walkover.

The site is located on a slope with levels falling to the south east. The slope appears to steepen to the south east. A topographical survey has not been provided, however, Ordnance Survey data suggests that the northern part of the site is at an elevation of c.60m AOD. It would be prudent to acquire a topographical survey of the site prior to development.

2.4 Surrounding Land Uses

The site is surrounded on all sides by existing residential properties.

There was no evidence of any contamination sources (heavy industry, fuel stations, etc.) noted in the area surrounding the site during the walkover.

2.5 Existing Infrastructure and Utilities

A review of statutory utility supplier records lies outside the scope of this report. Although no evidence of utilities was noted on the site during the site walkover, it is possible that buried utilities pass through the site. It is recommended that all utility plans are reviewed prior to commencing any development works.

3.0 Geo-Environmental Setting

This section is based principally upon a search of information available on public registers and obtained through the Ground Sure Report (GSR) to determine any environmental or geological constraints to the proposed development.

- Sections 3.1 to 3.4 refer to the Enviro+Geo Insight Ground Sure Report contained in Appendix II.
- Section 3.5 refers to the Historical Map Extracts contained in Appendix III.

3.1 Development Area Geology

A geological review of the site has been undertaken using information provided on published geological maps (BGS Sheet 28 Whitehaven, Solid and Drift Editions, 1:50,000 scale) and the Ground Sure Report (GSR) contained in Appendix II.

Extract of the geological maps are included below as Figures 1 and 2.

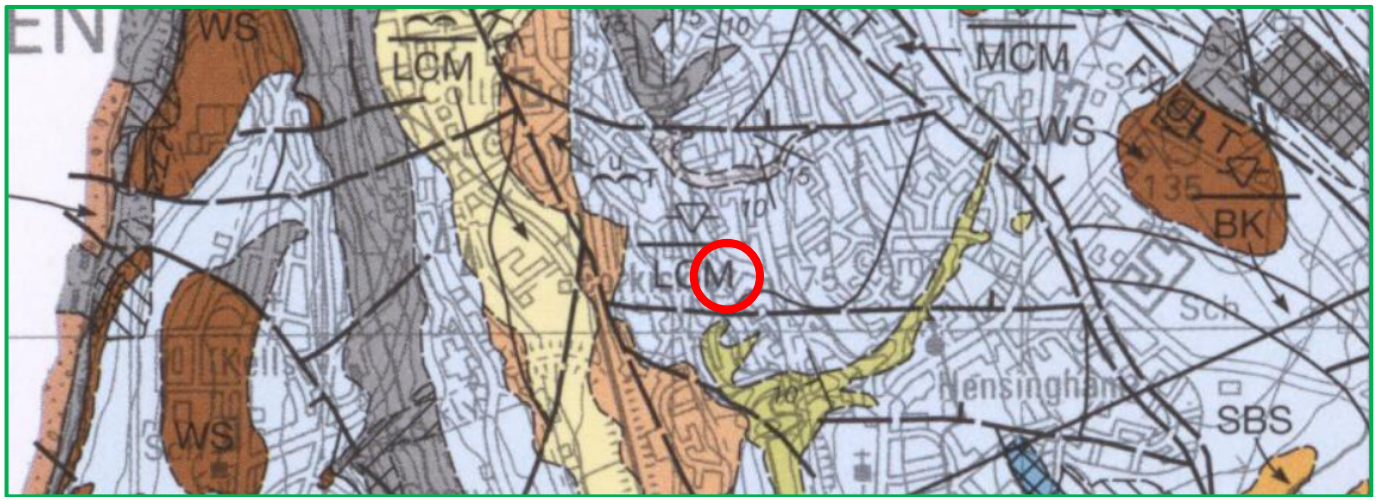

Figure 1. Drift Geological Map Extract (red circle denotes approximate site location)

Figure 2. Solid Geological Map Extract (red circle denotes approximate site location)

3.1.1 Made Ground

A review of the published geological map and the GSR does not indicate any made ground on the site and a review of the historical map extracts indicates that the site has remained undeveloped.

The site has been located adjacent to residential development dating back to 1865. As such, there is a potential for some fly tipping (construction materials, waste soils, etc…) from nearby development. However, significant or deep made ground is not anticipated.

No significant made ground is recorded within c.250m of the site boundary.

3.1.2 Drift Geological Deposits

A review of the published geological map and the GSR indicates that the site is underlain by glacial till deposits. These deposits typically comprise firm and stiff gravelly clays with bands of sand and gravel. Boulders may also be encountered. If clay deposits are encountered across the site, the ground is unlikely to be suitable for a soak-away drainage system.

The GSR indicates the following geohazards and associated preliminary level of risk:

- Shrink-swell clays — very low risk.
- Landslides — low risk (slope stability should be considered).
- Compressible deposits — negligible risk.
- Collapsible deposits — very low risk.
- Running sands — very low risk.

The drift deposits are classified as a Secondary Aquifer.

Consequently, Phase 2: Ground Investigation works would be prudent to aid the design of foundations and any retaining structures or roads, should they be deemed necessary by the Design Team.

3.1.3 Bedrock Deposits

Reference to the published geological map and the GSR indicates the site is underlain by the Pennine Lower Coal Measures (LCM). The LCM typically comprises interbedded mudstone, siltstone and sandstone with thick coal seams. The Harrington Four Foot Coal seam sub-crops c.57m south east of the site with a dip to the north west. The seam may, therefore, be present beneath the site at shallow depth. This is discussed further in Section 3.1.6.

The Pennine Lower Coal Measures is classified as a Secondary ‘A’ Aquifer.

The GSR indicates a negligible risk associated with the dissolution of soluble rocks.

3.1.4 Historical Investigation Records

The nearest historical borehole record held by the BGS is located 150m east. Given the distance, there is a significant potential for variability in the ground conditions to those present on site. However, the record indicates firm to stiff clay to a depth of 2.10m bgl overlying silty gravelly sand and stiff and very stiff very sandy clay. Bedrock of siltstone and mudstone was encountered from a depth of c.5.50m bgl.

3.1.5 Geological Features

An inspection of the geological map indicates that there are no geological faults on or immediately adjacent to the site.

3.1.6 Coal Mining Assessment

Reference to the published geological map and the GSR indicates the site is underlain by the Pennine Lower Coal Measures (LCM). The LCM typically comprises interbedded mudstone, siltstone and sandstone with thick coal seams. Coal seams are known to have been worked in the Whitehaven area.

The Harrington Four Foot Coal seam (HFF) sub-crops c.57m south east of the site with a dip to the north west. The seam may, therefore, be present beneath the site at shallow depth. The 1:10,000 scale geological map has been reviewed and an extract is included below as Figure 3. The geological map indicates that the seam varies between 0.50m and 1.00m in thickness and is, therefore considered workable (economically viable).

Figure 3. 1:10,000 scale geological map extract.

The Coal Authority Consultants online database has been reviewed and this indicates that:

- The site is not located within a Development High Risk Area (however, a high-risk area is present c.45m south east associated with the Harrington Four Foot Coal seam).
- No mine entries are recorded within 50m of the site.
- The site is not covered by an Abandoned Mines Catalogue.
- The site is not located within an area of “Past Shallow Coal Mine Workings”.
- The site is not located within an area of “Probable Shallow Coal Mine Workings”.

A Coal Authority (CA) Consultants Coal Mining report has been acquired for the site (ref: 51002539521001, dated: 16th June 2021). The report indicates that there are no recorded workings beneath the site. Other salient points from the CA Consultants Mining Report are included below:

- Probable unrecorded shallow workings – None.
- Mine Entries – None recorded within c.100m.
- Outcrops – None recorded.
- Mine Gas – None recorded within c.500m
- Coal Mining Subsidence – None within c.50m.
- Opencast Mines – None recorded within 500m.

A copy of the Coal Authority Consultants Coal Mining Report is included in Appendix IV.

Based on the information presented above, the risk to the site and the proposed development from shallow unrecorded mine workings is considered low to moderate. Although no deep coal mining is

recorded, the HFF coal seam sub-crops c.57m south east and dips towards to site. A such, the seam may be present beneath the site at shallow depth and could have been worked historically. GEO recommend an intrusive coal mining investigation to determine the risk to the proposed development from any workings within 30m of the surface.

It is generally accepted that there is a risk to the proposed development if the rock cover over a worked coal seam is less than ten times the seam thickness (a ratio of 1:10). There is some debate as to the exact thickness of rock cover required to mitigate the risk of collapse or disturbance at the surface and the Coal Authority recommends caution on the use of the standard 1:10 'rule of thumb'.

3.1.7 Non-Coal Mining and Quarrying Assessment

The GSR indicates that the site is located in an area where mineral veins may have been mined. The report includes the following comment with regards to mineral vein mining:

> *"Sporadic underground mining of restricted extent may have occurred. Potential for difficult ground conditions are unlikely and localised and are at a level where they need not be considered."*

In view of the information above, the risk to the proposed development from mineral vein mining is very low and further assessment is not considered necessary at this stage.

Information presented within the GSR suggests that there is no risk to the development from brine extraction, tin mining, clay mining and gypsum extraction. The GSR also notes that the site is not at risk of natural cavities.

3.1.8 Radon Gas Assessment

The GSR indicates that the development site is not located within a Radon Affected Area as defined by the Public Health Englans, as less than 1% of properties are above the action level. The plan provided in the GSR indicates that there no areas within 250 where more than 3% of properties are affected by radon. Consequently, in accordance with the GSR radon protection measures are not necessary.

3.2 Development Area Hydrogeology (Groundwater)

3.2.1 Made Ground/Soils

Any made ground/topsoil materials on site are likely to be classified as high permeability (i.e. worst-case scenario assumed until proven otherwise).

3.2.2 Drift Geology

The drift deposits beneath the site are classified as a Secondary Aquifer. This is assigned where it is not possible to attribute either category A or B.

3.2.3 Solid Geology

The underlying bedrock (Lower Coal Measures) is designated a Secondary 'A' Aquifer status. These are 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.

3.3 Development Area Hydrology

3.3.1 Groundwater

Given the topography and anticipated ground conditions, shallow groundwater is not anticipated. However, some localised perched groundwater may be encountered within any made ground and within the natural drift deposits.

A review of the Hydrology information in the GSR indicates the following:

- No groundwater abstractions are recorded within c.1km of the site.
- No surface water abstractions are recorded within c.1km of the site.
- No potable water abstraction licences are held within c.2km of the site.
- The site is not recorded as being within or within c.500m of a Source Protection Zone.

3.3.2 Surface Water Features

There are no surface water features recorded on site or within 250m of the site boundary.

3.3.3 Current Surface Water Run-off

Given the anticipated ground conditions, it is likely that any surface water will infiltrate directly into the ground. In addition, some overland flow (with the topography) is likely during heavy rainfall events.

3.4 Development Area Environmental Sensitivity

3.4.1 Site Ecology

No Environmental designations (Special Area of Conservation, Sites of Special Scientific Interest, Special Protection Areas, etc…) are recorded within 250m of the site.

For further details, please refer to Section 10 of the GSR in Appendix II.

3.4.2 Authorisations, Incidents and Registers

A licensed discharge is recorded c.220m west for sewage discharge to Pow Beck. The risk to the site is negligible.

No other authorisations, incidents or registers (Control of Major Accident Hazards, Licensed industrial activities, EA Pollution Incidents, etc…) are recorded within 250m of the site.

The Design Team should refer to Section 2.0 of the GSR in Appendix II.

3.4.3 Determination of Contaminated Land (Part IIA)

A review of the GSR indicates that the site is not currently recorded as being considered as Contaminated Land under Part IIA EPA 1990. In addition, no sites are determined as Contaminated Land under Part IIA EPA 1990 within c.500m of the proposed development area.

3.4.4 Historical Industrial Land Uses

A review of Section 1.0 in the GSR indicates the following historical land uses:

- Potentially Contaminative Uses (PCU) – None are recorded on site. Within 250m, the GSR indicates unspecified ground works (39m SW, 1951), brewery (162m N, 1938), unspecified factory (196m N, 1951) and an unspecified tank (231m SE, 1863).
- Historical Tanks – Unspecified tank recorded 117m E in 1925.
- Historical Energy Features – Numerous electrical sub-stations, the nearest is recorded 119m NE.
- Historical Petrol and Fuel Site Database – None noted within c.250m.
- Historical Garage and Motor Vehicle Repair Database – None noted within c.250m.

3.4.5 Current Industrial Land Uses

The GSR does not indicate any current industrial land uses of concern within 250m of the site.

3.4.6 Fuel Station Entries

No fuel filling stations are currently active within c.500m of the site.

3.4.7 Landfill and Waste Regulation/Management – Landfill Sites

- No active or recent Landfill Sites are recorded within c.250m.
- No (BGS/LA/EA/NRW Data) historical Landfill Sites are recorded within c.250m.
- No Environment Agency Historic Landfill Site is recorded within c.250m.
- No historical waste sites are recorded within c.250m.
- The licensed waste sites are recorded within c.250m.
- No waste exemptions are recorded within c.250m.

Further details are provided in Section 3.0 of the GSR in Appendix II.

3.5 Development Area Historical Plan Appraisal

This section is based on historical Ordnance Survey map data and provides a summary of the site history, highlighting any industries, processes or activities that may be considered as Geohazards. Copies of historical maps which date back to 1865 are provided in Appendix III and a summary of the site history is included below.

3.5.1 On-Site

The first historical map extract dated 1865 indicates that the site is part of an agricultural field. By 1966, the site became scrub land in-between residential housing. A very small structure, possibly a shed is recorded in the far north western part of the site from 1966 until the most recent extract dated 2003. Due to the dense scrub vegetation, no evidence of this structure was noted during the walkover.

3.5.2 Off-Site

The first historical map extract dated 1865 shows housing to the south, west and east, and agricultural fields to the north. A square reservoir is recorded c.230m south east.

Additional housing had been constructed around the site by 1925 and by 1966 the site was enclose by housing.

The reservoir appears disused from 1994 and the land appears to have been developed with housing since.

The historical maps do not indicate any significant industrial land uses on or in the vicinity of the site. As the reservoir appears to have been redeveloped for residential use, it is very unlikely to have been used as a landfill and the risk to the site from associated ground gas is considered negligible.

4.0 Conceptual Site Model

A Conceptual Site Model (CSM) has been designed using the information presented within this DTS to provide a model of the anticipated ground, groundwater and ground gas conditions below the development area (Existing Site CSM).

The CSM utilises the established *Source – Pathway – Receptor* pollutant linkage model and is designed to provide an improved understanding of the site characteristics. This ensures adequate and appropriate Phase 2: Ground Investigation (P2 GI) Works are designed and undertaken for wide spread and targeted investigations, should they be deemed necessary.

Depending on the results of the ground investigation, the CSM can be refined based upon the outcomes of the intrusive works to ensure that appropriate remediation (if required) is completed to ensure the development area is "fit for purpose" in relation to the proposed residential end use.

The preliminary CSM is presented in the matrix on the following page and considers the anticipated *Source – Pathway – Receptor* pollutant linkage model derived for this site.

SOURCE-PATHWAY-RECEPTOR POLLUTANT LINKAGE MODEL
Sources:
S1 = Possible Made Ground – No specific sources identified. Historical information suggests that the site has remained undeveloped with no industries, processes or potential sources of contamination present on site or within the immediate vicinity. However, as the client plans to develop the site for residential end use, it would be prudent to carry out some basic intrusive works to confirm the shallow ground conditions and to screen topsoil materials (where present) to determine their suitability for use in a residential context. If made ground or potential sources of contamination are encountered, the scope of chemical laboratory screening should be increased appropriately.
S2 = Ground Gas - Potential Sources Identified. No ground gas sources have been identified to date. However, there is a potential for shallow unrecorded coal mine workings beneath the site which could pose a risk to the site with respect to methane and carbon dioxide generation. Therefore, should the intrusive investigations identify any evidence of mine workings beneath the site, it is recommended that a phase of ground gas monitoring is carried out.
Pathways:
P1 = Inhalation of air (wind-blown particles, vapours, gasses)
P2 = Dermal/direct contact (limited risk through areas of private gardens and soft landscaping)
P3 = Ingestion (limited risk through areas of private gardens and soft landscaping)
P4 = Migration through services (potable water supply)
P5 = Direct contact with building materials (aggressive ground conditions for buried concrete)
P6 = Surface Run-off
P7 = Leaching from Soils (to underlying Aquifer)
Receptors:
R1 = Human Health (End users and Construction Workforce)
R2 = Controlled Waters (Aquifer)
R3 = Building Materials and Buried Utilities
R4 = Flora and Fauna (future private gardens and soft landscaping)

5.0 Preliminary Qualitative Risk Assessment

5.1 Qualitative Geotechnical Risk Assessment – Risk Meter

The preliminary Geotechnical Risk Meter below indicates the potential level of geotechnical risk associated with the proposed development. The risk meter takes into account past development, geology, mining and other geotechnical factors which have been discussed earlier in the report.

Geotechnical:	⇩					
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH

A risk level of LOW to MODERATE is determined appropriate for this development area for the following reasons:

- Historical records indicate that the site has not been previously developed.
- Geological records indicate that the site is underlain by glacial till deposits which typically comprise firm and stiff clays with bands of sand and gravel. As such, there is a potential for some variable ground conditions.
- Geological data indicates that the Harrington Four Foot Coal seam sub-crops c.57m south east of the site with a dip to the north west. The seam may, therefore, be present beneath the site at shallow depth and could have been worked historically.
- Shallow groundwater is not anticipated although some trapped “perched” water may be present within any drift deposits.
- Where clay soils are present, their soil shrinkability could be affected by mature vegetation such as trees.

Consequently, it would be prudent to complete a Phase 2: Ground Investigation to confirm the underlying ground conditions (i.e. the presence of any made ground and the drift deposits) and to allow samples to be recovered for geotechnical laboratory analysis to aid the design of foundations, highways and drainage.

Intrusive investigations are recommended to determine the risk to the proposed development from shallow unrecorded coal mine workings.

5.2 Qualitative Contamination Risk Assessment – Risk Meter

The following Risk Meter determines the potential level of risk associated with the development with respect to ground contamination, groundwater contamination and ground gas. The risk meter takes into account the anticipated *Sources – Pathways – Receptors* within the pollutant linkage model and CSM.

Ground Contamination:						
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH
Groundwater Contamination:						
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH
Ground Gas: *(Carbon Dioxide and Methane)*						
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH
Radon Gas:						
	<1%	**1%-3%**	**3%-5%**	**5%-10%**	**10%-30%**	**>30%***
	Estimated Percentage of Dwellings Exceeding the Radon Action Level					

Ground Contamination: A risk level of NEGLIGIBLE to VERY LOW is currently determined appropriate for this development with respect to ground contamination. In summary, the site has not been developed and there have been no historical industries/processes on the site or within close proximity (with the exception of the farming activities) that are considered as posing a potential significant risk of widespread or pervasive contamination.

However, as the site will be developed for residential end use, it is recommended that intrusive investigations be completed to confirm the shallow ground conditions. Samples should be recovered to allow for chemical laboratory screening to determine if the topsoil and any made ground materials are suitable for re-use in a residential context in addition to assessing any risks to Human Health.

At this stage, with no specific contamination sources identified, it is recommended that the soils are screened for a generic suite of contaminants that should include: Metals, Metalloids, pH, Water Soluble Sulphate, Total Organic Carbon, Asbestos and Speciated PAH.

If, during the ground investigation, areas of made ground or evidence of contamination are identified, it may be necessary to increase the range of contaminant screening depending on the nature and type of possible contaminants encountered.

In addition to the above, a watching brief should be implemented during the development works to ensure that if additional areas of made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination (i.e. fuel/oil) are identified then works should be stopped, the Local Authority notified and advice should be sought from an appropriately qualified and experienced Geo-Environmental Engineer.

Groundwater Contamination: A risk level of NEGLIGIBLE is currently considered appropriate for the site with respect to potential risks to controlled waters (groundwater, nearby surface water features) and adjacent sites, as limited potential sources have been identified.

Ground Gas: A risk level of NEGLIGIBLE is currently considered appropriate for the site with respect to potential harmful ground gas. However, there is a potential for shallow unrecorded coal mine workings beneath the site which could pose a risk to the site with respect to methane and carbon dioxide generation. Therefore, should the intrusive investigations identify any evidence of mine workings beneath the site, it is recommended that a phase of ground gas monitoring is carried out.

Radon Gas: The site is not located within a Radon Affected Area as defined by the PHE, as less than 1% of properties are above the action level. The plan provided in the GSR indicates that there no radon affected areas within c.250m of the site. Consequently, in accordance with the GSR radon protection measures are not necessary.

6.0 Conclusions

When considering the results of this DTS report, the following can be seen:

- The development site is currently considered to represent a low to moderate geotechnical risk.
- The site is currently considered to pose a negligible to very low risk to the proposed end users from ground contamination.
- The site is currently considered to pose a negligible risk to adjacent sites (the surrounding environment) and controlled waters with respect to potential ground/groundwater contamination.
- The site is currently considered to pose a negligible risk to the proposed end users from ground gas. However, monitoring will be required if evidence of mine workings is identified.

It would be prudent to complete a programme of Ground Investigation works to fully characterise the ground/groundwater conditions and ground gas regime below the site. The resulting information should be suitable for submission to the Local Authority for planning purposes and for the appointed design team.

In summary, the site works should include, but not limited to:

- Mini percussion boreholes and/or trial pits to determine the nature and in-situ strength of the underlying ground conditions across the development site.
- Rotary drilling to investigate the potential for shallow coal seams within 30m of the surface.
    - Given the proximity to nearby housing, the drilling should be completed using water flush.
- Soil logging by a suitably qualified and experienced Geo-Environmental Engineer.
- In-situ testing to aid foundation design.
- Laboratory based geotechnical testing.
- Laboratory chemical screening of soil samples.

It is recommended that a coal mining investigation is completed on the site to determine the risk to the proposed development from possible shallow unrecorded coal mine workings. The investigation should comprise at least one rotary borehole to prove the depth and thickness of the HFF seam or to c.30m bgl whichever is encountered first. If the borehole indicates insufficient rock cover overlying the seam, additional boreholes are recommended to check for evidence of workings.

Laboratory screening of soil samples will be required to determine the risk to potential receptors, namely proposed residents (human health).

GEO recommends that a “watching brief” and “observational technique” be applied to this site to ensure that if ground conditions appear to vary from those inferred within this investigation report then advice should be sought from a suitably qualified and experienced Geo-Environmental Engineer. In the event that made ground is identified during works on site then sampling of those materials should be completed by an appropriate Geo-Environmental Engineer to facilitate contamination screening in-conjunction with a Human Health Risk Assessment.

GEO is not responsible for the accuracy and completeness of third-party information and cannot be held responsible for any errors or omissions that may occur. The contents of this report have been specifically requested by the client and therefore any items not specifically mentioned cannot be assumed to be covered.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate Regulatory Authorities and/ or other key stakeholders in order to seek their approval of the findings prior to finalising any land values as part of a site acquisition or prior to undertaking any construction or redevelopment works on site.

End of Report

Appendix I

- Site Location Plan
- Aerial Photograph Extract
- Site Walkover Photographs (June 2021)

GEO Environmental Engineering

GEO2020-4237: Inkerman Terrace, Whitehaven – Site Location

Website: www.geoenvironmentalengineering.com
Email: info@geoenvironmentalengineering.com
Telephone: 08456 768 895 / 07883 440 186

GEO Environmental Engineering

GEO2020-4237: Inkerman Terrace, Whitehaven – Aerial Image

Website: www.geoenvironmentalengineering.com
Email: info@geoenvironmentalengineering.com
Telephone: 08456 768 895 / 07883 440 186

GEO Environmental Engineering

GEO2020-4237: Inkerman Terrace, Whitehaven – Site Photographs

Website: www.geoenvironmentalengineering.com
Email: info@geoenvironmentalengineering.com
Telephone: 08456 768 895 / 07883 440 186

Appendix II

- Enviro+Geo Insight Ground Sure Report (GSR)

Groundsure LOCATION INTELLIGENCE

Enviro+Geo Insight

298139 517194

Order Details

Date: 11/06/2021

Your ref: EMS_701068_916385

Our Ref: EMS-701068_916385

Client: emapsite

Site Details

Location: 298139 517194

Area: 0.18 ha

Authority: Copeland Borough Council

Summary of findings p. 2

OS MasterMap site plan p.12

Aerial image p. 8

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Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	**1.1**	**Historical industrial land uses**	0	2	7	35	-
15	**1.2**	**Historical tanks**	0	0	1	2	-
16	**1.3**	**Historical energy features**	0	0	2	7	-
16	1.4	Historical petrol stations	0	0	0	0	-
17	1.5	Historical garages	0	0	0	0	-
17	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
18	**2.1**	**Historical industrial land uses**	0	3	7	41	-
20	**2.2**	**Historical tanks**	0	0	1	3	-
21	**2.3**	**Historical energy features**	0	0	4	9	-
22	2.4	Historical petrol stations	0	0	0	0	-
22	2.5	Historical garages	0	0	0	0	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
23	3.1	Active or recent landfill	0	0	0	0	-
23	3.2	Historical landfill (BGS records)	0	0	0	0	-
24	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
24	**3.4**	**Historical landfill (EA/NRW records)**	0	0	0	1	-
24	3.5	Historical waste sites	0	0	0	0	-
24	3.6	Licensed waste sites	0	0	0	0	-
25	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
26	**4.1**	**Recent industrial land uses**	0	0	3	-	-
27	4.2	Current or recent petrol stations	0	0	0	0	-
27	4.3	Electricity cables	0	0	0	0	-
27	4.4	Gas pipelines	0	0	0	0	-
27	4.5	Sites determined as Contaminated Land	0	0	0	0	-

27	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
28	4.7	Regulated explosive sites	0	0	0	0	-
28	4.8	Hazardous substance storage/usage	0	0	0	0	-
28	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
28	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
28	4.11	Licensed pollutant release (Part A(2)/B)	0	0	0	0	-
29	4.12	Radioactive Substance Authorisations	0	0	0	0	-
29	**4.13**	**Licensed Discharges to controlled waters**	0	0	1	9	-
31	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
31	4.15	Pollutant release to public sewer	0	0	0	0	-
31	4.16	List 1 Dangerous Substances	0	0	0	0	-
31	4.17	List 2 Dangerous Substances	0	0	0	0	-
31	**4.18**	**Pollution Incidents (EA/NRW)**	0	0	1	2	-
32	4.19	Pollution inventory substances	0	0	0	0	-
32	4.20	Pollution inventory waste transfers	0	0	0	0	-
32	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
33	**5.1**	**Superficial aquifer**	Identified (within 500m)				
35	**5.2**	**Bedrock aquifer**	Identified (within 500m)				
36	**5.3**	**Groundwater vulnerability**	Identified (within 50m)				
37	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
37	5.5	Groundwater vulnerability- local information	None (within 0m)				
38	5.6	Groundwater abstractions	0	0	0	0	0
38	5.7	Surface water abstractions	0	0	0	0	0
38	5.8	Potable abstractions	0	0	0	0	0
38	5.9	Source Protection Zones	0	0	0	0	-
39	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
40	**6.1**	**Water Network (OS MasterMap)**	0	0	4	-	-

41	6.2	Surface water features	0	0	0	-	-
41	**6.3**	**WFD Surface water body catchments**	1	-	-	-	-
42	6.4	WFD Surface water bodies	0	0	0	-	-
42	**6.5**	**WFD Groundwater bodies**	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
43	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
44	**7.2**	**Historical Flood Events**	0	0	1	-	-
44	7.3	Flood Defences	0	0	0	-	-
44	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
44	7.5	Flood Storage Areas	0	0	0	-	-
45	7.6	Flood Zone 2	None (within 50m)				
45	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
46	8.1	Surface water flooding	Negligible (within 50m)				
Page	Section	Groundwater flooding					
47	**9.1**	**Groundwater flooding**	Low (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
48	**10.1**	**Sites of Special Scientific Interest (SSSI)**	0	0	0	0	1
49	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
49	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
49	10.4	Special Protection Areas (SPA)	0	0	0	0	0
49	10.5	National Nature Reserves (NNR)	0	0	0	0	0
50	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
50	**10.7**	**Designated Ancient Woodland**	0	0	0	1	3
50	10.8	Biosphere Reserves	0	0	0	0	0
51	10.9	Forest Parks	0	0	0	0	0
51	**10.10**	**Marine Conservation Zones**	0	0	0	0	2
51	10.11	Green Belt	0	0	0	0	0
51	10.12	Proposed Ramsar sites	0	0	0	0	0

52	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
52	**10.14**	**Potential Special Protection Areas (pSPA)**	0	0	0	0	1
52	10.15	Nitrate Sensitive Areas	0	0	0	0	0
53	**10.16**	**Nitrate Vulnerable Zones**	0	0	0	0	2
54	**10.17**	**SSSI Impact Risk Zones**	1	-	-	-	-
55	**10.18**	**SSSI Units**	0	0	0	0	1
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
56	11.1	World Heritage Sites	0	0	0	-	-
57	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
57	11.3	National Parks	0	0	0	-	-
57	**11.4**	**Listed Buildings**	0	8	8	-	-
58	**11.5**	**Conservation Areas**	1	0	0	-	-
59	11.6	Scheduled Ancient Monuments	0	0	0	-	-
59	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
60	**12.1**	**Agricultural Land Classification**	Urban (within 250m)				
61	12.2	Open Access Land	0	0	0	-	-
61	12.3	Tree Felling Licences	0	0	0	-	-
61	12.4	Environmental Stewardship Schemes	0	0	0	-	-
61	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
62	**13.1**	**Priority Habitat Inventory**	0	0	1	-	-
63	13.2	Habitat Networks	0	0	0	-	-
63	13.3	Open Mosaic Habitat	0	0	0	-	-
63	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
64	**14.1**	**10k Availability**	Identified (within 500m)				
65	14.2	Artificial and made ground (10k)	0	0	0	0	-
66	14.3	Superficial geology (10k)	0	0	0	0	-

66	14.4	Landslip (10k)	0	0	0	0	-
67	14.5	Bedrock geology (10k)	0	0	0	0	-
67	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
68	15.1	50k Availability	Identified (within 500m)				
69	15.2	Artificial and made ground (50k)	0	0	0	0	-
69	15.3	Artificial ground permeability (50k)	0	0	-	-	-
70	15.4	Superficial geology (50k)	1	0	1	1	-
71	15.5	Superficial permeability (50k)	Identified (within 50m)				
71	15.6	Landslip (50k)	0	0	0	0	-
71	15.7	Landslip permeability (50k)	None (within 50m)				
72	15.8	Bedrock geology (50k)	1	0	2	4	-
73	15.9	Bedrock permeability (50k)	Identified (within 50m)				
73	15.10	Bedrock faults and other linear features (50k)	0	0	5	10	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
75	16.1	BGS Boreholes	0	0	5	-	-
Page	Section	Natural ground subsidence					
77	17.1	Shrink swell clays	Very low (within 50m)				
78	17.2	Running sands	Very low (within 50m)				
79	17.3	Compressible deposits	Negligible (within 50m)				
80	17.4	Collapsible deposits	Very low (within 50m)				
81	17.5	Landslides	Moderate (within 50m)				
83	17.6	Ground dissolution of soluble rocks	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
85	18.1	Natural cavities	0	0	0	0	-
86	18.2	BritPits	0	0	0	0	-
86	18.3	Surface ground workings	0	3	6	-	-
86	18.4	Underground workings	0	0	0	5	17
87	18.5	Historical Mineral Planning Areas	0	0	0	0	-

88	**18.6**	**Non-coal mining**	1	0	0	0	1
88	18.7	Mining cavities	0	0	0	0	0
88	18.8	JPB mining areas	None (within 0m)				
89	**18.9**	**Coal mining**	Identified (within 0m)				
89	18.10	Brine areas	None (within 0m)				
89	18.11	Gypsum areas	None (within 0m)				
89	18.12	Tin mining	None (within 0m)				
89	18.13	Clay mining	None (within 0m)				

Page	Section	Radon					
90	**19.1**	**Radon**	Less than 1% (within 0m)				

Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
91	**20.1**	**BGS Estimated Background Soil Chemistry**	1	0	-	-	-
91	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
91	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-

Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
92	21.1	Underground railways (London)	0	0	0	-	-
92	21.2	Underground railways (Non-London)	0	0	0	-	-
92	21.3	Railway tunnels	0	0	0	-	-
92	21.4	Historical railway and tunnel features	0	0	0	-	-
92	21.5	Royal Mail tunnels	0	0	0	-	-
93	21.6	Historical railways	0	0	0	-	-
93	21.7	Railways	0	0	0	-	-
93	21.8	Crossrail 1	0	0	0	0	-
93	21.9	Crossrail 2	0	0	0	0	-
93	21.10	HS2	0	0	0	0	-

Recent aerial photograph

Capture Date: 10/10/2018

Site Area: 0.18ha

Recent site history - 2016 aerial photograph

Capture Date: 16/08/2016

Site Area: 0.18ha

Recent site history - 2008 aerial photograph

Capture Date: 05/10/2008

Site Area: 0.18ha

Recent site history - 1999 aerial photograph

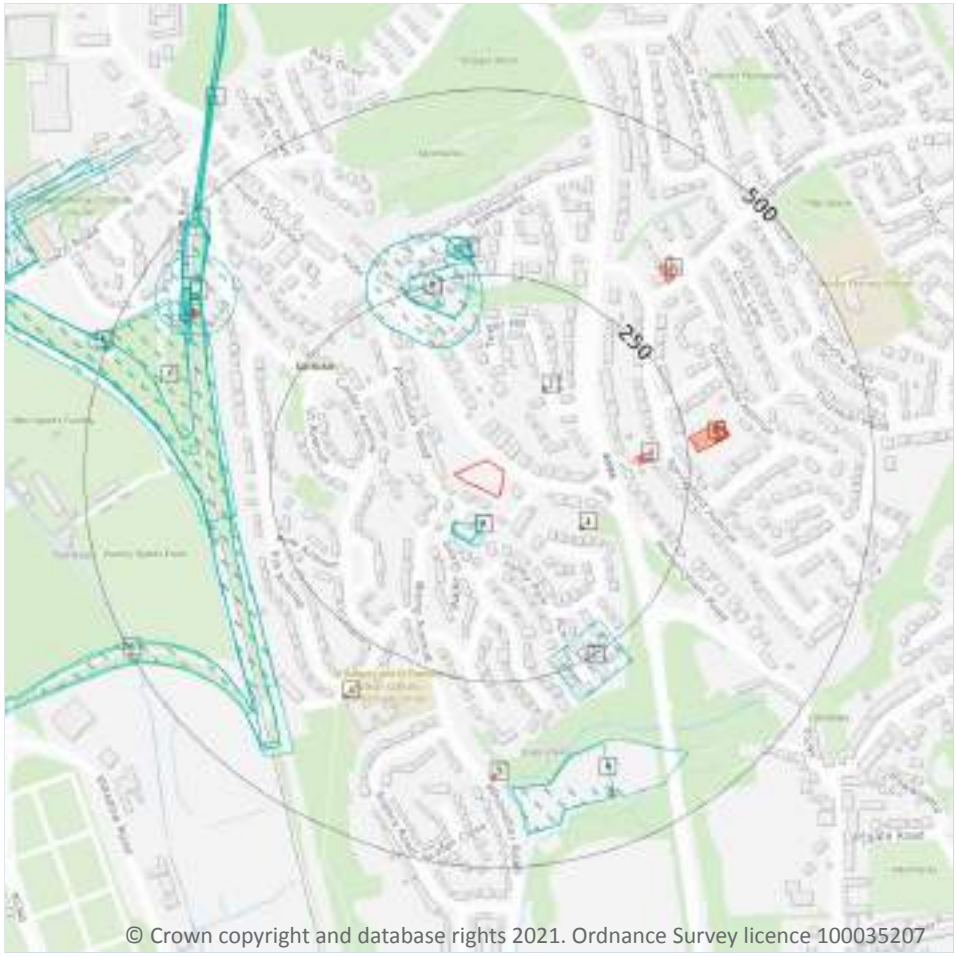
Capture Date: 26/07/1999

Site Area: 0.18ha

OS MasterMap site plan

Site Area: 0.18ha

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	44

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 13**

ID	Location	Land use	Dates present	Group ID
A	37m SW	Unspecified Ground Workings	1926	206312

ID	Location	Land use	Dates present	Group ID
A	39m SW	Unspecified Ground Workings	1951	202027
B	162m N	Brewery	1938	200037
B	162m N	Brewery	1898	201863
B	196m N	Unspecified Factory	1951	193307
B	197m N	Brewery	1926	205445
C	215m SE	Water Works	1863	193361
B	217m N	Brewery	1863	203907
C	231m SE	Unspecified Tank	1863	192803
E	270m N	Unspecified Heap	1977	200076
E	274m N	Unspecified Heap	1938 - 1951	200270
E	274m N	Unspecified Heap	1898	201730
E	275m N	Unspecified Heap	1926	204517
F	300m W	Railway Sidings	1977	201539
F	303m W	Railway Sidings	1951	207918
F	305m W	Railway Sidings	1926	205206
F	309m W	Railway Sidings	1938	206223
F	309m W	Railway Sidings	1898	209382
F	348m W	Railway Building	1977	194198
H	361m S	Sewage Works	1938	206308
H	361m SE	Sewage Works	1926	200289
I	369m NW	Unspecified Tank	1938	209266
I	398m NW	Railway Station	1863	205549
I	399m NW	Railway Station	1898	204509
I	408m NW	Railway Station	1977	207096
6	411m SW	Mineral Railway Sidings	1926	205307
I	412m NW	Cuttings	1863	208930
I	412m NW	Railway Station	1951	205849
I	415m NW	Railway Station	1938	201179

ID	Location	Land use	Dates present	Group ID
I	415m NW	Railway Station	1926	200655
H	418m S	Unspecified Tank	1926 - 1938	200971
I	419m NW	Unspecified Tank	1926	201388
I	430m NW	Cuttings	1951	207656
I	431m NW	Cuttings	1926	206407
I	434m NW	Cuttings	1938	203721
I	462m NW	Cuttings	1977	203343
J	481m NW	Tunnel	1863	200024
J	487m NW	Railway Tunnel	1898	199974
J	487m NW	Railway Tunnel	1938	203509
J	487m NW	Tunnel	1926	200122
J	488m NW	Tunnel	1977	200988
J	488m NW	Tunnel	1951	205441
K	495m W	Railway Building	1938 - 1951	201187
K	496m W	Railway Building	1898 - 1926	199993

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m **3**

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 13**

ID	Location	Land use	Dates present	Group ID
1	117m E	Unspecified Tank	1925	28497
I	422m NW	Unspecified Tank	1899 - 1925	29480
H	422m S	Unspecified Tank	1925	28499

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	9

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 13**

ID	Location	Land use	Dates present	Group ID
2	119m NE	Electricity Substation	1984 - 1992	15610
3	179m E	Electricity Substation	1984 - 1992	15368
D	254m E	Electricity Substation	1978 - 1992	15391
D	286m E	Electricity Substation	1961	15448
D	287m E	Electricity Substation	1984	15511
4	327m SW	Electricity Substation	1974	15025
G	338m NE	Electricity Substation	1992	15027
G	361m NE	Electricity Substation	1984	15028
5	374m S	Electricity Substation	1989 - 1992	15333

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.

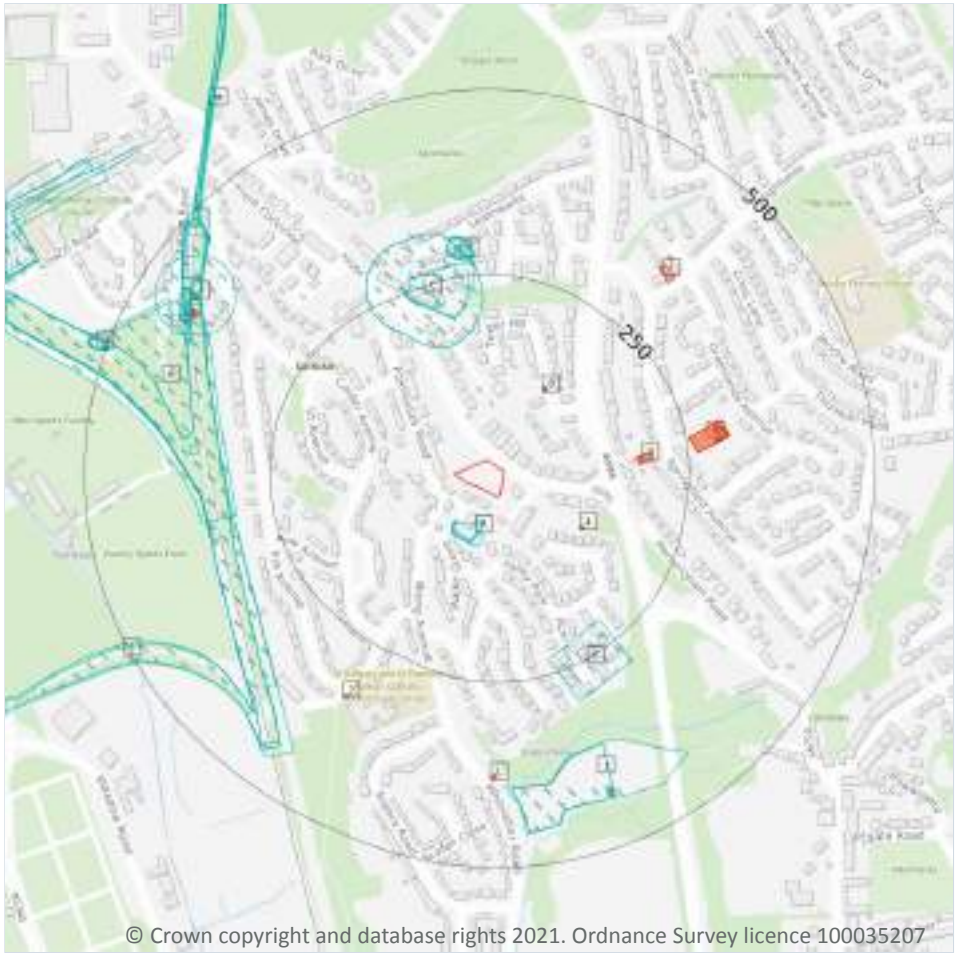
1.6 Historical military land

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	51

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 18**

ID	Location	Land Use	Date	Group ID
A	37m SW	Unspecified Ground Workings	1926	206312
A	37m SW	Unspecified Ground Workings	1926	206312
A	39m SW	Unspecified Ground Workings	1951	202027

ID	Location	Land Use	Date	Group ID
C	162m N	Brewery	1938	200037
C	162m N	Brewery	1898	201863
C	196m N	Unspecified Factory	1951	193307
C	197m N	Brewery	1926	205445
E	215m SE	Water Works	1863	193361
C	217m N	Brewery	1863	203907
E	231m SE	Unspecified Tank	1863	192803
G	270m N	Unspecified Heap	1977	200076
G	274m N	Unspecified Heap	1951	200270
G	274m N	Unspecified Heap	1938	200270
G	274m N	Unspecified Heap	1898	201730
G	275m N	Unspecified Heap	1926	204517
G	275m N	Unspecified Heap	1926	204517
H	300m W	Railway Sidings	1977	201539
H	303m W	Railway Sidings	1951	207918
H	305m W	Railway Sidings	1926	205206
H	309m W	Railway Sidings	1938	206223
H	309m W	Railway Sidings	1898	209382
H	348m W	Railway Building	1977	194198
J	361m S	Sewage Works	1938	206308
J	361m SE	Sewage Works	1926	200289
J	361m SE	Sewage Works	1926	200289
K	369m NW	Unspecified Tank	1938	209266
K	398m NW	Railway Station	1863	205549
K	399m NW	Railway Station	1898	204509
K	408m NW	Railway Station	1977	207096
3	411m SW	Mineral Railway Sidings	1926	205307
K	412m NW	Cuttings	1863	208930

ID	Location	Land Use	Date	Group ID
K	412m NW	Railway Station	1951	205849
K	415m NW	Railway Station	1938	201179
K	415m NW	Railway Station	1926	200655
J	418m S	Unspecified Tank	1938	200971
J	418m S	Unspecified Tank	1926	200971
K	419m NW	Unspecified Tank	1926	201388
K	430m NW	Cuttings	1951	207656
K	431m NW	Cuttings	1926	206407
K	434m NW	Cuttings	1938	203721
K	462m NW	Cuttings	1977	203343
M	481m NW	Tunnel	1863	200024
M	487m NW	Railway Tunnel	1938	203509
M	487m NW	Railway Tunnel	1898	199974
M	487m NW	Tunnel	1926	200122
M	488m NW	Tunnel	1951	205441
M	488m NW	Tunnel	1977	200988
N	495m W	Railway Building	1951	201187
N	496m W	Railway Building	1938	201187
N	496m W	Railway Building	1898	199993
N	496m W	Railway Building	1926	199993

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	4

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 18**

ID	Location	Land Use	Date	Group ID
1	117m E	Unspecified Tank	1925	28497
K	422m NW	Unspecified Tank	1899	29480
K	422m NW	Unspecified Tank	1925	29480
J	422m S	Unspecified Tank	1925	28499

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**13**

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 18**

ID	Location	Land Use	Date	Group ID
B	119m NE	Electricity Substation	1984	15610
B	120m NE	Electricity Substation	1992	15610
D	179m E	Electricity Substation	1992	15368
D	181m E	Electricity Substation	1984	15368
F	254m E	Electricity Substation	1978	15391
F	254m E	Electricity Substation	1992	15391
F	286m E	Electricity Substation	1961	15448
F	287m E	Electricity Substation	1984	15511
2	327m SW	Electricity Substation	1974	15025
I	338m NE	Electricity Substation	1992	15027
I	361m NE	Electricity Substation	1984	15028
L	374m S	Electricity Substation	1989	15333
L	374m S	Electricity Substation	1992	15333

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)

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	1

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 23**

ID	Location	Details		
1	270m SE	Site Address: Land off Hensingham Road, Adjacent to Snebra Ghyll, Hensingham, Whitehaven, Cumbria Licence Holder Address: Durranhill, Carlisle	Waste Licence: Yes Site Reference: 153 Waste Type: Inert Environmental Permitting Regulations (Waste) Reference: - Licence Issue: 10/06/1991 Licence Surrender: 16/04/1993	Operator: - Licence Holder: Eden Construction Limited First Recorded 06/07/1991 Last Recorded: 07/10/1992

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	0

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

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

4 Current industrial land use

Site Outline

Search buffers in metres (m)

Recent industrial land uses

Licensed Discharges to controlled waters

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m **3**

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 26**

ID	Location	Company	Address	Activity	Category
2	113m NW	Electricity Sub Station	Cumbria, CA28	Electrical Features	Infrastructure and Facilities
3	123m NE	Electricity Sub Station	Cumbria, CA28	Electrical Features	Infrastructure and Facilities
4	202m E	Electricity Sub Station	Cumbria, CA28	Electrical Features	Infrastructure and Facilities

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m	0

Open, closed, under development and obsolete petrol stations.

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	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	0

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.

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	10

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 26**

ID	Location	Address	Details	
5	220m W	ESK AVENUE MIREHOUSE CSO, 51-52 ESK AVENUE, COPELAND, WHITEHAVEN, CUMBRIA, CA28 8AN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01COP0041 Permit Version: 1 Receiving Water: POW BECK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: 01/01/1995 Effective Date: 01/01/1995 Revocation Date: 06/03/2005
A	274m W	ESK AVENUE MIREHOUSE CSO, 51-52 ESK AVENUE, COPELAND, WHITEHAVEN, CUMBRIA, CA28 8AN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 017480429 Permit Version: 2 Receiving Water: UN-NAMED TRIB OF POW BECK	Status: VARIED UNDER EPR 2010 Issue date: 12/03/2018 Effective Date: 01/04/2018 Revocation Date: -
A	274m W	ESK AVENUE MIREHOUSE CSO, 51-52 ESK AVENUE, COPELAND, WHITEHAVEN, CUMBRIA, CA28 8AN	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 017480429 Permit Version: 1 Receiving Water: UN-NAMED TRIB OF POW BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 07/03/2005 Effective Date: 07/03/2005 Revocation Date: 31/03/2018
6	463m S	SNEBRA WHITEHAVEN CSO 023B2, 145 WHINLATTER ROAD, WHITEHAVEN, CUMBRIA, CA28 8DY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01COP0039 Permit Version: 1 Receiving Water: SNEBRA GHYLL	Status: REVOKED - UNSPECIFIED Issue date: - Effective Date: 01/01/1995 Revocation Date: 29/03/2004

ID	Location	Address	Details	
B	470m SE	RIBTON MOORSIDE CSO, 130 MAIN STREET, HENSINGHAM, WHITEHAVEN, CUMBRIA, CA28 8PX	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 017480288 Permit Version: 1 Receiving Water: SNEBRA BECK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 30/09/1994 Revocation Date: 03/03/2005
B	470m SE	RIBTON MOORSIDE CSO, 130 MAIN STREET, HENSINGHAM, WHITEHAVEN, CUMBRIA, CA28 8PX	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01COP0085 Permit Version: 1 Receiving Water: SNEBRA BECK	Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 01/01/1995 Revocation Date: 01/01/1995
C	470m S	SNEBRA WHITEHAVEN CSO 023B2, 145 WHINLATTER ROAD, WHITEHAVEN, CUMBRIA, CA28 8DY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01COP0039 Permit Version: 2 Receiving Water: TRIB OF POW BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 30/03/2004 Effective Date: 30/03/2004 Revocation Date: 07/05/2018
C	470m S	SNEBRA WHITEHAVEN CSO 023B2, 145 WHINLATTER ROAD, WHITEHAVEN, CUMBRIA, CA28 8DY	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 01COP0039 Permit Version: 3 Receiving Water: TRIB OF POW BECK	Status: VARIED UNDER EPR 2010 Issue date: 08/05/2018 Effective Date: 08/05/2018 Revocation Date: -
B	472m SE	RIBTON MOORSIDE CSO, 130 MAIN STREET, HENSINGHAM, WHITEHAVEN, CUMBRIA, CA28 8PX	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 017480288 Permit Version: 3 Receiving Water: CULVERTED SEC OF SNEBRA BECK	Status: VARIED UNDER EPR 2010 Issue date: 12/03/2018 Effective Date: 01/04/2018 Revocation Date: -
B	472m SE	RIBTON MOORSIDE CSO, 130 MAIN STREET, HENSINGHAM, WHITEHAVEN, CUMBRIA, CA28 8PX	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 017480288 Permit Version: 2 Receiving Water: SNEBRA BECK	Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995) Issue date: 04/03/2005 Effective Date: 04/03/2005 Revocation Date: 31/03/2018

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	3

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 26**

ID	Location	Details	
1	79m E	Incident Date: 10/07/2001 Incident Identification: 15473 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	434m SE	Incident Date: 02/10/2002 Incident Identification: 113884 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	434m SE	Incident Date: 02/10/2002 Incident Identification: 113884 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

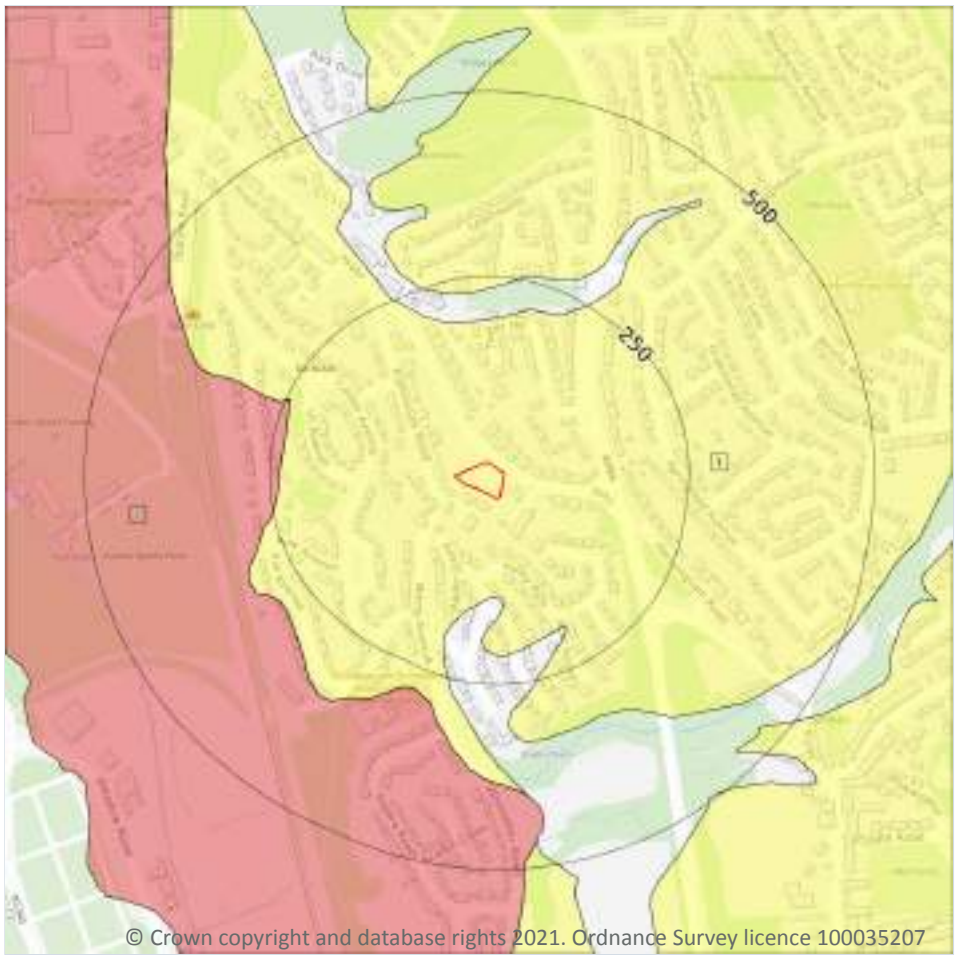
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



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 33**

ID	Location	Designation	Description
1	**On site**	**Secondary Undifferentiated**	**Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type**
2	234m 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	1

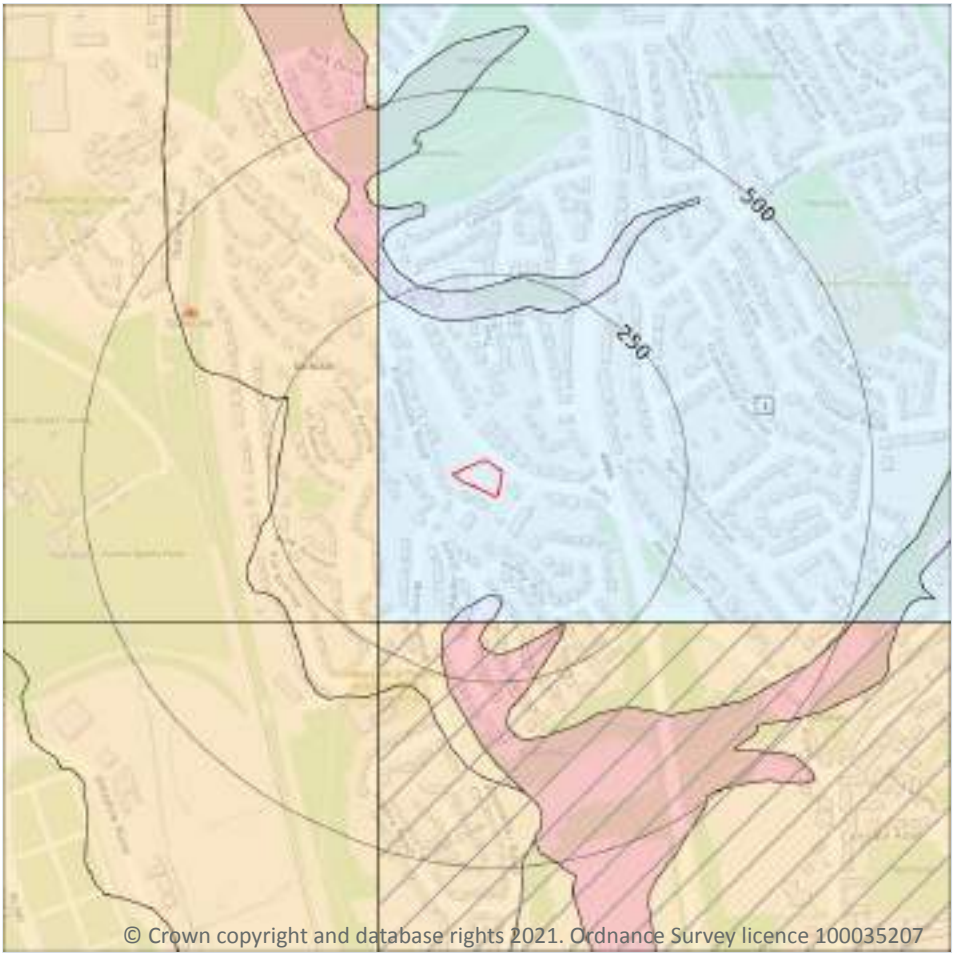
Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 35**

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

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

Groundwater vulnerability



Site Outline

Search buffers in metres (m)

Superficial vulnerability

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

Bedrock vulnerability

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

Other information

- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	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 36**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	**Summary Classification: Secondary superficial aquifer - Low Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year**	**Vulnerability: Low Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: Low**	**Vulnerability: Low 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

5.6 Groundwater abstractions

Records within 2000m	0

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.

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

5.7 Surface water abstractions

Records within 2000m	0

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

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

5.8 Potable abstractions

Records within 2000m	0

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

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

5.9 Source Protection Zones

Records within 500m	0

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

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

5.10 Source Protection Zones (confined aquifer)

Records within 500m	0

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

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

6 Hydrology

Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m	**4**

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 40**

ID	Location	Type of water feature	Ground level	Permanence	Name
1	198m NW	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
B	214m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	214m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
2	215m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	**0**

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.

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 40**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**Coastal Catchment**	**Not part of a river WB catchment**	**356**	**Ehen-Calder**	**South West Lakes**

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

6.4 WFD Surface water bodies

Records identified	0

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.

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 40**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aquifers**	**GB41202G103700**	**Poor**	**Poor**	**Good**	**2015**

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

7 River and coastal flooding

Site Outline

Search buffers in metres (m)

Environment Agency 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 Sea (RoFRaS)

Records within 50m	0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; 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).

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

7.2 Historical Flood Events

Records within 250m	1

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

Features are displayed on the River and coastal flooding map on **page 43**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
A	234m W	Flooding 05_11_1999	1999-11-05 1999-11-05	Main river	Channel capacity exceeded (no raised defences)	Fluvial

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding

8.1 Surface water flooding

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

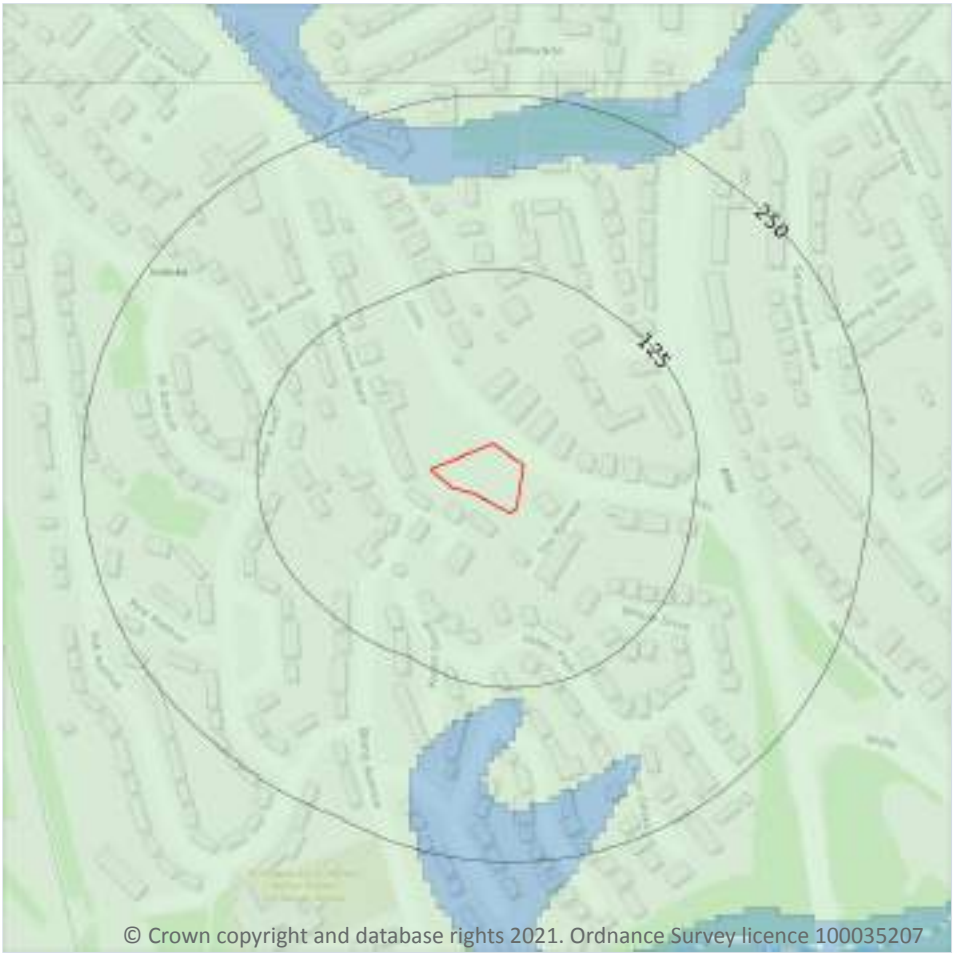
Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year 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.

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	**Low**
Highest risk within 50m	**Low**

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

Features are displayed on the Groundwater flooding map on **page 47**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

Designated Ancient Woodland

Marine Conservation Zones

Potential Special Protection Areas (pSPA)

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	1

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.

Features are displayed on the Environmental designations map on **page 48**

ID	Location	Name	Data source
-	1580m W	St. Bees Head	Natural England

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	4

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

Features are displayed on the Environmental designations map on **page 48**

ID	Location	Name	Woodland Type
1	417m N	Midgey Wood	Ancient & Semi-Natural Woodland
2	586m N	Crowpark Wood	Ancient & Semi-Natural Woodland
3	587m N	Midgey Wood	Ancient & Semi-Natural Woodland
4	715m N	Crowpark Wood	Ancient & Semi-Natural Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	2

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.

Features are displayed on the Environmental designations map on **page 48**

ID	Location	Name	Status
-	1720m W	Cumbria Coast - Zone 1	Designated
-	1720m W	Cumbria Coast - Zone 2	Designated

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

10.11 Green Belt

Records within 2000m	0

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

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	1

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.

Features are displayed on the Environmental designations map on **page 48**

ID	Location	Name	Status
-	1973m NW	Solway Firth	Potential

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

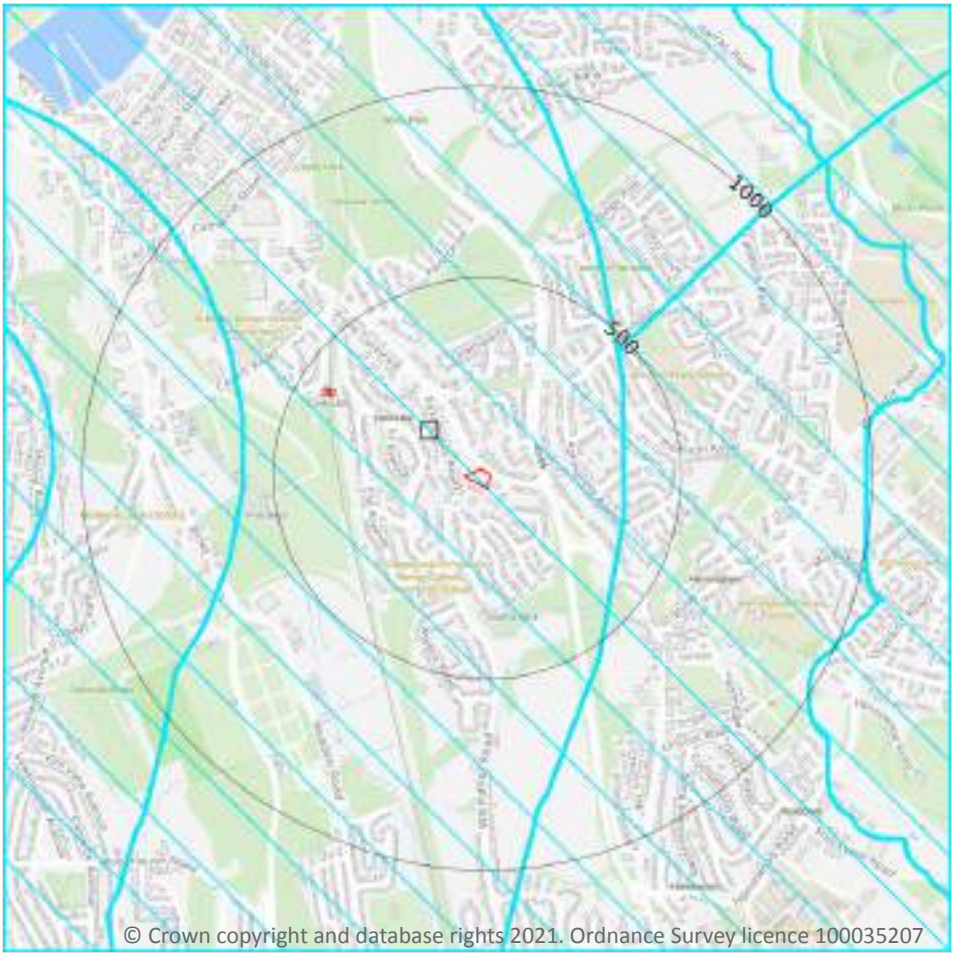
Records within 2000m	**2**

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

Location	Name	Type	NVZ ID	Status
1658m SW	St Bees	Groundwater	G180	Existing
1707m SW	St Bees	Groundwater	G180	Existing

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

SSSI Impact Zones and Units



Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

Not recorded

Favourable

Unfavourable - Recovering

Unfavourable - No change

Unfavourable - Declining

Partially destroyed

Destroyed

10.17 SSSI Impact Risk Zones

Records on site	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 54**

ID	Location	Type of developments requiring consultation
1	On site	**Infrastructure - Airports, helipads and other aviation proposals.** **Minerals, Oil and Gas - Oil & gas exploration/extraction.** **Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons > 200m² & manure stores > 250t).** **Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion** **Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.** **Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	**1**

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.

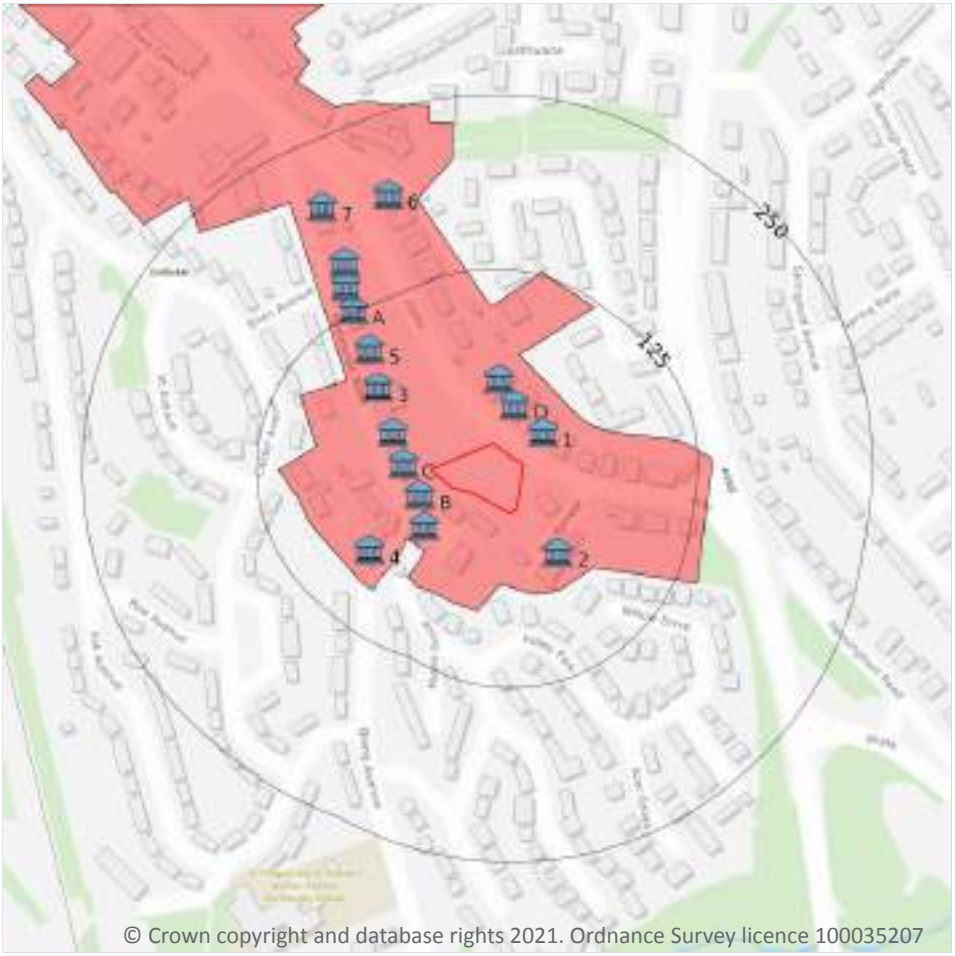
Features are displayed on the SSSI Impact Zones and Units map on **page 54**

ID: -
Location: 1580m W
SSSI name: St. Bees Head
Unit name: Saltom Bay
Broad habitat: Earth Heritage
Condition: Favourable
Reportable features:

Feature name	Feature condition	Date of assessment
EC - Marine Permian	Not Recorded	01/01/1900
EC - Non-Marine Permian Triassic (Red Beds)	Not Recorded	01/01/1900
EC - Westphalian	Not Recorded	01/01/1900
Hard maritime cliff and slope	Not Recorded	01/01/1900

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

11 Visual and cultural designations



Site Outline

Search buffers in metres (m)

Listed buildings

Conservation areas

Conservation areas - no data

National Parks

Areas of Outstanding Natural Beauty

Registered parks and gardens

Scheduled Monuments

World Heritage Sites

11.1 World Heritage Sites

Records within 250m	0

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

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

11.2 Area of Outstanding Natural Beauty

Records within 250m	0

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

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

11.3 National Parks

Records within 250m	0

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

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

11.4 Listed Buildings

Records within 250m	16

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

Features are displayed on the Visual and cultural designations map on **page 56**

ID	Location	Name	Grade	Reference Number	Listed date
B	19m SW	19, 20, 20A, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1207576	13/09/1972
C	21m W	17, 18, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1335958	13/09/1972
1	27m NE	17, 18, Inkerman Terrace, Whitehaven, Copeland, Cumbria, CA28	II	1086756	13/09/1972

ID	Location	Name	Grade	Reference Number	Listed date
D	32m NE	15, 16, Inkerman Terrace, Whitehaven, Copeland, Cumbria, CA28	II	1086755	13/09/1972
B	34m SW	22, 23, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1086785	13/09/1972
C	38m NW	11-16, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1086784	13/09/1972
2	43m SE	1-3, Retreat, Whitehaven, Copeland, Cumbria, CA28	II	1336014	13/09/1972
D	46m N	13, 14, Inkerman Terrace, Whitehaven, Copeland, Cumbria, CA28	II	1086754	13/09/1972
3	71m NW	10, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1207556	13/09/1972
4	72m SW	Meadow House, Whitehaven, Copeland, Cumbria, CA28	II	1279650	13/09/1972
5	97m NW	8, 9, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1335997	13/09/1972
A	128m NW	6, 7, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1086783	13/09/1972
A	145m NW	4, 5, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1207526	13/09/1972
A	161m NW	3, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1086782	13/09/1972
6	194m NW	1, 2, Inkerman Terrace, Whitehaven, Copeland, Cumbria, CA28	II	1086753	13/09/1972
7	204m NW	1, 2, Foxhouses Road, Whitehaven, Copeland, Cumbria, CA28	II	1279704	13/09/1972

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

11.5 Conservation Areas

Records within 250m	**1**

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

Features are displayed on the Visual and cultural designations map on **page 56**

ID	Location	Name	District	Date of designation
A	**On site**	**Whitehaven Corkickle**	**Copeland**	**1975**

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

11.6 Scheduled Ancient Monuments

Records within 250m	0

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

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

11.7 Registered Parks and Gardens

Records within 250m	0

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

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

12 Agricultural designations

Site Outline

Search buffers in metres (m)

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

12.1 Agricultural Land Classification

Records within 250m	1

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

Features are displayed on the Agricultural designations map on **page 60**

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

This data is sourced from Natural England.

12.2 Open Access Land

Records within 250m	0

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

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

12.3 Tree Felling Licences

Records within 250m	0

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

This data is sourced from the Forestry Commission.

12.4 Environmental Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

12.5 Countryside Stewardship Schemes

Records within 250m	0

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

This data is sourced from Natural England.

13 Habitat designations

Site Outline

Search buffers in metres (m)

Priority Habitat Inventory
Open Mosaic Habitat
Limestone Pavement Orders

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

13.1 Priority Habitat Inventory

Records within 250m	1

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 62**

ID	Location	Main Habitat	Other habitats
1	134m E	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	1

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 64**

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

This data is sourced from the British Geological Survey.

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

14.2 Artificial and made ground (10k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial

14.3 Superficial geology (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

14.4 Landslip (10k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock

14.5 Bedrock geology (10k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	0

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.

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 68**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW028_whitehaven_v4**

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

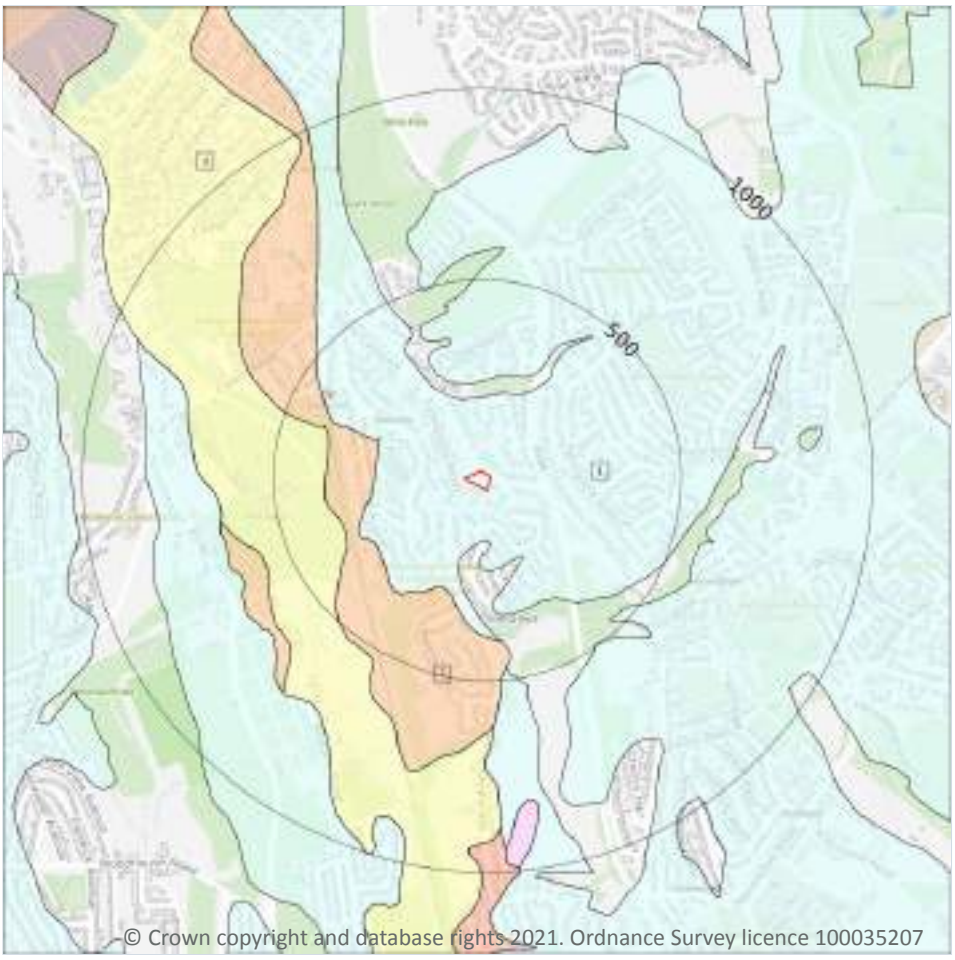
15.3 Artificial ground permeability (50k)

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 **3**

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 70**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**TILLD-DMTN**	**TILL, DEVENSIAN**	**DIAMICTON**
2	234m W	RTDU-XCSV	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	CLAY, SAND AND GRAVEL
3	342m 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	**1**

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

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

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

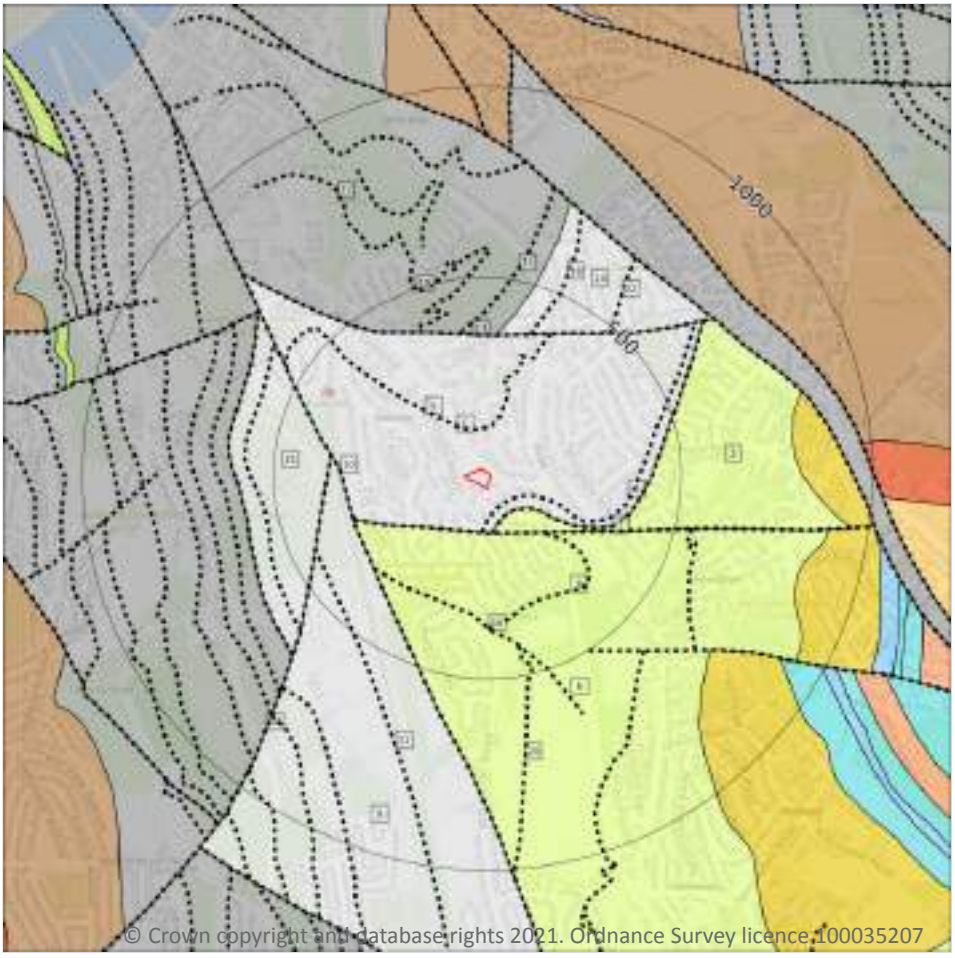
15.7 Landslip permeability (50k)

Records within 50m	**0**

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **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 72**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**PLCM-MDSS**	**PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE**	**WESTPHALIAN**
3	86m SE	SMGP-MDSS	STAINMORE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN

ID	Location	LEX Code	Description	Rock age
6	117m S	SMGP-MDSS	STAINMORE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	NAMURIAN
9	310m W	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
12	350m N	PMCM-MDSS	PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
14	351m N	PLCM-MDSS	PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
15	354m W	PLCM-MDSS	PENNINE LOWER 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 **1**

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**	**Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m **15**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 72**

ID	Location	Category	Description
2	57m SE	ROCK	Coal seam, inferred
4	86m SE	FOSSIL_HORIZON	Marine band
5	105m N	ROCK	Coal seam, inferred
7	117m S	FAULT	Fault, inferred, displacement unknown

ID	Location	Category	Description
8	184m SE	ROCK	Coal seam, inferred
10	311m W	FAULT	Fault, inferred, displacement unknown
11	320m S	FAULT	Fault, inferred, displacement unknown
13	350m N	FAULT	Fault, inferred, displacement unknown
16	354m W	FAULT	Fault, inferred, displacement unknown
17	358m N	ROCK	Coal seam, inferred
18	374m N	ROCK	Coal seam, inferred
19	395m NW	ROCK	Coal seam, inferred
20	420m S	ROCK	Coal seam, inferred
21	434m SW	ROCK	Coal seam, inferred
22	484m NE	ROCK	Coal seam, 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	5

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.

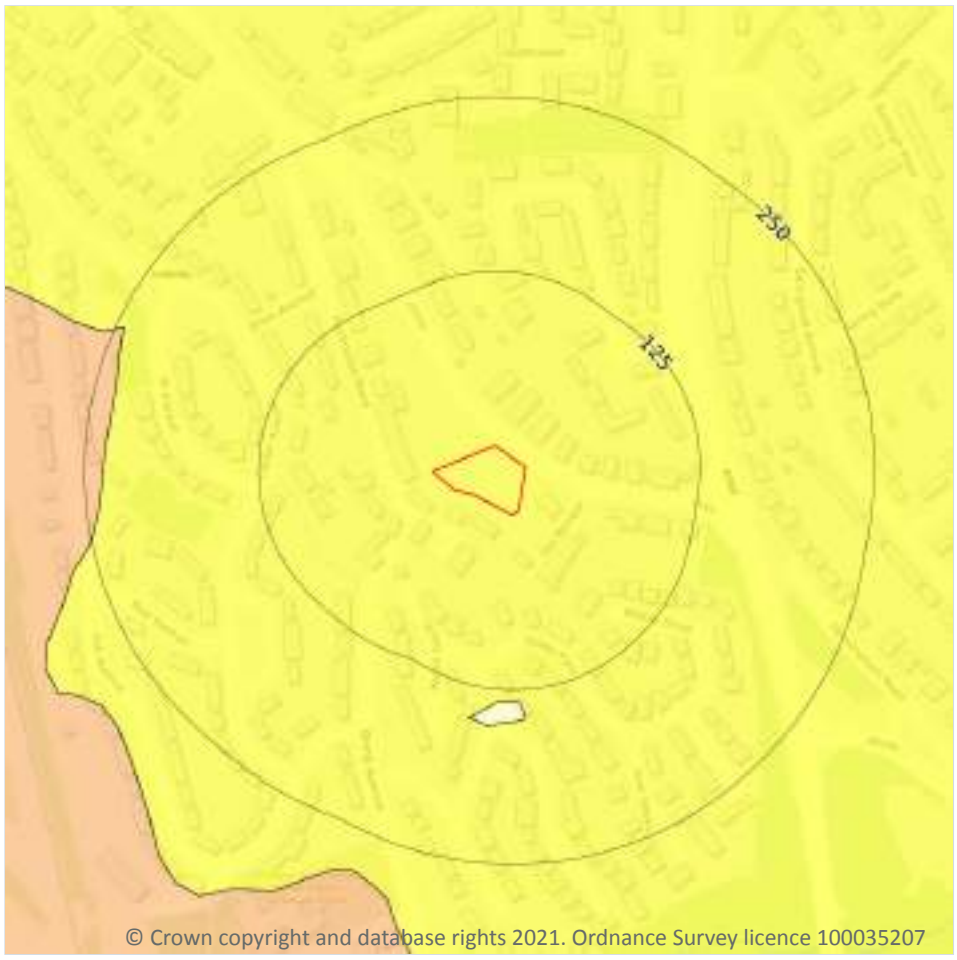
Features are displayed on the Boreholes map on **page 75**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	150m E	298306 517133	A595 HENSINGHAM BYPASS CUMBRIA 1	10.0	N	819877
2	160m SE	298308 517108	A595 HENSINGHAM BYPASS CUMBRIA TP2	3.0	N	819900

ID	Location	Grid reference	Name	Length	Confidential	Web link
3	200m E	298347 517097	A595 HENSINGHAM BYPASS CUMBRIA TP1	2.0	N	819899
4	232m SE	298366 517064	A595 HENSINGHAM BYPASS CUMBRIA 2	10.0	N	819878
5	244m SE	298321 516987	A595 HENSINGHAM BYPASS CUMBRIA 3	10.0	N	819879

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	1

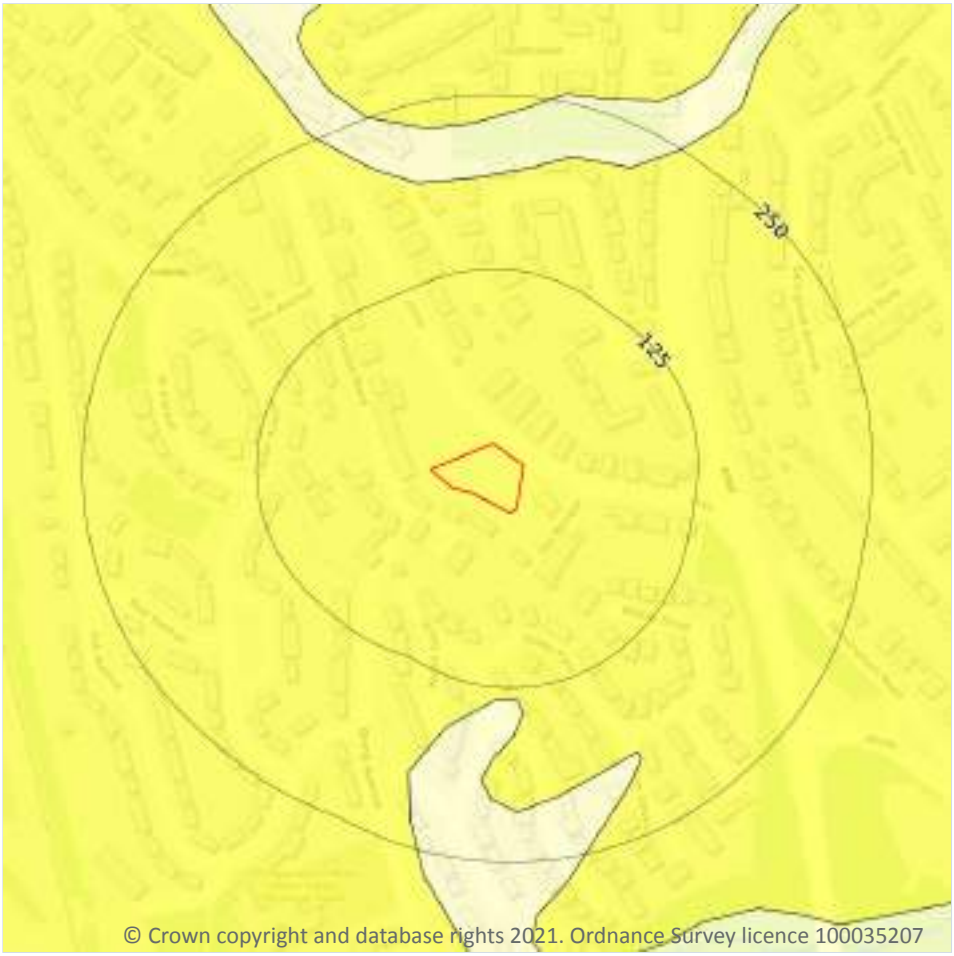
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 77**

Location	Hazard rating	Details
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 78**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits

Site Outline

Search buffers in metres (m)

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

17.3 Compressible deposits

Records within 50m	1

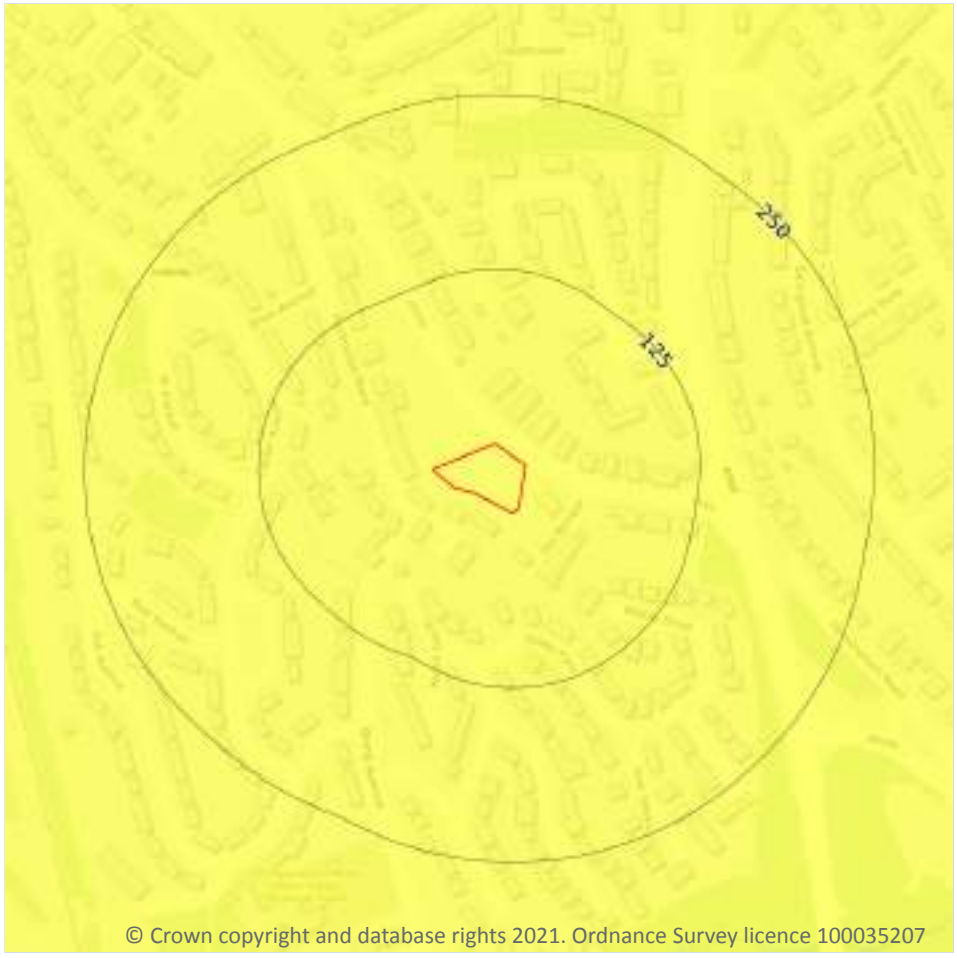
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 79**

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

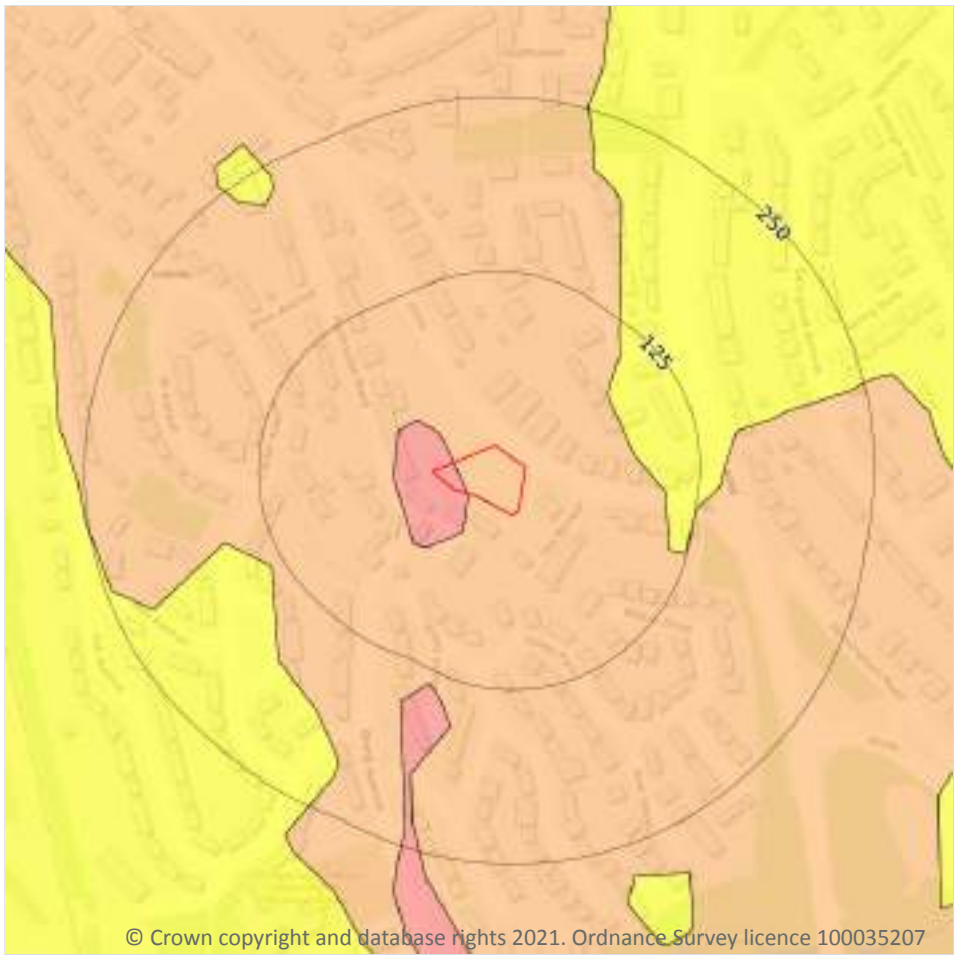
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 80**

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 81**

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

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

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

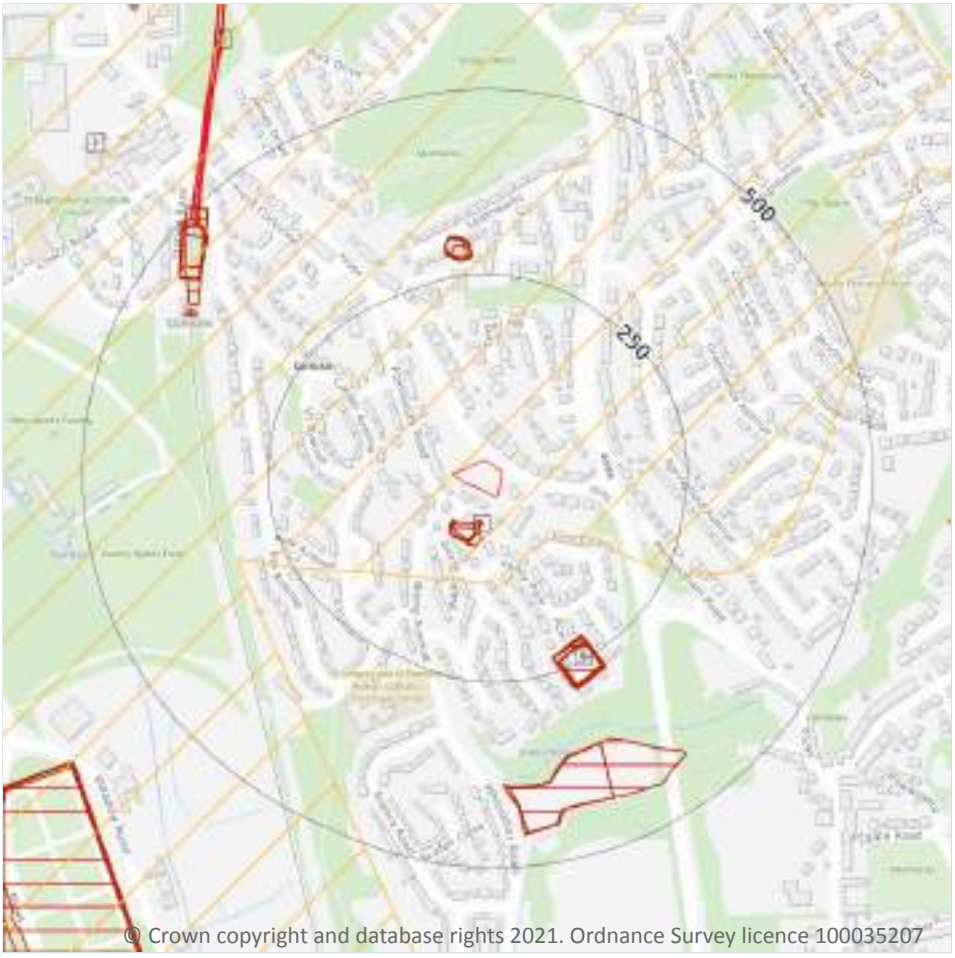
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 83**

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

This data is sourced from the British Geological Survey.

18 Mining, ground workings and natural cavities



Site Outline

Search buffers in metres (m)

Natural cavities (Area)

Natural cavities (Point)

BritPits

Surface ground workings

Underground workings

Historical Mineral Planning Areas

Mining Cavities

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

18.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

18.2 BritPits

Records within 500m	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.

18.3 Surface ground workings

Records within 250m	9

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 85**

ID	Location	Land Use	Year of mapping	Mapping scale
A	37m SW	Unspecified Ground Workings	1926	1:10560
A	37m SW	Unspecified Ground Workings	1926	1:10560
A	39m SW	Unspecified Ground Workings	1951	1:10560
B	219m SE	Reservoir	1926	1:10560
B	220m SE	Reservoir	1938	1:10560
B	220m SE	Reservoir	1898	1:10560
B	223m SE	Reservoir	1951	1:10560
B	227m SE	Reservoir	1863	1:10560
B	230m SE	Reservoir	1977	1:10000

This is data is sourced from Ordnance Survey/Groundsure.

18.4 Underground workings

Records within 1000m	22

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 85**

ID	Location	Land Use	Year of mapping	Mapping scale
F	481m NW	Tunnel	1863	1:10560
F	487m NW	Railway Tunnel	1938	1:10560
F	487m NW	Railway Tunnel	1898	1:10560
F	488m NW	Tunnel	1951	1:10560
F	488m NW	Tunnel	1977	1:10000
H	656m NW	Air Shaft	1951	1:10560
H	656m NW	Air Shaft	1977	1:10000
H	656m NW	Air Shaft	1938	1:10560
H	656m NW	Air Shaft	1898	1:10560
-	679m W	Colliery	1863	1:10560
-	799m NW	Air Shaft	1951	1:10560
-	802m NW	Air Shaft	1938	1:10560
-	802m NW	Air Shaft	1898	1:10560
-	804m NW	Air Shaft	1863	1:10560
-	888m NW	Air Shaft	1863	1:10560
-	895m NW	Air Shaft	1951	1:10560
-	895m NW	Air Shaft	1977	1:10000
-	897m NW	Air Shaft	1938	1:10560
-	897m NW	Air Shaft	1898	1:10560
-	925m SW	Tunnel	1951	1:10560
-	925m SW	Tunnel	1977	1:10000
-	928m SW	Tunnel	1938	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.5 Historical Mineral Planning Areas

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	2

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

Features are displayed on the Mining, ground workings and natural cavities map on **page 85**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Iron Ore (Bedded)**	**B**	**Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered**
-	987m SE	Not available	Vein Mineral	B	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

This data is sourced from the British Geological Survey.

18.7 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

18.8 JPB mining areas

Records on site	0

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

This data is sourced from Johnson Poole and Bloomer.

18.9 Coal mining

Records on site	1

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

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

This data is sourced from the Coal Authority.

18.10 Brine areas

Records on site	0

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

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

18.11 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.12 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Mining Searches UK.

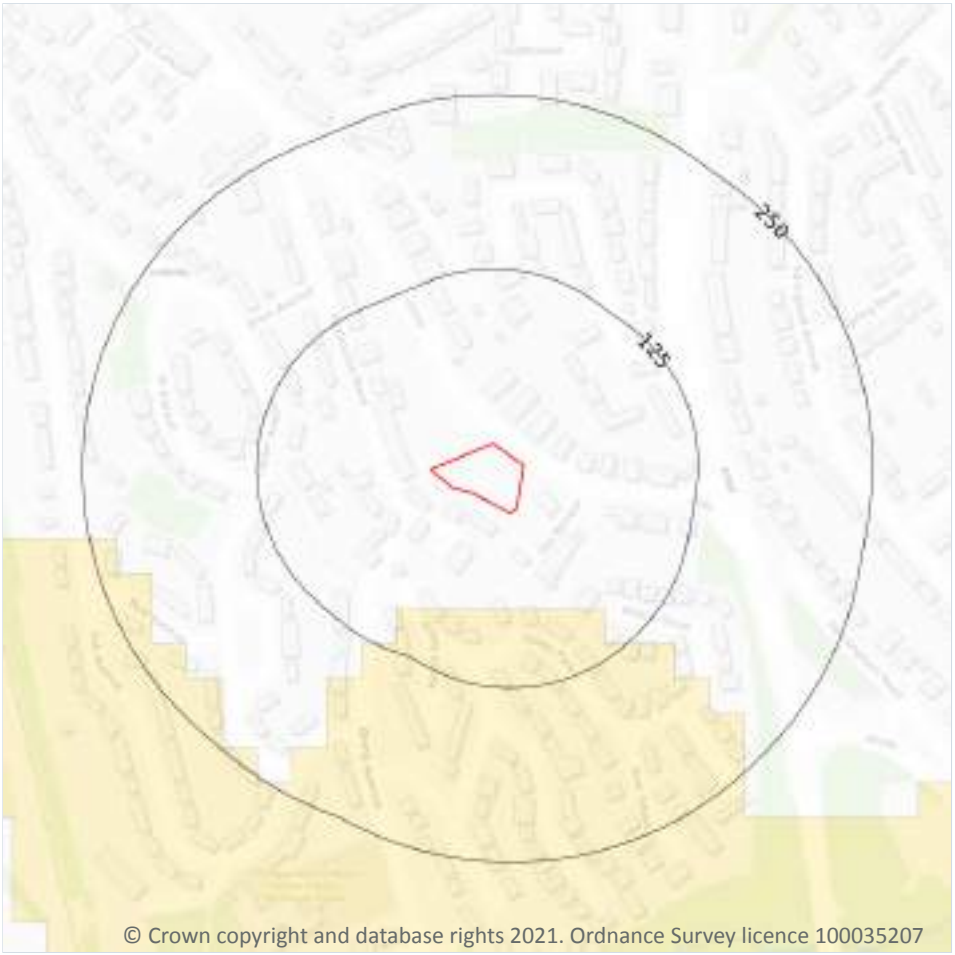
18.13 Clay mining

Records on site	0

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

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

19 Radon



Site Outline

Search buffers in metres (m)

Greater than 30%

Between 10% and 30%

Between 5% and 10%

Between 3% and 5%

Between 1% and 3%

Less than 1%

19.1 Radon

Records on site	1

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

Features are displayed on the Radon map on **page 90**

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

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

20 Soil chemistry

20.1 BGS Estimated Background Soil Chemistry

Records within 50m	1

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

Location	Arsenic	Bioaccessible Arsenic	Lead	Bioaccessible Lead	Cadmium	Chromium	Nickel
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**

This data is sourced from the British Geological Survey.

20.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

20.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

21 Railway infrastructure and projects

21.1 Underground railways (London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.2 Underground railways (Non-London)

Records within 250m	0

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

This data is sourced from publicly available information by Groundsure.

21.3 Railway tunnels

Records within 250m	0

Railway tunnels taken from contemporary Ordnance Survey mapping.

This data is sourced from the Ordnance Survey.

21.4 Historical railway and tunnel features

Records within 250m	0

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.

This data is sourced from Ordnance Survey/Groundsure.

21.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

21.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

21.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

21.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

21.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

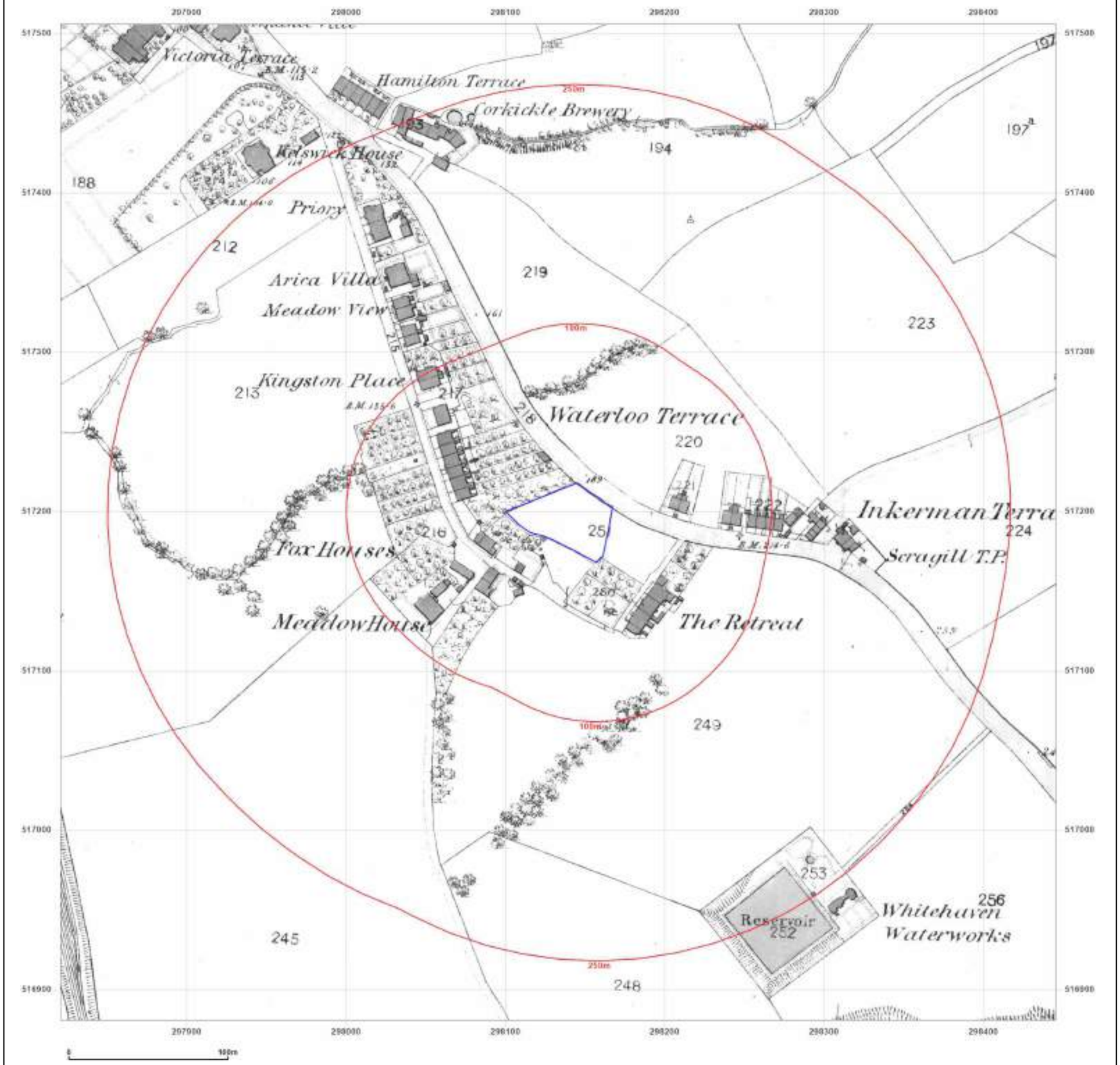
Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Terms and conditions

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

Appendix III

- Historical Map Extracts



emapsite™

Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: County Series
Map date: **1865**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1865
Revised 1865
Edition N/A
Copyright N/A
Levelled N/A

Groundsure INSIGHTS

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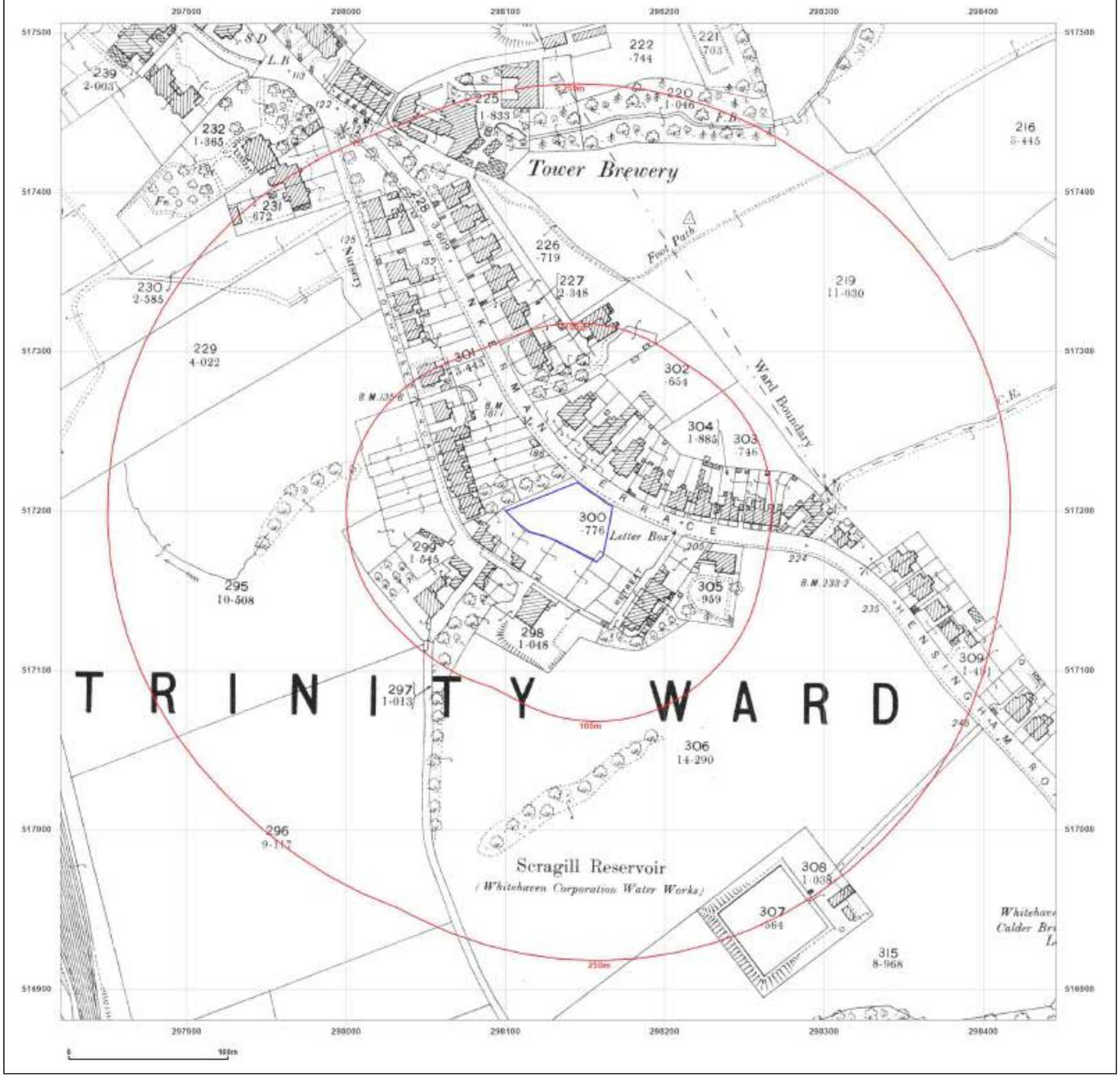
sales@emapsite.com

Production date: 11 June 2021

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



emapsite™

Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: County Series
Map date: **1899**
Scale: 1:2,500
Printed at: 1:2,500

N
W E
S

Surveyed 1899
Revised 1899
Edition N/A
Copyright N/A
Levelled N/A

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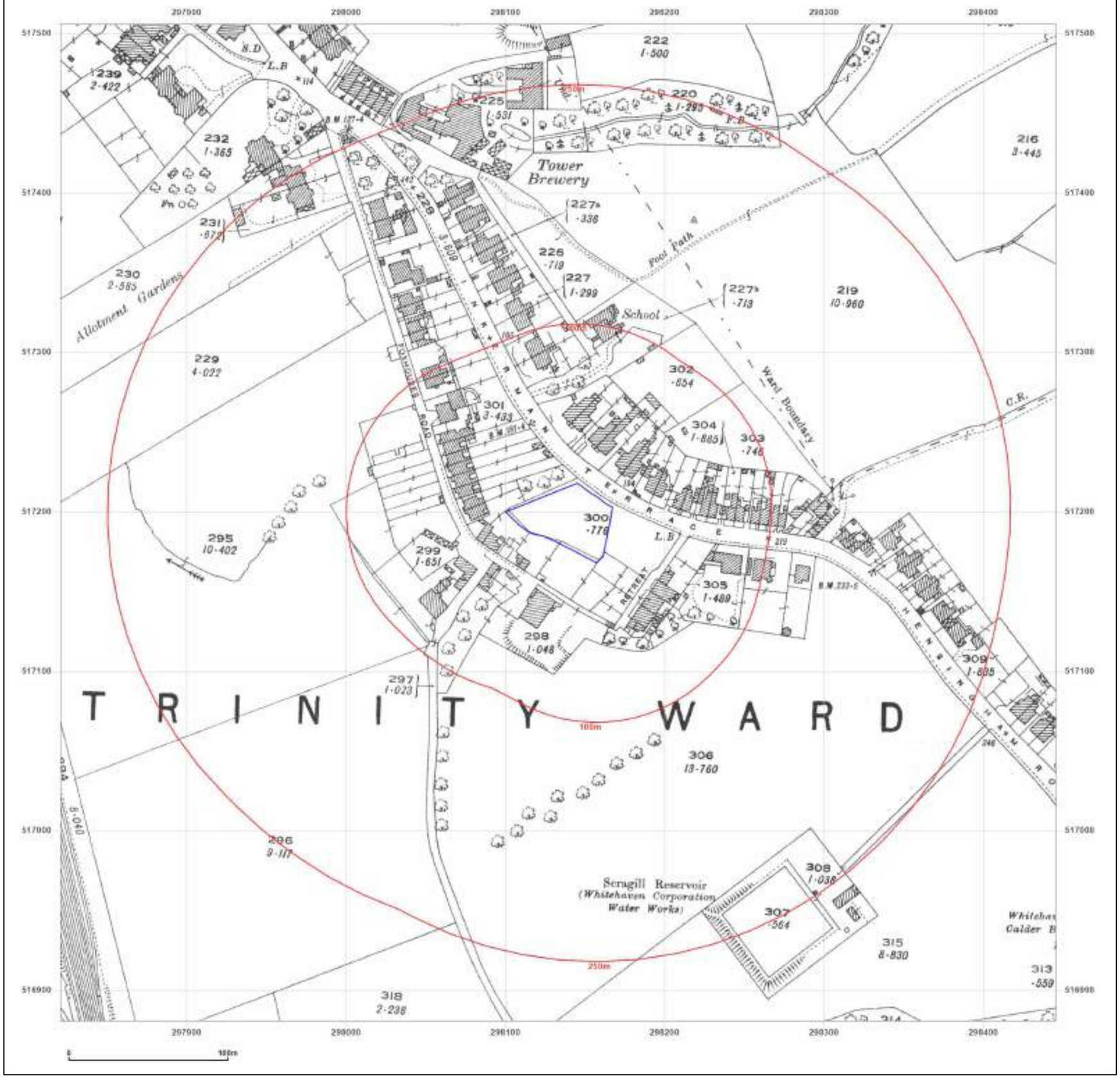
Production date: 11 June 2021

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



Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: County Series

Map date: **1925**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1925
Revised 1925
Edition N/A
Copyright N/A
Levelled N/A

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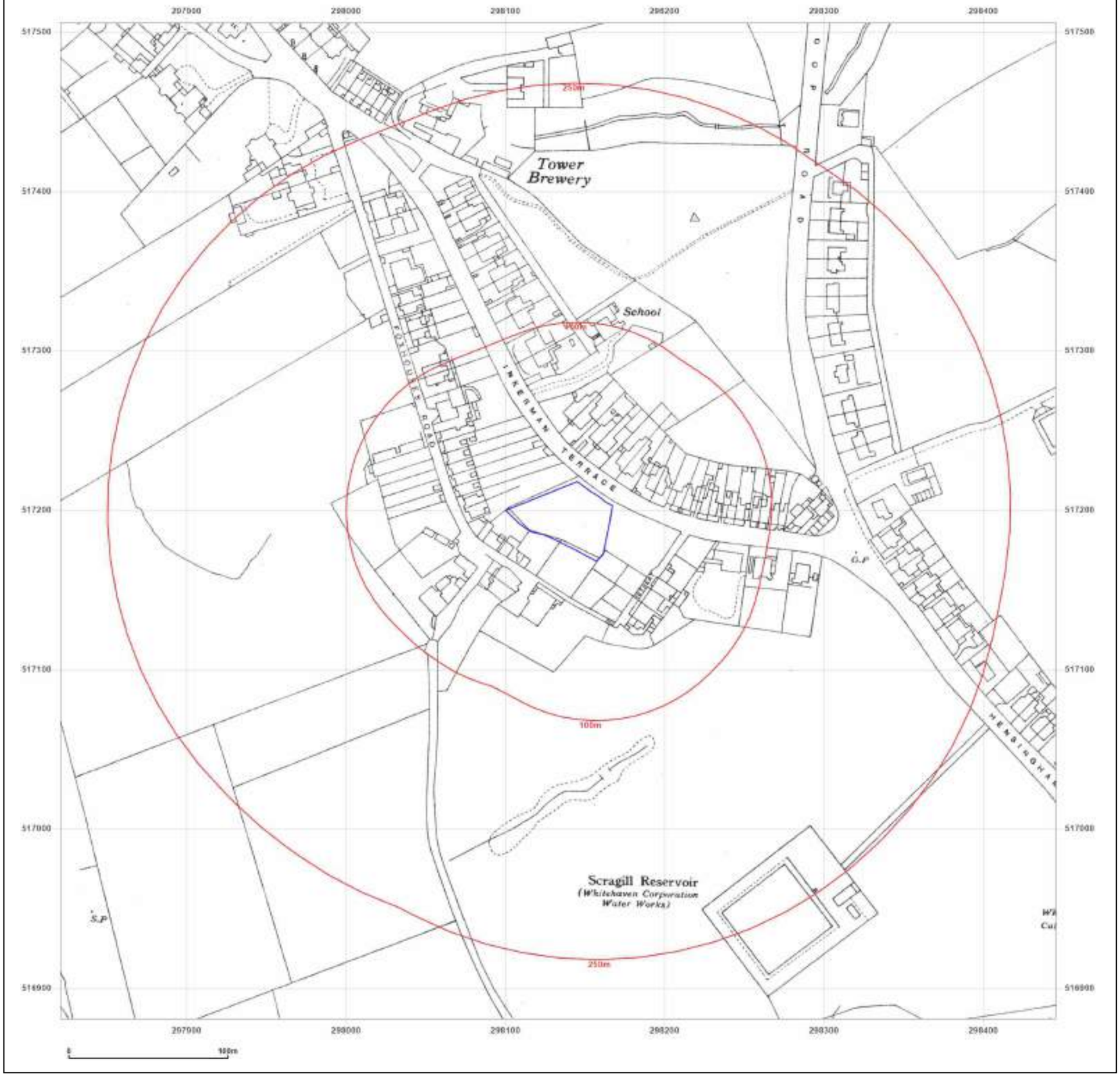
Production date: 11 June 2021

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



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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: County Series

Map date: **1945**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1938
Revised 1938
Edition N/A
Copyright 1945
Levelled N/A

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Production date: 11 June 2021

Map legend available at:
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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1960-1962**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1956

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1956

Surveyed 1961
Revised 1961
Edition N/A
Copyright 1962
Levelled 1956

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1961-1962**

Scale: 1:2,500

Printed at: 1:2,500

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

Surveyed 1961
Revised 1961
Edition 1963
Copyright 1963
Levelled 1956

Surveyed 1961
Revised 1961
Edition 1963
Copyright 1963
Levelled 1956

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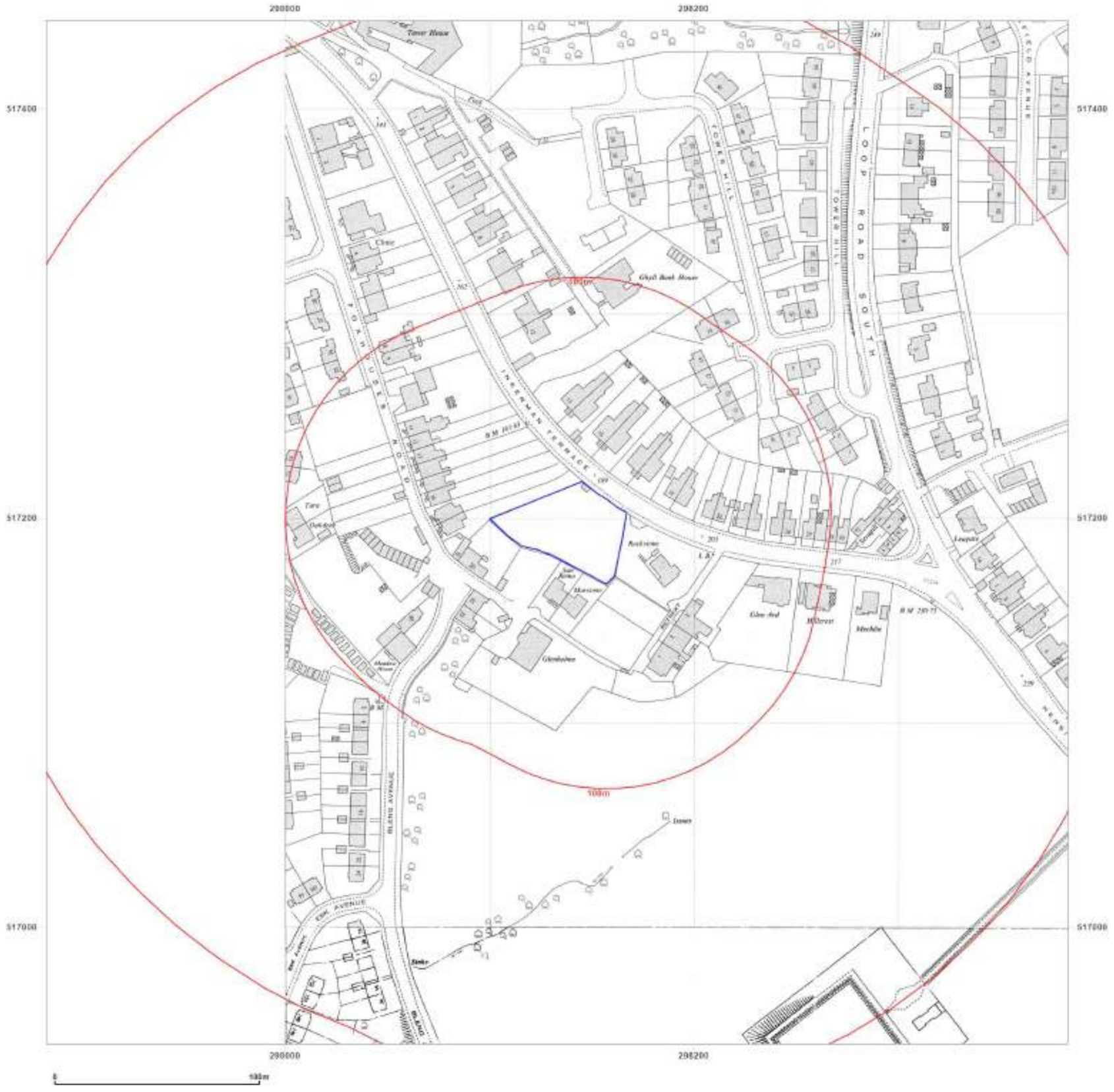

emapsite™

Site Details:

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Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid
Map date: **1961-1966**
Scale: 1:1,250
Printed at: 1:2,000

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Surveyed 1960
Revised 1966
Edition N/A
Copyright 1966
Levelled 1965

Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1961-1968**

Scale: 1:2,500

Printed at: 1:2,500

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Surveyed 1961
Revised 1961
Edition 1962
Copyright 1962
Levelled 1956

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1969
Levelled 1965

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

Surveyed 1968
Revised 1968
Edition N/A
Copyright 1970
Levelled 1965

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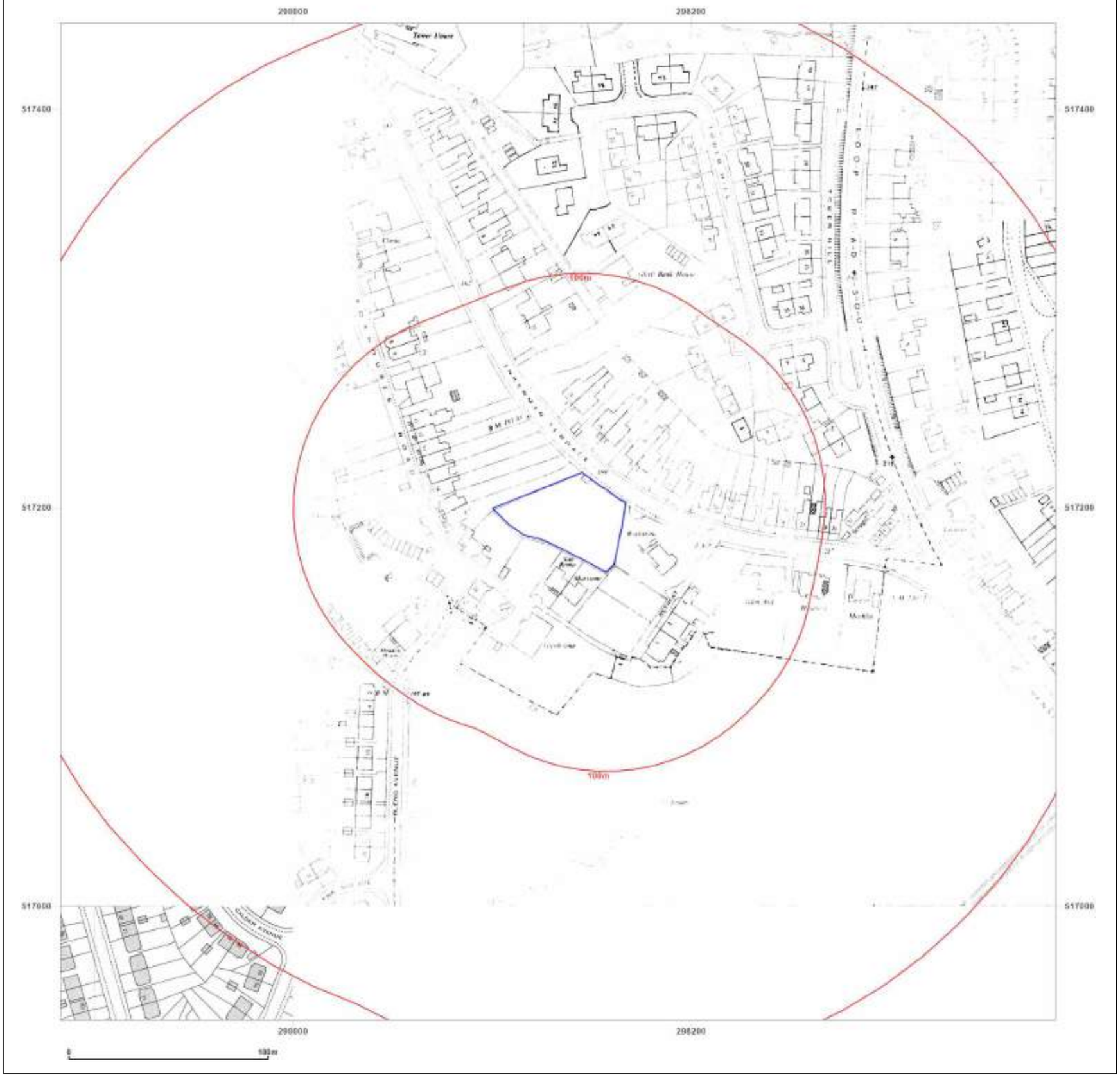

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Site Details:

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Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1974**

Scale: 1:1,250

Printed at: 1:2,000

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

Surveyed 1961
Revised 1973
Edition N/A
Copyright 1974
Levelled 1965

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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1978**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed 1978
Revised 1978
Edition N/A
Copyright 1978
Levelled N/A

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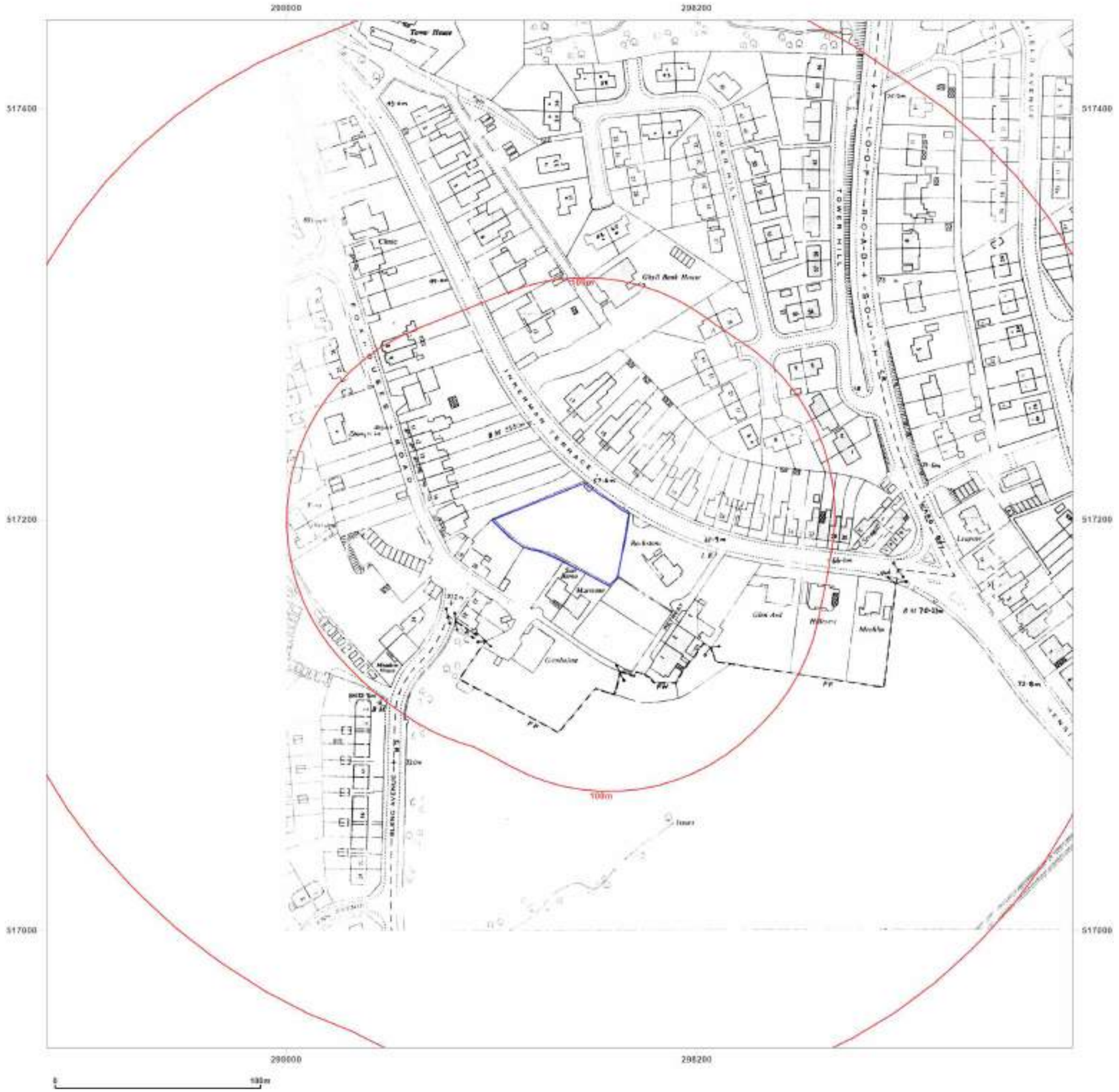

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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1979**

Scale: 1:1,250

Printed at: 1:2,000

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

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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1984-1989**

Scale: 1:1,250

Printed at: 1:2,000

N
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Surveyed 1960
Revised 1983
Edition N/A
Copyright 1984
Levelled 1965

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

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Production date: 11 June 2021

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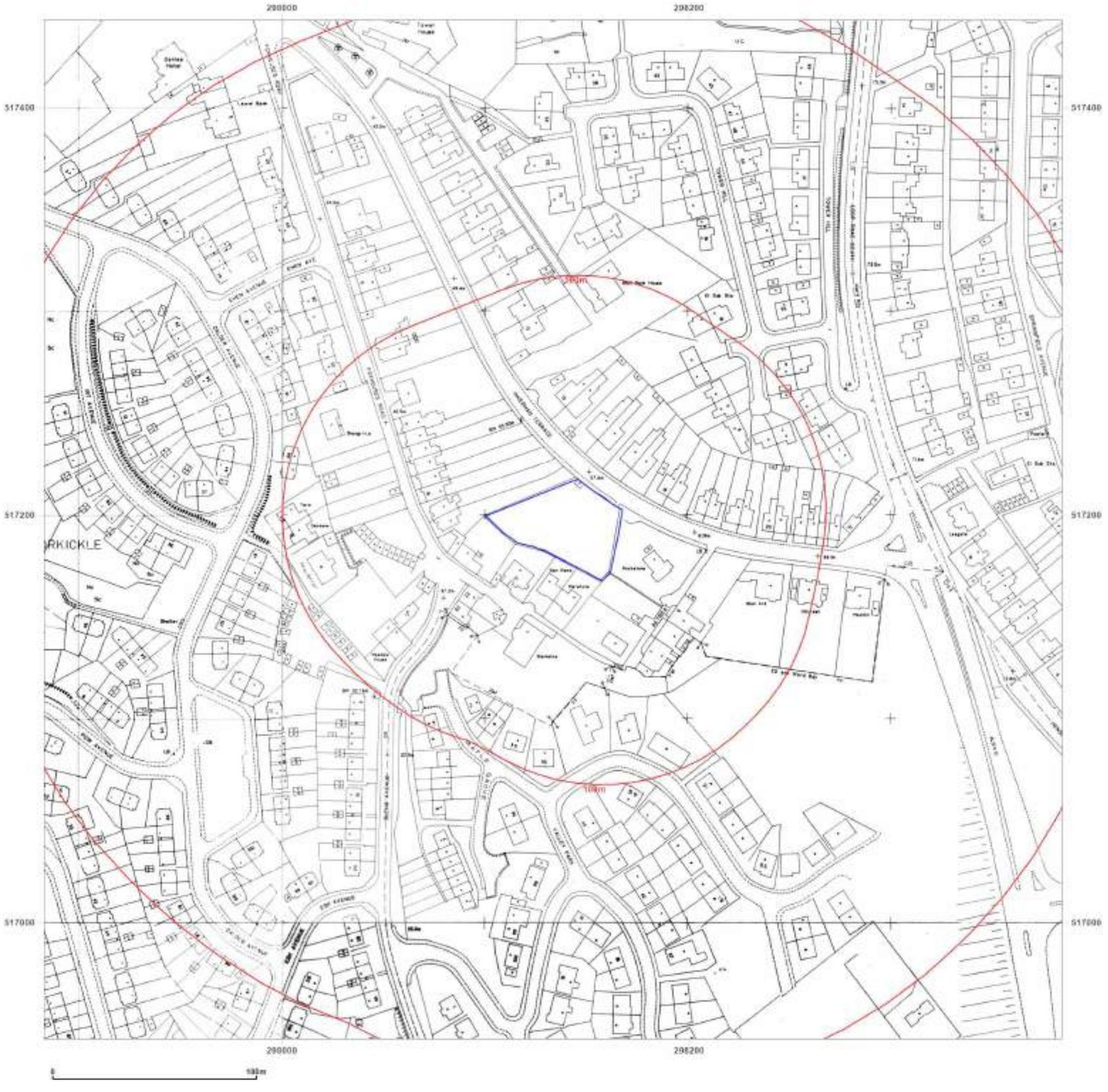

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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1992-1994**

Scale: 1:1,250

Printed at: 1:2,000

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Surveyed N/A Revised N/A Edition N/A Copyright 1994 Levelled N/A	Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A
Surveyed N/A Revised N/A Edition N/A Copyright 1994 Levelled N/A	Surveyed 1992 Revised 1992 Edition N/A Copyright 1992 Levelled N/A

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Production date: 11 June 2021

Map legend available at:
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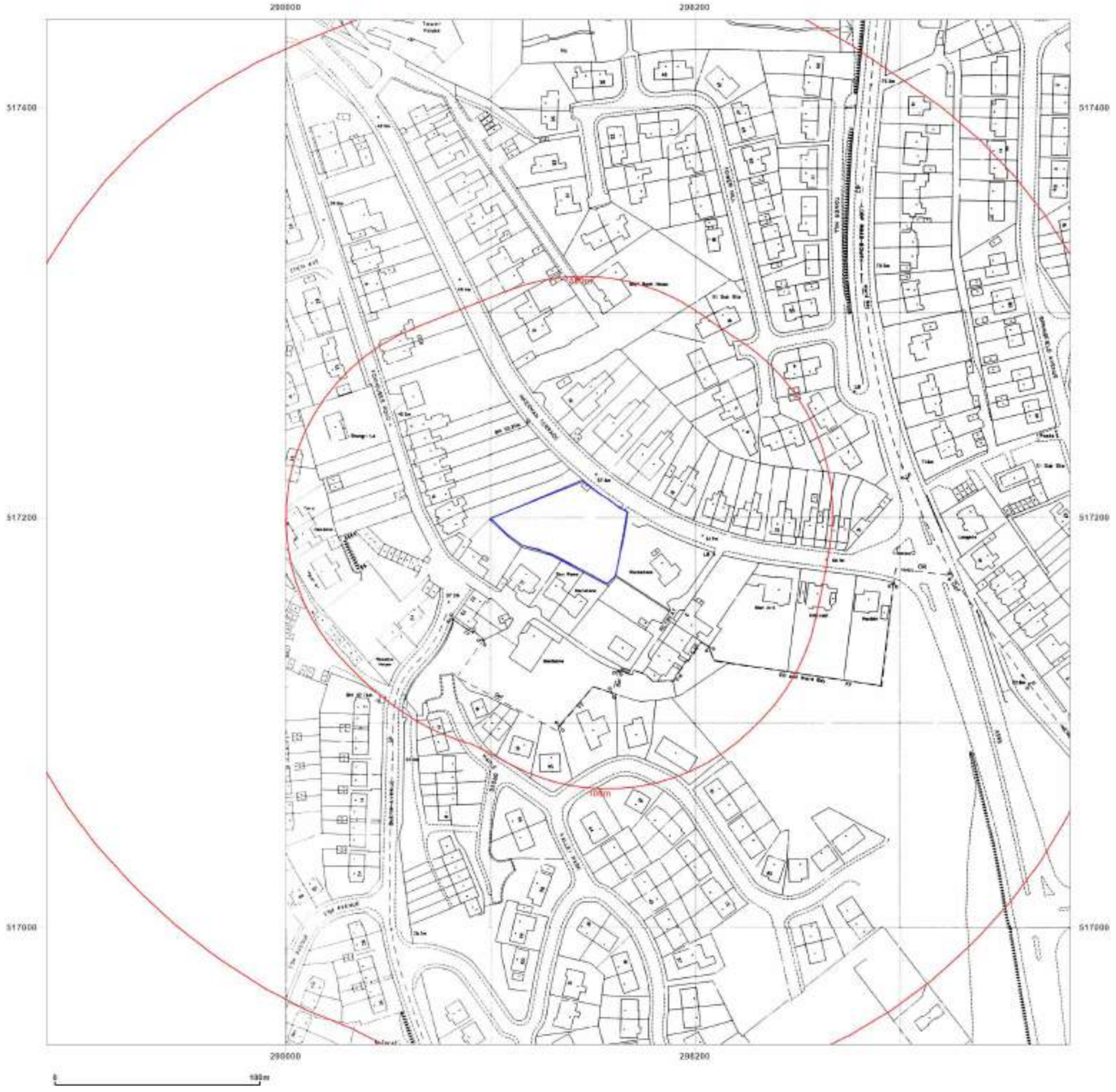

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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

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Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

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Production date: 11 June 2021

Map legend available at:
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Site Details:

Client Ref: EMS_701068_916384
Report Ref: EMS-701068_916384
Grid Ref: 298133, 517193

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

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Production date: 11 June 2021

Map legend available at:
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Appendix IV

- The Coal Authority Consultants Coal Mining Report

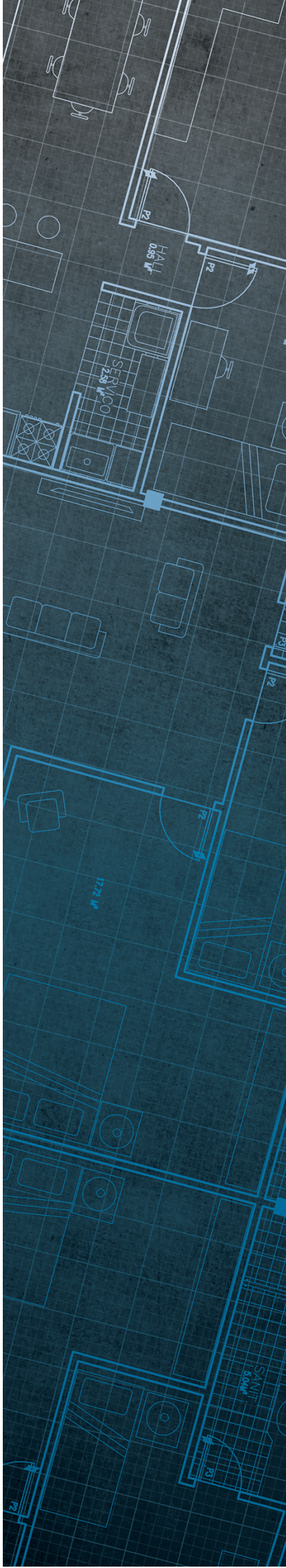
The Coal Authority

Consultants

Coal Mining Report

Inkerman Terrace
Whitehaven
Cumbria

Date of enquiry:	**16 June 2021**
Date enquiry received:	**16 June 2021**
Issue date:	**16 June 2021**
Our reference:	**51002539521001**
Your reference:	**2021-4237**



Consultants

Coal Mining Report

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

Client name

Curtis Evans

Enquiry address

Inkerman Terrace
Whitehaven
Cumbria

Approximate position of property

How to contact us

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

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

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops
No outcrops recorded.

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

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

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

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

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

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

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

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

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

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

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

Court orders
None recorded.

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

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

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

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

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

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

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

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

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

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

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

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

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

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

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

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

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

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

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

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

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

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

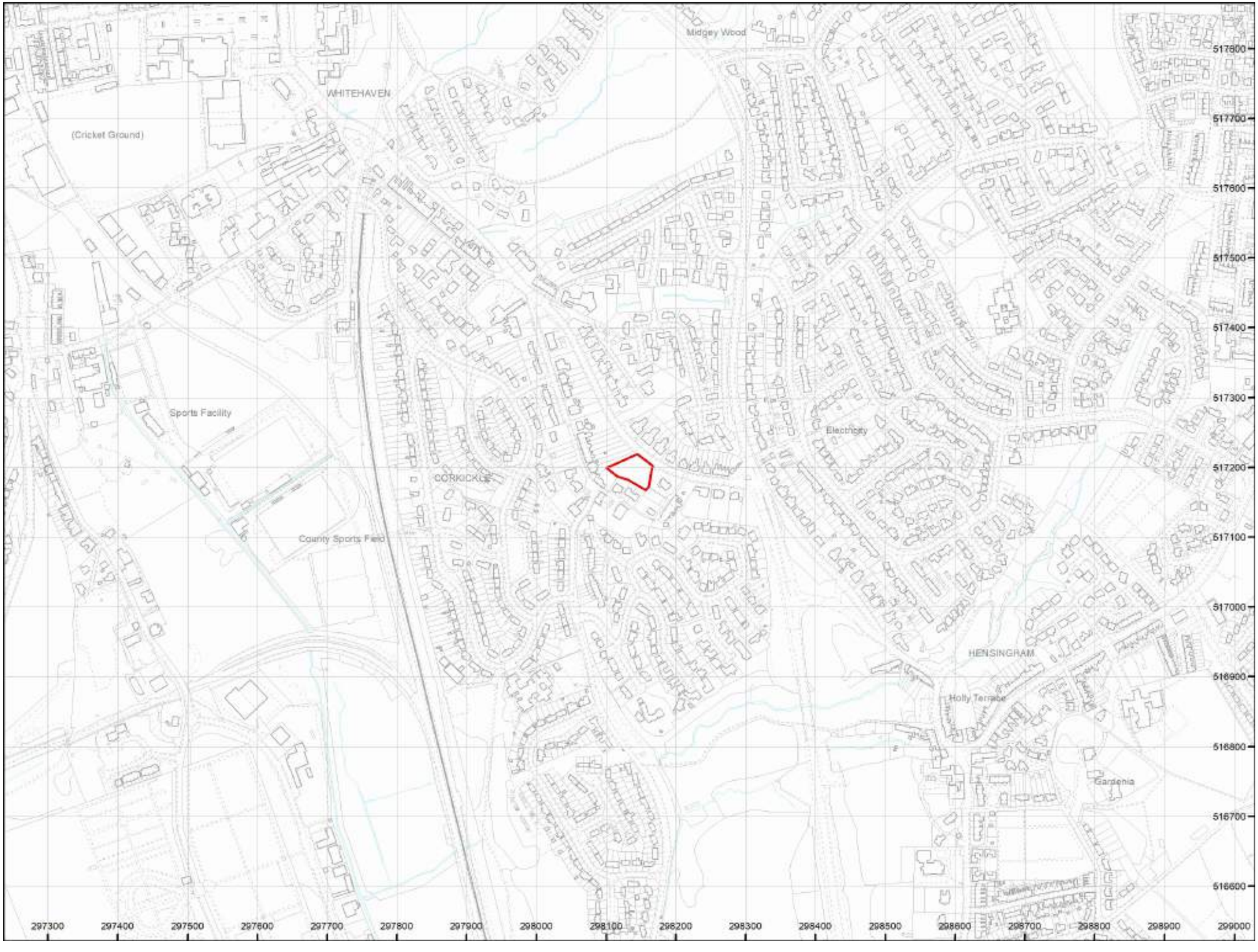
The Coal Authority

Summary of findings

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

Key

Approximate position of the enquiry boundary shown



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+44 (0)1623 637 000 (International)
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Consultants