

# ERGO

## PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT

Land North West of Tollgate House,  
Barrington Road,  
Bedlington,  
NE22 7AP

Prepared for:

Mr H Deol

Report Ref: 21-1085-r01  
Date Issued: April 2022









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## QUALITY ASSURANCE








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| <b>EXECUTIVE SUMMARY</b>            |   |  |
|-------------------------------------|---|--|
| <b>Site Address</b>                 | Land North West of Tollgate House, Barrington Road, Bedlington, NE22 7AP.   |  |
| <b>Grid Reference</b>               | E426999, N583336.   |  |
| <b>Site Area</b>                    | 0.41 Ha.  |  |
| <b>Current Site Use/Description</b> | <p>The subject site is a roughly rectangular shaped parcel of land located c. 1.9 km north east of Bedlington Town Centre.</p> <p>The site currently comprises undeveloped, vacant overgrown grassland with a small area of hard standing surrounding the access gate at the centre of the southern boundary. The site appears to predominantly comprise unmaintained grasses and shrubs with sporadic semi-mature and trees. Evidence of a former brick structure was noted in the central area where brick rubble is now noted.</p> <p>During the site walkover, frequent metal sheets were noted in the eastern site area whilst a stockpile of subsoil material was noted in the north-eastern area associated with unknown earthworks at the site.</p> |  |
| <b>Proposed Development</b>         | ERGO understands that Mr Deol will develop the subject site for low rise residential end use. The proposed development will comprise a series of low rise detached residential dwellings with associated garden and landscaped areas, estate roads, pavements and infrastructure.   |  |
| <b>Environmental Setting</b>        | <i>Drift Geology</i>  | Glacial Till (Sands, clays and gravels).   |
|                                     | <i>Bedrock Geology</i>  | Pennine Middle Coal Measures Formation (Sandstone, mudstone, siltstone, coal).   |
|                                     | <i>Hydrogeology</i>   | Undifferentiated aquifer strata overlying a Secondary A Aquifer (Bedrock Geology).   |
|                                     | <i>Hydrology</i>  | The nearest surface water feature is Sleek Burn tributary recorded c. 48m west of the site boundary.   |
|                                     | <i>Flood Risk</i>   | Searches indicate that the site is located within a Flood Risk 1 Zone, with minimal risk of surface water flooding in the northeast and north-western corners of the site. |
|                                     | <i>Ecology</i>  | Mature trees and dense vegetation may provide habitats for wildlife.   |
|                                     | <i>Compressible Ground and Subsidence Hazards</i>   | No significant hazards identified in the searches undertaken.  |
| <b>Site History</b>                 | <p>Historical mapping suggests that the site has undergone several stages of development. C.1855-1897 the site was partially occupied by a Brick Field and Tile works with associated clay pit and reservoir feature. Following that the site appears to have been cleared, infilled and redeveloped to include terraced housing and allotment gardens. These structures gradually underwent clearance with the site having been unoccupied by 1985.</p> <p>The site was demarcated into several fields in recent years with varying boundaries.</p>  |  |

|  |   |
|--|---|
| <b>Utility Locations</b>                 | <p>A formal utilities survey has not been completed.</p> <p>However, overhead cables were noted to bisect the central and western site areas and follow the southern site boundary in the eastern site area. Additionally, evidence of buried service infrastructure was noted within the adjacent Barrington Road and it is considered that buried service may impact the site.</p>  |
| <b>Landfill Sites &amp; Ground Gases</b> | <p>1No. historical licenced waste site is recorded 19m East of the site boundary and was active c. 1964-1975 and is recorded as accepting Industrial, Commercial and Household waste.</p>   |
| <b>Invasive Plant Species</b>            | <p>No invasive plant species were identified during the site walkover. A full detailed Habitat Survey may be required.</p>  |
| <b>Radon</b>                             | <p>Unaffected – No special precaution required.</p>   |
| <b>Coal Mining / Land Stability</b>      | <p>The site is deemed to be High Risk in terms of the potential presence of unrecorded shallow mine workings within the Moorland seam that have the potential to cause ground instability.</p> <p>The Coal Authority as a statutory consultee will require a series of rotary open holes across the site to confirm the presence or otherwise of coal workings and provide an assessment of any coal on site and understand the nature of potential underground workings.</p> |

#### Geotechnical Risk

Based on the desk study information, the following geotechnical assessment has been made:

-  Given that the site has been developed previously, dependent upon the extent of demolition/below ground turnover, it is possible that there may be Made Ground fill deposits and significant buried obstructions including foundations present within the subsurface;
-  Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution;
-  There is the potential for buried service infrastructure to be present on site which may require diversion or an appropriate standoff zone to be incorporated in to designs;
-  A clay pit was formerly recorded within the north west of the site with an associated high wall feature noted to bisect the site, whilst an assumed reservoir feature was noted in the north east of the site. Both of these features will require confirmation and delineation to identify the extents, including confirmation of the potential high wall features;
-  There is potential for soft organic deposits within the site boundary associated with former assumed reservoir feature in the north east of the site.
-  The site is potentially underlain by shallow unrecorded mine workings within the Moorland Seam c.24mbgl, which may lead to ground instability and cause subsidence if worked.
-  The site is undulating, generally sloping to the north. In order to construct low rise residential development, earthworks will be required to create a level developable platform.

#### Contaminated Land Risk Assessment

##### Human Health

Given that the site has been developed previously and the surrounding historic mining legacy, tile works, Brick Works and landfilling activities, Made Ground is likely present on the site and therefore heavy metal, PAH, SVOC and VOC compound contamination may be present within the subsurface. Additionally, previous development and onsite infilling are considered a potential source of ACM in the sub-surface, although no evidence has been noted to date.

Construction workers may come into contact with impacted soils during earthworks. All construction works must be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this potential risk.

Future residential site users may come into contact with impacted soils within any garden and landscaped areas. If impacted soils are identified then localised remediation or an appropriate cover system, designed in accordance with BRE465 (Cover Systems for Land Regeneration), will mitigate the risk.

Based on the available information the potential risk to the proposed development from heavy metal and non-volatile PAH / hydrocarbon impact is considered to be moderate and will be confirmed via chemical testing of the soils as part of any subsequent intrusive investigation works.

#### **Controlled Waters**

The presence of significant potentially mobile contaminants is considered possible due to the current and historic land uses on site and the surrounding area.

The nearest surface water feature, a tributary of Sleek Burn is recorded c.48m West of the site is within influencing distance from the site as a receptor of potentially significant contamination. It should be noted that no groundwater abstraction licenses are recorded within 1km of the site.

The risk is considered moderate at this stage and should be confirmed during any subsequent intrusive investigation with subsequent groundwater monitoring.

#### **Ground Gas**

Possible Made Ground underlying the site, underlying potential unrecorded shallow coal mining, adjacent landfilling and onsite infilled land and numerous nearby infilled ponds, historic organic reservoir deposits, may represent a potentially significant source of gas generation.

Ground gas can migrate through permeable strata, foundation structures and/or service ducting and accumulate within confined spaces where they may pose a risk to residential end users. Carbon dioxide and methane have associated asphyxiation and explosive risks respectively and if present the risks can be appropriately mitigated through the careful design of building structures.

Based on the information currently available there is considered to be a moderate risk however this should be confirmed by subsequent intrusive investigation works.

#### **Recommendations**

A detailed Phase II intrusive Geo-Environmental Ground Investigation should be undertaken in order to confirm the findings of the initial conceptual site model and value engineer a development solution.

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## APPENDICES

**Appendix I** Limitations

**Appendix II** Glossary

**Appendix III** Drawings

*Drawing No 21-1085-001* – Site Location Plan

*Drawing No 21-1085-002* – Proposed Development Plan

*Drawing No 21-1085-003* – Historical Features Plan

**Appendix IV** Photographs

**Appendix V** Historical Maps

**Appendix VI** Coal Authority Mining Report

## 1. INTRODUCTION

### 1.1 Background

ERGO Ltd has been commissioned by George F White on behalf of their Client Mr Deol to undertake a Phase I Geo-Environmental Site Assessment at land north west of Tollgate House, Bedlington.

This report is required to determine potential contaminated land and geotechnical liabilities associated with a proposed future residential development.

### 1.2 Proposed Development

ERGO understands that your Client intends to develop the subject site for a low rise residential end use. The proposed development is understood to comprise up to 16no. detached and semi-detached houses with associated estate roads, driveways, gardens and infrastructure.

Drawing 21-1085-002 (Appendix III) identifies the proposed development layout. A snapshot of the proposed development is shown within figure 1.1 below.

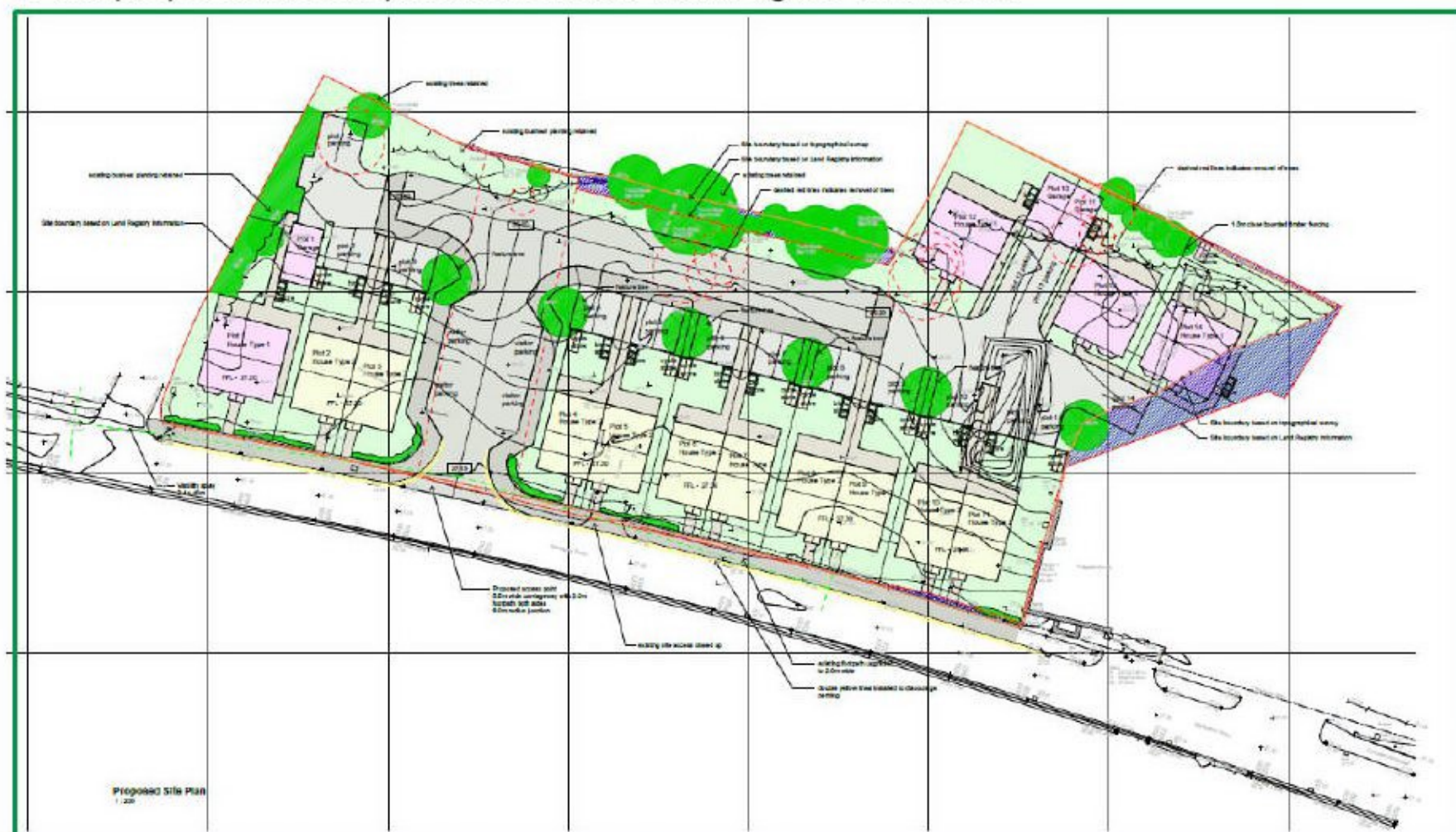


Figure 1.1 Snapshot of Proposed Development

### 1.3 Objectives

The objectives of the Geo-Environmental Investigation are to:







- Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with Environment Agency (EA) document Live Contamination Risk Management (LCRM 2019);
- Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors;
- Assess the desk study information and where possible, provide preliminary recommendations in relation to foundations, pavement construction and floor slabs; and,
- Provide recommendations regarding future works required and undertake a preliminary pre-construction cost appraisal.

#### 1.4 Limitations

The limitations of this report are presented in Appendix I.

#### 1.5 Sources of Information

Background information was sought from the following sources:

-  Groundsure Search;
-  Historical mapping dated 1855 to 2021. A selection of historical maps are reproduced in Appendix V;
-  Online planning records held by Northumberland County Council;
-  Magic Map;
-  Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007); and,
-  British Geological Survey Map (Sheet 14).

#### 1.6 Confidentiality

ERGO has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from ERGO; a charge may be levied against such approval.



## 2. SITE SETTING

### 2.1 Site Details

|                                |   |
|--------------------------------|---|
| <b>Site Address</b>            | Land North West of Tollgate House, Barrington Road, Bedlington, NE22 7AP. |
| <b>National Grid Reference</b> | E426999, N583336.   |
| <b>Site Area</b>               | 0.41 Ha.  |

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 21-1085-001.

### 2.2 Current Site Use

ERGO has undertaken a site walkover of the entire site and a description of the key findings is summarised in Table 2.1.

**Table 2.1 Site Description**

|                                     |  |     |
|-------------------------------------|--|-----|
| <b>Occupancy/ Use / Description</b> | <p>The subject site is a roughly rectangular shaped parcel of land located 1.9 km north east of Bedlington Town Centre.</p> <p>The site currently comprises undeveloped, vacant overgrown grassland with a small area of hard standing surrounding the access gate at the centre of the southern boundary. The site appears to predominantly comprise unmaintained grasses and shrubs with sporadic semi-mature and trees. Evidence of a former brick structure was noted in the central area where brick rubble is now noted.</p> <p>During the site walkover, frequent metal sheets were present in the eastern site area whilst a stockpile of subsoil material was noted in the north-eastern area associated with unknown earthworks at the site.</p> |     |
| <b>Structures</b>                   | <p>No structures were noted onsite.</p> <p>Evidence of a former brick structure was noted in the central area where brick rubble is now present.</p>   |     |
| <b>Access</b>                       | <p>Access can be gained via a gate at the centre of the southern boundary off Barrington Road.</p>   |     |
| <b>Topography</b>                   | <p>The site is noted to be slightly undulating with a gradual slope to the north.</p>  |     |
| <b>Retaining structures</b>         | <p>No retaining structures were noted on site during the site walkover.</p>  |     |
| <b>Surface Cover (%)</b>            | Buildings:   | 0%  |
|                                     | Hardstand:   | 2%  |
|                                     | Soft cover:  | 98% |
| <b>Vegetation/ Ecology</b>          | <p>Unmaintained grasses and rough scrub vegetation were located across the majority of the site with mature trees present along the northern and eastern boundaries.</p> <p>No invasive species were noted during the initial site walkover, however confirmation of this is recommended.</p> <p>A Habitat Survey will be required to support the planning application. The mature trees and dense vegetation may provide habitat for animals.</p>   |     |
| <b>Hazardous Material Storage</b>   | <p>No Above Ground Storage Tanks (AST) or Underground Storage Tanks (UST) were observed at the site during the preliminary site walkover.</p>  |     |

|   |   |
|---|---|
| <b>Hazardous Material Storage (Continued)</b> | Given the historic site usage, it is considered possible that hazardous material storage may have previously occurred though no evidence of this was identified during the site walkover.   |
| <b>Asbestos Containing Material (ACM)</b>     | No evidence of ACM was noted across the site during the site walkover.  |
| <b>Polychlorinated Biphenyls (PCBs)</b>       | No equipment was identified onsite which may contain PCBs within the site boundary.   |
| <b>Waste Storage</b>                          | Potentially hazardous waste streams are likely to be generated at the site and were observed during the site walkover in the form of numerous metal sheets, brick rubble from previous wall and stockpiled subsoil of unknown origins.  |
| <b>Utilities</b>                              | A formal utilities survey has not been completed as far as ERGO are aware. However, overhead cables were noted to bisect the central and western site areas and follow the southern site boundary in the eastern site area. Additionally, evidence of buried service infrastructure was noted within the adjacent Barrington Road and it is considered that buried service may impact the site. |

### 2.3 Surrounding Area

The surrounding area land uses are summarised in Table 2.2.

**Table 2.2 Surrounding Land Uses**

| <b>DIRECTION</b> | <b>LAND USE</b>  |
|------------------|--|
| <b>North</b>     | Vehicle Scrap Yard.  |
| <b>East</b>      | Vacant residential plot with industrial Garage Units beyond. |
| <b>South</b>     | Barrington Road with Agricultural Land beyond.               |
| <b>West</b>      | Residential plot.  |



### 3. SITE HISTORY

#### 3.1 On-Site Historical Development

A review of historical mapping pertinent to the site is summarised in Table 3.1 below. In addition, historical site features are presented on Drawing No 21-1085-003 in Appendix III.

**Table 3.1 Site Historical Development**

| MAP EDITION           | HISTORICAL LAND USE   | HISTORICAL MAP EXCERPT |
|-----------------------|---|------------------------|
| Pre 1855-<br>Pre 1896 | <p>The site is partially occupied by a Clay Pit in the north-western area with Barrington Tile Works present along the north-eastern boundary.</p> <p>1No. assumed reservoir feature is located in the eastern site area.</p> <p>2no. structures are present in the western site area assumed to be associated with the clay pit and brick fields works</p> |                        |
| Pre 1896-<br>Pre 1922 | <p>The Clay Pit, reservoir and Brick Works are no longer recorded and assumed to have been infilled.</p> <p>Terraced housing with associated outbuildings and roads are now recorded in the southern site area. Several small outbuildings and 3No. larger structures are present in the central and northern area of the site.</p>                         |                        |
| Pre 1922-<br>Pre 1975 | <p>Reconfiguration of the buildings in the northern and central areas has occurred. Allotment gardens are also present in the northern section.</p>   |                        |
| Pre 1975-<br>Pre 2003 | <p>The site has been cleared with the terraced housing and allotment gardens no longer recorded with several bisecting field boundaries noted.</p> <p>An access track is noted off Barrington Road to the south.</p>  |                        |

| MAP EDITION           | HISTORICAL LAND USE   | HISTORICAL MAP EXCERPT   |
|-----------------------|---|--|
| Pre 2003-<br>Pre 2010 | Further reconfiguration of fence lines has occurred separating the west and eastern areas of the site.<br>The western area of the site now comprised multiple fence lines and 2No. structures partially straddling the northern boundary. |   |
| Pre 2010-<br>Present  | Fence lines are no longer depicted within the site boundary. Buildings are no longer present on the northern boundary.  |  |

### 3.2 Off-Site Historical Development

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250m radius of the site is summarised below in Table 3.2.

**Table 3.2 Surrounding Potentially Contaminative Land Uses.**

| SURROUNDING FEATURE  | DISTANCE | DATES  | DIRECTION |
|--|----------|--|-----------|
| Brick Field<br>...then not mapped  | 20m      | Pre 1855- Pre 1897   | N         |
| Railway<br>...then Mineral Railway   | 5m       | Pre 1855- Pre 1967<br>Pre 1967- Pre 2021                       | S         |
| Railway Sidings<br>...then not mapped  | 25m      | Pre 1897- Pre 1991   | SW        |
| Bedlington Brickworks<br>...then expanded<br>...then associated clay pit<br>...then unrecorded | 80-160m  | Pre 1897- Pre 1936<br>Pre 1936- Pre 1951<br>Pre 1951- Pre 1987 | NE        |
| Allotment Gardens<br>...then not mapped  | 10m      | Pre 1897- Pre 1962   | N         |
| Tramways (2No.)<br>... then not mapped   | 180m     | Pre 1936- Pre 1959   | NE        |
| Depot<br>...then 2No. depots<br>...then not mapped   | 50m      | Pre1975- Pre2010   | W         |
| Brick Works<br>...then not mapped  | 91m      | Pre 1924- Pre 1936   | SE        |
| Railway Sidings<br>...then not mapped  | 184m     | Pre 1859- Pre 1897   | W         |

### 3.3 Planning History

ERGO has undertaken a detailed search of online planning records held by Northumberland County Council which has identified that the following pertinent information:

- An application pertaining the development of 5no. executive house at the subject site, identified the requirements for a land contamination assessment to be completed

- C.180m east of the site, the Coal Authority required an intrusive investigation to confirm potential risks from the underlying coal mining geology as part of the application for the erection of 2No. low rise dwellings.

## 4. ENVIRONMENTAL SETTING

### 4.1 Geology and Hydrogeology

The British Geological Survey (BGS) map for the site, (1:50,000, Solid & Drift edition) Sheet 14 and online records indicates the site is underlain by the geological sequence presented in Table 4.1, this information is corroborated by records from BGS boreholes in the vicinity summarised in Table 4.2. Faults nearby the site are described in Table 4.3.

**Table 4.1 Summary of Underlying Geology**

| GEOLOGICAL UNIT | CLASSIFICATION                         | DESCRIPTION             | AQUIFER CLASSIFICATION     |
|-----------------|--|-------------------------|----------------------------|
| Made Ground     | Made Ground (Northern site area)       | Made Ground (Undivided) | N/A                        |
| Drift           | Glacial Till                           | Sands, Clay and Gravels | Secondary Undifferentiated |
| Solid           | Pennine Middle Coal Measures Formation | Sandstone               | Secondary A Aquifer        |

No pertinent BGS borehole records have been identified within the vicinity of the site. Boreholes c.200m east of the site record significant thicknesses of Made Ground (~4.00-7.70m) overlying firm to stiff occasionally laminated clays to depths in excess of 11.00mbgl.

**Table 4.3 Faulting**

| LOCATION | DESCRIPTION                                   |
|----------|---|
| On Site  | Inferred Coal Seam – Moorland Seam dipping E. |
| On Site  | Unnamed, Normal fault, downthrown the NE.     |

BGS mapping records indicate the presence of a volcanic Whin Sill intrusion c.50m south of the site.

The Groundsure Report indicates that the site is not located within a Groundwater Source Protection Zone. Furthermore, there are no groundwater / potable abstractions recorded within 1km of the site.

Based on the local topography, it is considered likely that shallow groundwater, if present, will flow in a northerly direction, following the topographical gradient towards Sleek Burn.

### 4.2 Geotechnical Data

Geotechnical Data presented within a commercially available environmental database is summarised within Table 4.4.

**Table 4.4 Summary of Geotechnical Data**

| HAZARD               | DESIGNATION                  |
|----------------------|------------------------------|
| Shrink-Swell Clay    | Low Risk.                    |
| Landslides           | Very Low Risk.               |
| Ground Dissolution   | Negligible Risk.             |
| Compressible Ground  | Negligible to Very Low Risk. |
| Collapsible Deposits | Very Low Risk.               |
| Running Sand         | Very Low Risk.               |

### 4.3 Coal Mining

The Groundsure Report states the site is in an area which may be affected by coal mining.

A Coal Authority Mining Report was obtained (Ref: 51002774391001) dated 9th December 2021.

The Coal Authority operates a risk based approach to the assessment of potential instability issues associated with future development of land located within the pre-defined Coal Authority Consultation Areas. This risk based approach sub-divides the potential risk into 'Low & High' Risk Categories.

The Risk Categories can be defined as:

**Low Risk Sites** - Deemed to be land where coal mining has taken place, however it was at such depth not to pose a risk to new development and it therefore contains no known recorded risks and as such no further assessment is required.

For Low Risk Sites, the Coal Authority categorically state:

*"If your proposed development is within the Development Low Risk Area **there is no need for you to submit any coal mining information with your planning application** and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice".*

**High Risk Sites** are deemed to be landholdings located within an area known to contain legacy risks that include:

- Mine entries (shaft or Adit);
- Shallow Coal Workings (recorded and probable);
- Workable coal seam outcrops;
- Mine gas sites and areas;
- Recorded coal mining related hazards;
- Geological features (fissures and break lines); and,
- Former surface mining sites (sometimes using historic opencast extraction methods).


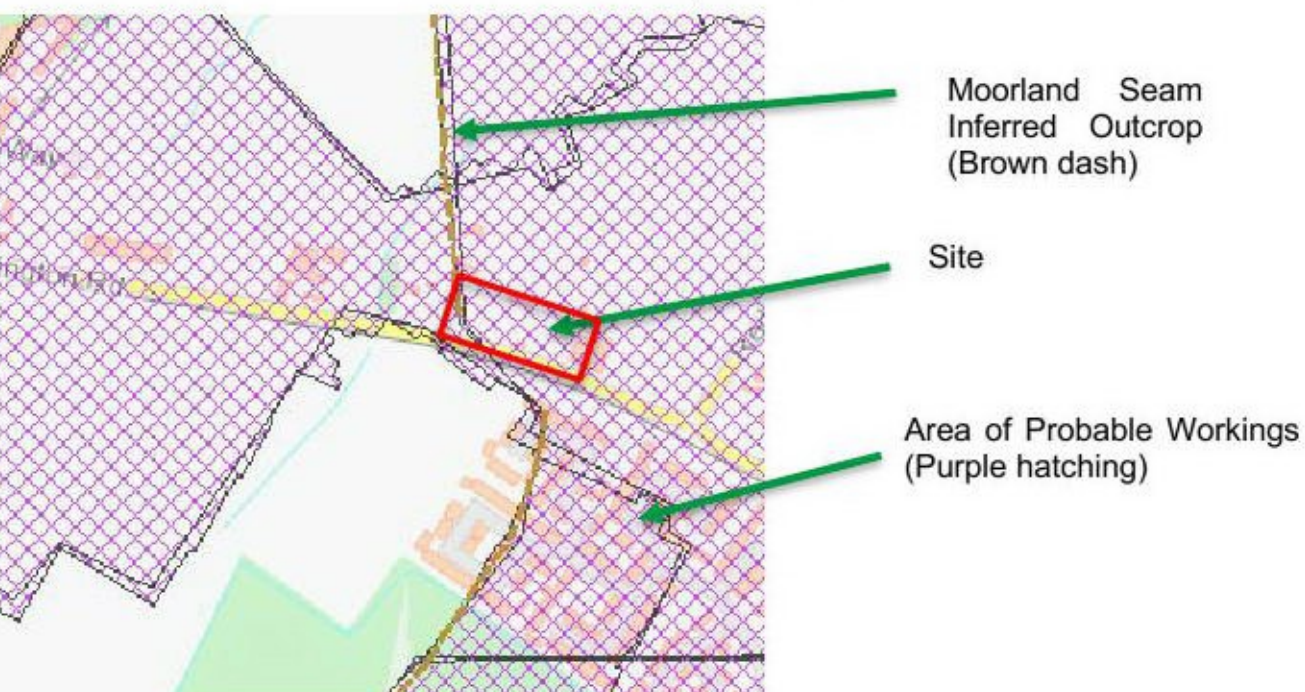
#### 4.3.1 Coal Mining Information

Prior to the enactment of the Coal Mines Regulation Act (1872) which came into force on the 1<sup>st</sup> January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the Coal Authority has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth which could result in a subsidence event in the future (through successive cavitation) associated with failure of support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires a consideration of a wide range of information and ERGO has completed a review of relevant information in relation to potential coal mining activities. Table 4.5 provides a summary of pertinent coal mining information.

**Table 4.5 Coal Mining Information**

| SOURCES OF INFORMATION       | SUMMARY   |
|------------------------------|---|
| Coal Authority Mining Report | The Coal Authority Mining Report (Ref: 51002774391001) dated December 2021 has been obtained for the subject site by ERGO. This report confirmed: <ul style="list-style-type: none"> <li>▪ The property is within an area that is affected by past recorded underground mining within 5No. seams between depths of 119-214mbgl, last worked in 1955;</li> </ul> |

| SOURCES OF INFORMATION                                 | SUMMARY   |
|--|---|
| <p><b>Coal Authority Mining Report (Continued)</b></p> | <ul style="list-style-type: none"> <li>▪ <i>The shallowest coal seam with recorded workings (Bottom Yard) recorded at a depth of 119mbgl with a recorded 0.80m thickness;</i></li> <li>▪ <i>The site is in an area of probable unrecorded shallow workings;</i></li> <li>▪ <i>There are no known coal mine entries within 100 metres of the site boundary;</i></li> <li>▪ <i>The site is in an area where the Coal Authority believe there is coal at or close to the surface which may have been worked in the past;</i></li> <li>▪ <i>The Moorland Seam is recorded to outcrop within the subject site boundary;</i></li> <li>▪ <i>No coal claims are recorded adjacent to the property</i></li> <li>▪ <i>There is no record of a mine gas emission requiring action by the Coal Authority within or adjacent to the site boundary;</i></li> <li>▪ <i>The Authority is not aware of any evidence of damage arising due to geological faults or other lines of weakness that have been affected by coal mining; and</i></li> <li>▪ <i>The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.</i></li> </ul> |
| <p><b>Coal Authority Interactive Map</b></p>           | <p>The Coal Authority Interactive Map shows that the site is located within in a High Risk Development Area;</p>  <p>The site is located within an area of probable shallow workings;<br/> The Moorland Seam is shown to outcrop on site.</p>  <p>No opencast workings are noted within the vicinity of the site.</p>   |



| SOURCES OF INFORMATION                    | SUMMARY  |
|---|--|
| <b>British Geological Survey Mapping</b>  | The 1:10,000 geological mapping for the area notes the Moorland Seam outcropping through the site running N-S, dipping S beneath the site.<br>An unnamed fault is also present running in an NW-SE orientation through the site downthrowing NE. |
| <b>Historical Ordnance Survey Mapping</b> | No evidence of historic mine working features were identified within the site boundary.<br>Barrington Colliery is recorded c. 500m NW of the site.<br>Bedlington Colliery is recorded c.500m SW of the site                                      |
| <b>Review of Coal Authority Archive</b>   | No Coal Authority archives / Mine Abandonment Plans have been made available.  |
| <b>Historical Site Investigations</b>     | No historical site investigations were made available.   |

#### 4.3.2 Coal Mining Risk Assessment

This Risk Assessment comprises a desk-based review of all available information on the coal mining issues which are relevant to the application site deemed to be located within a 'High Risk' area. This includes:

- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and,
- Demonstrating to the Local Planning Authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The Coal Mining Risk Assessment is summarised in Table 4.6.

**Table 4.6 Summary of Coal Mining Risk Assessment**

| COAL MINING RISK ASSESSMENT                                | YES / NO | RISK ASSESSMENT   |
|--|----------|---|
| Recorded Underground Coal Mining at Shallow Depth (<30m)   | No       | Low   |
| Recorded Underground Coal Mining at Depth (>30m)           | Yes      | Low - The shallowest recorded workings are within the Bottom Yard Seam at a depth of 119m bgl.              |
| Unrecorded Underground Coal Mining at Shallow Depth (<30m) | Yes      | High - Probable shallow workings are noted at the site, understood to be associated with the Moorland Seam. |
| Mine Entries (Shaft / Adits)                               | No       | Low - None recorded onsite or within the vicinity of the site   |
| Coal Mining Geology – Fractures / Fissures                 | No       | Low   |
| Recorded Gas Emissions                                     | No       | Low   |
| Recorded Mining Surface Hazard                             | No       | Low   |
| Surface Mining (opencast)                                  | No       | Very Low / Low  |

Based on the above, a potential high risk of unrecorded coal mining at shallow depth has been identified. It is considered that the onsite unnamed fault may reduce the area impacted by

potential shallow working. The Coal Authority as a statutory consultee will require a series of rotary open holes across the site to determine the presence of any coal on site and understand the nature of any potential coal workings.

#### 4.4 Hydrology

Recorded surface water features within 250m of the subject site are summarised in Table 4.7.

**Table 4.7 Surface Water Features**

| SURFACE WATER FEATURE           | QUALITY | DISTANCE (m) | DIRECTION |
|---------------------------------|---------|--------------|-----------|
| Unnamed tributary of Sleek Burn | N/A     | 49m          | West      |

The site is predominantly located within a currently defined Flood Risk Zone 1; defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (<0.1%), and as such is considered to be unaffected by river flooding. In addition, the Groundsure Report states there is a limited potential for groundwater flooding to occur at the site.

The north-eastern and north-western boundary there is a 1 in 1000 year return period for surface water flooding.

#### 4.5 Radon Risk Potential

The Groundsure Report indicates the site is situated in an area where less than 1% of homes are above the Action Level and that the BGS reports that full radon protective measures are not necessary in the construction of new dwellings or extensions.

#### 4.6 Industrial Land Uses

Current industrial land uses within the vicinity of the site include:

-  G&T Hancock (Scrap Metal) – 5m NE
-  R Binks Ltd (Vehicle Repair) – 72m SE
-  Silos – 118m NW
-  Water Pumping Station- 157m SE
-  Unspecified Works- 240m SE
-  Cemex UK – Concrete Products – 246m E
-  Ayton Autos – Vehicle Repair – 249m E

#### 4.7 Sensitive Land Uses

No significant environmentally sensitive land uses have been identified onsite or within close proximity to the site. The closest residential properties are located adjacent to the western and eastern boundaries of the site.

#### 4.8 Site Sensitivity Assessment

The site is assessed to be located within a **Low/ Moderate** sensitivity setting as discussed within Table 4.8.

**Table 4.8 Site Sensitivity Assessment**

| SENSITIVITY PROFILE   | DISCUSSION  | RATING |
|---|---|--------|
| Groundwater Source Protection Zone or Drinking Water Safeguard Zone | The site is not located within a Groundwater Source Protection Zone or Drinking Water Safeguard Zone. | LOW    |
| Distance to the closest groundwater abstraction point.              | There are no recorded groundwater abstraction points within 1km of the site.                          | LOW    |
| Aquifer Classification in Superficial Drift Deposits.               | Secondary Undifferentiated  | LOW    |

| SENSITIVITY PROFILE   | DISCUSSION   | RATING                   |
|---|--|--------------------------|
| <b>Aquifer classification in Bedrock.</b>   | The underlying solid deposits are classified as a Secondary A Aquifer. No potable water abstractions have been identified within 1km of the site reducing sensitivity of the receptor. | <b>LOW</b>               |
| <b>Is the site underlain by low permeability Drift to depths in excess of 10.0m?</b>                              | Historical BGS boreholes within the vicinity of the suggest the presence of significant thicknesses of drift.  | <b>MODERATE</b>          |
| <b>Is the site located within 50m of a surface watercourse?</b>   | An unnamed tributary of Sleek Burn is recorded 48m West of the site boundary.  | <b>MODERATE</b>          |
| <b>Sensitive land uses within close proximity (e.g. residential, school, nursery, local nature reserves etc.)</b> | Residential units are adjacent to the at the western and eastern borders.  | <b>MODERATE</b>          |
| <b>Overall Site Environmental Sensitivity</b>   |  | <b>LOW/<br/>MODERATE</b> |

#### 4.9 Preliminary Geotechnical Assessment

Based on the desk study information, the following geotechnical assessment has been made:

- Given that the site has been developed previously, dependent upon the extent of demolition/below ground turnover, it is possible that there may be Made Ground fill deposits and significant buried obstructions including foundations present within the subsurface;
- Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution;
- There is the potential for buried service infrastructure to be present on site which may require diversion or an appropriate standoff zone to be incorporated in to designs;
- A clay pit was formerly noted within the north west of the site with an associated high wall feature noted to bisect the site, whilst an assumed reservoir feature was noted in the north east of the site. Both of which will require investigation/delineation to identify the extents of these former features including confirmation of potential high wall features;
- There is potential for soft organic deposits within the site boundary associated with former assumed reservoir feature in the north east of the site.
- The site is potentially underlain by shallow unrecorded mine workings within the Moorland Seam c.24mbgl, which may lead to ground instability and cause subsidence if worked.
- The site is undulating, generally sloping to the north. In order to construct low rise residential development, earthworks will be required to create a level developable platform.

#### 4.10 Unexploded Ordnance

The regional unexploded bomb risk map from Zetica indicates that the site is in an area at low risk from possible Unexploded Ordnance (UXO) resulting from the Second World War. (Zetica, 2021).

It should be noted that there was a Junker Ju88 crash c. 315m NE of the site in September 1941, likely to have associated with identified Luftwaffe targets in Blyth. (<http://www.keystothepast.info/article/10339/Site-Details?PRN=N24392>).

## 5. CONSULTATIONS

### 5.1 Landfill Sites and Waste Treatment Sites

There are no active landfills recorded within 250m of the site boundary.

1No. historic landfill site is recorded 19m East of the site at Barrington Brickworks Ref: PF 002 accepting Industrial, Commercial, Household and Special wastes between 1964 and 1975. A historic unnamed waste site is noted 161m Northeast of the site within mapping records.

1no. historic licensed waste site is recorded 23m North of the site, registered to Arthur Hancock (ref: HAN001) at Barrington Road for the Dismantling of Vehicles licenced between 1992 and 2012.

### 5.2 Regulatory Database

The information summarised in Table 5.1 has been obtained from a commercially available environmental database. The summary table only includes records from within 250m of the subject site and not otherwise detailed in the report.

**Table 5.1 Summary of Environmental Data**

| RECORD   | ENTRIES WITHIN 250m | DETAILS                |
|--|---------------------|------------------------|
| Contaminated Land Register Entries and Notices                     | 0                   | None Identified (N/A). |
| Authorised industrial processes (IPC/IPPC/LAPPC).                  | 0                   | N/A                    |
| Fuel Stations Entries  | 0                   | N/A                    |
| Licensed radioactive substances                                    | 0                   | N/A                    |
| Enforcements, prohibitions or prosecutions                         | 0                   | N/A                    |
| Discharge Consents   | 0                   | N/A                    |
| Pollution Incidents  | 0                   | N/A                    |
| Consents issued under the Planning (Hazardous Substances) Act 1990 | 0                   | N/A                    |
| Control of Major Accident Hazard (COMAH) sites                     | 0                   | N/A                    |

## 6. INITIAL CONCEPTUAL SITE MODEL

### 6.1 Initial CSM

In accordance with Environment Agency, LCRM (2019) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), ERGO Ltd has developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised within Table 6.1.

**Table 6.1 Initial Conceptual Site Model**

| SOURCE  | PATHWAY   | RECEPTOR                                      |
|---|---|---|
| <b>Human Health</b>   |   |   |
| <b>Heavy metals, PAHs and Semi Volatile Organic Compounds (SVOC) associated with onsite Made Ground, historic organic reservoir deposits, historical mining legacy and adjacent historical land use as Brick Field, Tile Works and surrounding Earthworks, Depots and Tramways</b>  | Dermal Contact and Ingestion<br>Consumption of Home-grown Produce | Construction Workers<br>Residential End Users |
| <p><b>Discussion:</b></p> <p>Given that the site has been developed previously and the surrounding historic mining legacy, Tile works and Brick Works, Made Ground is likely present on the site and therefore heavy metal, PAH and SVOC compound contamination may be present within the subsurface.</p> <p>If present, contaminants may pose a short-term risk to construction workers who may come into contact with impacted soils during earthworks. However, risks can be mitigated through the use of appropriate Personal Protective Equipment (PPE) and the provision of adequate welfare facilities.</p> <p>Future residential users may come into contact with impacted soils within any proposed garden or landscaped areas. If impacted soils are identified then localised remediation or an appropriate cover system, designed in accordance with BRE465 (<i>Cover Systems for Land Regeneration</i>), will mitigate the risk.</p> <p>Based on the available information the potential risk to the proposed development from heavy metal and non-volatile PAH / hydrocarbon impact is at this stage considered to be moderate however, this will need to be confirmed via chemical testing of Made Ground as part of any subsequent intrusive investigation works.</p> |   |   |
| <b>Volatile hydrocarbon compounds associated within Made Ground and nearby Depot, Tramways, Scrap Yard Works and Allotment Gardens and Volatile Organic deposits associated with the former assumed reservoir feature</b>   | Volatilisation / Accumulation, Vapour Inhalation                  | Construction Workers, Residential End Users   |
| <p><b>Discussion:</b></p> <p>Potential Made Ground deposits associated with onsite features and nearby historical depot and historical allotment gardens and tramways along with potential organic reservoir deposits and scrap yard works, represent possible sources of hydrocarbon compounds and VOCs which may pose a risk to construction workers if they come into contact with impacted soils.</p> <p>The use of appropriate PPE/Respiratory Protective Equipment (RPE) will ensure they are at no unacceptable level of risk.</p> <p>Future residential end users may come into contact with impacted soil in landscaped areas and/ or via indoor inhalation of vapours if present. If present, and a potential risk is determined, localised remediation or the provision of a chemical resistant membrane within any proposed residential units impacted would provide mitigation.</p> <p>The risk is considered to be low/moderate at this stage, however, this will need to be confirmed via chemical testing of Made Ground as part of any subsequent intrusive investigation works.</p>   |   |   |

| SOURCE   | PATHWAY                      | RECEPTOR  |
|--|------------------------------|---|
| <b>Asbestos Containing Materials (ACM) within onsite Made Ground from historic onsite activities, infilling of land and previous demolition works</b>  | Fibre / Dust Inhalation      | Construction Workers<br>Residential End Users<br>Third Party Property |
| <p><b>Discussion:</b></p> <p>No ACM was identified during the site walkover; however, given that the site has been previously subject to construction and demolition and infilling works, it raises the possibility that ACM may be present within Made Ground deposits on the site.</p> <p>Disturbance of ACM may give rise to dust generation, posing a risk to adjacent site users, construction workers, and residential end users. ACM poses a risk through fibre and dust inhalation and if present may pose a risk to construction workers during any future earthworks / demolition and to adjacent third-party property should dust be generated during those works.</p> <p>If present, these risks can be mitigated through the development of a detailed enabling works strategy following guidance and protocol specified within the Control of Asbestos Regulations (2012) and industry best practice as detailed in CIRIA733 (Asbestos in Soil and Made Ground: A guide to understanding risk) and wearing suitable PPE to reduce to potential risk of dust inhalation.</p> <p>The risk is considered to be low/moderate at this stage, however, this will need to be confirmed via chemical testing of Made Ground as part of any subsequent intrusive investigation works.</p>   |                              |   |
| <b>Hazardous Ground Gases</b>  |                              |   |
| <b>Methane and Carbon Dioxide associated with possible significant thicknesses of on-site and adjacent Made Ground, infilled clay pits, infilled ponds, landfills and potential historic shallow coal mining</b>   | Inhalation<br>Accumulation   | Construction Workers<br>Residential End Users                         |
| <p><b>Discussion:</b></p> <p>Potentially significant thicknesses of onsite and adjacent Made Ground underlying the site, infilled clay pits and infilled ponds, historical organic reservoir deposits along with underlying potential historical shallow coal mining and landfills within influencing distance may represent a potentially significant source of gas generation.</p> <p>Methane and Carbon Dioxide gases represent hazards from both explosions and asphyxiation respectively and present a significant hazard to any intrusive site works. Ground gas can also migrate through permeable strata, foundation structures and/or service ducting and accumulate within confined spaces where they may pose a risk to residential end users.</p> <p>Based on the information currently available there is considered to be a moderate risk. This will require confirmation through a series of monitoring well installations. Should a ground gas risk to end users be proven, the risks can be mitigated through the adoption of suitable control measures within the building construction using guidance presented within CIRIA 665 (Assessing Risk Posed by Hazardous Ground Gases to Buildings) and BS8485 (Code of Practice for the Characterisation and Remediation from Ground Gas in Affected Developments).</p> |                              |   |
| <b>Controlled Waters</b>   |                              |   |
| <b>Mobile contaminants associated with onsite infilled ground and Made Ground deposits and current and historic adjacent land uses including a vehicle scrap yard</b>  | Vertical / Lateral Migration | Secondary A Aquifer<br>Sleek Burn tributary                           |
| <p><b>Discussion:</b></p> <p>The presence of significant potentially mobile contaminants are considered likely due to current and historic land uses on site and the surrounding area.</p> <p>The nearest surface water feature, a tributary of Sleek Burn is recorded c.48m West of the site is within influencing distance from the site as a receptor of potentially significant contamination. It should be noted that no groundwater abstraction licenses are recorded within 1km of the site.</p> <p>The risk is considered moderate at this stage and should be confirmed during any subsequent intrusive investigation with subsequent groundwater monitoring.</p>   |                              |   |

| SOURCE  | PATHWAY               | RECEPTOR               |
|---|-----------------------|------------------------|
| <b>Buildings and Infrastructure</b>   |                       |                        |
| <b>pH &amp; Sulphate within onsite Made Ground associated within historic onsite structures and infilled land</b>   | Corrosion of Concrete | Foundations / Concrete |
| <p><b>Discussion:</b></p> <p>Onsite Made Ground with a high proportion of concrete and/or mortar can give rise to elevated levels of sulphate and aggressive ground conditions, infilled made ground within the site boundary relating to the former clay pit may also contribute to elevated sulphate levels.</p> <p>Sulphate (water soluble) can result in corrosion of buried concrete unless appropriately designed.</p> <p>Assessment should be undertaken to confirm the levels of pH and sulphate within the shallow soils and thus determine the concrete classification.</p> |                       |                        |

## 7. CONCLUSIONS AND RECOMMENDATIONS

### Site Summary

The site has historically been utilised as a tile works, clay pit, allotment gardens and terraced housing and is located within the wider industrial/mining area of Bedlington. The site is currently disused.

The site is currently covered by unmaintained grass and rough scrub vegetation with mature trees present along the northern boundary.

These uses are considered to have the potential to be sources of heavy metal, polycyclic aromatic hydrocarbon (PAH), petroleum hydrocarbon, asbestos and ground gas impact to the sub-surface. Available information indicates that the site is potentially underlain by shallow mine workings.

### Contamination Issues

|                          |  |
|--------------------------|--|
| <p>Human Health</p>      | <p>As the site has been developed previously and given the surrounding historic mining legacy, Made Ground is likely present on the site and therefore heavy metal and PAH/TPH compound contamination may be present within the subsurface. Significant Made Ground is likely to be associated with the historic clay pit and tile works present on site.</p> <p>Given the previous development on the site, there is the possibility that ACM may be present within demolition materials in the sub-surface.</p> <p>Construction workers may come into contact with impacted soils during earthworks. All construction works must be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this potential risk.</p> <p>Future residential site users may come into contact with impacted soils within any garden and landscaped areas. If impacted soils are identified then localised remediation or an appropriate cover system, designed in accordance with BRE465 (Cover Systems for Land Regeneration), will mitigate the risk.</p> <p>Based on the available information the potential risk to the proposed development from heavy metal and non-volatile PAH / hydrocarbon impact is considered to be low/moderate however, this should be confirmed via chemical testing of the soils as part of any subsequent intrusive investigation works.</p> |
| <p>Controlled Waters</p> | <p>The presence of significant potentially mobile contaminants are considered possible due to historic land uses on site and the surrounding area.</p> <p>The nearest recorded surface water feature, a tributary of Sleek Burn is recorded c.48m West of the site is within influencing distance from the site as a receptor of potentially significant contamination. It should be noted that no groundwater abstraction licenses are recorded within 1km of the site.</p> <p>The risk is considered moderate at this stage and should be confirmed during any subsequent intrusive investigation with subsequent groundwater monitoring.</p>  |
| <p>Ground Gas</p>        | <p>Possible Made Ground underlying the site, underlying potential historical shallow coal mining and numerous adjacent nearby infilled ponds, historic organic reservoir deposits, historical landfill and clay pits may represent potentially significant sources of gas generation. Ground gas can also migrate through permeable strata, foundation structures and/or service ducting and accumulate within confined spaces where they may pose a risk to residential end users. Based on the information currently available there is considered to be a moderate risk however this should be confirmed by subsequent intrusive investigation works.</p>   |
| <p>Potable Waters</p>    | <p>A suitable water supply pipework should be designed.</p>  |



### Geotechnical Issues

Based on the desk study information, the following geotechnical assessment has been made:

- Given that the site has been developed previously, dependent upon the extent of demolition/below ground turnover, it is possible that there may be Made Ground fill deposits and significant buried obstructions including foundations present within the subsurface;
- Investigation will be required in order to assess the underlying Made Ground and natural deposits and undertake in-situ geotechnical testing to determine the likely foundation solution;
- There is the potential for buried service infrastructure to be present on site which may require diversion or an appropriate standoff zone to be incorporated in to designs;
- A clay pit was formerly noted within the north west of the site with an associated high wall feature noted to bisect the site, whilst an assumed reservoir feature was noted in the north east of the site. Both of which will require investigation to determine the extents of these former features including confirmation of the potential high wall features;
- There is potential for soft organic deposits within the site boundary associated with former assumed reservoir feature in the north east of the site.
- The site is potentially underlain by shallow unrecorded mine workings within the Moorland Seam c.24mbgl, which may lead to ground instability and cause subsidence if worked.
- The site is undulating, generally sloping to the north. In order to construct low rise residential development, earthworks will be required to create a level developable platform.

**END OF REPORT**

**APPENDIX I  
LIMITATIONS**

1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between ERGO and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. ERGO cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by ERGO is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by ERGO in this connection without their explicit written agreement there to by ERGO.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.

**APPENDIX II  
GLOSSARY**

## TERMS

|              |  |                         |  |
|--------------|--|-------------------------|--|
| <b>AST</b>   | Above Ground Storage Tank                                  | <b>SGV</b>              | Soil Guideline Value                                 |
| <b>BGS</b>   | British Geological Survey                                  | <b>SPH</b>              | Separate Phase Hydrocarbon                           |
| <b>BSI</b>   | British Standards Institute                                | <b>TPH CWG</b>          | Total Petroleum Hydrocarbon (Criteria Working Group) |
| <b>BTEX</b>  | Benzene, Toluene, Ethylbenzene, Xylenes                    | <b>SPT</b>              | Standard Penetration Test                            |
| <b>CIEH</b>  | Chartered Institute of Environmental Health                | <b>SVOC</b>             | Semi Volatile Organic Compound                       |
| <b>CIRIA</b> | Construction Industry Research Association                 | <b>UST</b>              | Underground Storage Tank                             |
| <b>CLEA</b>  | Contaminated Land Exposure Assessment                      | <b>VCCs</b>             | Vibro Concrete Columns                               |
| <b>CSM</b>   | Conceptual Site Model                                      | <b>VOC</b>              | Volatile Organic Compound                            |
| <b>DNAPL</b> | Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB) | <b>WTE</b>              | Water Table Elevation                                |
| <b>DWS</b>   | Drinking Water Standard                                    | <b>m</b>                | Metres   |
| <b>EA</b>    | Environment Agency   | <b>km</b>               | Kilometres   |
| <b>EQS</b>   | Environmental Quality Standard                             | <b>%</b>                | Percent  |
| <b>GAC</b>   | General Assessment Criteria                                | <b>%v/v</b>             | Percent volume in air                                |
| <b>GL</b>    | Ground Level   | <b>mb</b>               | Milli Bars (atmospheric pressure)                    |
| <b>GSV</b>   | Gas Screening Value  | <b>l/hr</b>             | Litres per hour                                      |
| <b>HCV</b>   | Health Criteria Value                                      | <b>µg/l</b>             | Micrograms per Litre (parts per billion)             |
| <b>ICSM</b>  | Initial Conceptual Site Model                              | <b>ppb</b>              | Parts Per Billion                                    |
| <b>LNAPL</b> | Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)  | <b>mg/kg</b>            | Milligrams per kilogram (parts per million)          |
| <b>ND</b>    | Not Detected   | <b>ppm</b>              | Parts Per Million                                    |
| <b>LMRL</b>  | Lower Method Reporting Limit                               | <b>mg/m<sup>3</sup></b> | Milligram per metre cubed                            |
| <b>NR</b>    | Not Recorded   | <b>m bgl</b>            | Metres Below Ground Level                            |
| <b>PAH</b>   | Polycyclic Aromatic Hydrocarbon                            | <b>m bcl</b>            | Metre Below Cover Level                              |
| <b>PCB</b>   | Poly-Chlorinated Biphenyl                                  | <b>mAOD</b>             | Metres Above Ordnance Datum (sea level)              |
| <b>PID</b>   | Photo Ionisation Detector                                  | <b>kN/m<sup>2</sup></b> | Kilo Newtons per metre squared                       |
| <b>QA</b>    | Quality Assurance  | <b>µm</b>               | Micro metre  |
| <b>SGV</b>   | Soil Guideline Value                                       |                         |  |

**APPENDIX III  
DRAWINGS**



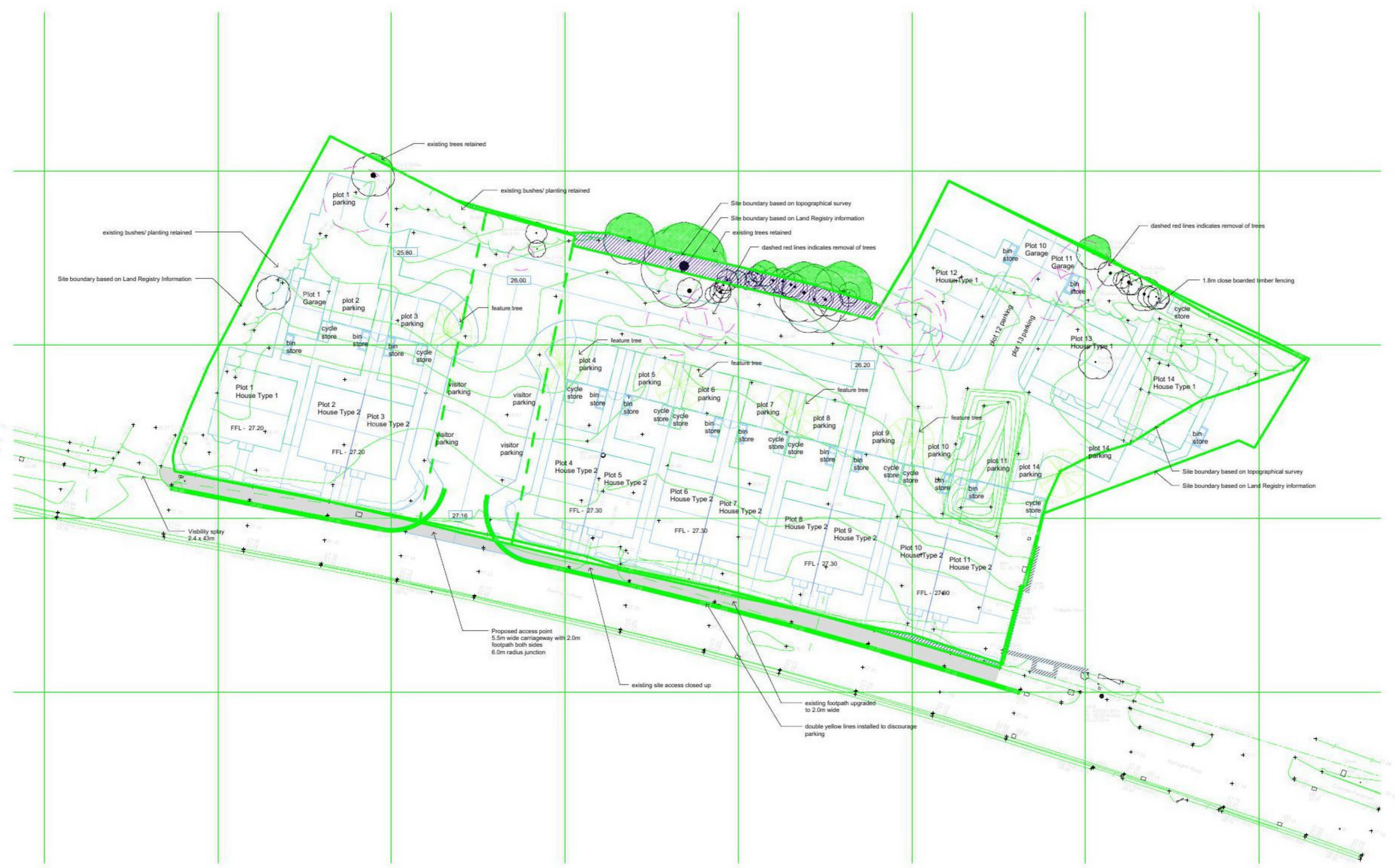
SITE



Drawing 21-1085-001  
Site Location Plan

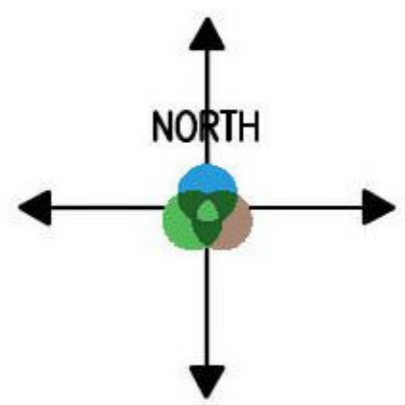


Key:



Notes:

| P1   | -        | 01.04.2022 | DRAFT                                    | AB               | JN         |
|--|----------|------------|--|------------------|------------|
| Phase  | Revision | Date       | Issue                                    | Drawn            | Authorised |
| Client: Mr Harjit Singh Deol                           |          |            | Job No: 21-1085                          | Date: 01.04.2022 |            |
|  |          |            | Drawing No: 002                          | Scale: NTS       |            |
| Job Title: Tollgate House, Barrington Road, Bedlington |          |            | Drawing Title: Proposed Development Plan |                  |            |



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








K97

Location Symbols

Historical Features

-  Housing (Pre 1922 - Pre 1987)
-  Residential Housing (Pre 1897 - Pre 1987)
-  Tile Works Reservoir (Pre 1855 - Pre 1897)
-  Clay Pit (Pre 1855 - Pre 1897)
-  Brick Field Buildings (Pre 1855 - Pre 1897)

Notes:

| Phase | Revision | Date       | Issue | Drawn | Authorised |
|-------|----------|------------|-------|-------|------------|
| P1    | -        | 10.01.2022 | DRAFT | RB    | JN         |

|                            |  |             |                     |            |  |
|----------------------------|--|-------------|---------------------|------------|--|
| Client:                    |  | Job No:     |                     | Date:      |  |
| Mr Harjit Singh Deol       |  | 21-1085     |                     | 10.01.2022 |  |
| Job Title:                 |  | Drawing No: |                     | Scale:     |  |
| Tollgate House, Bedlington |  | 003         |                     | NTS        |  |
| Drawing Title:             |  |             | Historical Features |            |  |



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**APPENDIX IV  
PHOTOGRAPHS**



**PLATE 1 – OVERVIEW OF THE SITE LOOKING WEST**



**PLATE 2 – ACCESS GATE AT THE CENTRE OF THE SOUTHERN BOUNDARY**



**PLATE 3 – EVIDENCE OF EARTHWORKS AND THE EASTERN BOUNDARY**



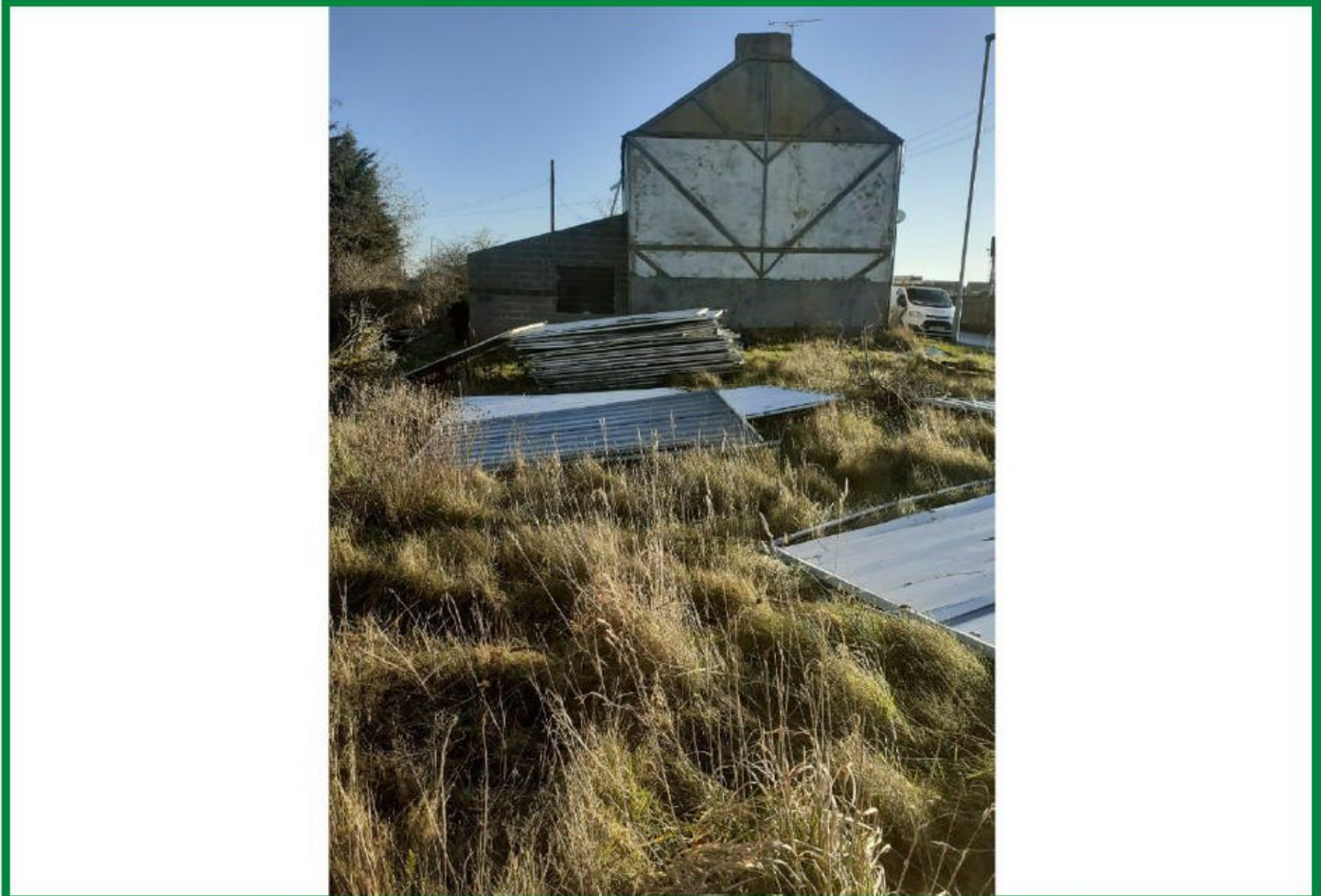
**PLATE 4 – EASTERN SITE BOUNDARY**



**PLATE 5 – NORTHERN SITE BOUNDARY**



**PLATE 6 – STORED METAL SHEETING IN THE CENTRE OF THE SITE**



**PLATE 7 – STORED METAL SHEETING TO THE EAST OF THE SITE**

**APPENDIX V  
HISTORICAL MAPS**

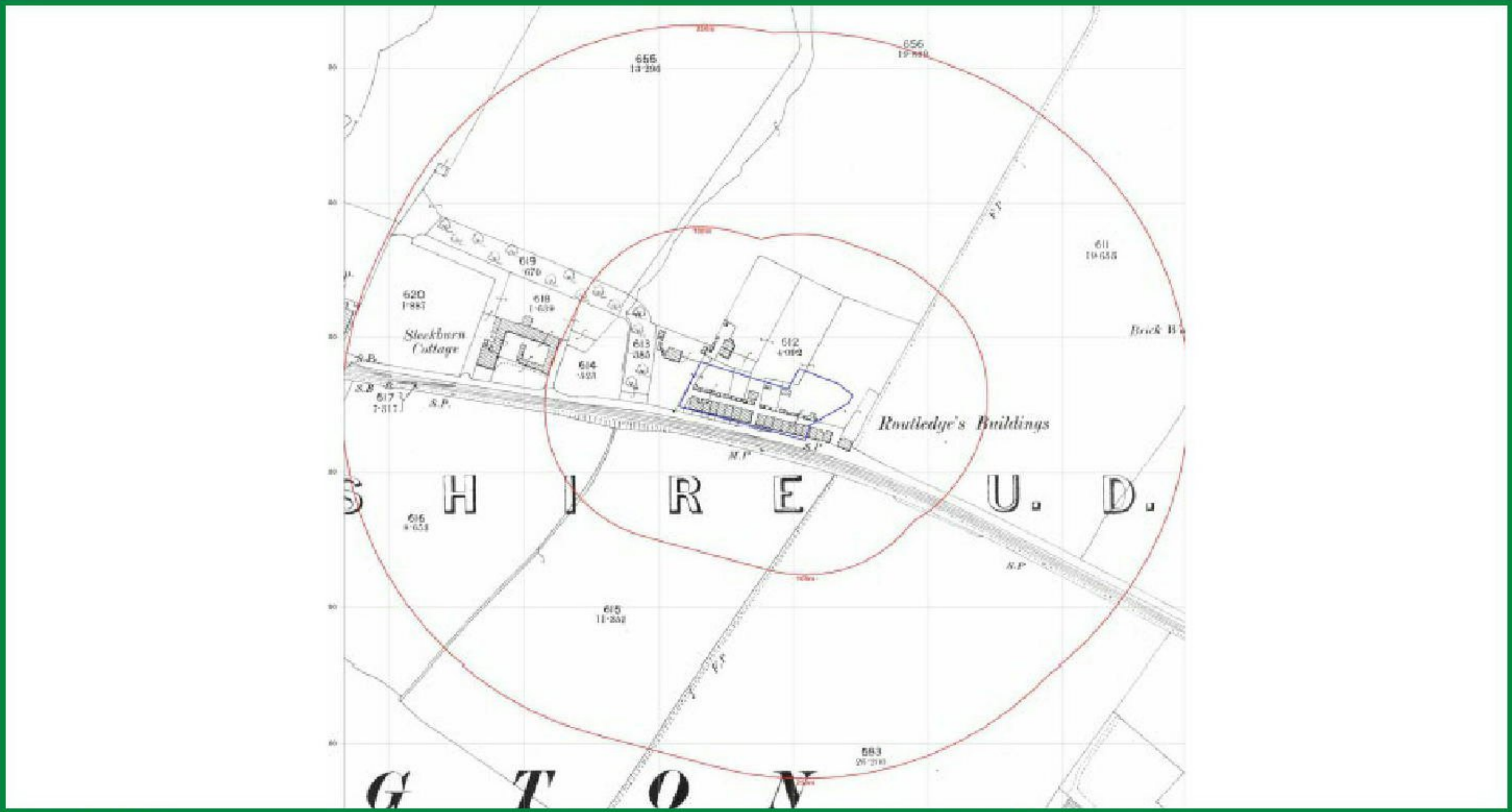


**Historical Map**  
Dated: 1855  
Original Scale: 1:2,500

North

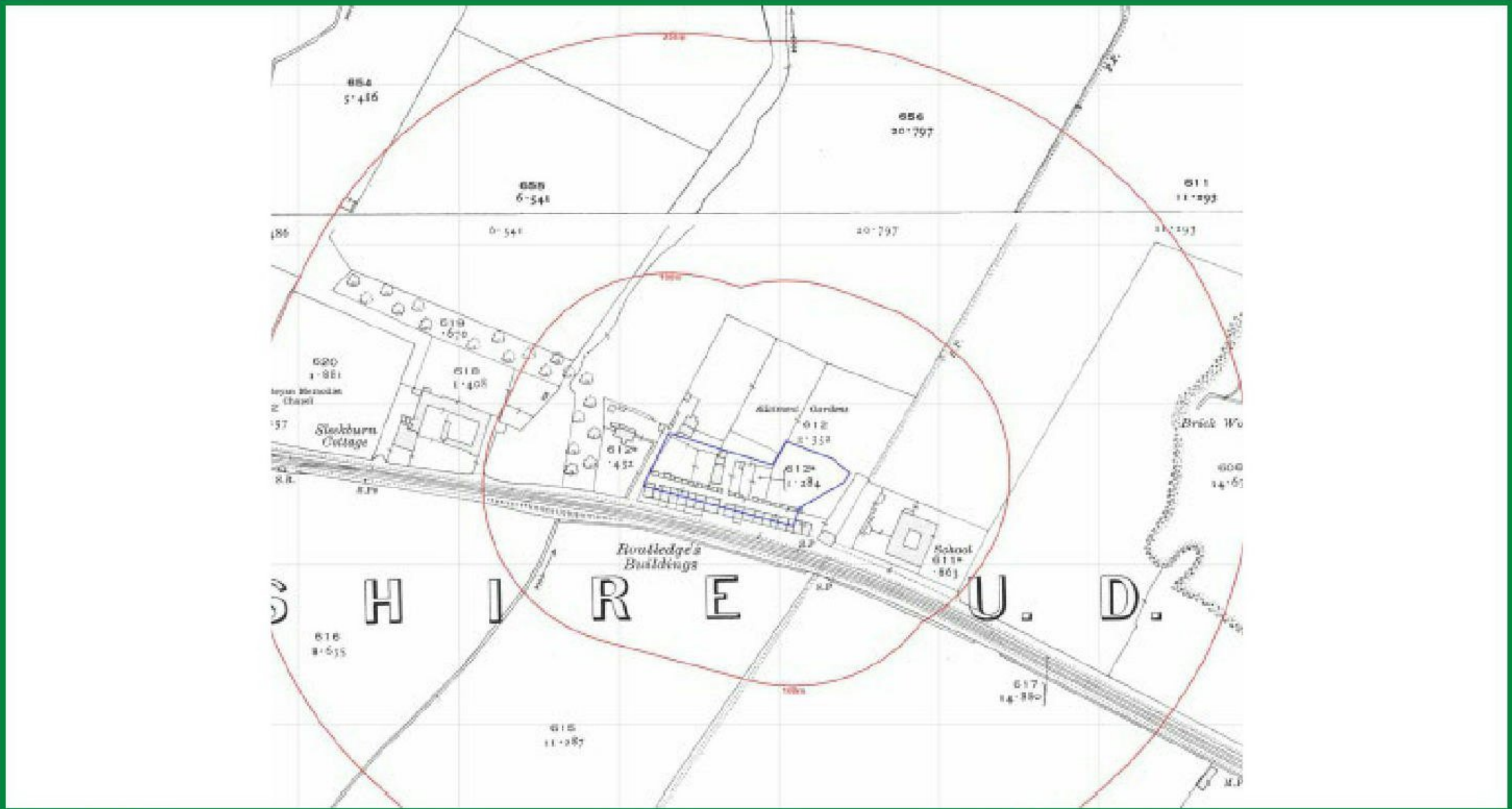






**Historical Map**  
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Original Scale: 1:2,500

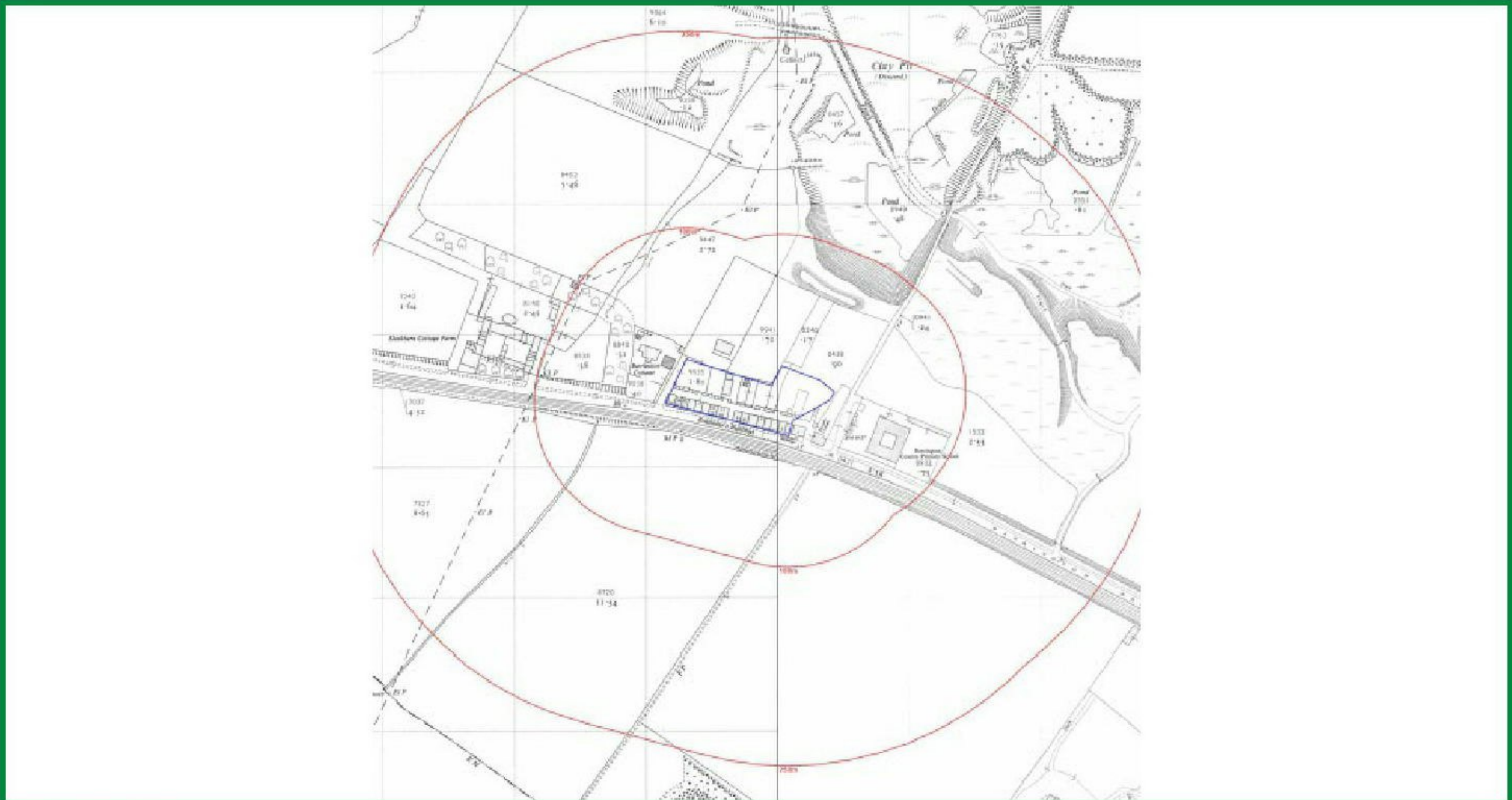




**Historical Map**  
Dated: 1922  
Original Scale: 1:2,500

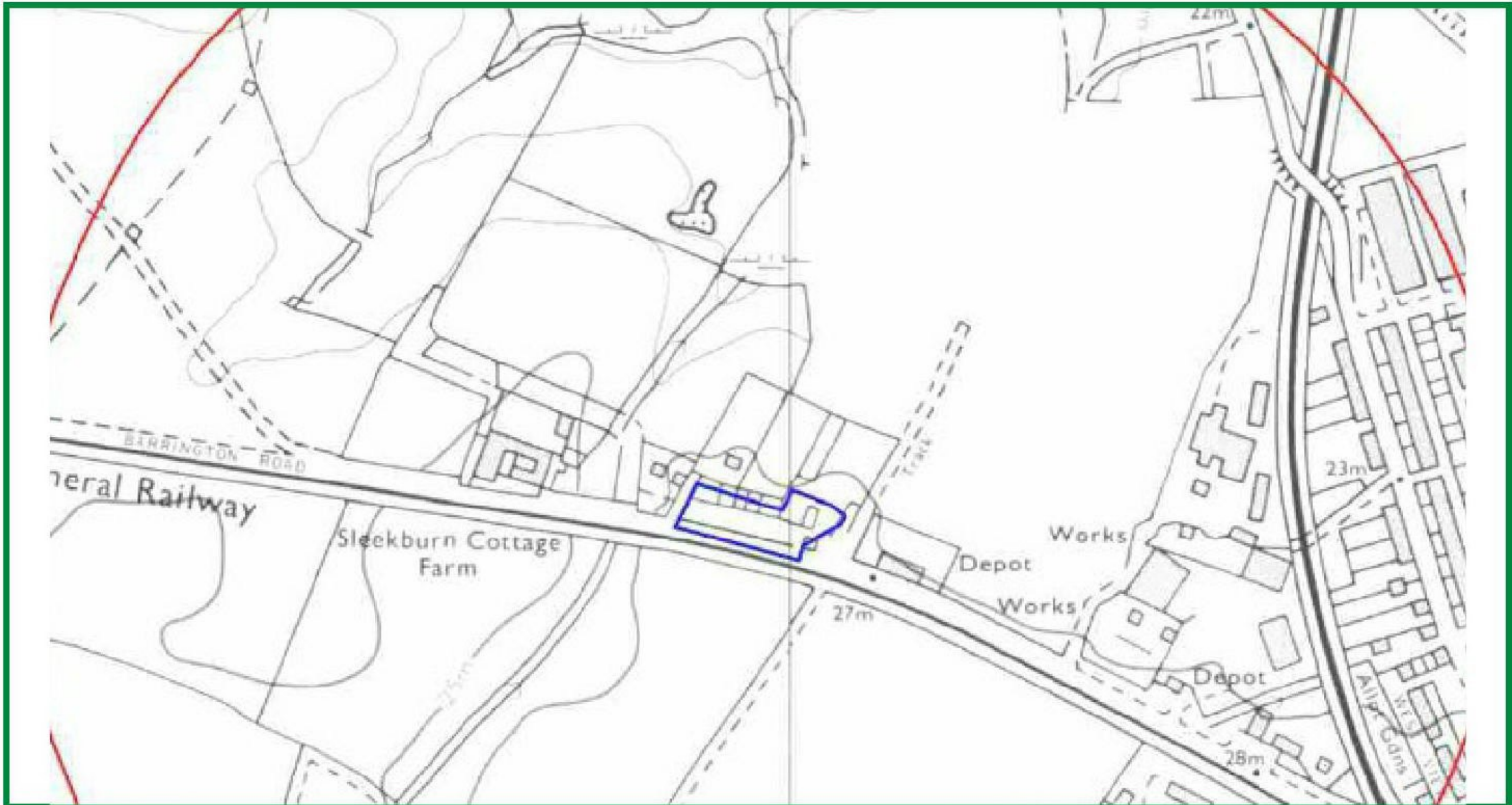
North





|  |  |   |
|--|--|---|
| <p><b>Historical Map</b></p> <p>Dated: 1962</p> <p>Original Scale: 1:2,500</p> |  <p>North</p> |  |
|--|--|---|





Historical Map

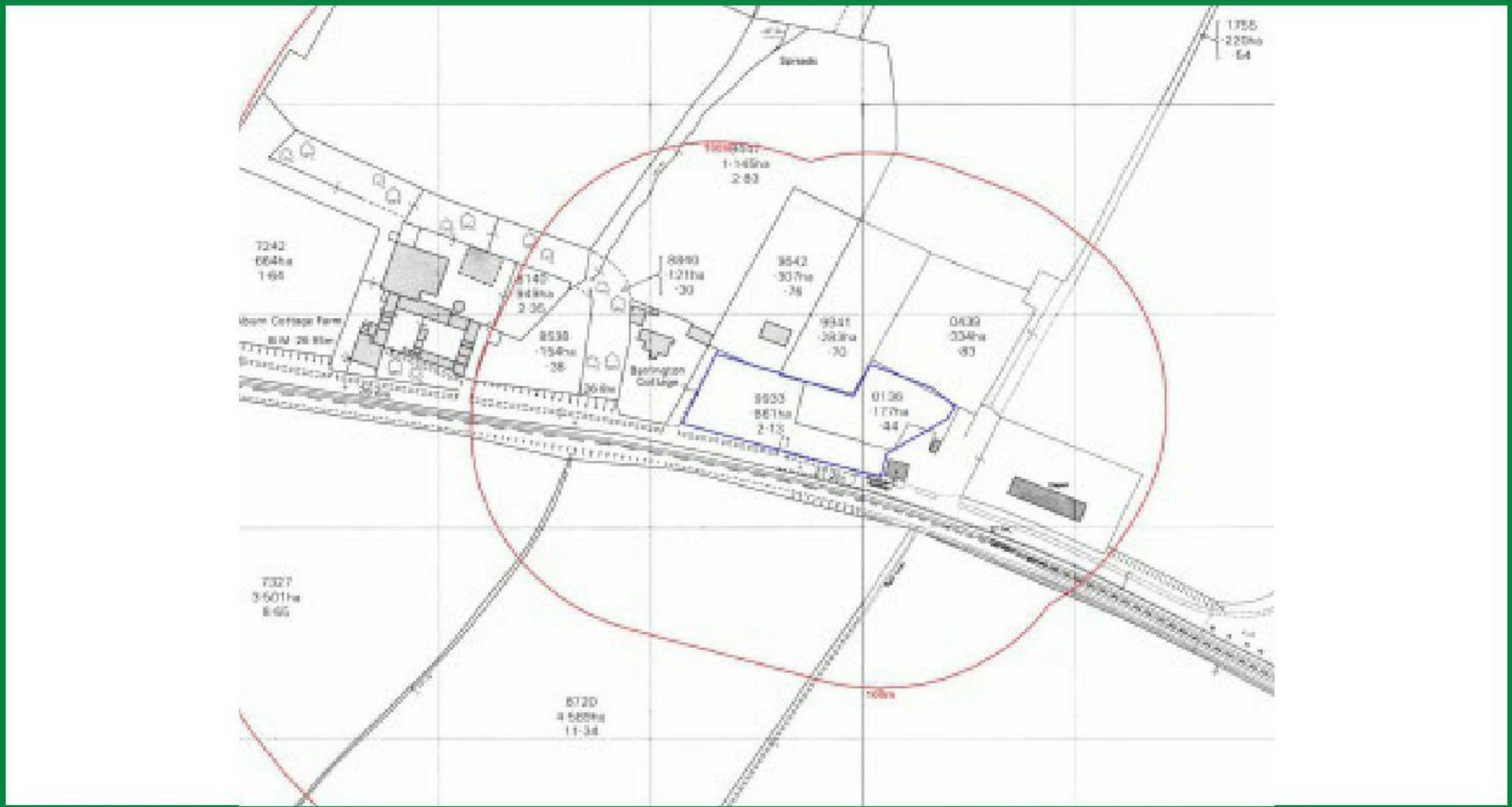
Dated: 1975

Original Scale: 1:10,000



North





**Historical Map**  
Dated: 1985  
Original Scale: 1:2,500

↑  
North





**Historical Map**

Dated: 2003

Original Scale: 1:1,250



North





Historical Map

Dated: 2021

Original Scale: 1:10,000



North



**APPENDIX VI  
COAL AUTHORITY  
MINING REPORT**





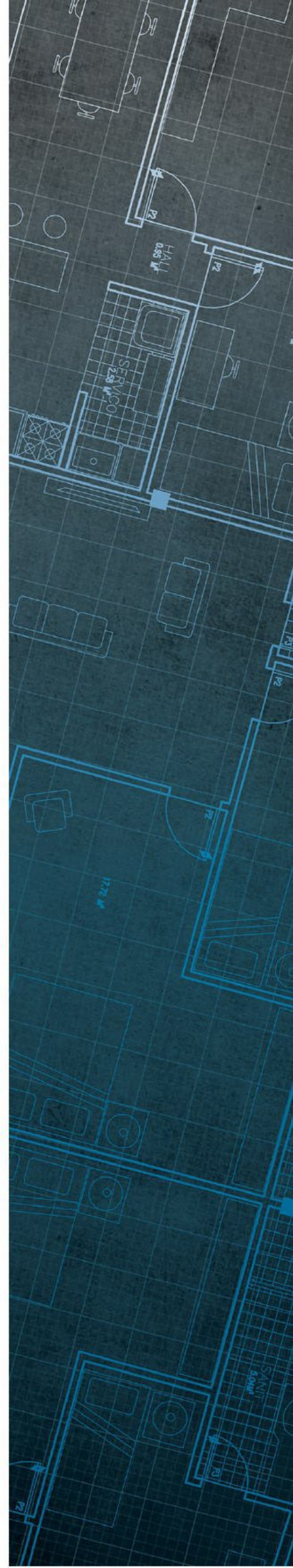
The Coal  
Authority

# Consultants Coal Mining Report

Tollgate House, Barrington Road,  
Bedlington, Ne22 7ap  
Northumberland

Date of enquiry: 9 December 2021  
Date enquiry received: 9 December 2021  
Issue date: 9 December 2021

Our reference: 51002774391001  
Your reference: GS-8391386



# 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

GROUNDSURE LIMITED

### Enquiry address

Tollgate House, Barrington Road, Bedlington, Ne22  
7ap  
Northumberland

### How to contact us

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

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

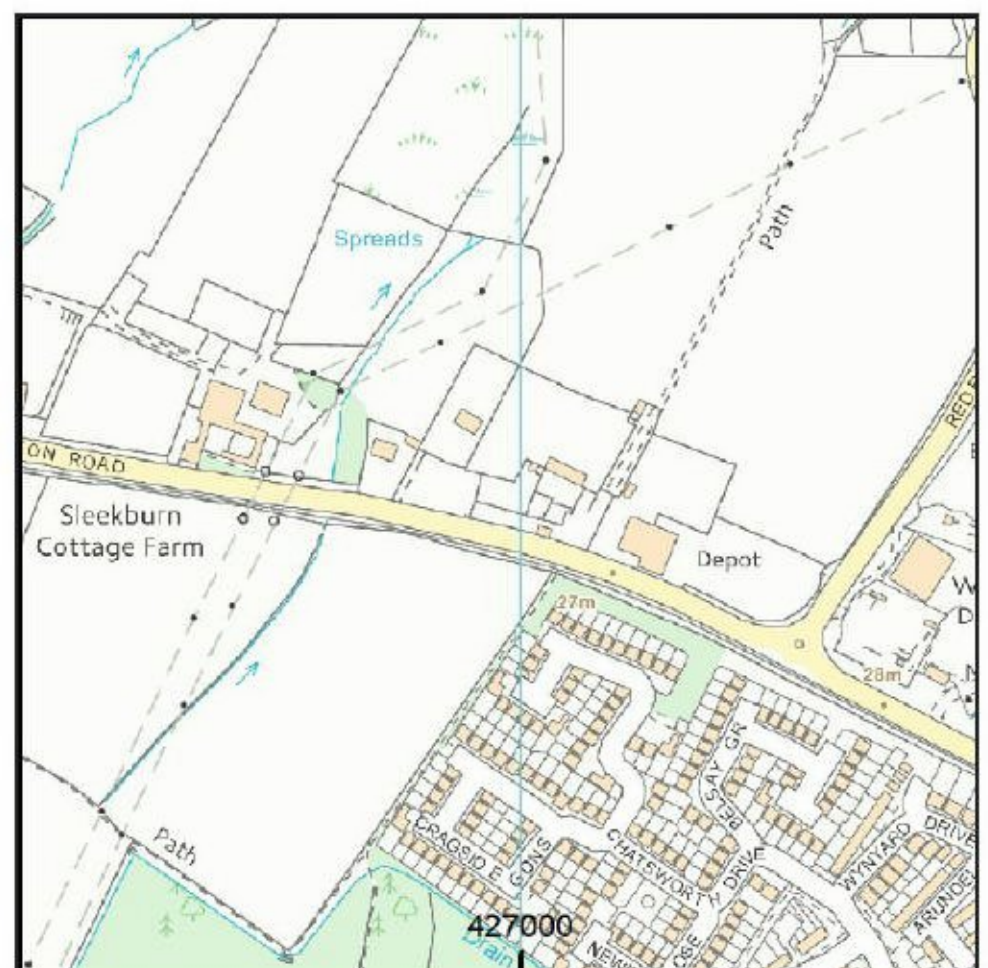
[www.groundstability.com](http://www.groundstability.com)

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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# Section 1 – Mining activity and geology

## Past underground mining

| Colliery   | Seam         | Mineral | Coal Authority reference | Depth (m) | Direction to working | Dipping rate of seam worked (degrees) | Dipped direction of seam worked | Extraction thickness (cm) | Year last mined |
|------------|--------------|---------|--------------------------|-----------|----------------------|---------------------------------------|---------------------------------|---------------------------|-----------------|
| BEDLINGTON | TOP MAIN     | Coal    | 5YGQ                     | 70        | South-West           | 1.8                                   | North                           | 100                       | 1954            |
| BEDLINGTON | BTM. YARD    | Coal    | 5WD1                     | 118       | North                | 1.3                                   | North-East                      | 80                        | 1944            |
| BEDLINGTON | BTM. YARD    | Coal    | 7O8L                     | 119       | Beneath Property     | 1.4                                   | North                           | 80                        | 1944            |
| BEDLINGTON | BTM. YARD    | Coal    | 5WD4                     | 119       | South                | 1.5                                   | North-East                      | 80                        | 1950            |
| BEDLINGTON | LOW MAIN     | Coal    | 5J37                     | 153       | North-East           | 2.4                                   | North-East                      | 170                       | 1903            |
| BED        | BTM. MAUDLIN | Coal    | 5YRN                     | 154       | Beneath Property     | 3.0                                   | North-East                      | 70                        | 1920            |
| BED        | BTM. MAUDLIN | Coal    | 5YRP                     | 156       | North-West           | 2.2                                   | East                            | 80                        | 1921            |
| BEDLINGTON | LOW MAIN     | Coal    | 5J3A                     | 159       | South-West           | 1.7                                   | North-East                      | 170                       | 1962            |
| BEDLINGTON | LOW MAIN     | Coal    | 5J3B                     | 161       | Beneath Property     | 1.7                                   | North-East                      | 170                       | 1955            |
| BEDLINGTON | LOW MAIN     | Coal    | 5J39                     | 174       | North                | 1.3                                   | South-East                      | 170                       | 1904            |
| BED        | BRASS THILL  | Coal    | 5YWE                     | 177       | Beneath Property     | 5.3                                   | South-East                      | 170                       | 1954            |
| BED        | BRASS THILL  | Coal    | 5YWB                     | 178       | North                | 0.9                                   | North-East                      | 160                       | 1954            |
| BED        | BRASS THILL  | Coal    | 5YWD                     | 180       | South-West           | 1.9                                   | East                            | 160                       | 1954            |
| BEDLINGTON | HUTTON       | Coal    | 5WZQ                     | 200       | Beneath Property     | 2.5                                   | North-East                      | 137                       | 1909            |
| unnamed    | HUTTON       | Coal    | 5WZT                     | 209       | Beneath Property     | 1.9                                   | East                            | 97                        | 1922            |
| BEDLINGTON | HUTTON       | Coal    | 5WZS                     | 209       | North                | 1.9                                   | East                            | 97                        | 1922            |
| unnamed    | HUTTON       | Coal    | 5WZX                     | 214       | Beneath Property     | 0.0                                   | East                            | 97                        | 1931            |
| BEDLINGTON | HUTTON       | Coal    | 5WZV                     | 214       | East                 | 0.0                                   | East                            | 97                        | 1931            |
| BEDLINGTON | HARVEY       | Coal    | 5GKN                     | 230       | West                 | 2.2                                   | North-East                      | 99                        | 1933            |
| BEDLINGTON | HARVEY       | Coal    | 5GKM                     | 231       | South                | 2.2                                   | North-East                      | 99                        | 1963            |
| unnamed    | HARVEY       | Coal    | 5GKP                     | 243       | North                | 2.9                                   | East                            | 91                        | 1966            |

### Probable unrecorded shallow workings

Yes.

### Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

### Mine entries

None recorded within 100 metres of the enquiry boundary.

### Abandoned mine plan catalogue numbers

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

|       |       |       |
|-------|-------|-------|
| NC335 | NC476 | NC524 |
| NC644 | NC565 | NC184 |
| NC525 | NC410 | NC539 |

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

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

### Outcrops

| Seam name        | Mineral | Seam workable | Distance to outcrop (m) | Direction to outcrop | Bearing of outcrop |
|------------------|---------|---------------|-------------------------|----------------------|--------------------|
| CHARLAW/MOORLAND | Coal    | Yes           | Within                  | N/A                  | 170                |

### Geological faults, fissures and breaklines

Please refer to the 'Summary of findings' map (on separate sheet) for details of any geological faults, fissures or breaklines either within or intersecting the enquiry boundary.

Fault under or close to the property 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

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

### **Development advice**

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

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

## Section 5 – Data definitions

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

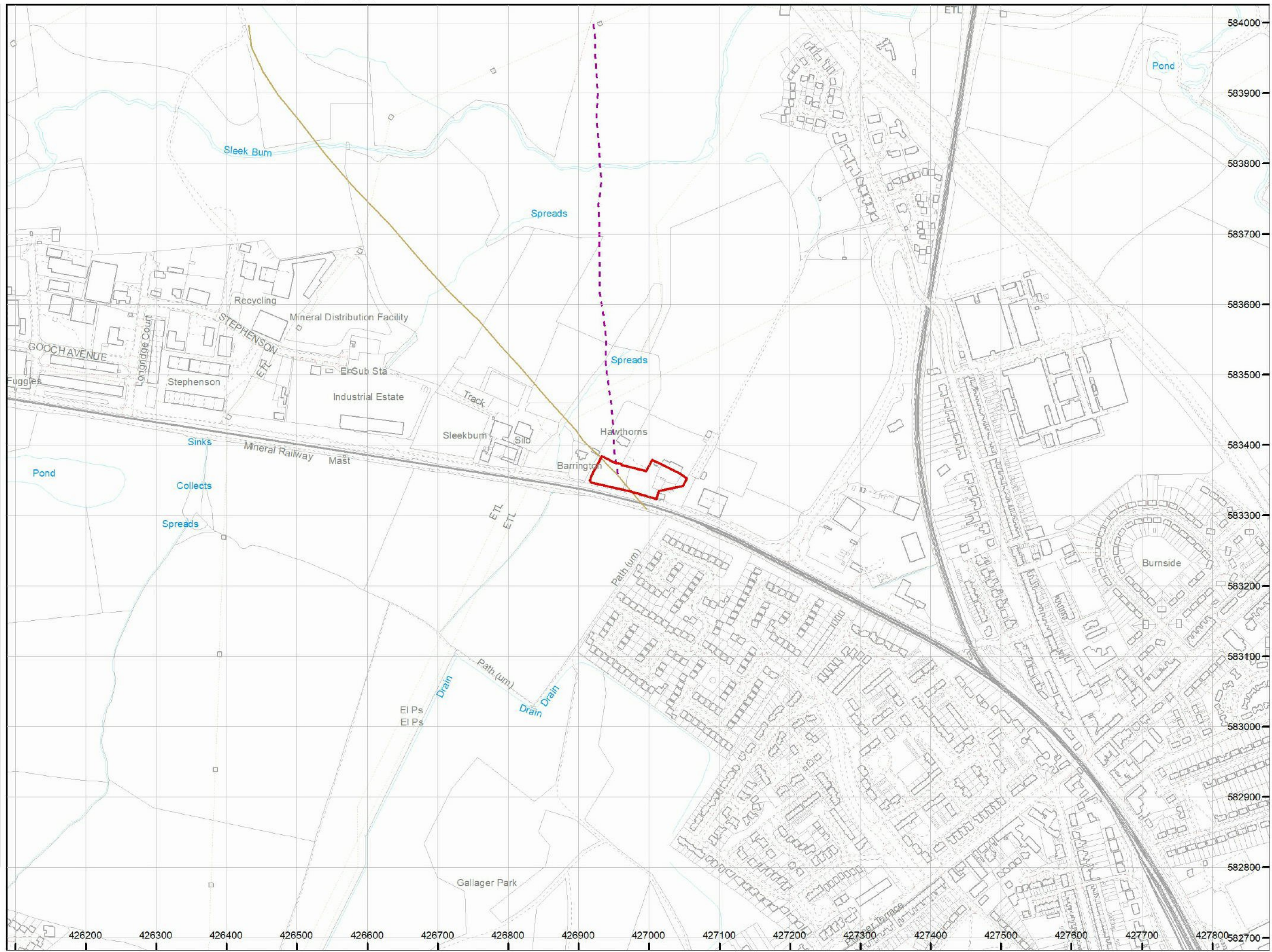
### **Payment to owners of former copyhold land**

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

**Key**

- Approximate position of the enquiry boundary shown 
- Outcrop (Conjectured) 
- Geological faults 



**How to contact us**  
 0345 762 6848 (UK)  
 +44 (0)1623 637 000 (International)  
 www.groundstability.com