



PHASE 1: DESK TOP STUDY REPORT
(PRELIMINARY ENVIRONMENTAL RISK ASSESSMENT)

PROPOSED RESIDENTIAL DEVELOPMENT OF LAND AT
RHEDA PARK
NEAR FRIZINGTON
CUMBRIA

FOR:

Mr J Reed

GEO Environmental Engineering

DOCUMENT CONTROL SHEET

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1.0 Introduction

1.1 Instruction

Geo Environmental Engineering Ltd (GEO) has completed a Phase 1: Desk Top Study Report (Preliminary Environmental Risk Assessment – PERA) for land at Rheda Park, Frizington, Cumbria to determine any potential geohazards that may affect the residential development of the site. Geo Environmental Engineering Ltd has been commissioned to complete the report by the Consultant, MJN Associates on behalf of the Client, Mr John Reed.

The Phase 1: Desk Top Study Report is suitable for submission to the Local Authority as part of any potential planning application as the site is currently undergoing consideration by the Client for residential development. The Client is considering the construction of a residential housing estate with associated access roads, infrastructure, private gardens and general areas of soft landscaping. Further development details are available from the Consultant.

1.2 Aims and Objectives

The aims and objectives of this Phase 1: Desk Top Study (DTS) Report are to assess the geological and environmental sensitivity of the development area and the surrounding environs, with 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 generally been completed in accordance with the following documents and includes a site visit (November 2016):

- CLR11: Model Procedures for the Management of Land Contamination. DEFRA/EA, 2004.
- BS10175:2011: Code of Practice for the Investigation of Potentially Contaminated Sites.
- BS5930:1999: Code of Practice for Site Investigations.

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

- British Geological Survey (BGS – Appendix IV).
- Environment Agency (EA).
- Ground Sure Report (Geoinsight and Enviroinsight – GSR – Appendix II and III – Incorporating Mapinsight Historical Ordnance Survey (OS) Plans)
- The Coal Authority Coal Mining Report (CA – Appendix IV).
- The Coal Authority Online Database (CA – Appendix IV).

1.3 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 Existing Site Layout Plan in Appendix I.

This DTS has been completed utilising information relating to the physical, environmental and industrial setting of the development area, highlighting, where possible, any potential geohazards that might be encountered when considering the future redevelopment of this land, with this DTS reflecting a proposed end use, as considered by the developer (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.

1.0 Introduction (Cont'd)

1.3 Limitations of Use (Cont'd)

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 and feasibility of construction be considered by the developer before commencing acquisition or redevelopment.

Agreement for the use or copying of this report by any Third Party must be obtained in writing from Geo Environmental Engineering Ltd. The use and 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.

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. Geo Environmental Engineering Ltd cannot accept responsibility for the accuracy of third party information.

2.0 Site Location and Development Proposals

2.1 Site Location

The development area is irregular in shape and comprises dense woodland on the western extent of Frizington. Agricultural fields are present to the north, south and west, with residential properties of Rheda Park to the east. The site is accessed via a private road through the central site area. The site is approximately 1.81Ha and is centred on National Grid Reference (NGR) 302157, 517087.

2.2 Existing Site Levels

During the site walkover, the development area was noted as dense woodland, which restricted access. The site is thought to be undulating, with the general area indicating a slope to the west. Taking in to account the variation in topography across the site it would be considered prudent to confirm site features and levels by-way of a Topographical Survey, however this may currently be difficult due to the dense woodland.

2.3 Existing Site Surfacing and Buildings

At the time of the site walkover (where access was available) the site was noted as being free of buildings and hardstanding. The site surfacing was noted as dense vegetation with many mature trees. The site is surrounded by mature hedgerows and post-wire fences.

There was no visual evidence of fly-tipping or of surface staining (contamination). There was no evidence of recent bonfires. As the land is woodland there was no visual evidence of materials, chemical or fuel storage.

2.4 Surrounding Land Uses

The immediate surrounding area predominantly comprises residential and agricultural land.

2.0 Site Location and Development Proposals (Cont'd)

2.5 Existing Infrastructure and Utilities

A review of statutory utility supplier records lies outside the scope of this report. However, as the site is bounded by residential housing estates it is considered likely that there will be mains utility connections nearby.

Consequently, there should be a review of the statutory utility plans should include correspondence with the utility providers to determine the presence of buried utilities prior to commencing any redevelopment/construction works.

This will determine if any significant or mains utilities are present on site that may require easement strips, alterations to proposed layouts or potentially costly diversions/terminations. Determining the presence of on-site utilities will also protect the workforce by reducing the risk of utility strikes during the construction phase.

2.6 Development Proposal

The site is currently being assessed by the Client as to its suitability for residential redevelopment. This is considered to comprise the construction of a residential housing estate, with further development details available from the Consultant.

3.0 Environmental Setting

Section 3.1 refers to the Ground Sure Report (GSR - Geoinsight) contained in Appendix II, with Sections 3.2 to 3.4 referring to the Ground Sure Report (GSR - Enviroinsight) contained in Appendix II.

3.1 Development Area Geology

A geological review of the site has been undertaken using information provided on published geological plans in conjunction with the Ground Sure Report (GSR - Geoinsight) contained in Appendix II.

3.1.1 Made Ground

A review of published geological maps and the GSR indicates that made ground materials are not recorded on or close to the site.

Historical plans suggest the site was originally agricultural in use and then dense woodland for many years. Consequently, it is unlikely that significant areas of deep made ground are present.

Across much of the development area, it may be the case that beneath the dense vegetation natural topsoil is present with some localised made ground. Historically, there has been a potential for granular materials to be added to the topsoil through agricultural processes (i.e. ploughing), perhaps to aid drainage, with some additional soil disturbance also possible if field drainage has been installed. This can sometimes include granular man-made materials such as ash and clinker.

It is therefore recommended that excavations be formed on site to determine the shallow soils and if made ground is identified that includes anthropogenic debris then contamination screening should be undertaken as part of a human health risk assessment. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context.

No historical ground workings are recorded by the GSR as being within c.250m of the site.

3.0 Environmental Setting (Cont'd)

3.1 Development Area Geology (Cont'd)

3.1.2 Drift Geological Deposits

A review of published geological plans and the GSR indicates that the Drift geological deposits beneath the site are Glacial Till (typically firm to stiff sandy gravelly clay). At this stage, the thickness of the Drift deposits is unknown. The GSR (Geosight Section 4.0) within Appendix II identifies the following geohazards and indicates a preliminary level of risk:

- Shrink-swell clays – very low level risk.
- Landslides – very low level risk.
- Compressible deposits – Glacial Till deposits noted as negligible level risk.
- Collapsible deposits – Glacial Till very low level risk.
- Running sands – Glacial Till very low risk.

It is recommended that reference be made to Section 4.0 of the Geosight GSR (Appendix II). Consequently, Phase 2: Ground Investigation works would be prudent to aid the design of foundations, any retaining structures and highways, should they be deemed necessary by the Design Team.

3.1.3 Solid Geological Deposits

Solid geological deposits across the development site are indicated by the BGS as being variable, comprising the Brockram Breccia and the St Bees Sandstone Formation. No potential shallow or subcropping coal seams are noted within close proximity to the site.

Although the Solid deposits are noted to be variable across the site Section 4.0 of the GSR Geosight (Appendix II) has noted the following:

“Significant Soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks”.

It is recommended that reference be made to Section 4.0 of the GSR (Appendix II). Consequently, Phase 2: Ground Investigation works would be prudent to aid the design of foundations, retaining structures and highways, should they be deemed necessary by the Design Team.

3.1.4 Historical Investigation Records

No historical borehole records are held by the BGS within a representative distance of the site.

3.1.5 Geological Features

Two geological structural faults are inferred on site and within close proximity to the site. These fault lines have the potential to act as conduits for the migration (horizontally and vertically) of potentially harmful ground gas, should areas of infilling or former mine workings be nearby. They may also act as localised “weathered” or “weak” zones.

3.1.6 Mining and Quarrying Assessment

Due to the geological setting, site specific reference has been made to the Coal Authority (CA) by way of a CA Coal Mining Report (Appendix IV).

3.0 Environmental Setting (Cont'd)

3.1 Development Area Geology (Cont'd)

3.1.6 Mining and Quarrying Assessment (Cont'd)

In summary, the CA records suggest that the property is not within a surface area that could be affected by past underground mining. The CA does not record the site as being within a former opencast and they do not record any mine entries within 20m. The CA is not aware of any coal mining subsidence claims.

Reference has also been made to the CA Online Database (Appendix IV) which notes the following:

- The site lies within a CA referral area and therefore a site-specific CA Coal Mining Report has been acquired.
- The CA does not record mine entries on site.
- The CA does not record the site to be in an area which is underlain by shallow coal mine workings.
- The CA does not believe that coal is at or close to the surface which may have been historically worked.
- The CA does not record surface mining (open cast) on site or within the vicinity of the site.
- The CA does not record coal outcrops on site or within the vicinity of the site.
- The CA does not record the site as being within a CA defined "High Risk Development Area".

Consequently, when taking into consideration the desk based information provided by the CA, GSR and BGS the development site is not currently considered to be at potential risk from shallow coal mining related geohazards (i.e. ground instability, mine entries, etc.).

Parts of Frizington and the Cleator Moor area is known for historical iron ore mining, some of which was very shallow in depth. The BGS 1:10,000 scale plan (Sheet NY01NW) covers the site and surrounding area. Elsewhere areas of historical iron ore mining are noted on the plan. However, none are noted at or close to the site location. Consequently, the BGS geological plan suggests that shallow iron ore mining did not take place at the site location.

A review of the GSR Geosight (Section 3.0) indicates that the following activities do not affect the site:

- | | | |
|--------------------|---------------------|--------------|
| ■ Natural Cavities | ■ Gypsum Extraction | ■ Tin Mining |
| ■ Brine Extraction | ■ Clay Mining | |

No quarrying activities (historical or current) are recorded on site or within close proximity to the site.

The desk based information provided to GEO does not suggest a significant or unacceptable risk of shallow mining geohazards. However, GEO is not responsible for third party information and records may be inaccurate or incomplete. Therefore, GEO recommends the developer implement a watching brief during the redevelopment and consideration should be made for the potential for historical mining features.

3.1.7 Radon Gas Assessment

The GSR Geosight Section 1.4 indicates that the development site is not located within a Radon Affected Area as defined by the Health Protection Agency (HPA), as less than 1% of properties are above the action level. Consequently, in accordance with BR211 radon protection measures are not currently necessary.

3.0 Environmental Setting (Cont'd)

3.2 Development Area Hydrogeology (Groundwater)

3.2.1 Made Ground/Soils

Any made ground materials on site are likely to be classified as high permeability due to the urbanised setting (i.e. worst case scenario assumed until proven otherwise).

3.2.2 Drift Geology

The variable Drift geological deposits are noted by the EA as Secondary (undifferentiated) Aquifer status.

3.2.3 Solid Geology

The site is underlain by Principal A aquifer. The Principal Aquifer (St Bees Sandstone) are likely to be considered as a strategic resource.

3.3 Development Area Hydrology

3.3.1 Groundwater

Groundwater could be present at shallow depth within the Drift geology, with the potential for localised pockets of trapped surface infiltration within the upper made ground (where present). A review of the information in the GSR Enviroinsight 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 development area.
- No potable water abstraction licences are held within c.1km of the site.
- The site is not recorded as being within or within c.1km of a Source Protection Zone.

Based on the above information the site is not considered to lie within a particularly sensitive environmental setting.

3.3.2 Surface Water Features

No Environment Agency (EA) GQA classified rivers, canals, ponds or lakes (i.e. biological or chemical monitoring points) are thought to be recorded within c.250m of the development area. A Tertiary River (unnamed) is noted c.60m north-east.

3.3.3 Current Surface Water Run-off

It is considered that a large portion of the current surface water interception will infiltrate directly into the made ground/topsoil as hard-standing is not present. Some overland flow (with the topography) is likely during heavy rainfall events and standing water may occur.

3.4 Development Area Environmental Sensitivity

3.4.1 Site Ecology

- No Sites of Special Scientific Interest (SSSI) is noted within c.250m.
- No Local Nature Reserves (LNR) are present within c.250m.
- No Special Areas of Conservation (SAC) are noted within c.250m.

3.0 Environmental Setting (Cont'd)

3.4 Development Area Environmental Sensitivity (Cont'd)

3.4.1 Site Ecology (Cont'd)

- No Special Protection Areas (SPA) are present within c.250m.
- Two records of Ancient Woodland are recorded within c.250m. They do not appear to relate to the site, but woodland c.97m north.
- No World Heritage Sites are recorded within c.250m.
- No RAMSAR Sites are noted within c.250m.
- No Areas of Outstanding Natural Beauty (AONB) are recorded within c.250m.
- No National Parks are recorded within c.250m.
- No Nitrate Vulnerable Zones (NVZ) are within c.250m.
- No Nitrate Sensitive Areas are within c.250m.
- No records of Green Belt are recorded within c.250m.

The Design Team should refer to Section 8.0 of the GSR (Enviroinsight – Appendix II).

3.4.2 Authorisations, Incidents and Registers

- No records of IPC Authorisations are held within c.250m.
- No records of IPPC Authorisations are held within c.250m.
- No records of Water Industry Referrals (potentially harmful discharges to the public sewer) are held within c.250m.
- No records of Red List Discharge Consents (potentially harmful discharges to controlled waters) are held within c.250m.
- No records of List 1 Dangerous Substances Inventory sites are held within c.250m.
- No records of List 2 Dangerous Substances Inventory sites are held within c.250m.
- No records of Part A (2) and Part B Activities and Enforcements are noted within c.250m.
- No records of Category 3 or 4 Radioactive Substances Authorisations are held within c.250m.
- No Licensed Discharge Consents are held within c.250m.
- No records of Planning Hazardous Substance Consents or Enforcements are within c.250m.
- No records of COMAH and NIHHS sites are held within c.250m.
- No Environment Agency Recorded Pollution Incidents are recorded within c.250m.

The Design Team should refer to Section 2.0 of the GSR (Enviroinsight – Appendix II).

3.4.3 Determination of Contaminated Land (Part IIA)

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

3.4.4 Historical Industrial Land Uses

A review of Section 1.0 in the GSR (EnviroInsight) identifies the following:

- Potentially Contaminative Uses Identified within c.250m – No entries noted within c.250m.
- Historical Tank Database – No entries noted within c.250m.
- Historical Energy Features – No entries noted within c.250m.
- Historical Petrol and Fuel Site Database – No entries noted within c.250m.
- Historical Garage and Motor Vehicle Repair Database – No entries noted within c.250m.
- Potentially Infilled Land within c.250m – No entries are noted within c.250m.

3.0 Environmental Setting (Cont'd)

3.4 Development Area Environmental Sensitivity (Cont'd)

3.4.4 Historical Industrial Land Uses (Cont'd)

It is recommended that reference be made to Section 1.0 of the GSR (Enviroinsight – Appendix II).

3.4.5 Current Industrial Land Uses

Due to the rural and residential nature of the site and immediate surrounding area there are no current industrial land uses noted within c.250m of the development site. It is recommended that reference be made to Section 4.0 of the GSR (Enviroinsight – Appendix II).

3.4.6 Fuel Station Entries

According to information provided by Catalist and presented in the GSR Enviroinsight there are no fuel filling sites recorded within c.500m of the development area.

3.4.7 Landfill and Waste Regulation/Management – Landfill Sites/Other Waste Sites

- No Environment Agency Registered Landfill Sites are recorded within c.250m.
- No Environment Agency Historic Landfill Sites are recorded within c.250m.
- The BGS/DoE Landfill Site Survey does not record any Landfill Sites within c.250m.
- No GroundSure Local Authority Landfill sites are recorded within c.250m.
- No Operational and Non-Operational Waste Treatment, Transfer or Disposal Sites are recorded within c.250m.
- No Environment Agency Licensed Waste Sites are recorded within c.250m.

It is recommended that reference be made to Section 3.0 of the GSR Enviroinsight (Appendix II) for further information. The GSR has not indicated potential areas of infilling that could form sources of ground gas generation.

3.5 Development Area Historical Plan Appraisal

Section 3.5 is based on historical plans (Ordnance Survey extracts) obtained as part of the parcel of information within the GSR and provides a summary of the site history, highlighting any industries, processes or activities that may be considered as Geohazards. Copies of old survey plans (1:10,560, 1:10,000 and 1:2,500 Scale) covering the site and adjacent areas have been reviewed with selected extracts included within Appendix III. Attention is made to the greater detail presented in the 1:2,500 scale plans dating between c.1864 and c.1994.

Early historical plans note the site as agricultural land, later becoming dense woodland up until the present day. Historical plans have not recorded any buildings, structures or features of potential contaminative concern on site or within close proximity to the site.

The surrounding area has remained as agricultural fields and woodland for many years. An opencast mine was once present to the north; however, this was over c.400m from the site. Frizington was noted to the east and gradually increased in size over the years, with the Rheda Park housing estate established to the east of the site during the late 1990's and early 2000's.

At the time of the site walkover (where access was available) the site was noted as being free of buildings.

3.0 Environmental Setting (Cont'd)

3.5 Development Area Historical Plan Appraisal (Cont'd)

The site surfacing was noted as dense vegetation with mature trees. The site is surrounded by mature hedgerows and post-wire fences.

There was no visual evidence of fly-tipping or of surface staining (contamination). There was no evidence of recent bonfires. As the land is used for agricultural grazing there was no visual evidence of materials, chemical or fuel storage.

4.0 Conceptual Site Model

A Conceptual Site Model (CSM) has been designed using the information presented within this P1 DTS to provide a graphical representation of the anticipated ground, groundwater and ground gas conditions below the development area (Existing Site CSM). The CSM is presented within Sections 4.1 to 4.3 and aids the completion of the Preliminary Qualitative Risk Assessment (PQRA – Section 5.0).

The CSM utilises the established *Source – Pathway – Receptor* pollutant linkage model and is designed to provide an improved understanding of the site characteristics, designing a Preliminary Screening Strategy (PSS) for the Potential Contaminants of Concern (PCOC's). 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.

During the P2 GI the CSM can be refined depending 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 end use. The CSM is presented in Sections 4.1 to 4.3 below and continued on the following page.

4.1 Anticipated Sources – Preliminary Screening Strategy

Sources:

S1 = Generic/Organic Made Ground – NO significant sources of widespread of pervasive contamination noted.

The historical information available for the site suggests that the site has been agricultural land/woodland for many years.

Across much of the development area, it is likely that the site will exhibit topsoil over natural soils with localised made ground. Historically, there has been a potential for granular materials to be added to the topsoil within agricultural fields through agricultural processes (i.e. ploughing), perhaps to aid drainage, with some additional soil disturbance during the installation of field drainage (where present). This can sometimes include granular man-made materials such as ash and clinker. It is therefore recommended that excavations be formed on site to determine the shallow soils and if made ground is identified that includes anthropogenic debris then contamination screening should be undertaken as part of a human health risk assessment. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context.

If made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified then contamination screening with appropriate Human Health Risk Assessment can be completed. Potential Contaminants of Concern (PCOC's) include Arsenic, Cadmium, Chromium (III and VI), Copper, Lead, Mercury, Nickel, Selenium, Zinc, Cyanide (free), pH, Soluble Sulphate, Total Organic Carbon, Speciated PAH, and Asbestos.

A watching brief should be implemented during the development/construction works to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination 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 (i.e. contamination screening with appropriate Human Health Risk Assessment).

S2 = Ground Gas – No Potential Sources Identified.

4.0 Conceptual Site Model (Cont'd)

4.2 Anticipated Pathways

Pathways:
P1 = Inhalation of indoor / outdoor air (wind-blown particles)
P2 = Dermal/direct contact (limited risk present through areas of private gardens and soft landscaping)
P3 = Ingestion (limited risk present through areas of private gardens and soft landscaping)
P4 = Migration through existing services
P5 = Direct contact with building materials
P6 = Surface Run-Off
P7 = Leaching from Soils


4.3 Anticipated Receptors

Receptors:
R1 = Human Health (Residents)
R2 = Human Health (Construction Workforce) – Not considered within this assessment
R3 = Groundwater (Principal Aquifer and off-site surface water features)
R4 = Building Materials and Buried Utilities
R5 = Flora and Fauna (future private gardens and soft landscaping)

5.0 Preliminary Qualitative Risk Assessment (PQRA)

5.1 Qualitative Geotechnical Risk Assessment – Risk Meter

The following Preliminary Geotechnical Risk Meter determines the potential level of risk associated with the geotechnical properties of the site, considering any potential geohazards identified by the information presented within the DTS.

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

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

- Localised made ground could be present.
- Drift geological deposits could be variable.
- Shallow groundwater could be present that could affect excavation stability and ground bearing pressures.
- The presence of dense vegetation and mature trees (even once removed) may necessitate the use of non-standard foundations.

5.0 Preliminary Qualitative Risk Assessment (PQRA) (Cont'd)

5.1 Qualitative Geotechnical Risk Assessment – Risk Meter (Cont'd)

Consequently, Phase 2: Ground Investigation works would be prudent to determine ground/groundwater/gas conditions and to aid the design of foundations, retaining structures and highways, should they be deemed necessary by the Design Team. Due to the dense vegetation across much of the site it may be the case that some vegetation removal is required prior to providing access for investigation plant and equipment.

5.2 Qualitative Contamination Risk Assessment – Risk Meter

The following Preliminary Ground Contamination, Groundwater Contamination and Ground Gas Risk Meter determines the potential level of risk associated with the redevelopment of the site when considering 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:	↓					
RISK =	NEGLIGIBLE	VERY LOW	LOW	MODERATE	HIGH	VERY HIGH

A risk level of VERY LOW is currently determined appropriate for this development with respect to ground contamination. In summary, the historical information available suggests that much of the site has remained agricultural land/woodland.

However, to confirm this risk assessment and to determine if the topsoil materials on site are suitable for re-use in a residential context, it is recommended that excavations be formed on site as part of a Phase 2: Ground Investigation to confirm the shallow ground conditions and to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination are identified, then contamination screening with appropriate Human Health Risk Assessment can be completed. Topsoil materials should also be screened to determine if they are suitable for re-use within a residential context. The Potential Contaminants of Concern (PCOC's) are presented within Section 4.1 of the CSM.

A watching brief should also be implemented during the development/construction works to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory (malodorous) evidence of potential contamination 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 (i.e. contamination screening with appropriate Human Health Risk Assessment).

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). In summary, no significant sources have been recorded and potential receptors are considered to be limited.

5.0 Preliminary Qualitative Risk Assessment (PQRA) (Cont'd)

5.2 Qualitative Contamination Risk Assessment – Risk Meter (Cont'd)

A risk level of NEGLIGIBLE is considered appropriate for the site with respect to potential harmful ground gas. In summary, no sources have been identified beneath the site and surrounding the site.

GEO also recommends that a “watching brief” and “observational technique” be applied to this site to ensure that if ground conditions appear to vary from those identified within this investigation report then advice should be sought from a suitably qualified and experienced Engineering Geologist, Geotechnical or Geo-Environmental Engineer.

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 very low risk to the proposed end users (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.
- A negligible risk is currently considered present of ground gas.

Consequently, it would be considered appropriate for the Local Planning Authority Environmental Health Department to attach the appropriate conditions relating to Phase 2: Ground Investigation works to any planning permission granted for this site. This is to ensure the “*geohazards*” identified are appropriately assessed to ensure the appropriateness of the site for the proposed end use prior to commencing redevelopment/construction.

The combination of the Phase 1: Desk Top Study Report and any subsequent Phase 2: Ground Investigation should be suitable for submission to the Local Authority for planning purposes and for the appointed Design Team.

A Consulting Engineer should be contacted to determine if any potential items are identified or considered present on site that may mean redevelopment is not possible (from a construction) or cost perspective.

GEO also recommends that a “watching brief” and “observational technique” be applied to this site to ensure that if ground conditions appear to vary from those identified within this investigation report then advice should be sought from a suitably qualified and experienced Engineering Geologist, Geotechnical or Geo-Environmental Engineer.

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.

End of Report

Appendix I

- Site Location Plan
- Aerial Photograph Extract
- Existing Site Layout Plan
- Site Images

GEO2016-2203: Site Location Plan (Not to Scale)



GEO2016-2203: Aerial Photograph Extract



GEO2016-2203: Existing Site Layout Plan (Not to Scale) – Supplied by Client



GEO2016-2203: Site Images (November 2016)



Appendix II

- Ground Sure Report (GSR – Geoinsight and Enviroinsight)

Groundsure Geo Insight

Address: Land at,West End,Rheda Park, Frizington,CA26 3TA,
Date: 7 Nov 2016
Reference: EMS-391454_523897
Client: EmapSite



Aerial Photograph Capture date: 05-Oct-2008
Grid Reference: 302157,517087
Site Size: 1.81ha

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Overview of Findings

The Groundsure Geo Insight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and Groundsure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1:Geology

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	Yes
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	Yes
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	Yes
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	Yes
1.4 Radon data	1.4.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

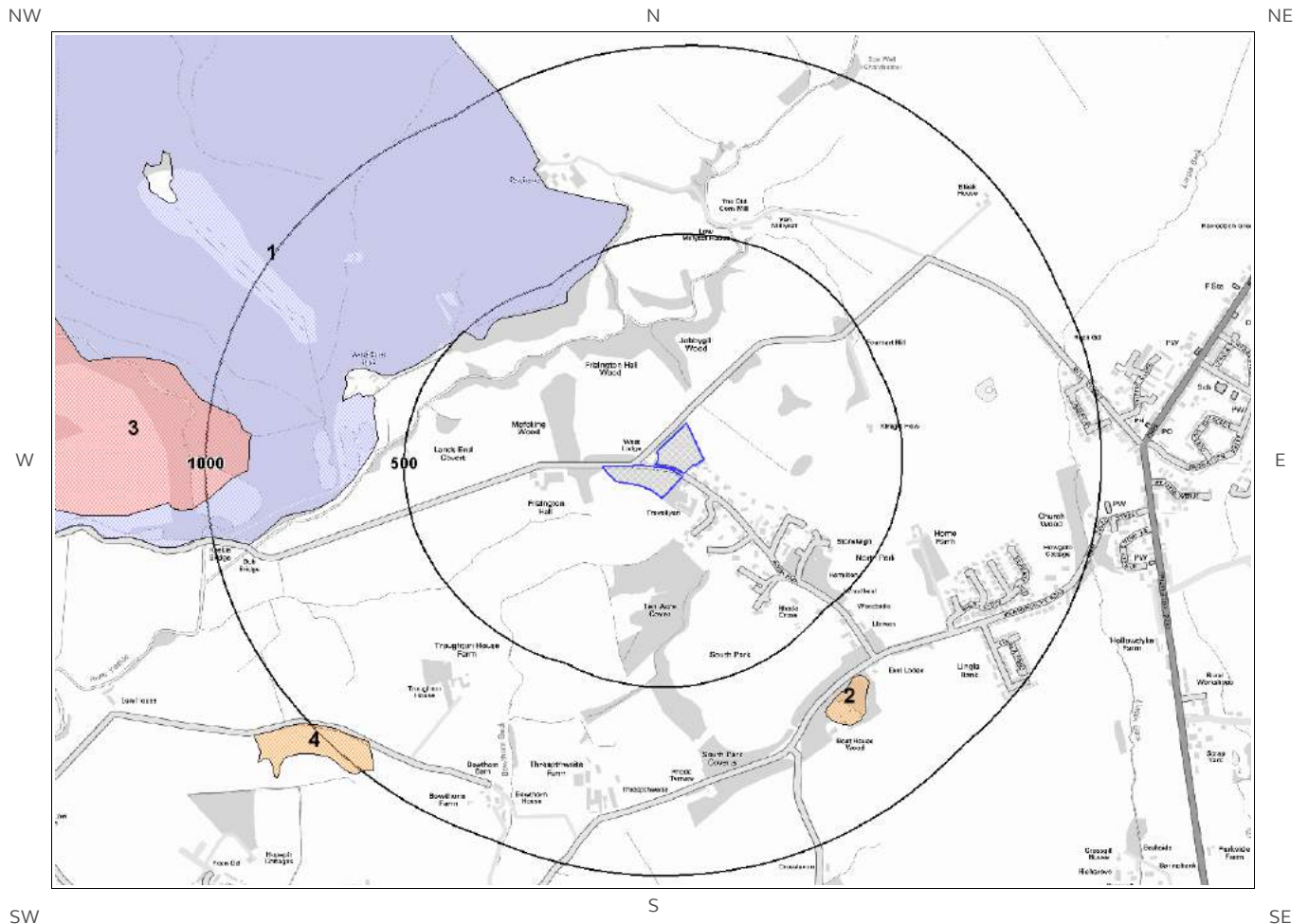
Section 2:Ground Workings	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	0	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	1	7
2.3 Current Ground Workings	0	0	0	0	2

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	1	7
3.2 Coal Mining	1	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	0	0	0	1	11
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0
Section 4: Natural Ground Subsidence	On-site				
4.1 Shrink Swell Clay	Very Low				
4.2 Landslides	Very Low				
4.3 Ground Dissolution of Soluble Rocks	Negligible				
4.4 Compressible Deposits	Negligible				
4.5 Collapsible Deposits	Very Low				
4.6 Running Sand	Very Low				
Section 5: Borehole Records	On-site	0-50m	51-250		
5 BGS Recorded Boreholes	0	0	4		
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
6 Records of Background Soil Chemistry	5	4	25		
Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500	
7.1 Tunnels	0	0	0	Not Searched	
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
7.3 Historical Railways	0	0	0	Not Searched	
7.4 Active Railways	0	0	0	Not Searched	

Section 7:Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0

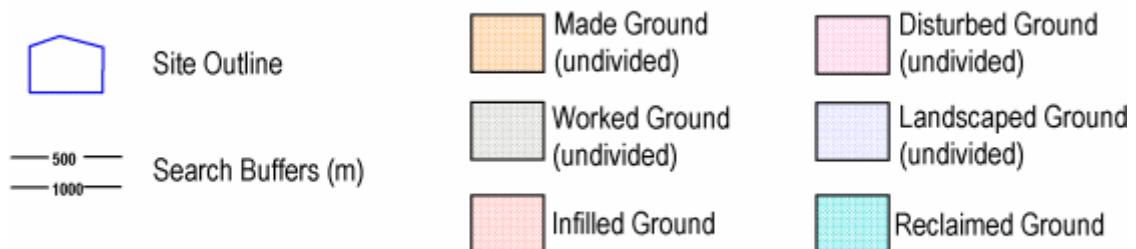
1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend

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1 Geology

1.1 Artificial Ground

1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:028

Are there any records of Artificial/Made Ground within 500m of the study site boundary? Yes

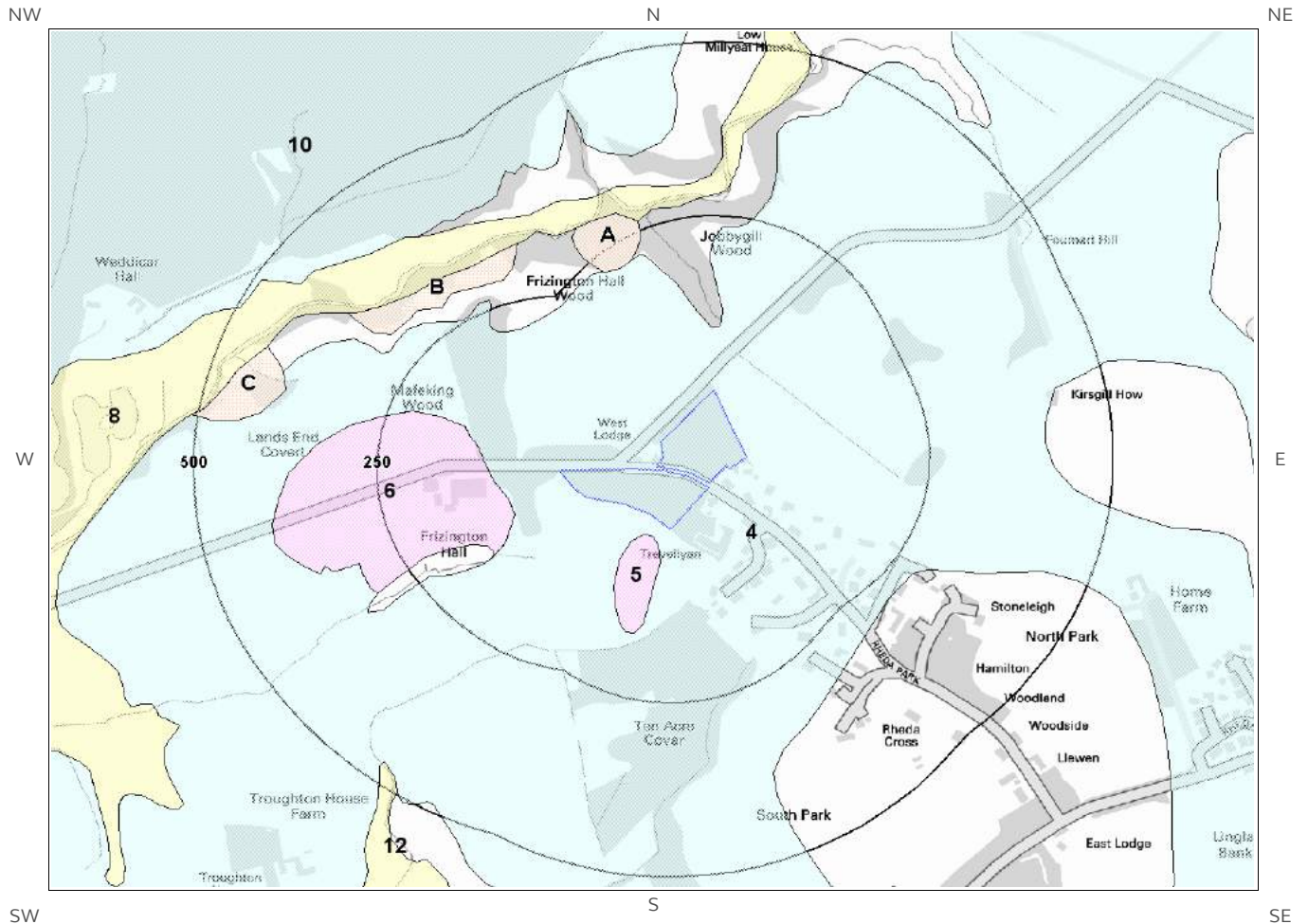
ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	440.0	NW	LSGR-ARTGR	LANDSCAPED GROUND (UNDIVIDED)	ARTIFICIALLY MODIFIED GROUND

1.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

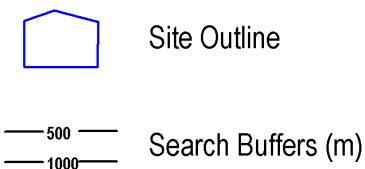
Database searched and no data found.

1.2 Superficial Deposits and Landslips Map



**Superficial Deposits and Landslips
Legend**

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1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
4	0.0	On Site	TILLD	TILL, DEVENSIAN	DIAMICTON
5	24.0	SW	GFDUD	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
6	81.0	SW	GFDUD	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
7A	216.0	NW	SUPNM	SUPERFICIAL THEME NOT MAPPED [FOR DIGITAL MAP USE ONLY]	UNKNOWN/UNCLASSIFIED ENTRY
8	263.0	NW	ALV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]
9B	284.0	NW	SUPNM	SUPERFICIAL THEME NOT MAPPED [FOR DIGITAL MAP USE ONLY]	UNKNOWN/UNCLASSIFIED ENTRY
10	354.0	N	TILLD	TILL, DEVENSIAN	DIAMICTON
11C	392.0	W	SUPNM	SUPERFICIAL THEME NOT MAPPED [FOR DIGITAL MAP USE ONLY]	UNKNOWN/UNCLASSIFIED ENTRY
12	470.0	SW	ALV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]

1.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	High	Low
24.0	SW	Intergranular	Very High	High

1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary?

Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1A	216.0	NW	SLIP/UKNO WN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
2B	284.0	NW	SLIP/UKNO WN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY
3C	392.0	W	SLIP/UKNO WN	LANDSLIDE DEPOSITS	UNKNOWN/UNCLASSIFIED ENTRY

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.2.4 Landslip Permeability

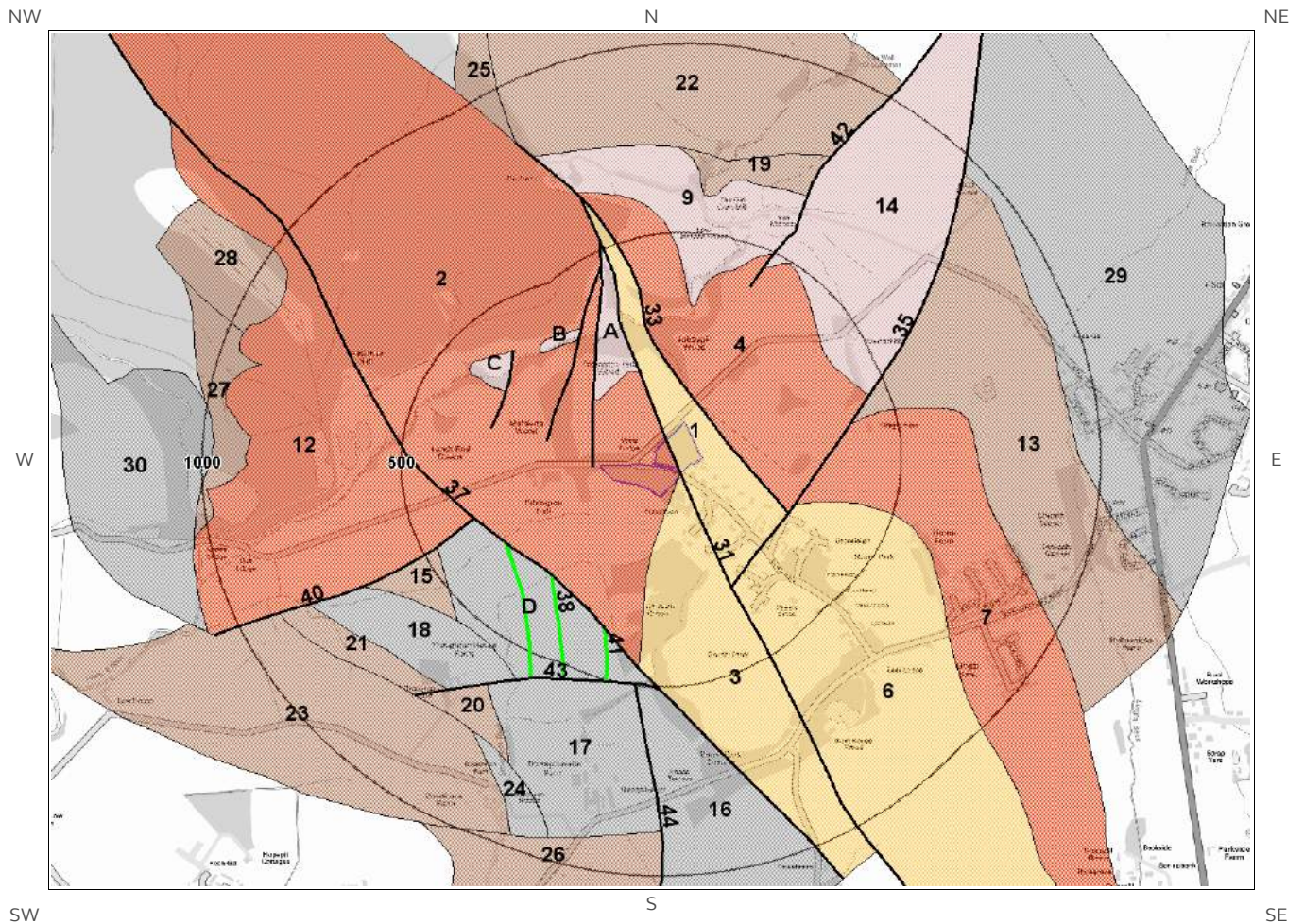
Are there any records relating to permeability of landslips within the study site* boundary?

No

Database searched and no data found.

* This includes an automatically generated 50m buffer zone around the site

1.3 Bedrock and Faults Map

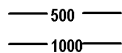


Bedrock and Faults Legend

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Site Outline



Search Buffers (m)

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:028

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/ Solid Geology within 500m of the study site boundary:

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	SBS-SDST	St Bees Sandstone Formation - Sandstone	No Details
2	0.0	On Site	BK-BREC	Brockram - Breccia	No Details
3	0.0	On Site	SBS-SDST	St Bees Sandstone Formation - Sandstone	No Details
4	55.0	NE	BK-BREC	Brockram - Breccia	No Details
5A	172.0	N	MYTB-MDSL	Millyeat Member - Mudstone, Sandstone And Limestone	Westphalian D / Bolsovian
6	260.0	SE	SBS-SDST	St Bees Sandstone Formation - Sandstone	No Details
7	262.0	SE	BK-BREC	Brockram - Breccia	No Details
8D	292.0	SW	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian / Duckmantian
9	307.0	N	MYTB-MDSL	Millyeat Member - Mudstone, Sandstone And Limestone	Westphalian D / Bolsovian
10C	308.0	NW	MYTB-MDSL	Millyeat Member - Mudstone, Sandstone And Limestone	Westphalian D / Bolsovian
11B	330.0	N	MYTB-MDSL	Millyeat Member - Mudstone, Sandstone And Limestone	Westphalian D / Bolsovian
12	344.0	SW	BK-BREC	Brockram - Breccia	No Details
13	378.0	E	WS-SDST	Whitehaven Sandstone Formation - Sandstone	Westphalian D / Bolsovian
14	394.0	NE	MYTB-MDSL	Millyeat Member - Mudstone, Sandstone And Limestone	Westphalian D / Bolsovian
15	461.0	SW	WS-SDST	Whitehaven Sandstone Formation - Sandstone	Westphalian D / Bolsovian
16	494.0	S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian / Duckmantian
17	494.0	S	PMCM-MDSS	Pennine Middle Coal Measures Formation - Mudstone, Siltstone And Sandstone	Bolsovian / Duckmantian

1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site* boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	High	High
0.0	On Site	Mixed	High	Moderate

* This includes an automatically generated 50m buffer zone around the site

1.3.3 Faults

Are there any records of Faults within 500m of the study site boundary?

Yes

ID	Distance (m)	Direction	Category Description	Feature Description
31	0.0	On Site	FAULT	Fault, inferred, displacement unknown
32A	21.0	W	FAULT	Fault, inferred, displacement unknown
33	55.0	NE	FAULT	Fault, inferred, displacement unknown
34B	150.0	NW	FAULT	Fault, inferred, displacement unknown
35	260.0	SE	FAULT	Fault, inferred, displacement unknown
36C	290.0	NW	FAULT	Fault, inferred, displacement unknown
37	292.0	SW	FAULT	Fault, inferred, displacement unknown
38	295.0	SW	ROCK	Coal seam, inferred
39D	312.0	SW	ROCK	Coal seam, inferred
40	345.0	SW	FAULT	Fault, inferred, displacement unknown
41	372.0	S	ROCK	Coal seam, inferred
42	393.0	NE	FAULT	Fault, inferred, displacement unknown
43	494.0	S	FAULT	Fault, inferred, displacement unknown
44	494.0	S	FAULT	Fault, inferred, displacement unknown

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.4 Radon Data

1.4.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level

1.4.2 Radon Protection

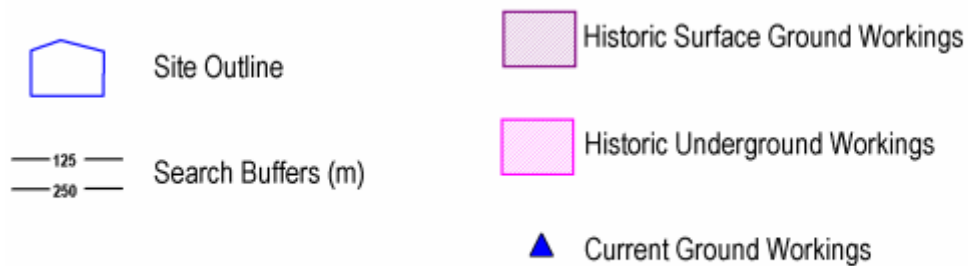
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary

2 Ground Workings Map



Ground Workings Legend

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2 Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on Groundsure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? No

Database searched and no data found.

2.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the Groundsure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
Not shown	499.0	NE	302444 517646	Iron Shaft	1863
Not shown	658.0	S	301809 516374	Coal Pit	1863
Not shown	840.0	S	302240 516159	Old Iron Shaft	1863
Not shown	928.0	SW	301134 516236	Disused Colliery	1898
Not shown	929.0	SW	301159 516329	Disused Colliery	1926
Not shown	930.0	SW	301278 516321	Disused Unspecified Mine	1993
Not shown	931.0	SW	301280 516318	Disused Colliery	1951
Not shown	932.0	SW	301280 516320	Unspecified Disused Mine	1969

2.3 Current Ground Workings

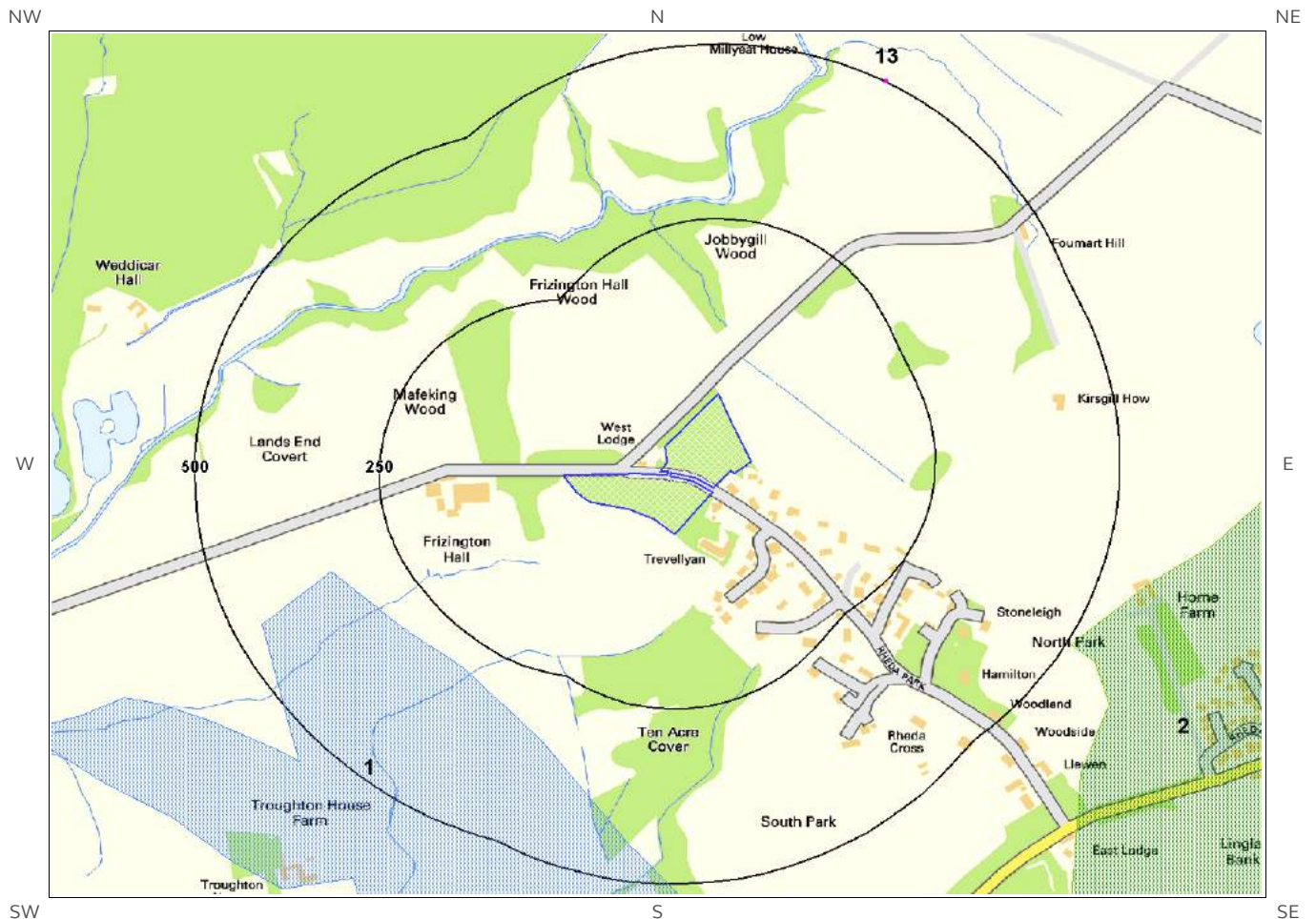
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	696.0	SE	302625 516483	Sandstone	Crosslacon	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	975.0	SW	301324 516381	Coal, Deep	Bowthorn Colliery	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend

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3 Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from Groundsure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? Yes

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
13	499.0	NE	302444 517646	Iron Shaft	1863
Not shown	658.0	S	301809 516374	Coal Pit	1863
Not shown	840.0	S	302240 516159	Old Iron Shaft	1863
Not shown	928.0	SW	301134 516236	Disused Colliery	1898
Not shown	929.0	SW	301159 516329	Disused Colliery	1926
Not shown	930.0	SW	301278 516321	Disused Unspecified Mine	1993
Not shown	931.0	SW	301280 516318	Disused Colliery	1951
Not shown	932.0	SW	301280 516320	Unspecified Disused Mine	1969

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? Yes

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

3.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	292.0	SW	Not available	Iron Ore (Bedded)	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
2	506.0	SE	Not available	Iron Ore (Non Vein)	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
Not shown	676.0	S	Not available	Iron Ore (Non Vein)	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
Not shown	757.0	S	Not available	Iron Ore (Non Vein)	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered
Not shown	871.0	E	Not available	Iron Ore (Non Vein)	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
Not shown	922.0	E	Not available	Iron Ore (Bedded)	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
Not shown	936.0	S	Not available	Iron Ore (Bedded)	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
Not shown	948.0	S	Not available	Iron Ore (Non Vein)	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
Not shown	952.0	SE	Not available	Ironstone (bedded)	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	971.0	SE	Not available	Ironstone (bedded)	Underground mining is known or considered likely to have occurred within or close to the area. Potential for difficult ground conditions are at a level where they should be considered
Not shown	972.0	NE	Not available	Iron Ore (Non Vein)	Underground mining is known to have occurred within or very close to the area. Potential for difficult ground conditions should be investigated. Potential for localised subsidence is at a level where it should be considered

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
Not shown	972.0	W	Not available	Iron Ore (Bedded)	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

3.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled “Review of mining instability in Great Britain, 1990” PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level.

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.10 Clay Mining

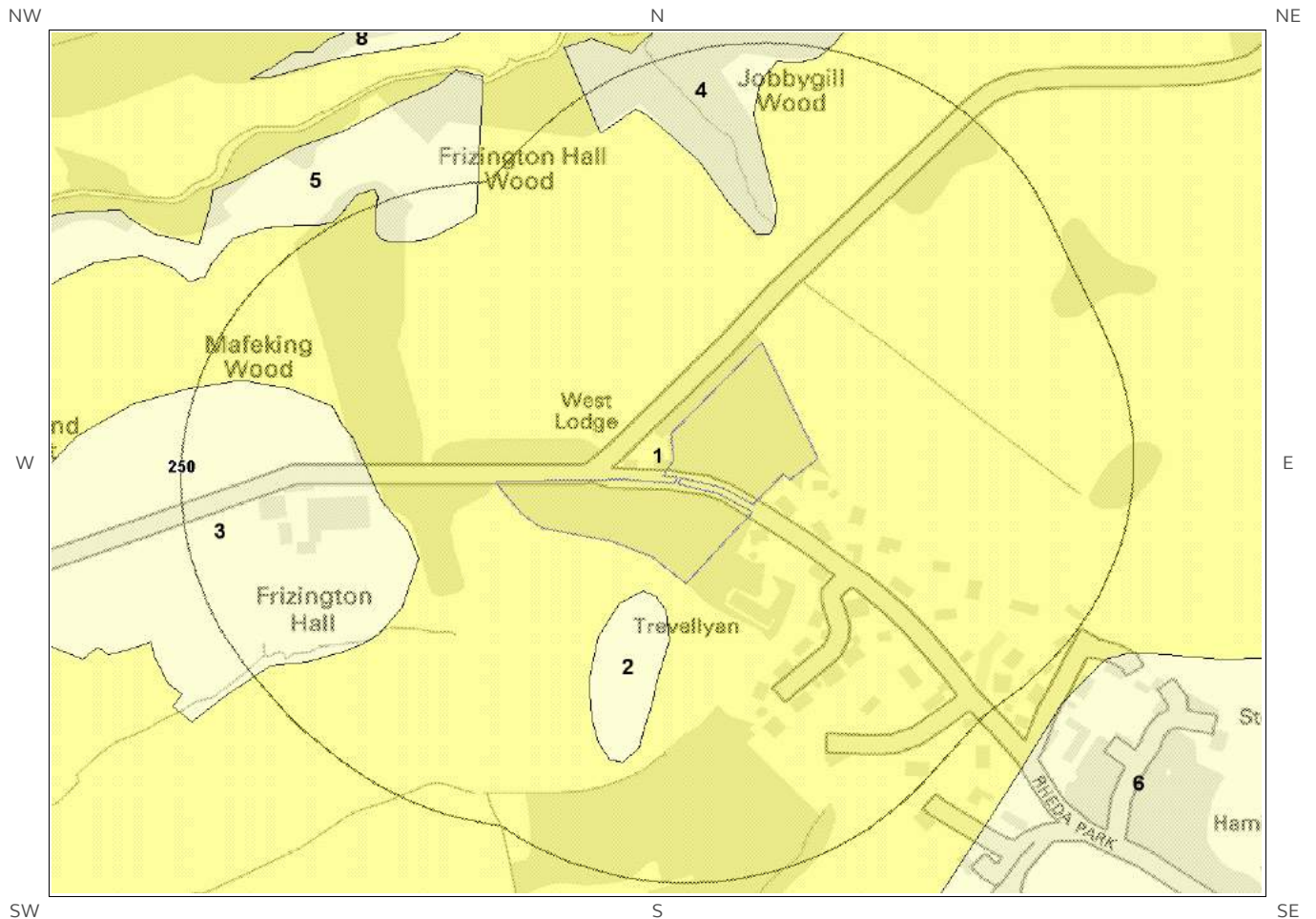
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

4 Natural Ground Subsidence

4.1 Shrink-Swell Clay Map

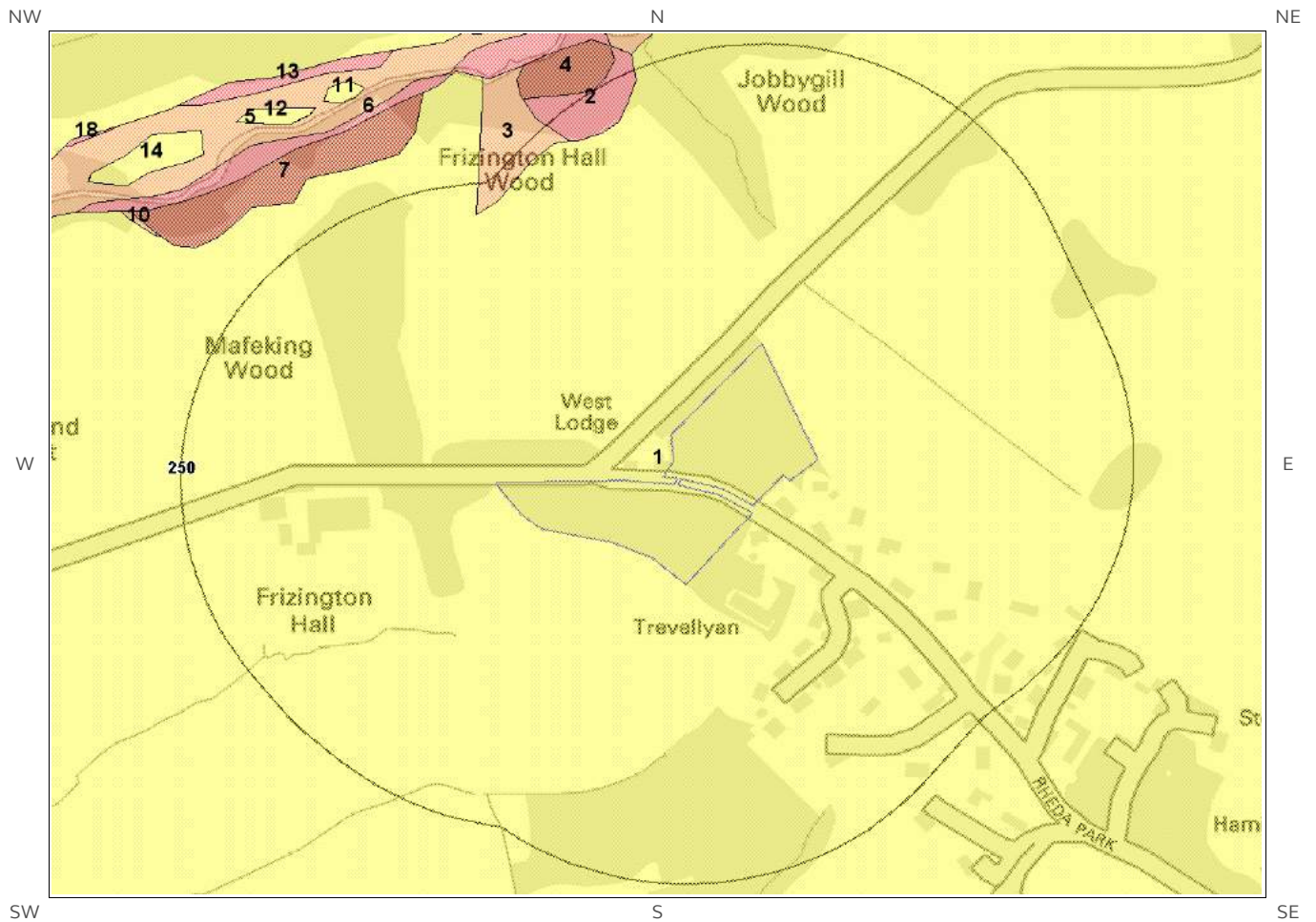


Shrink Swell Clay Legend

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4.2 Landslides Map

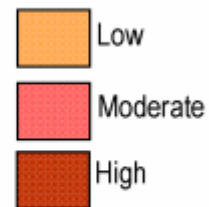
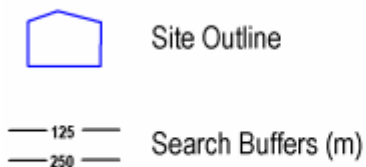
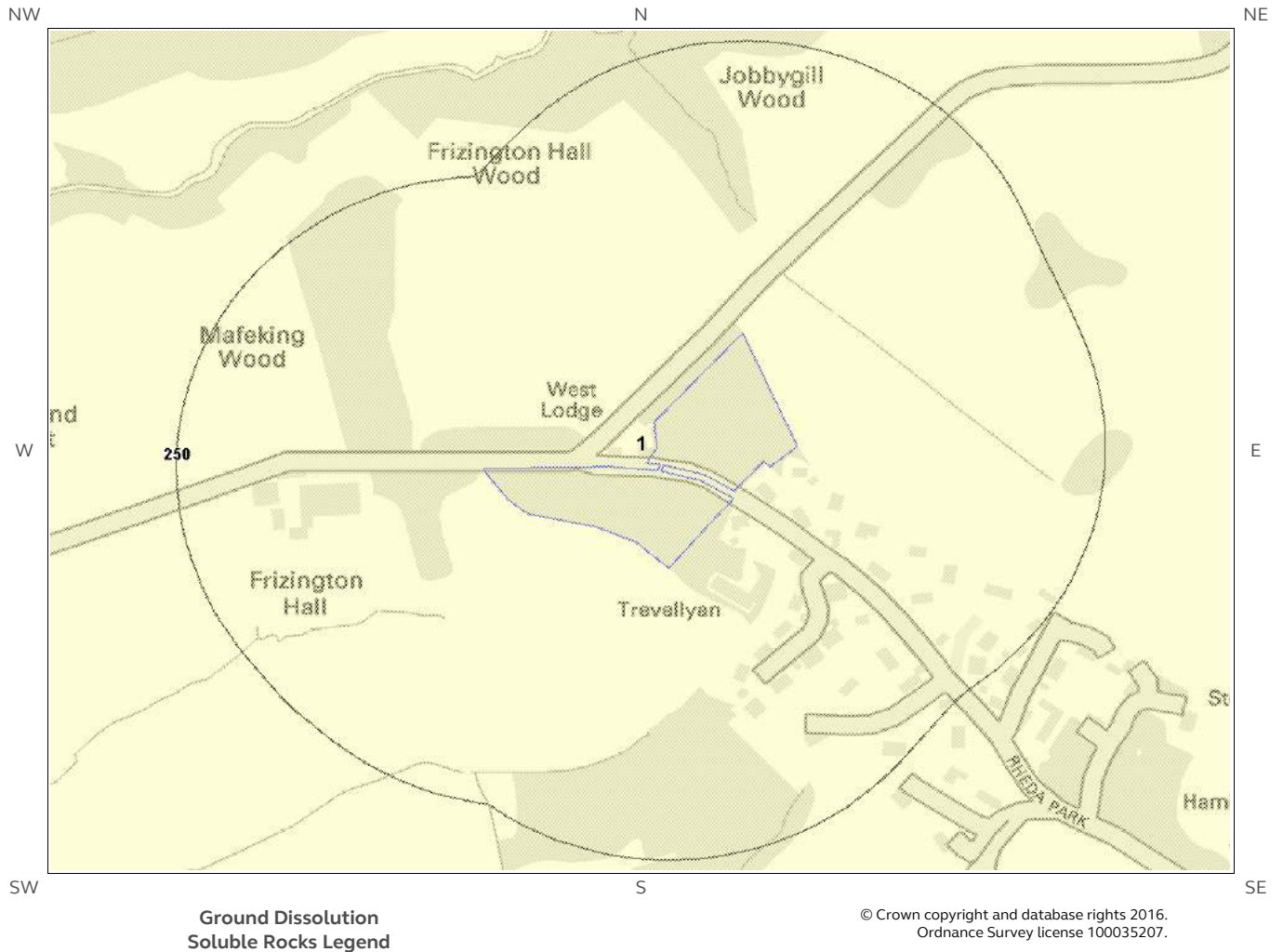


Landslides Legend

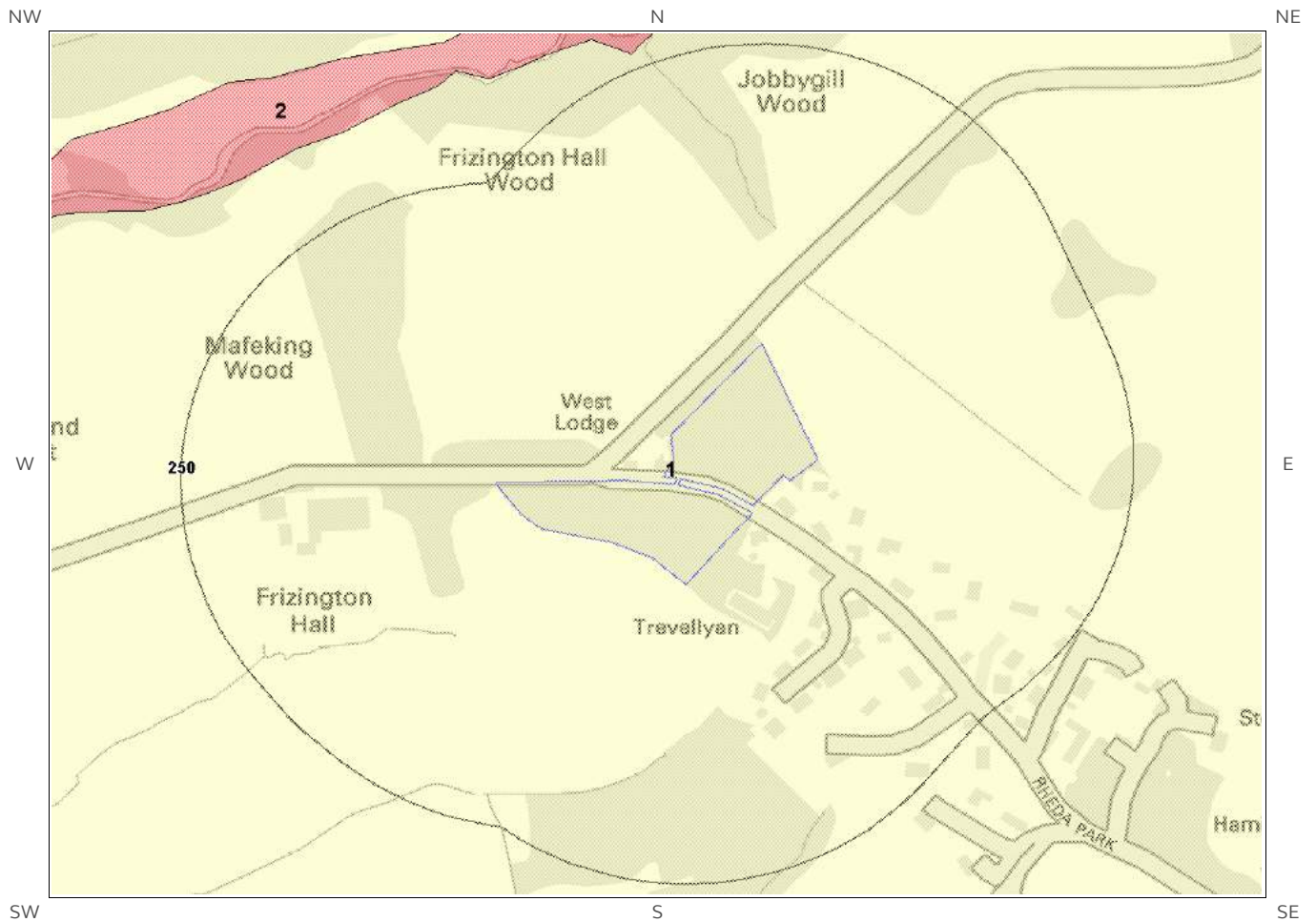
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4.3 Ground Dissolution Soluble Rocks Map



4.4 Compressible Deposits Map

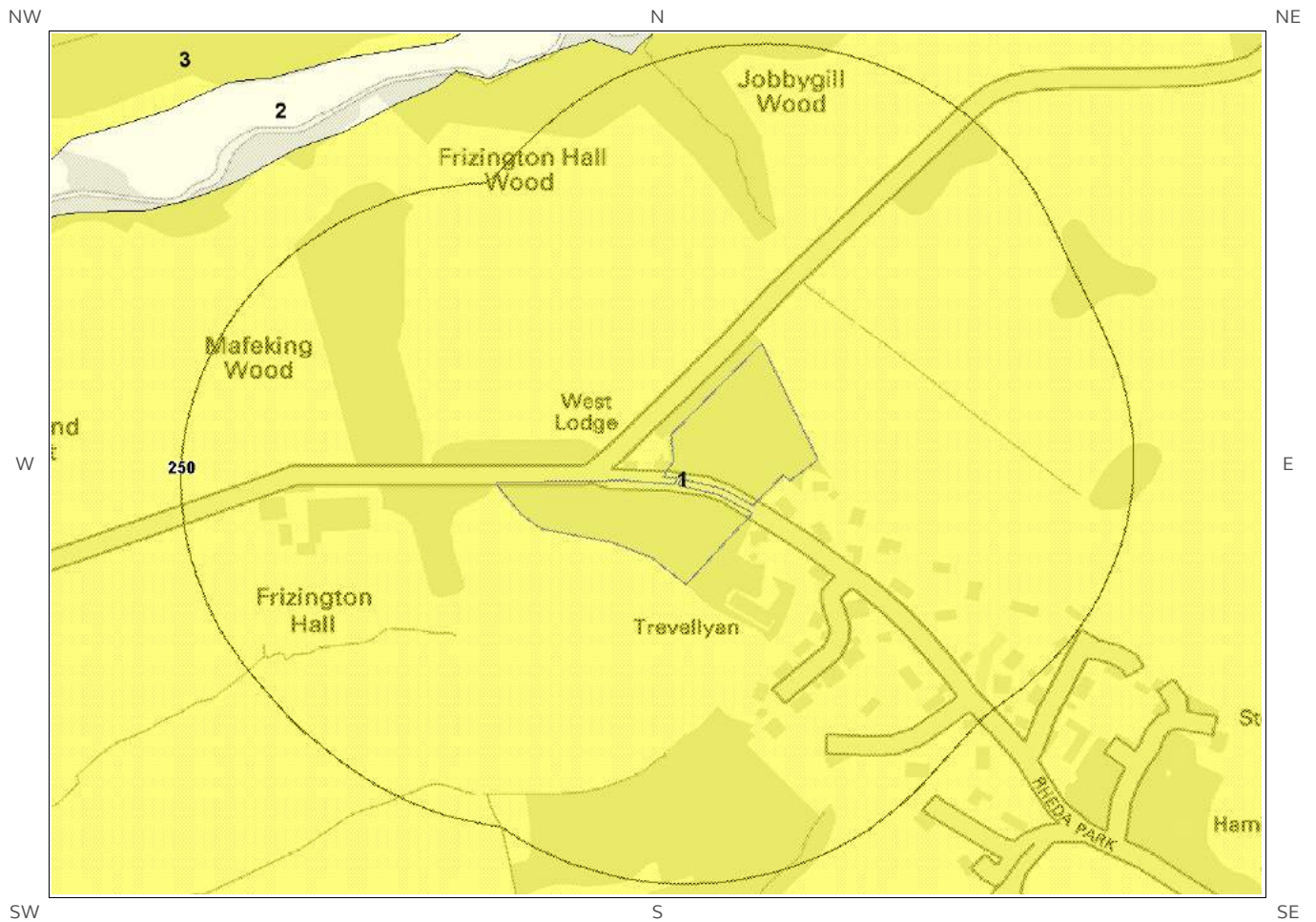


Compressible Deposits Legend

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4.5 Collapsible Deposits Map

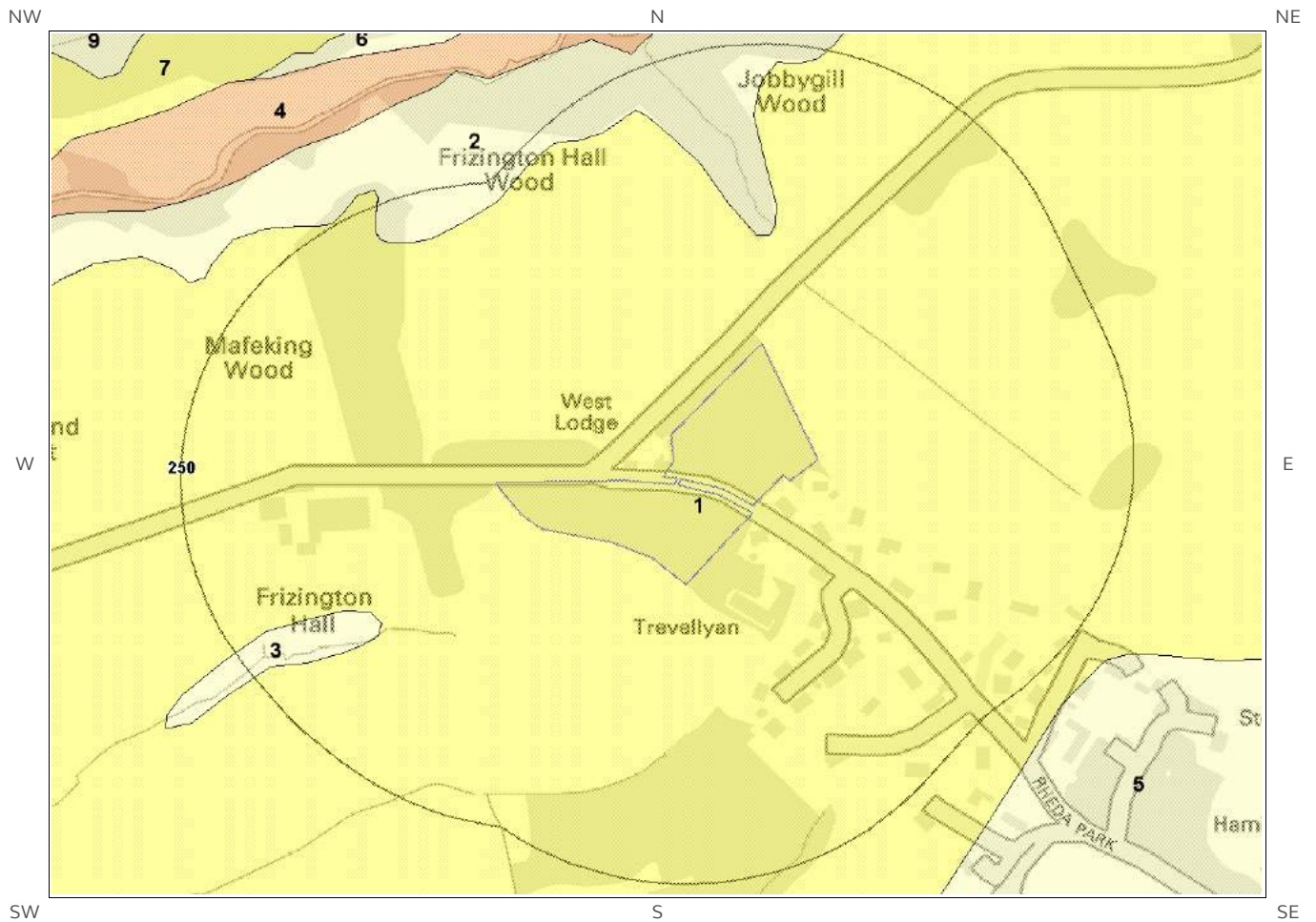


Collapsible Deposits Legend

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4.6 Running Sand Map



Running Sand Legend

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4 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site** boundary? **Very Low**

4.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.
2	24.0	SW	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

4.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This includes an automatically generated 50m buffer zone around the site

4.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible ground identified. No special actions required to avoid problems due to compressible ground. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible ground.

4.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

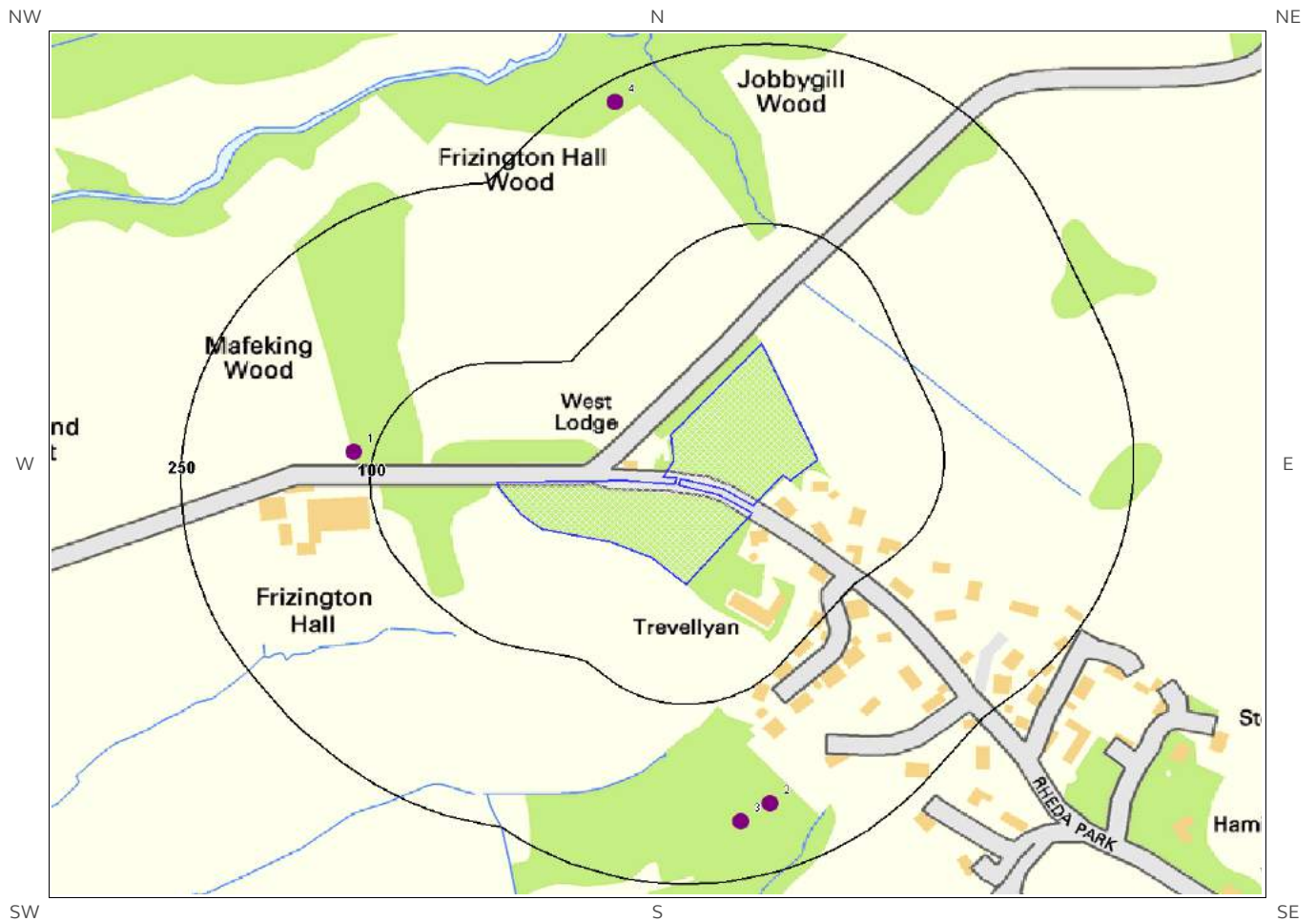
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

4.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

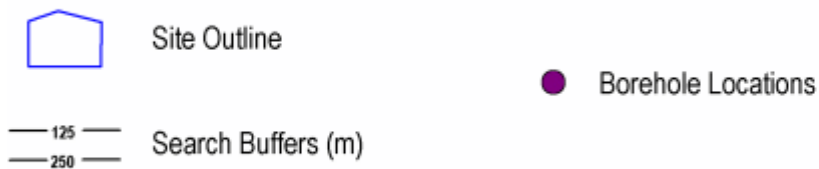
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

5 Borehole Records Map



Borehole Records Legend

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5 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

Records of boreholes within 250m of the study site boundary:

4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	116.0	W	301894 517108	NY01NW174	174.65	FRIZINGTON HALL
2	195.0	S	302223 516815	NY01NW167	16.03	THREAPTHWAITE BH7
3	203.0	S	302200 516800	NY01NW440	-1.0	THREAPWAITE
4	233.0	NW	302100 517400	NY01NW413	-1.0	FRIZINGTON HALL

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/837873

#2: scans.bgs.ac.uk/sobi_scans/boreholes/837866

#4: scans.bgs.ac.uk/sobi_scans/boreholes/838116

6 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

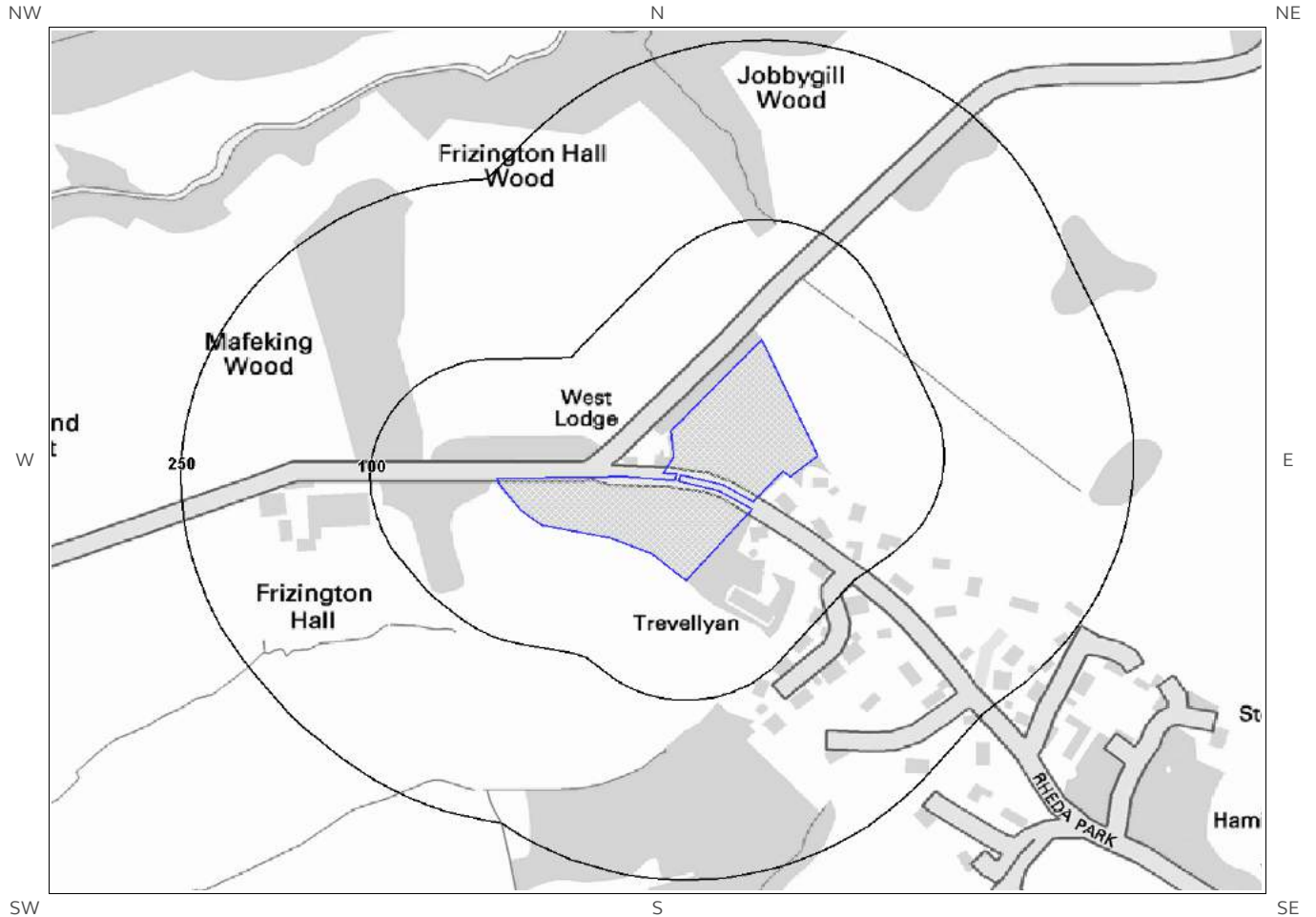
34

For further information on how this data is calculated and limitations upon its use, please see the Groundsure Geo Insight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
7.0	W	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
18.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
18.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
24.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
55.0	NE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
56.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
56.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
61.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
61.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
81.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
91.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	<15 mg/kg	<100 mg/kg
91.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
104.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
104.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
143.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
172.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
174.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
208.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
208.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
210.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
216.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
217.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
224.0	N	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
227.0	NW	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
239.0	E	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
241.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
242.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
248.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
248.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

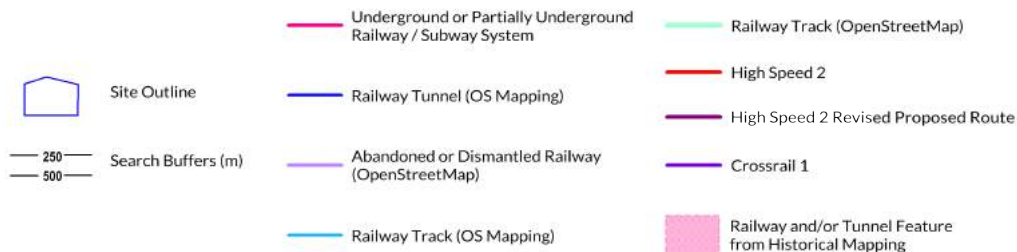
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

7 Railways and Tunnels Map



Railways and Tunnels Legend

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7 Railways and Tunnels

7.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.2 Historical Railway and Tunnel Features

This data is derived from Groundsure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary?	No
Have any historical railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels Map.

7.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary?	No
Have any active railway lines been identified within 250m of the study site boundary?	No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels Map.

7.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

Is the study site within 5km of the route of the High Speed 2 rail project?	No
Is the study site within 5km of the proposed alternative route of the High Speed 2 rail project?	No
Is the study site within 500m of the route of the Crossrail 1 rail project?	No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

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Standard Terms and Conditions

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-sept-2016/>

Groundsure Enviro Insight

Address: Land at, West End, Rheda Park, Frizington, CA26 3TA,
Date: 7 Nov 2016
Reference: EMS-391454_523898
Client: EmapSite

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 05-Oct-2008
Grid Reference: 302157,517087
Site Size: 1.81ha

Report Reference: EMS-391454_523898
Client Reference: EMS_391454_523898

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Overview of Findings

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Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	0	5
1.2 Additional Information – Historical Tank Database	0	0	0	3
1.3 Additional Information – Historical Energy Features Database	0	0	0	0
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
1.6 Potentially Infilled Land	0	0	0	5
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	0	0	0
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	0	1
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency Licensed Waste Sites	0	0	0	0	0	2

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	0	0	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	0	3	Not searched	Not searched
	On-site	0-50m	51-250	251-500	501-1000	1000-1500

Section 6: Hydrogeology and Hydrology

0-500m

6.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	0	8	13	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
7.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site	No
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low
7.4 Are there any Flood Defences within 250m of the study site?	No
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Limited potential
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Low

Section 8: Designated Environmentally Sensitive Sites

On-site 0-50m 51-250 251-500 501-1000 1000-2000

8.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	1
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	2	0	0	0
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.11 Records of National Parks	0	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards	
9.1 What is the maximum risk of natural ground subsidence?	Very Low
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Very Low
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.
9.2.2 Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.

Section 10: Mining	
10.1 Are there any coal mining areas within 75m of the study site?	Yes
10.2 Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
10.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between Groundsure and the Client. The document contains the following sections:

1. Historical Industrial Sites

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

2. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

3. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

4. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure gas pipelines and underground electricity transmission lines.

5. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

6. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

7. Flooding

Provides information on river and coastal flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

8. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

9. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence and radon..

10. Mining

Provides information on areas of coal and non-coal mining and brine affected areas.

11. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, Groundsure provide a free Technical Helpline (08444 159000) for further information and guidance.

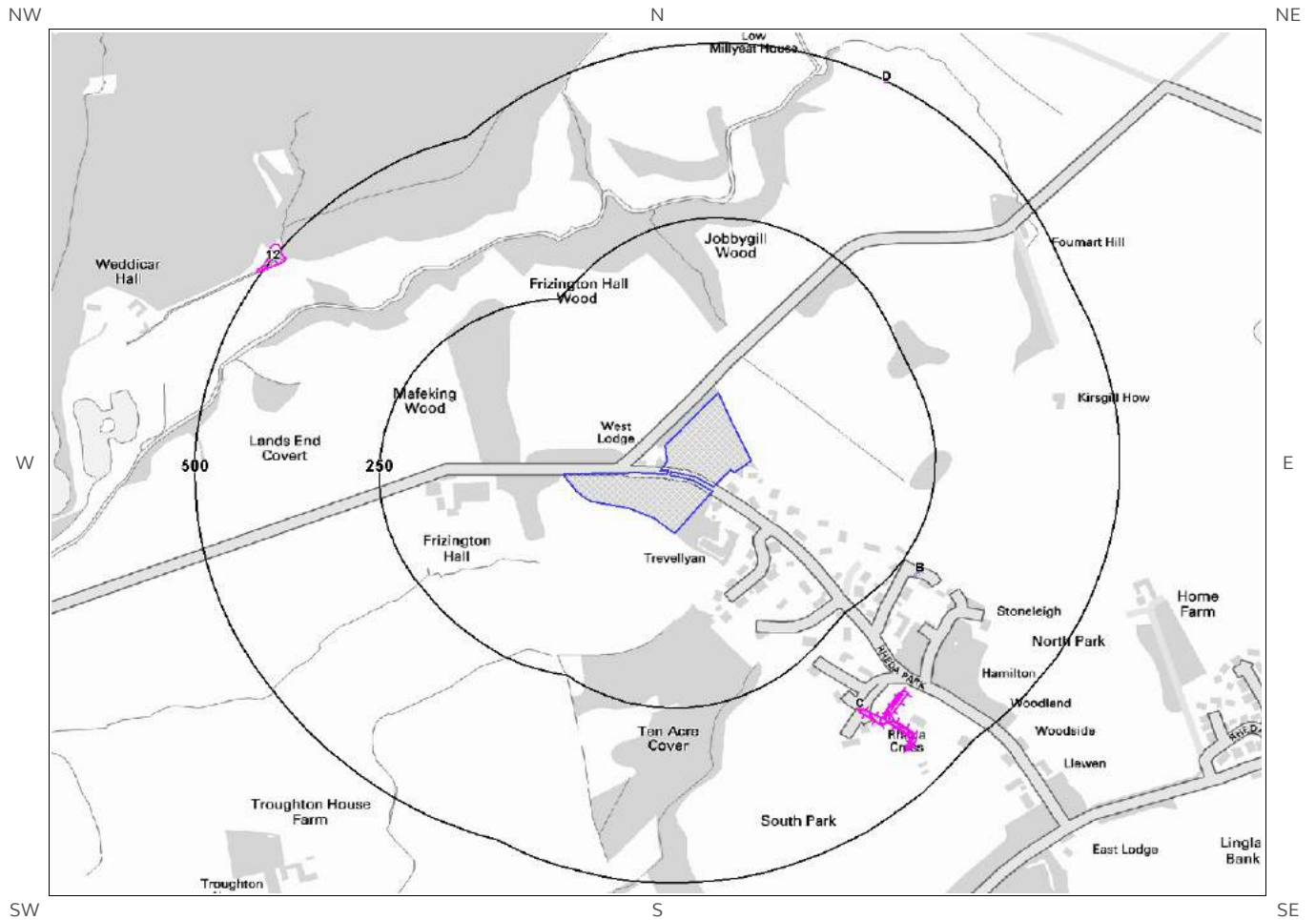
Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.

1. Historical Land Use



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Historical 1:10,000 and 1:10,560 scale mapping



Site Outline

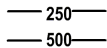


Industrial Land Use



Potentially Infilled Land

Historical 1:2,500, 1:1,250 and 1:500 scale mapping



Search Buffers (m)



Energy Features



Petrol Stations



Tanks



Garages

1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 5

ID	Distance [m]	Direction	Use	Date
1B	274	SE	Unspecified Tank	1926
2A	354	SE	Unspecified Ground Workings	1951
3A	356	SE	Unspecified Ground Workings	1938
4A	356	SE	Unspecified Ground Workings	1938
5D	499	NE	Iron Shaft	1863

1.2 Additional Information – Historical Tank Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 3

ID	Distance (m)	Direction	Use	Date
6B	274	SE	Unspecified Tank	1899
7C	350	SE	Unspecified Tank	1960
8C	352	SE	Unspecified Tank	1996

1.3 Additional Information – Historical Energy Features Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 0

Database searched and no data found.

1.4 Additional Information – Historical Petrol and Fuel Site Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

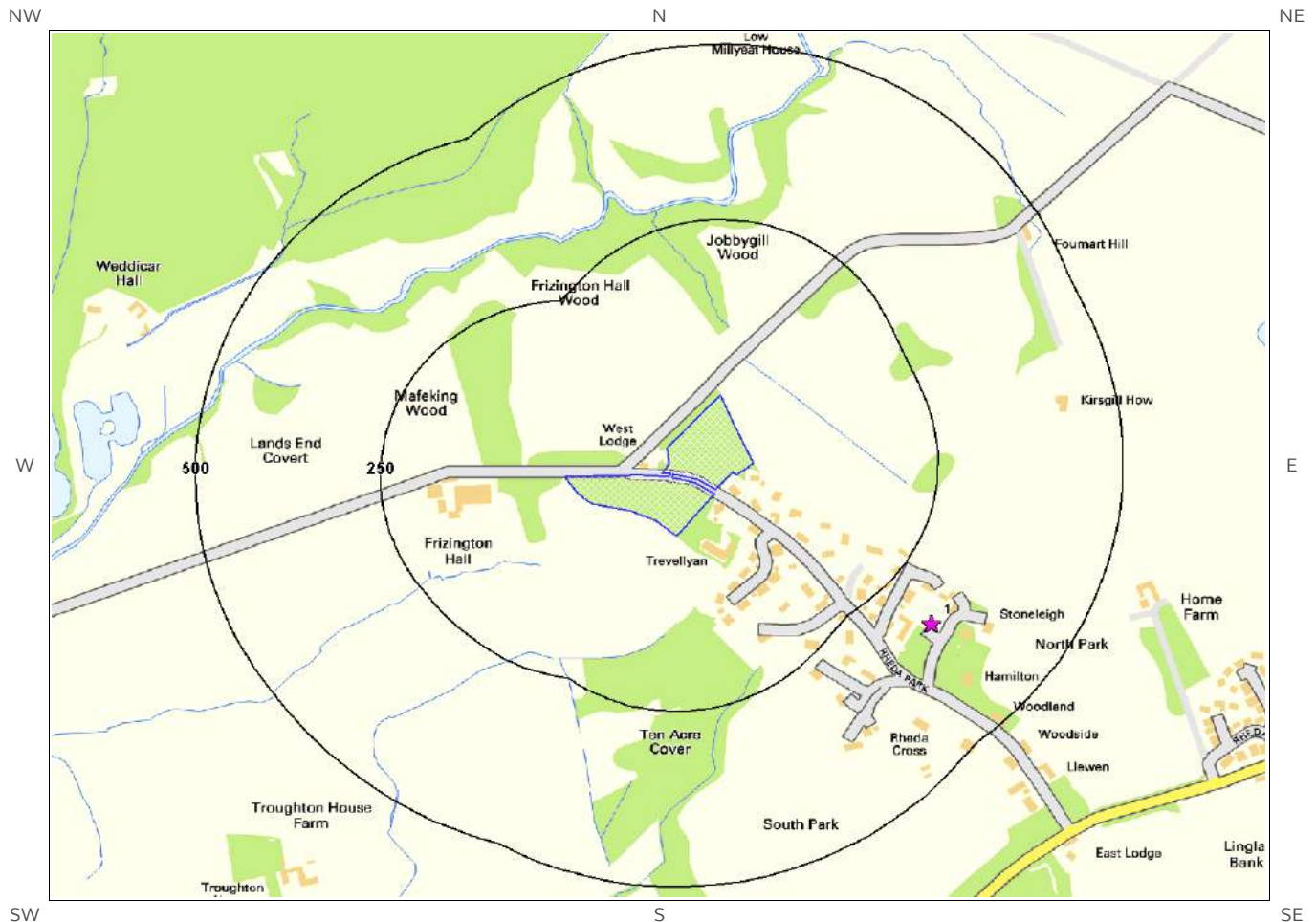
1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 5

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

ID	Distance(m)	Direction	Use	Date
9A	354	SE	Unspecified Ground Workings	1951
10A	356	SE	Unspecified Ground Workings	1938
11A	356	SE	Unspecified Ground Workings	1938
12	485	NW	Pond	1863
13D	499	NE	Iron Shaft	1863

2. Environmental Permits, Incidents and Registers Map



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- | | | |
|-------------------------------|---|--|
| Site Outline | Recorded Pollution Incident | RAS 3 & 4 Authorisations |
| Dangerous Substances (List 1) | Dangerous Substances (List 2) | Part A(1) Authorised Processes and Historic IPC Authorisations |
| Water Industry Referrals | Licenced Discharge Consents | Part A(2) and Part B Authorised Processes |
| Red List Discharge Consents | Sites Determined as Contaminated Land | COMAH / NIHHS Sites |
| | Hazardous Substance Consents and Enforcements | |

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

2.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

2.1.8 Records of Licensed Discharge Consents within 500m of the study site:

0

Database searched and no data found.

2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

2.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

2.3 Environment Agency Recorded Pollution Incidents

2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

1

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance (m)	Direction	NGR	Details
1	332	SE	302501 516873	Incident Date: 15-Apr-2003 Incident Identification: 151467 Pollutant: Sewage Materials Pollutant Description: Final Effluent Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

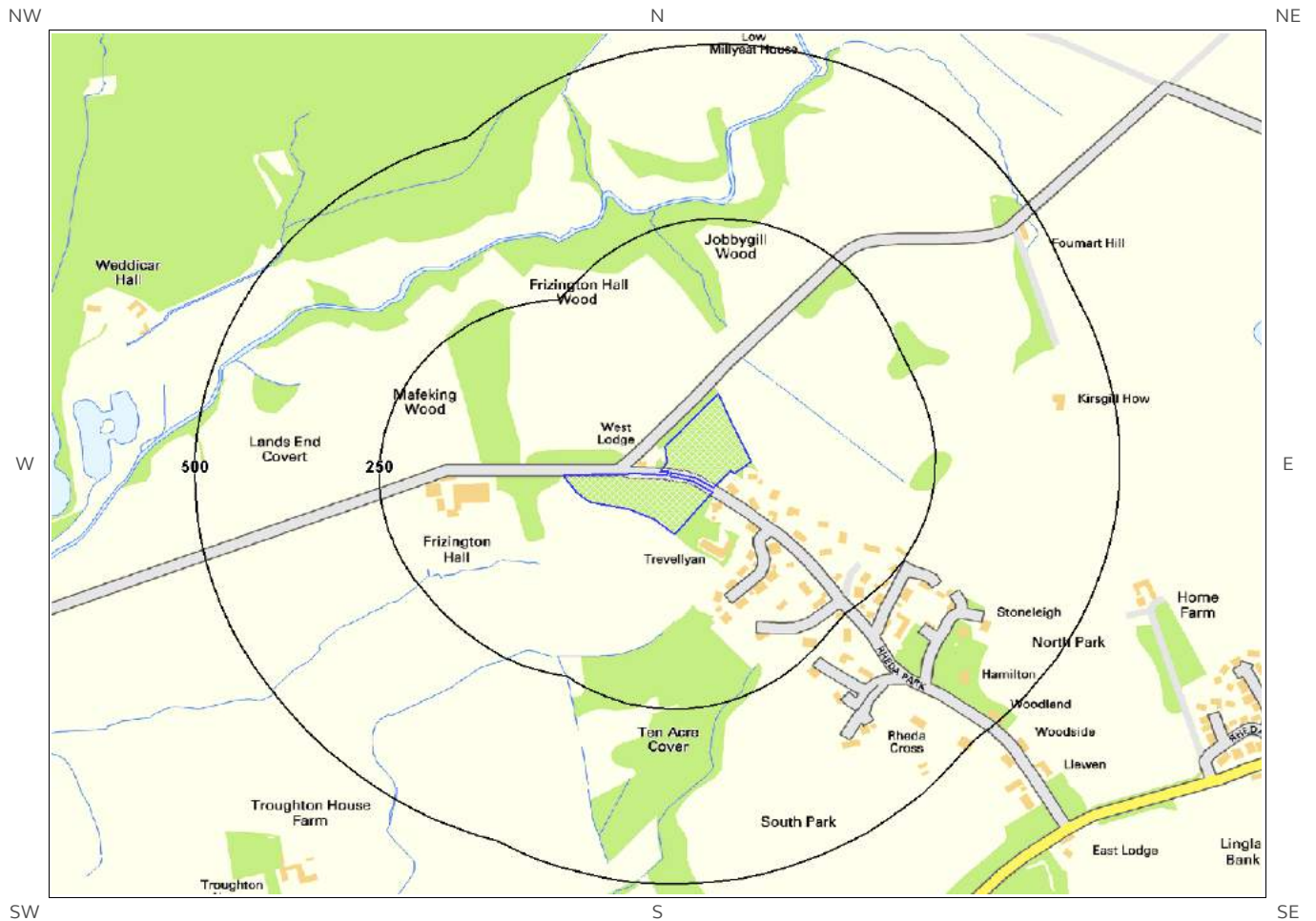
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

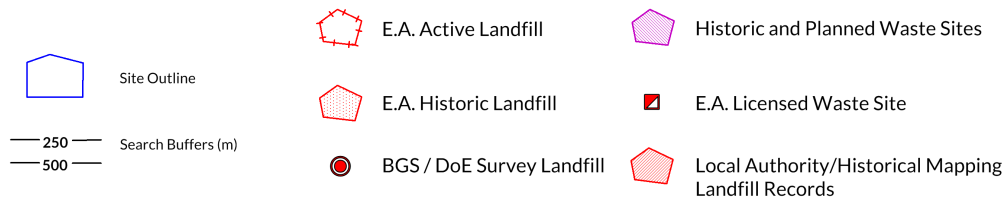
0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



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3. Landfill and Other Waste Sites

3.1 Landfill Sites

3.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

3.2 Other Waste Sites

3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

Database searched and no data found.

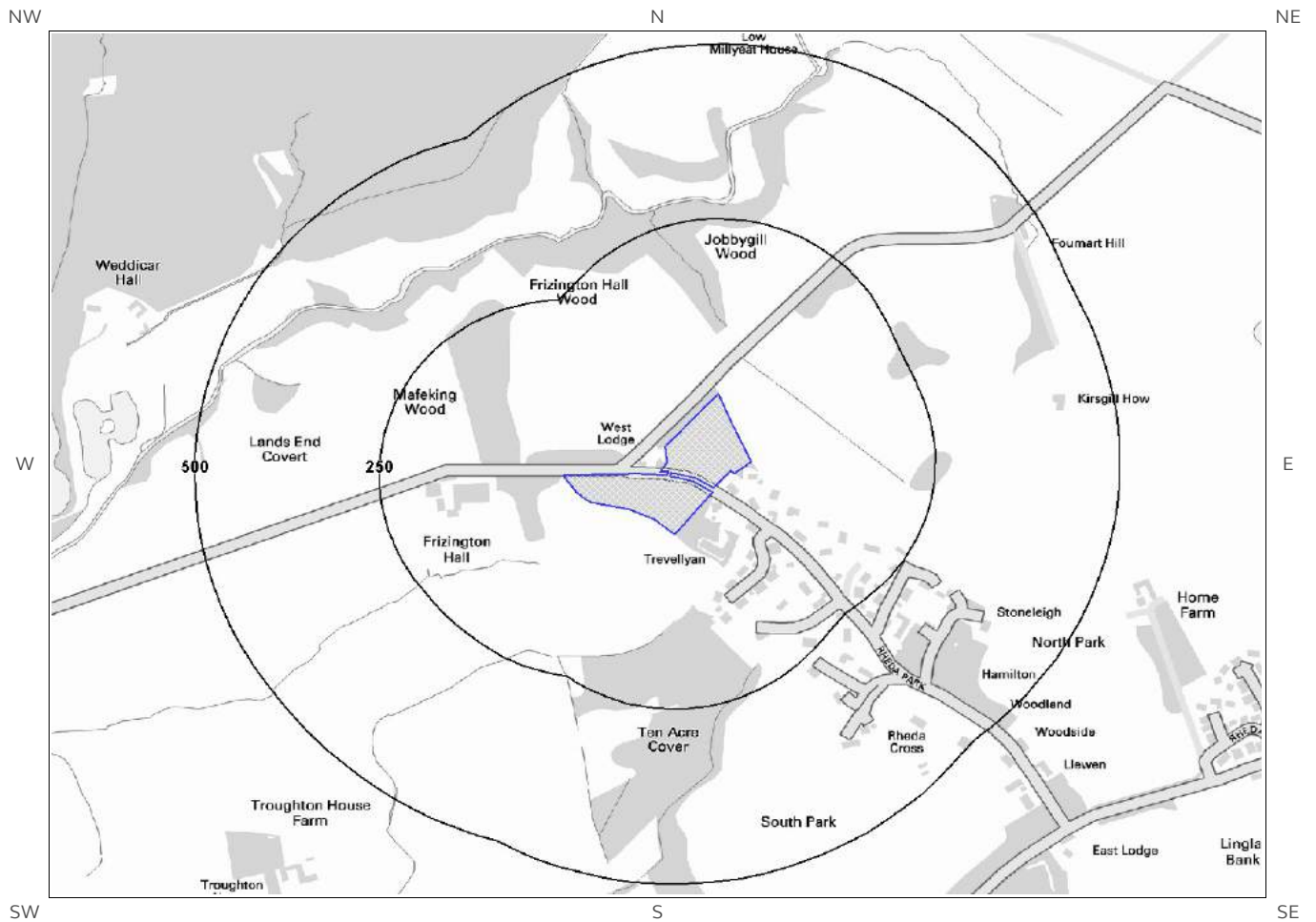
3.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

2

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1418	SE	303480 516377	<p>Site Address: Park Gate Garage, Frizington Road, Frizington, Cumbria, CA26 3QY Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KEN004 EPR reference: - Operator: Malcolm Wayne Kenmare & Karen Kenmare Waste Management licence No: 57542 Annual Tonnage: 0.0</p> <p>Issue Date: 07/09/2004 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Issued Site Name: Vehicle Depolluting & Dismantling (authorised Treatment Facility) Correspondence Address: Avondale, Frizington Road, Frizington, Cumbria, CA26 3QY</p>
Not shown	1418	SE	303480 516377	<p>Site Address: Park Gate Garage, Frizington Road, Frizington, Cumbria, CA26 3QY Type: ELV Facility Size: < 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: KEN006 EPR reference: EA/EPR/YP3093ZY/T002 Operator: Kenmare Tyre Services Limited Waste Management licence No: 57542 Annual Tonnage: 800.0</p> <p>Issue Date: 07/09/2004 Effective Date: 17/06/2005 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Transferred Site Name: Park Gate Garage Correspondence Address: -</p>

4. Current Land Use Map



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4. Current Land Uses

4.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site: 0

Database searched and no data found.

4.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

4.4 National Grid High Pressure Gas Transmission Pipelines

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

5.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
TILLD	TILL, DEVENSIAN	DIAMICTON
GFDUD	GLACIOFLUVIAL DEPOSITS, DEVENSIAN	SAND AND GRAVEL [UNLITHIFIED DEPOSITS CODING SCHEME]

5.3 Bedrock and Solid Geology

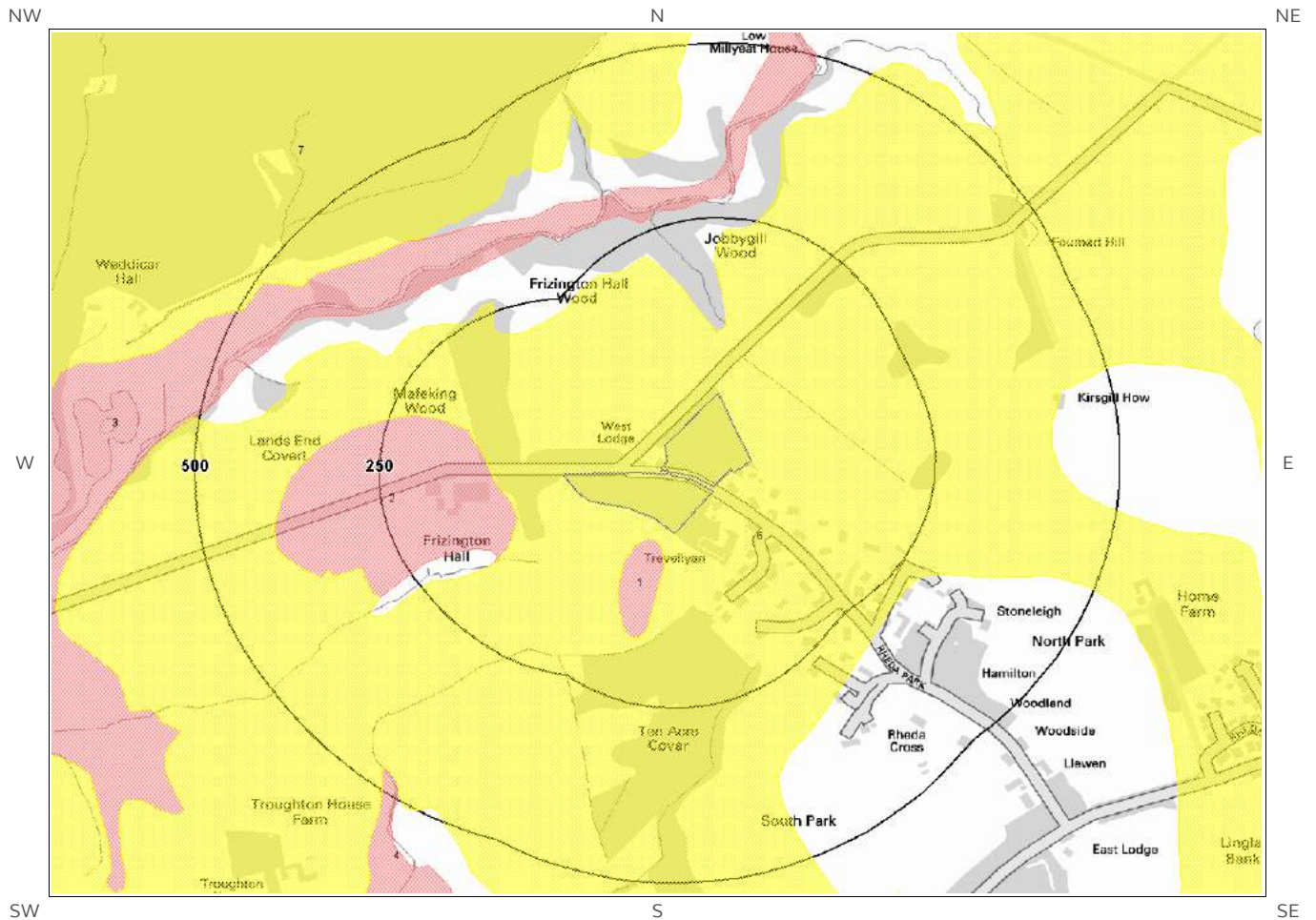
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
BK-BREC	BROCKRAM	BRECCIA
SBS-SDST	ST BEES SANDSTONE FORMATION	SANDSTONE
SBS-SDST	ST BEES SANDSTONE FORMATION	SANDSTONE

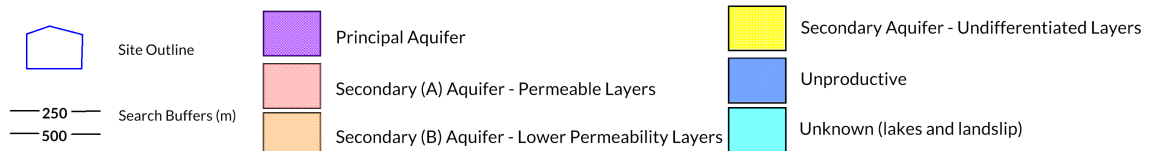
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

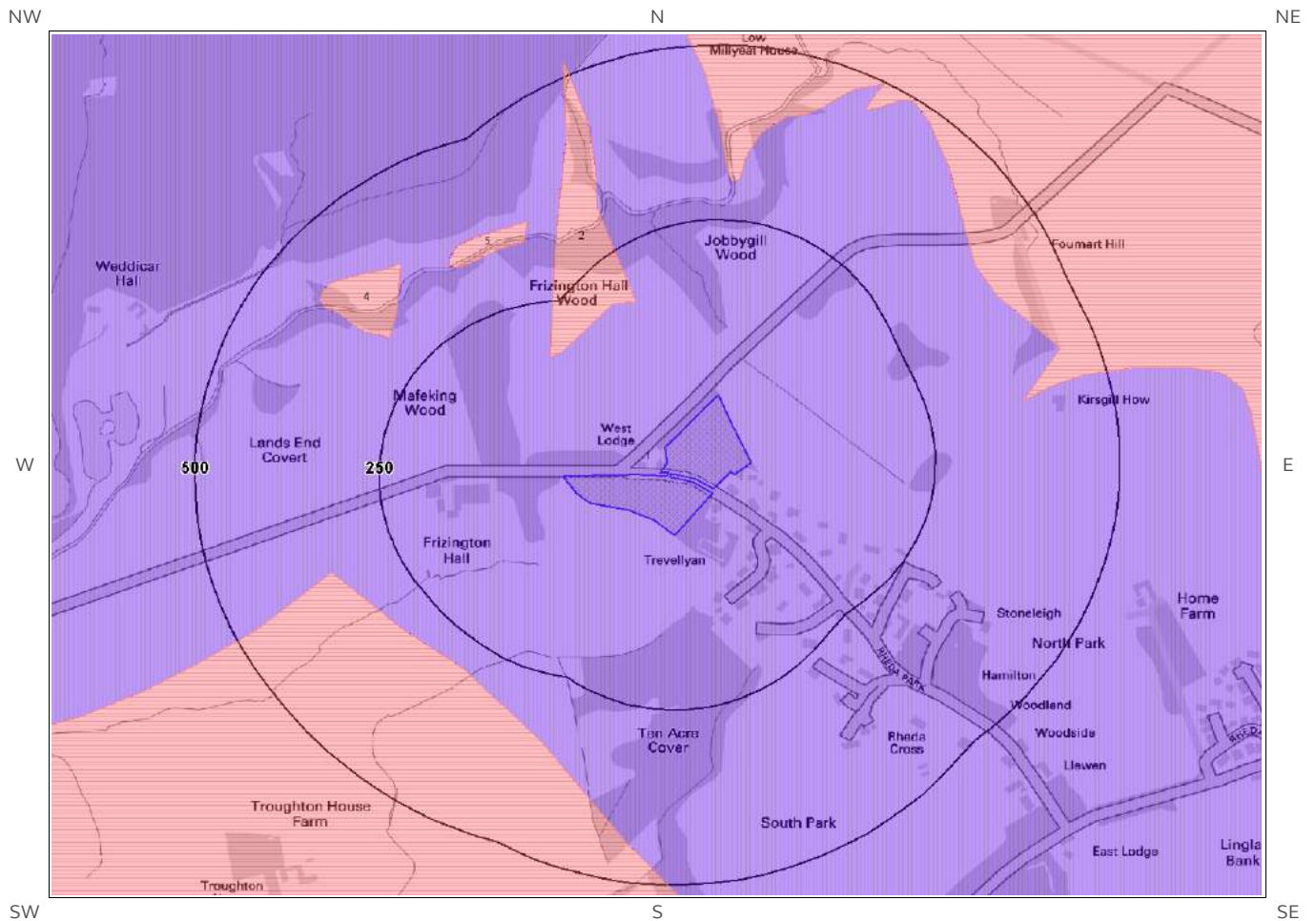
6a. Aquifer Within Superficial Geology



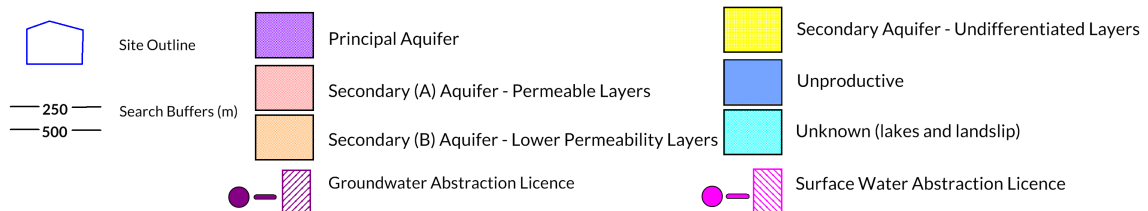
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6b. Aquifer Within Bedrock Geology and Abstraction Licenses

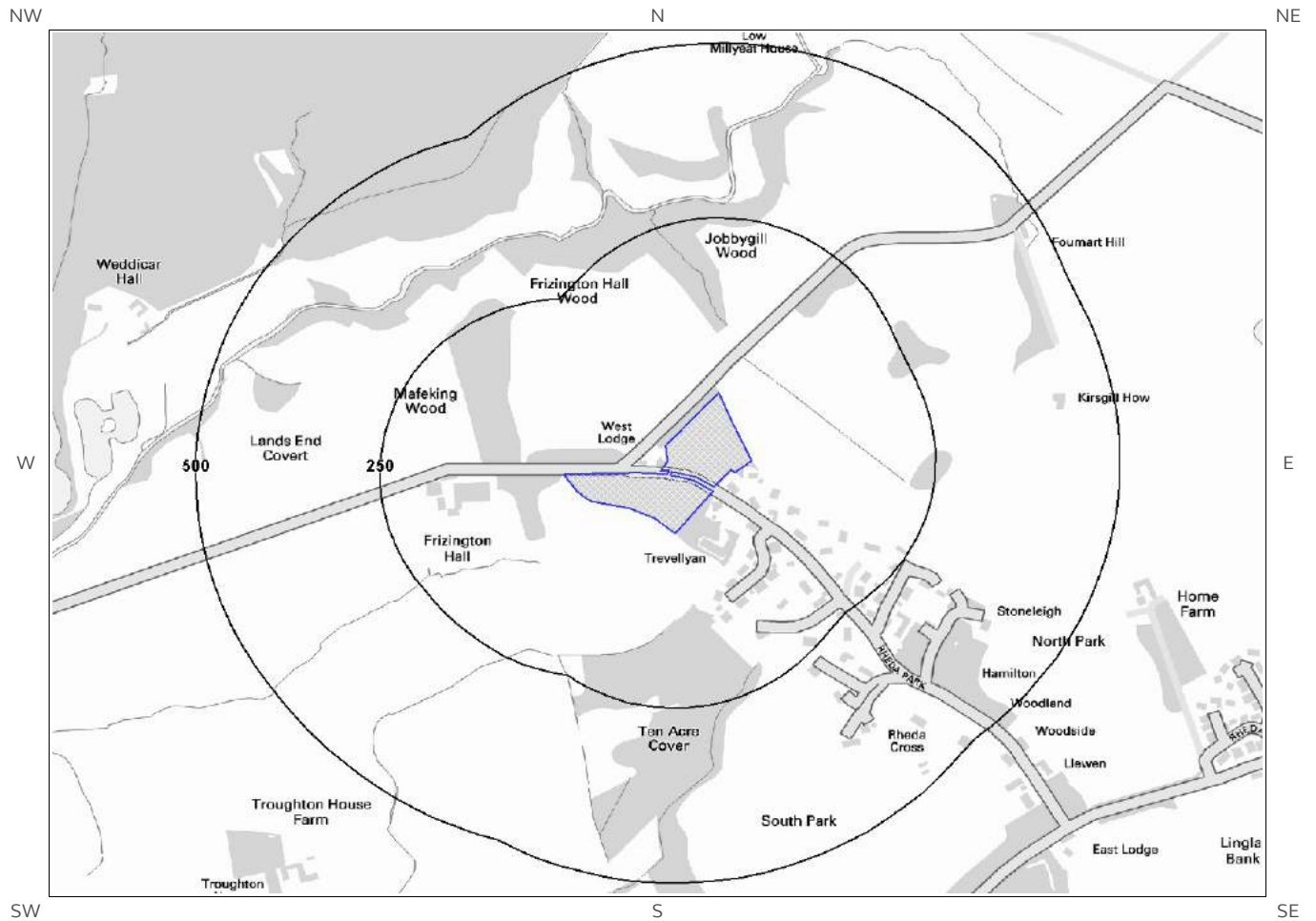


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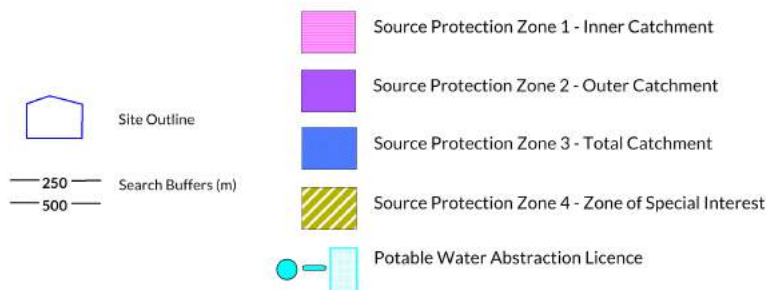




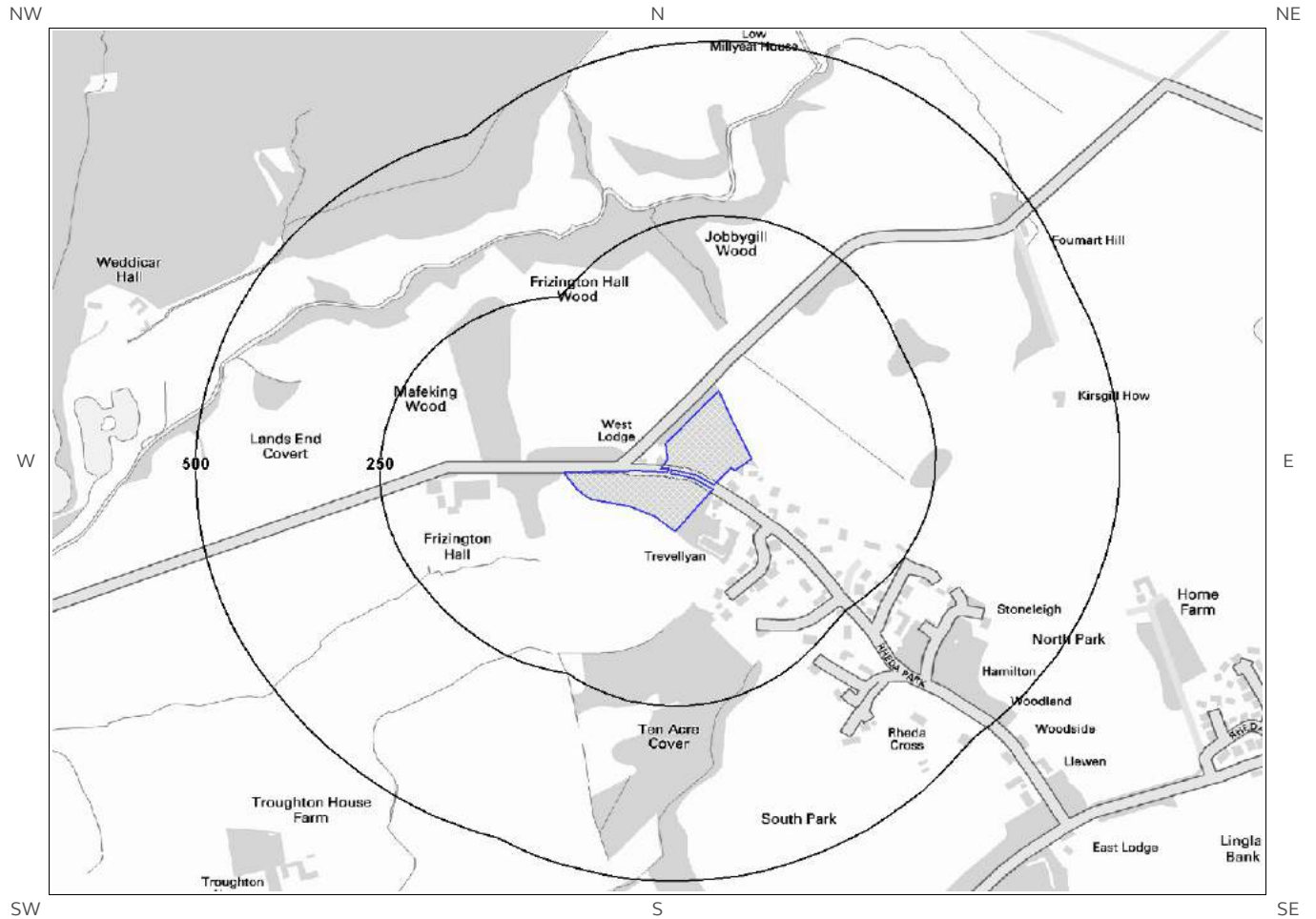
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



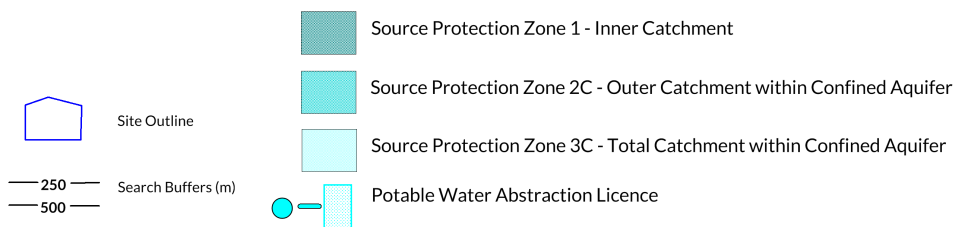
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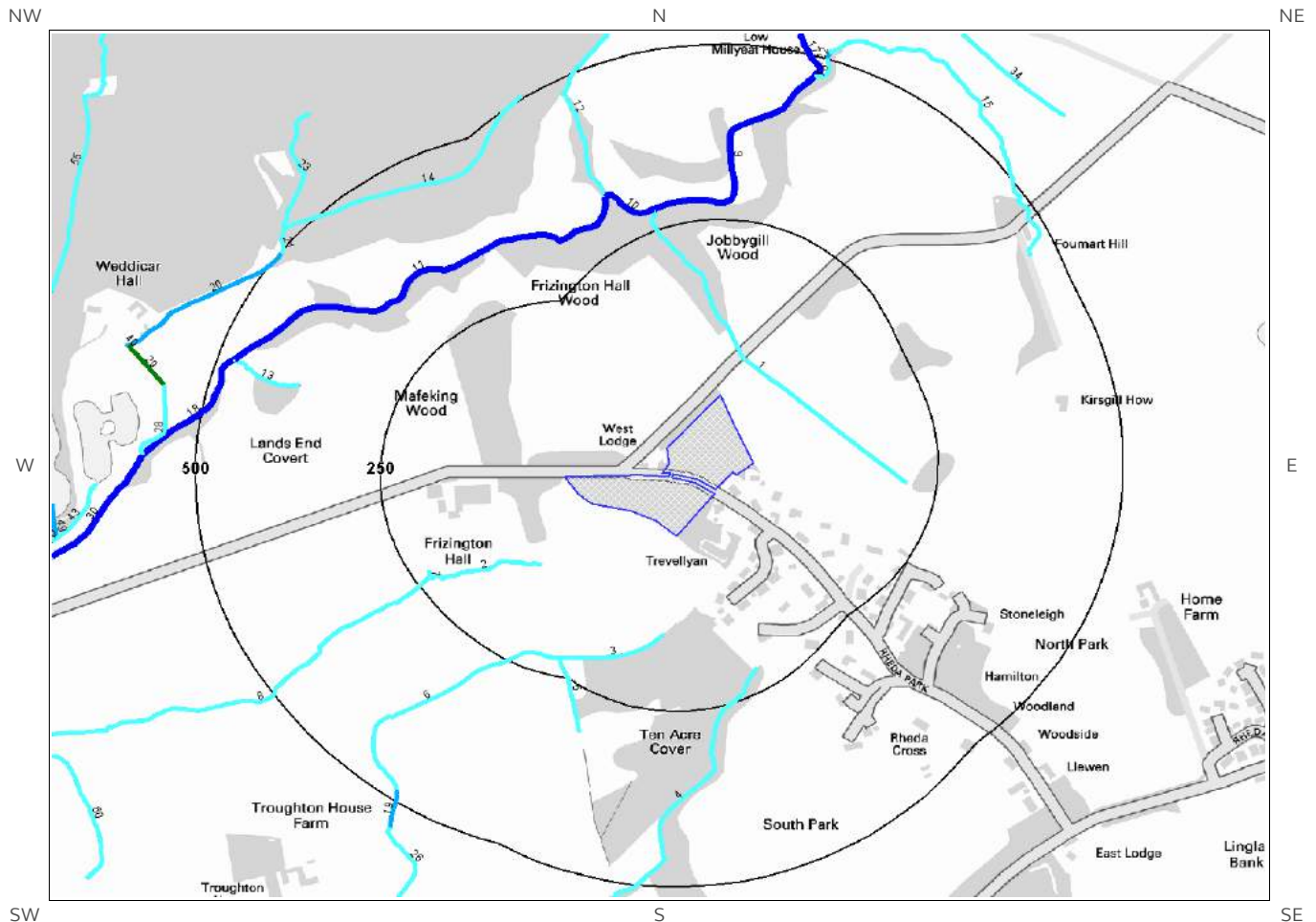
6d. Hydrogeology – Source Protection Zones within confined aquifer



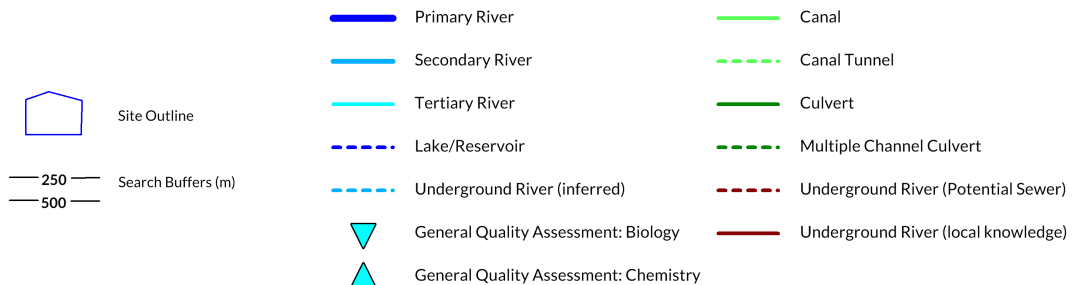
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6e. Hydrology – Detailed River Network and River Quality



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6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? **Yes**

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

ID	Distance (m)	Direction	Designation	Description
6	0	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
1	24	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	81	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
3	263	NW	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
7	354	N	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
4	470	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

6.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? **Yes**

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the Groundsure Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	Designation	Description
1	0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	172	N	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

ID	Distance (m)	Direction	Designation	Description
3	292	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	308	NW	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
5	330	N	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

6.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site? Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1049	SE	302700 516100	<p>Status: Historical Licence No: 2774004002 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: Well At Birks Farm, Cleator Moor, Cumbria Data Type: Point Name: J CHARLTON & SONS</p> <p>Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 5519 Original Start Date: 16/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 16/12/1965 Version End Date:</p>
Not shown	1049	SE	302700 516100	<p>Status: Historical Licence No: 2774004002 Details: General Farming & Domestic Direct Source: Ground Water - North West Region Point: "well At Birks Farm, Cleator Moor, Cumbria" Data Type: Point Name: J CHARLTON & SONS</p> <p>Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: 5519 Original Start Date: 16/12/1965 Expiry Date: - Issue No: 100 Version Start Date: 16/12/1965 Version End Date:</p>

6.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

6.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site?

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site?

Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
0	On Site	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
327	SW	Minor Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
355	N	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.
480	W	Minor Aquifer/Low Leaching Potential	L	Soils in which pollutants are unlikely to penetrate the soil layer because either water movement is largely horizontal, or they have the ability to attenuate diffuse pollutants.

Is there any Environment Agency information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

6.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site? Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details	
1	60	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
2	111	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
3	142	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
4	217	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	223	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	223	S	River Name: Bowthorn Beck Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	227	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
8	232	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
9	275	N	River Name: Dub Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
10	279	N	River Name: Dub Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
11	295	NW	River Name: Dub Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
12	322	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
13	381	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
14	452	N	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
15	463	NE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
16	472	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
17	472	N	River Name: Dub Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
18	477	W	River Name: Dub Beck Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
19	485	SW	River Name: Bowthorn Beck Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
20	498	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
21	498	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

6.11 Surface Water Features

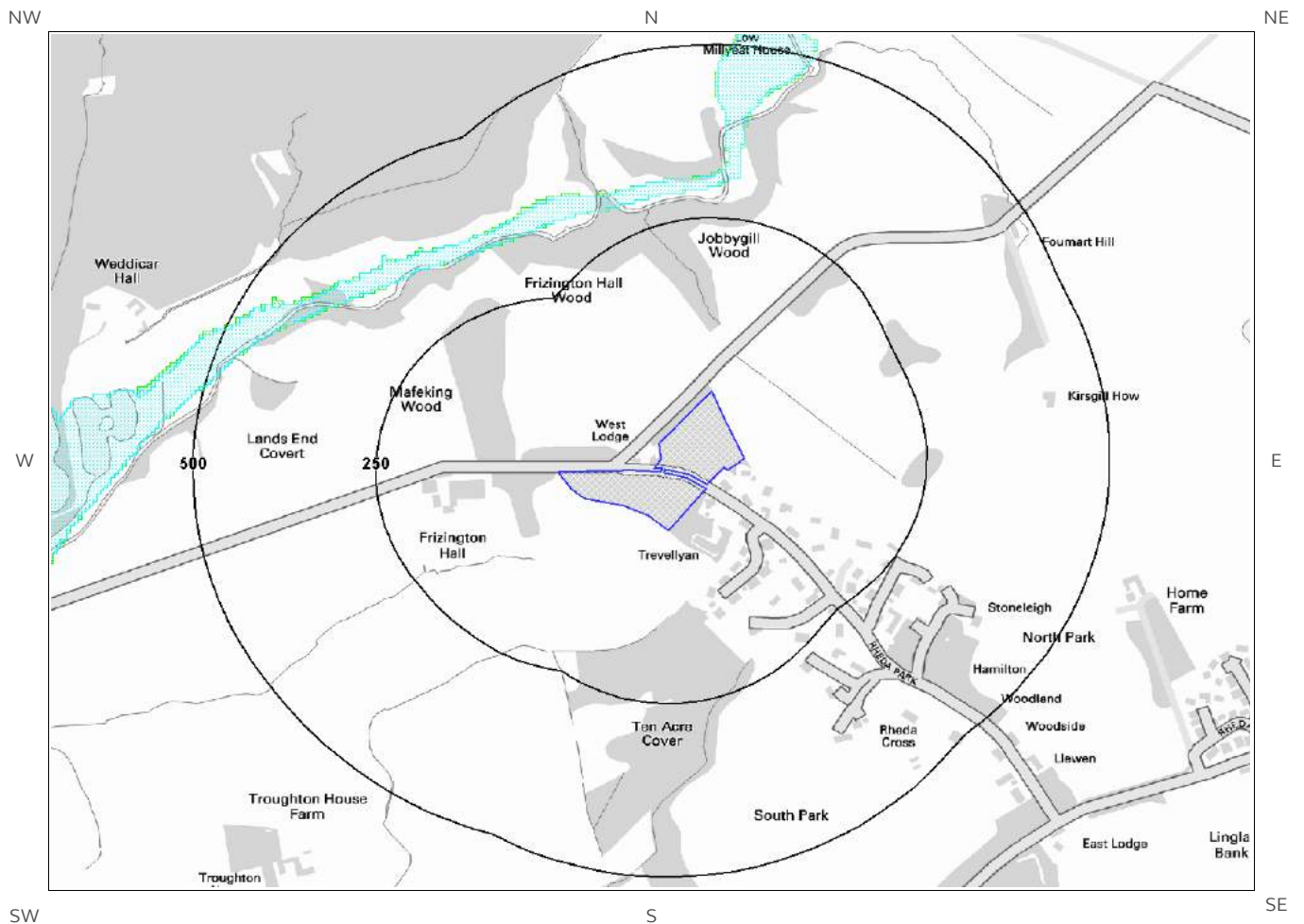
Are there any surface water features within 250m of the study site?

Yes

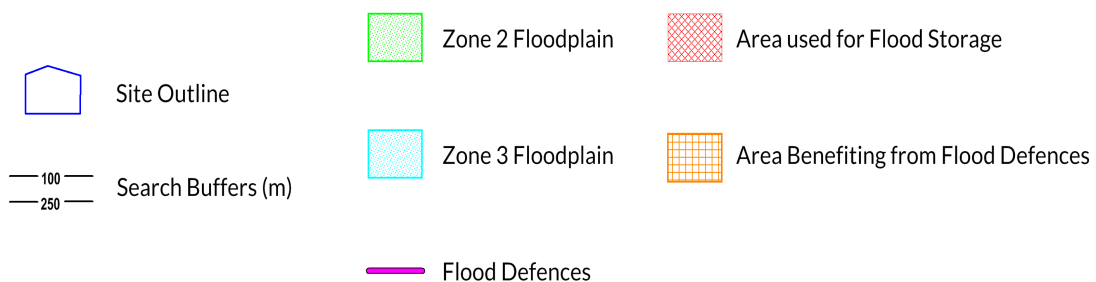
The following surface water records are not represented on mapping:

Distance (m)	Direction
60	NE
76	NE
98	N
111	SW
143	SW
143	S
217	SE
223	S
226	S
227	SW
232	SW

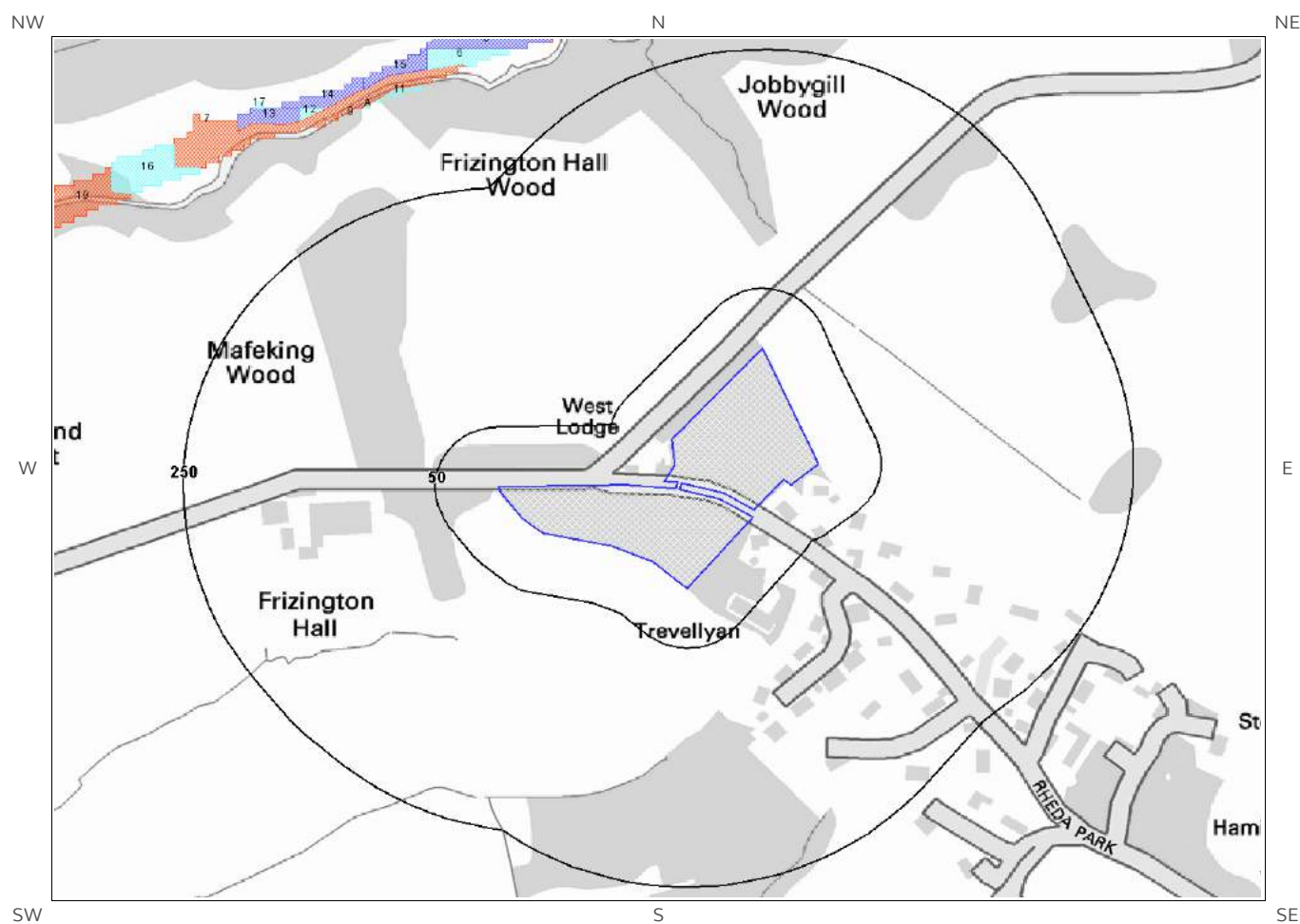
7a. Environment Agency Flood Map for Planning (from rivers and the sea)



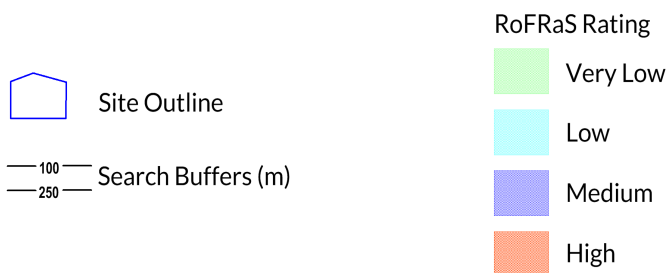
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7b. Environment Agency Risk of Flooding from Rivers and the Sea (RoFRaS) Map



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7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency Zone 2 floodplain? No

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite? Very Low

The Environment Agency RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site? No
Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

7.6 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site?

No

7.7 Groundwater Flooding Susceptibility Areas

7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding?

Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

7.8 Groundwater Flooding Confidence Areas

What is the British Geological Survey confidence rating in this result?

Low

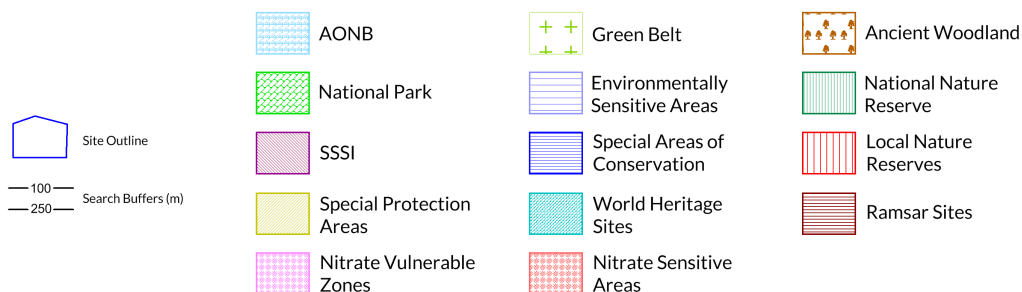
Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

8. Designated Environmentally Sensitive Sites Map



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8. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site?

Yes

8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:

1

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	SSSI Name	Data Source
Not shown	1743	E	Yeathouse Quarry	Natural England

8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:

0

Database searched and no data found.

8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:

0

Database searched and no data found.

8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:

0

Database searched and no data found.

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

8.6 Records of Ancient Woodland within 2000m of the study site:

2

The following records of Designated Ancient Woodland provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
2	87	N	UNKNOWN	Ancient Replanted Woodland
3	207	NW	UNKNOWN	Ancient and Semi-Natural Woodland

8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

0

Database searched and no data found.

8.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

8.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Ground conditions predominantly low plasticity. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with shrink-swell clays.

9.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.

9.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

* This indicates an automatically generated 50m buffer and site.

9.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site? Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

9.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

9.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site? Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard
Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

9.2 Radon

9.2.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

* This indicates an automatically generated 50m buffer and site.

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? ☐ No radon protective measures are necessary.

10. Mining

10.1 Coal Mining

Are there any coal mining areas within 75m of the study site? Yes

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

Are there any Non-Coal Mining areas within 50m of the study site boundary? No

Database searched and no data found.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No

Guidance: No Guidance Required.

Contact Details

EmapSite
Telephone: 0118 9736883
sales@emapsite.com

emapsite™

British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:

Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk



**British
Geological Survey**

NATURAL ENVIRONMENT RESEARCH COUNCIL

Environment Agency

National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 08708 506 506

Web: www.environment-agency.gov.uk

Email: enquiries@environment-agency.gov.uk



**Environment
Agency**

Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe

Email: enquiries@phe.gov.uk

Main switchboard: 020 7654 8000



**Public Health
England**

The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



**The Coal
Authority**

Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505



Local Authority

Authority: Copeland Borough Council
Phone: 0845 054 8600

Web: <http://www.copeland.gov.uk>

Address: The Copeland Centre, Catherine Street, Whitehaven,

Gemapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, Natural England who retain the Copyright and Intellectual Property Rights for the data.

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Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-sept-2016>

Appendix III

- Ground Sure Report Historical Map Extracts (GSR – Mapinsight)

Site Details:

Land at, West End, Rheda Park,
Frizington, CA26 3TA

Client Ref: EMS_391454_523896
Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: County Series

Map date: 1864

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1864
Revised 1864
Edition N/A
Copyright N/A
Levelled N/A



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www.groundsure.com

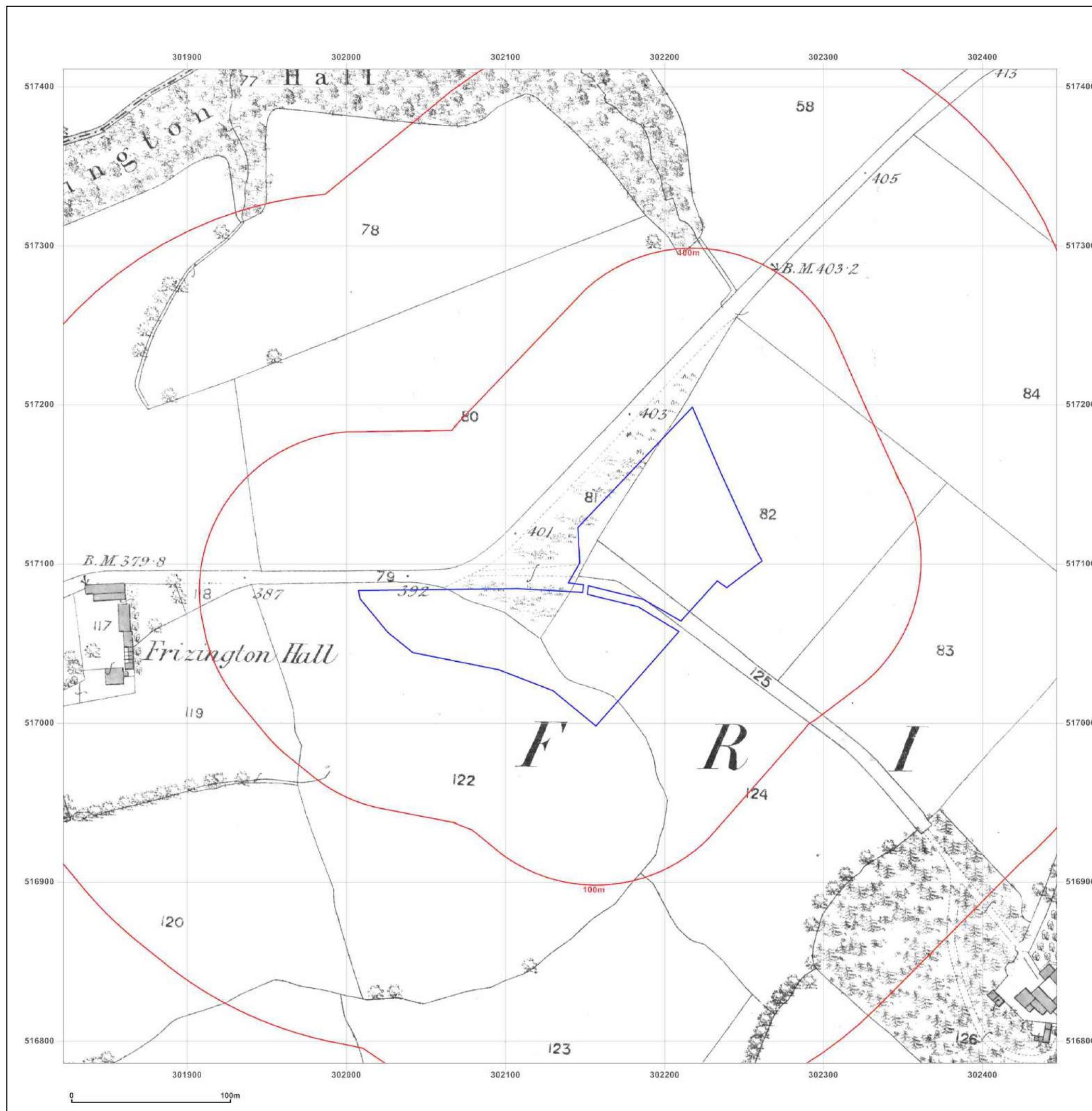


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Production date: 07 November 2016

To view map legend click here [Legend](#)



Site Details:

Land at, West End, Rheda Park,
Frizington, CA26 3TA

Client Ref: EMS_391454_523896
Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: County Series

Map date: 1899

Scale: 1:2,500

Printed at: 1:2,500



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



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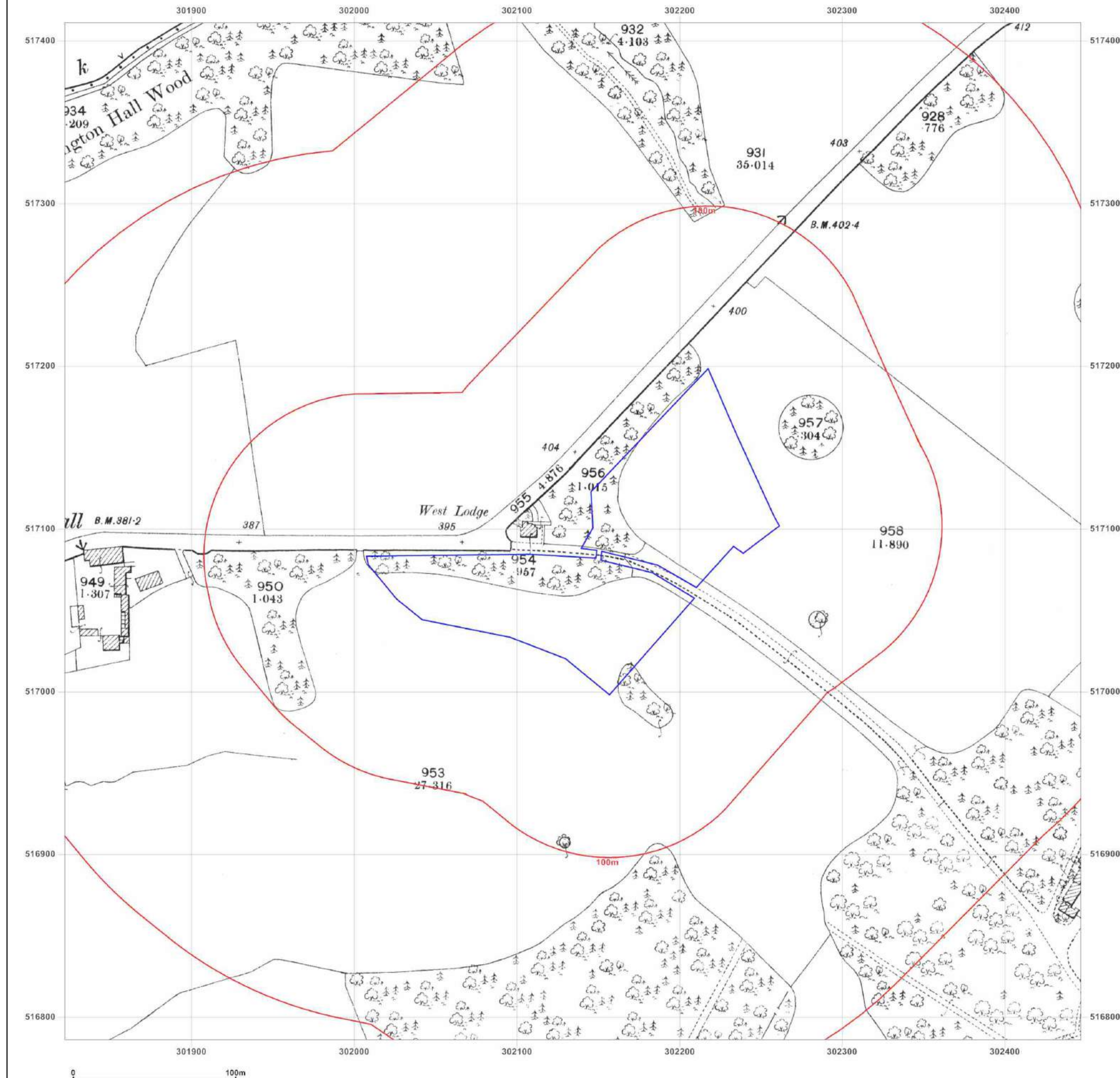


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Production date: 07 November 2016

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Site Details:

Land at, West End, Rheda Park,
Frizington, CA26 3TA

Client Ref: EMS_391454_523896
Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: County Series

Map date: 1925

Scale: 1:2,500

Printed at: 1:2,500



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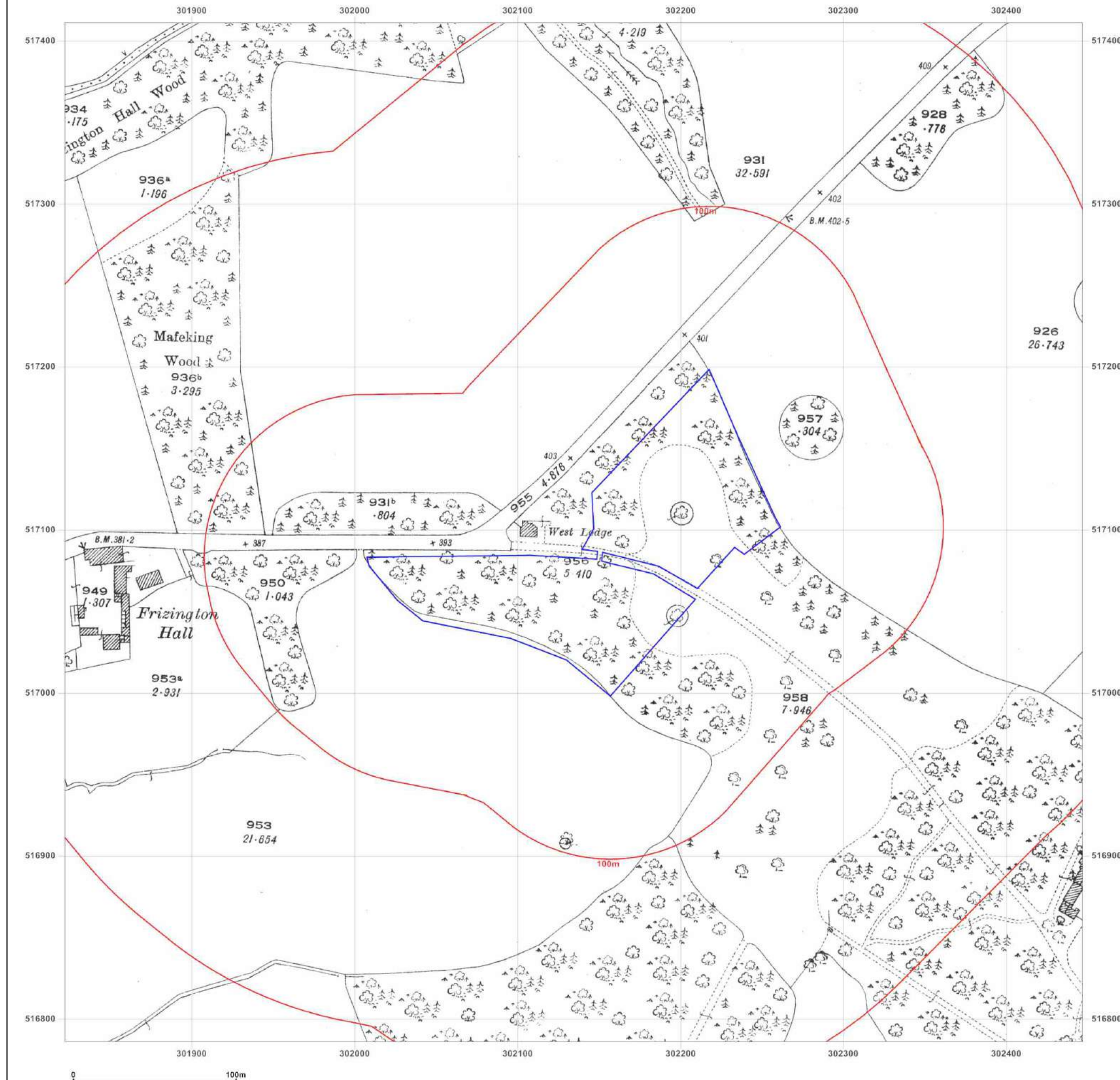


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Site Details:

Land at, West End, Rheda Park,
Frizington, CA26 3TA

Client Ref: EMS_391454_523896
Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: National Grid

Map date: 1960

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1960
Revised 1960
Edition N/A
Copyright 1962
Levelled 1956

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

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

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Frizington, CA26 3TA

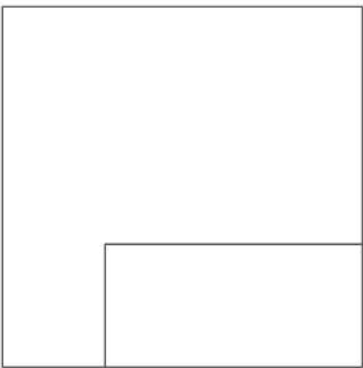
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Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: National Grid

Map date: 1987

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1965
Revised 1987
Edition N/A
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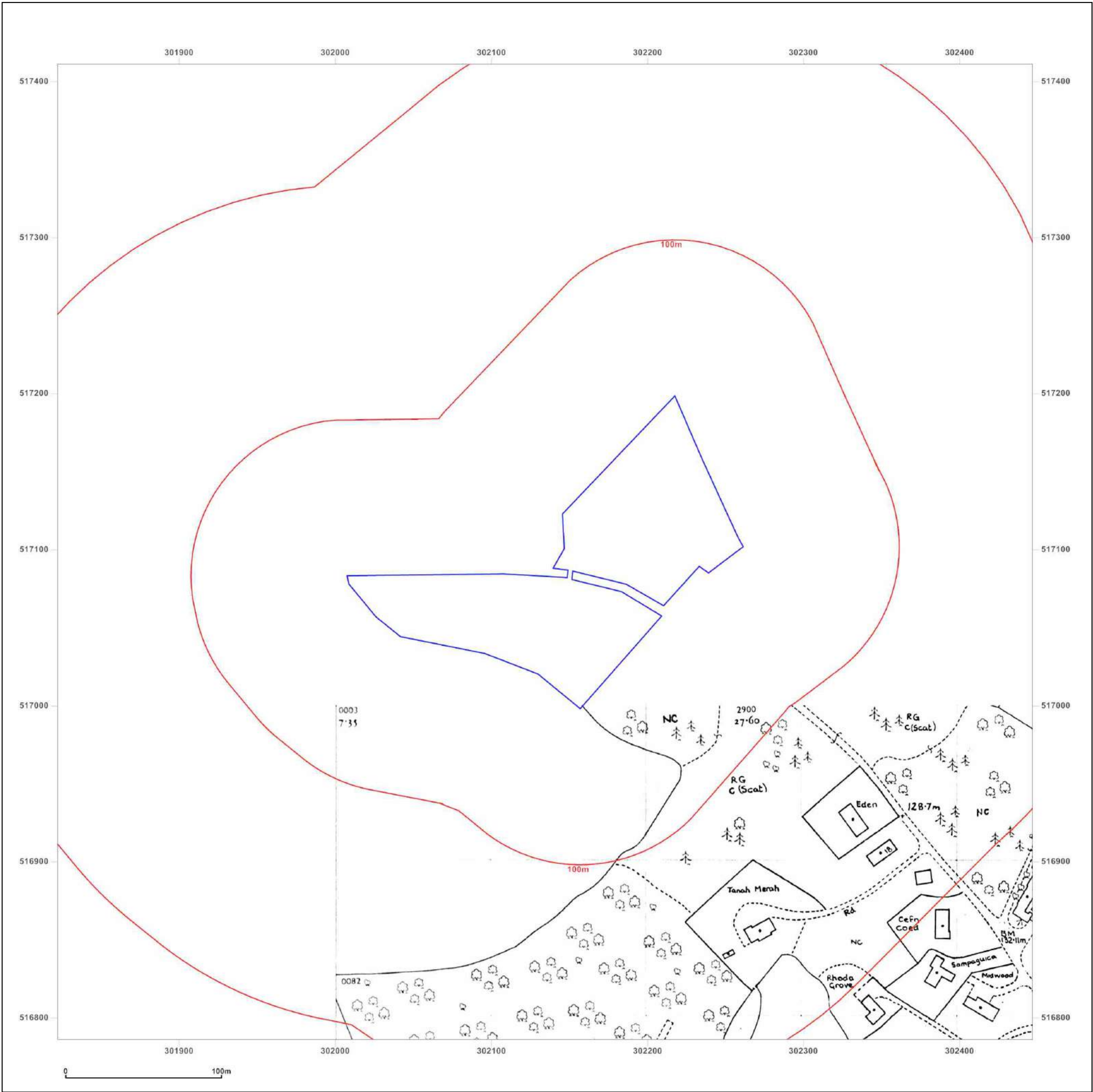


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Site Details:

Land at, West End, Rheda Park,
Frizington, CA26 3TA

Client Ref: EMS_391454_523896
Report Ref: EMS-391454_523896
Grid Ref: 302134, 517098

Map Name: National Grid

Map date: 1991-1994

Scale: 1:2,500

Printed at: 1:2,500



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

Surveyed 1965
Revised 1991
Edition N/A
Copyright 1991
Levelled 1965

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1991
Levelled 1965

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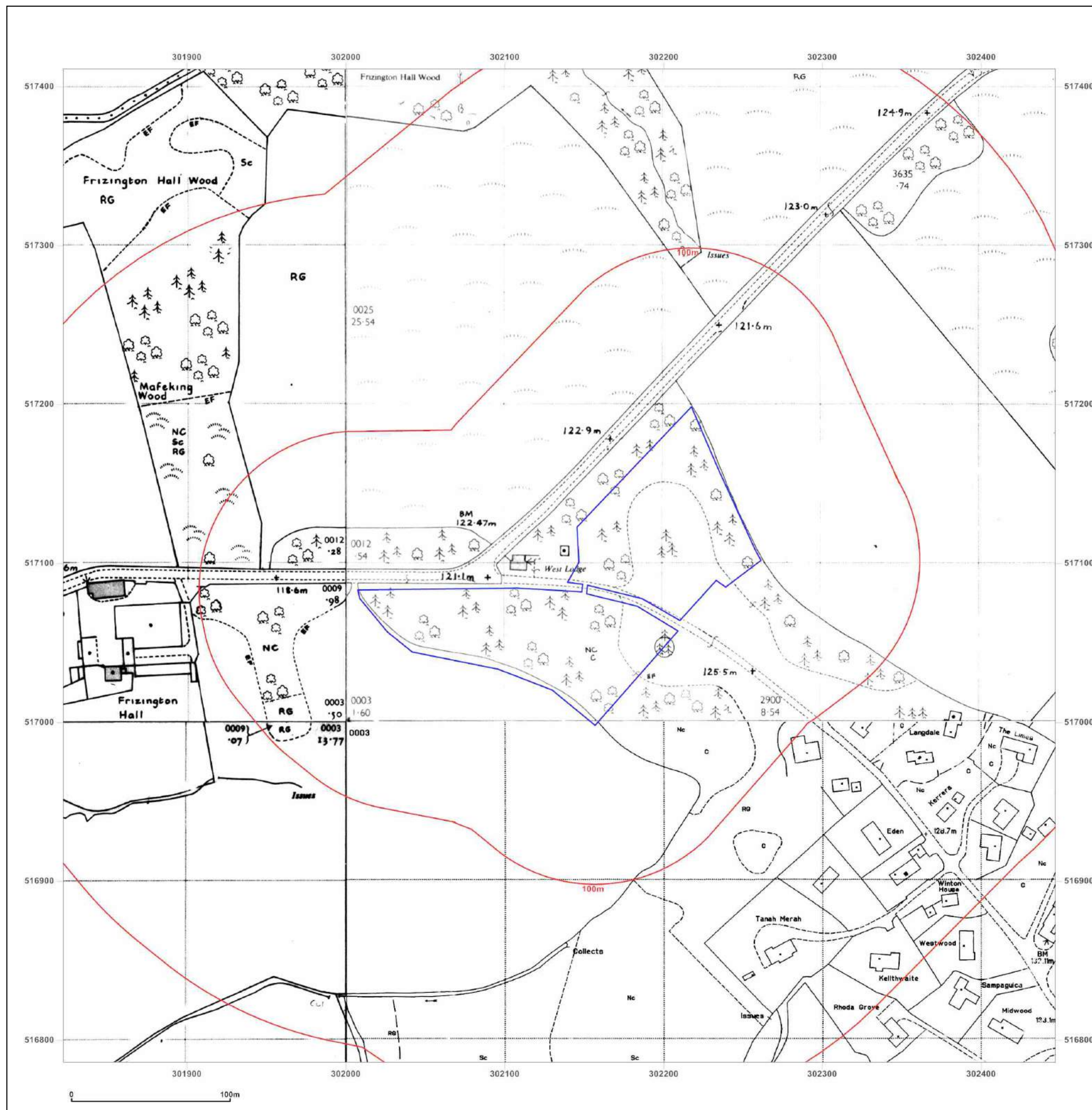


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Appendix IV

- The Coal Authority Coal Mining Report
- The Coal Authority On-line Database
- BGS Geological Plan Extract



The Coal
Authority

Resolving the **impacts** of mining

CON29M Non-Residential Mining Report

WEST LODGE
RHEDA PARK
FRIZINGTON
CUMBRIA
CA26 3TA

Date of enquiry: 08 November 2016
Date enquiry received: 08 November 2016
Issue date: 08 November 2016

Our reference: 51001295497001
Your reference: GEO2016-2203



CON29M Non-Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

Curtis Evans

Enquiry address


WEST LODGE, RHEDA PARK, FRIZINGTON,
CUMBRIA, CA26 3TA


How to contact us


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

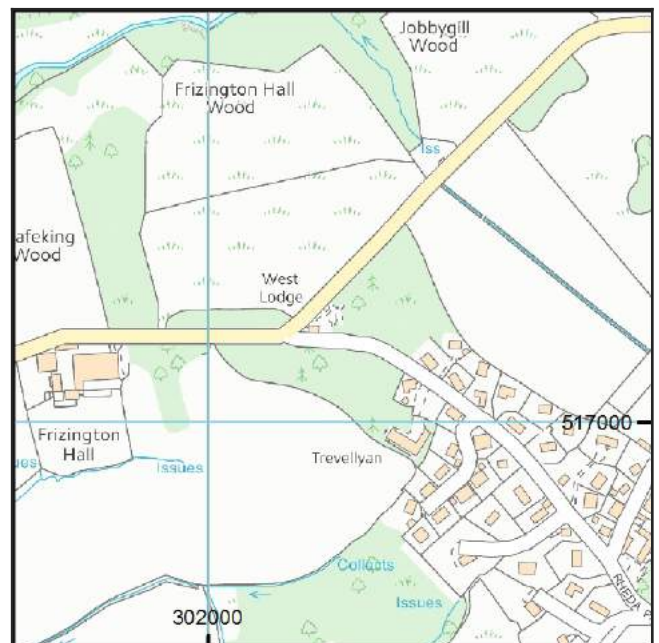
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NG18 4RG

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Approximate position of property



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Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	No
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Withdrawal of support	No
13	Working facilities order	No
14	Payments to owners of former copyhold land	No
15	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is not within a surface area that could be affected by past underground mining.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

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

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres, 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.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Withdrawal of support

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.

13. Working facilities order

The property is not in an area where an order has been made, under the provisions of the Mines (Working Facilities and Support) Acts 1923 and 1966 or any statutory modification or amendment thereof.

14. 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.

15. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

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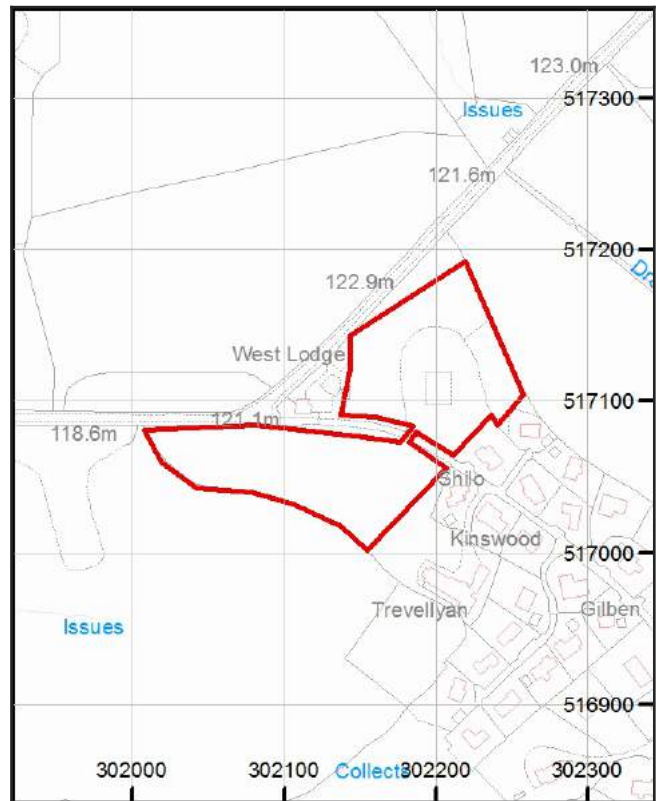
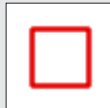
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown




How to contact us


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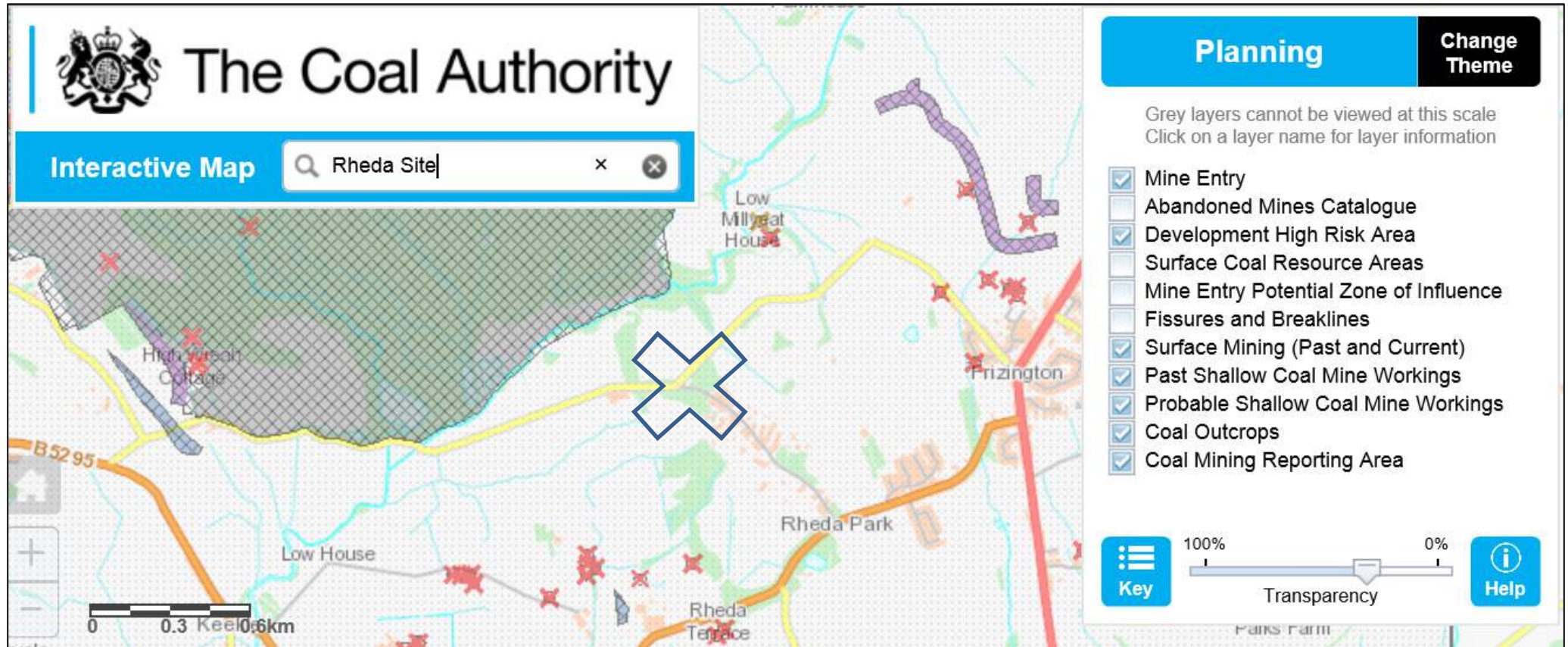
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VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	08 November 2016
Issued to	CURTIS EVANS 4 CULGARTH AVENUE COCKERMOUTH CUMBRIA CA13 9PL
Property search for	WEST LODGE RHEDA PARK FRIZINGTON CUMBRIA CA26 3TA
Reference number	51001295497001
Date of issue	08 November 2016
Cost	£77.00
VAT @ 20%	£15.40
Total received	£92.40
VAT registration	598 5850 68

GEO2016-2203: Coal Authority Online Database



Approximate Site Location marked with the 

GEO2016-2203: BGS Geological Map Extract





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