GEO Environmental Engineering

# PHASE 1: DESK TOP STUDY REPORT

# (PRELIMINARY GEO-ENVIRONMENTAL RISK ASSESSMENT)

## PROPOSED RESIDENTIAL DEVELOPMENT OF LAND AT

## ARLECDON PARK ROAD, ARLECDON

## FRIZINGTON, CUMBRIA

## FOR:

## WR RICHARDSON LIMITED

GEO Environmental Engineering

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# DOCUMENT CONTROL SHEET

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# 1.0 Introduction

## 1.1 Instruction

GEO Environmental Engineering (GEO) Ltd has completed a Phase 1: Desk Top Study Report (Preliminary Risk Assessment) for a site located off Arlecdon Park Road, Arlecdon, near Frzington, Cumbria.

The report has been commissioned by the Consultant, Martin Cuthell Limited on behalf of the Client, WR Richardson Limited.

The Phase 1: Desk Top Study (DTS) Report is suitable for submission to the Planning Authority as part of a planning application. It is understood that the Client's intention is to construct a series of residential properties with private gardens, general soft landscaping, associated parking and infrastructure.

Further development details relating to the full scope of proposed development are available from the Client.

## 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.

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

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

- British Geological Survey (BGS).
- Environment Agency (EA).
- Ground Sure Report (GSR – Appendix II).
- Historical Map Extracts (Appendix III).
- The Coal Authority Online Database (Appendix IV).
- Previous Intrusive Fieldworks (Appendix V).

Site photographs are presented in Appendix I.

## 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), with the approximate extent of the site marked on the plans 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.

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

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders in order to seek their approval of the findings prior to undertaking any works on site. GEO accepts no responsibility for the accuracy of third party information involved within the completion of this report.

Reliance on the report is for the named Client only. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Geo Environmental Engineering Ltd. Reliance on the report is strictly in accordance with Geo Environmental Engineering Ltd standard terms and conditions.

# 2.0 Site Location and Development Proposals

## 2.1 Site Location

The development area is irregular in shape and comprises a piece of land that is covered in scrub vegetation off Arlecdon Park Road, Arlecdon.

The site is centred on National Grid Reference (NGR) 305039, 518655 and is 0.39Ha in size.

## 2.2 Existing Site Levels

Although no Topographical Survey has been provided at this stage, it was noted during the site visit that the site gently falls away to the south.

## 2.3 Existing Site Surfacing and Buildings

The site comprises scrub vegetation with borders comprising a mixture of shrubs and wire fencing. There are no structures present on site.

The surrounding area comprises residential properties, undeveloped agricultural land and small farm / industrial premises.

During the site visit there was no visual indication of any invasive plant species (i.e. Japanese Knotweed). However, it may be considered prudent to complete an ecological survey.

There was no evidence of burning or any fuel/oil type contamination, nor any evidence of above ground or below ground tanks as well as a lack of any “fly-tipped” materials.

## 2.4 Existing Infrastructure and Utilities

A review of statutory utility supplier records lies out-with the scope of this report.

During the site walkover, existing utilities (i.e. service covers) were not identified on site although they were noted in the existing road infrastructure which borders the site.

Given the close proximity of the adjacent properties, it is feasible to suggest that utilities associated with these properties may pass through or close to the site. Therefore, a utility survey is considered prudent.

## 2.5 Development Proposal

A proposed site layout plan is included in Appendix I.

The plan indicates houses with private gardens, general soft landscaping, associated parking and associated infrastructure. The east of the site will be used for storage tanks (surface water attenuation) only and will not be developed with housing or used for gardens. It is anticipated tha the tanks will be buried, therefore some soil disposal is likely to be required.

## 2.6 Basic Intrusive Investigations

During a review of historical mapping dated 1984, a small round feature was noted in the centre of the site and a former tile works were noted in the eastern part. Therefore, as part of the site walkover, 4 No. trial pits were excavated in the vicinity of these features to assess the shallow ground conditions and determine if the previous land uses pose a risk to the proposed development and/or end user (i.e., is

made ground and or visual/olfactory evidence of contamination present?). GEO have historically completed intrusive investigations on parts of the site as noted in Section 2.7.
Copies of the trial pit logs are included in Appendix I.

Trial pits TP01 and TP02 were excavated to a depth of between c.0.60m and c.0.70m bgl in the vicinity of a small round feature. The trial pits encountered dark grey brown silty/clayey sandy gravelly topsoil to a depth of c.0.30m bgl. Occasional small fragments of metal were noted in TP01 only. This was underlain by natural drift deposits comprising firm brown gravelly clay.

Trial pit TP03 was located in the far eastern end of the field. Historical maps suggest that this area was previously been part of a tile works. It is understood that this area will be used for 'storage tanks' and is not included in the residential development. Trial pit TP03 encountered made ground to the base of the exploratory hole at 0.80m bgl. This comprised silty gravelly loam with occasional brick, tile, plastic and reworked clay overlying angular gravel of red shale and clinker. The material was not considered suitable for re-use within a proposed residential development but is unlikely to pose a risk to human health as this area will be used for tank storage (attenuation only) and will not include gardens or housing. The Client terminated the trial pit at a depth of 0.80m bgl to avoid damage to a possible cable which he believed to be present in this area.

Trial pit 04 was located at the eastern extent of the proposed residential development. The trial pit encountered topsoil with occasional brick fragments to 0.21m bgl. This was underlain by natural drift deposits comprising firm gravelly clay.

None of the exploratory holes located within the proposed residential development area encountered significant made ground or evidence of potential contamination sources. As the made ground encountered in trial pit TP03 was located outside of the proposed residential development area, it is unlikely to pose a risk to human health. The made ground encountered in TP03 should not be re-used within the proposed residential development.

## 2.7 Previous Reports

GEO have previously completed a series of fieldworks (i.e. soakaways) on the site as detailed below.

- Ground Investigation for Soil Infiltration Analysis completed on Land at Arlecdon Parks Road, Arlecdon, Cumbria by GEO Environmental Engineering Limited (Ref: GEO2019-3642, dated 23.04.2019).

The fieldworks and report identified the following.

- Published geological maps indicated that the site is underlain by Glacial Till which typically comprises sandy gravelly clay with occasional coarse material (sand, gravel, cobbles and boulders) and has been subjected to huge pressures during glacial activities. As a result, these deposits usually have a low to negligible permeability.
- The fieldworks identified topsoil to depths of c.0.25m to c.0.30.m overlying "firm to stiff red brown clay" to a maximum depth of c.1.60m.
- Bedrock was not encountered.
- The trial pits were filled with water and after a period of 27 hours, the water levels remained "static" and in one pit actually rose, possibly due to partial collapse of the pit or minor groundwater ingress.
- In accordance with the BRE365 Methodology, as the water added to the test pit did not fall between the 75% and 25% of the effective depth, a soil infiltration rate cannot be determined. The test is therefore considered as a fail and the soils are classified as impermeable and are not considered suitable for on-site soakaways.

# 3.0 Geo-Environmental Setting

- Section 3.1 refers to the Ground Sure Report (GSR) contained in Appendix II
- Sections 3.2 to 3.4 refer to the GSR contained in Appendix II.
- Section 3.5 refers to the historical map extracts included in Appendix III.

## 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) contained in Appendix II.

### 3.1.1 Made Ground

A review of published geological plans and the GSR does not indicate any made ground within c.250m.

The previous report on the site identified up to c.0.30m of very dark brown sandy gravelly loam. No anthropogenic debris was noted.

The historical plans (Appendix III) identify that the majority of the site has remained undeveloped. However, in the mid c.1860's a Tile Works is shown to extend across the southeastern boundary of the site. On the same plan, a circular "dashed" feature has been recorded in the west of the site although it is unknown what this feature represents.

Recent intrusive investigations have been completed as discussed in Sections 26 and 2.7. The previous fieldworks encountered topsoil with occasional metal and brick but no evidence of any contamination sources. Localised made ground was encountered in the far eastern part of the field close to the boundary, however, discussions with the Client indicate that this area will be used for tank storage (surface water attenuation) and will not form part of the residential development (i.e., not form part of private gardens or soft landscaping).

It is likely that the attenuation tank will be buried. Any made ground materials generated during the burial of the tank is not considered suitable for re-use elsewhere on site. Therefore, the materials may need to be disposed of offsite at an appropriate landfill.

Based on the historical records and previous intrusive investigations, significant made ground or contaminations is not anticipated within the proposed residential development area.

### 3.1.2 Drift Geological Deposits

A review of published geological plans and the GSR indicates that the site is devoid of geological deposits and therefore variable deposits may be encountered which may comprise clay, silt, sand and gravels.

However, previous works completed in the central and western portion of the site identified "firm to stiff red brown clay to a maximum depth of c.1.60m.

The GSR (Section 17.0) within Appendix II identifies the following geohazards and indicates a preliminary level of risk:

- Shrink-swell clays – very low risk.
- Landslides – low risk.
- Compressible deposits – negligible risk.
- Collapsible deposits – very low risk.

- Running sands – very low risk.

Intrusive site investigations would be beneficial to confirm ground conditions for foundation and highway design. Previous investigations have determined that the site is not suitable for soakaways.

### 3.1.3 Solid Geological Deposits

Solid geological deposits across the development site are indicated by the BGS as the Pennine Lower Coal Measures which comprises comprise cyclical alternations of mudstone, siltstone, sandstone and coal. There are no recorded sub-cropping coal seams on or within close proximity to the site.

### 3.1.4 Historical BGS Boreholes / Trial Pits

Reference should be made to Section 2.6 of this report to detail the ground conditions identified in the central and western portion of the site.

The GSR has no historical borehole records within a representative distance of the site.

### 3.1.5 Geological Features

A fault is noted to be present adjacent to the far eastern boundary.

The GSR (Section 17.6) indicates a negligible hazard rating with respect to ground dissolution of soluble rocks.

### 3.1.6 Coal Mining Assessment

The Lower Coal Measures are known to comprise productive coal seams. The site is underlain by mudrocks (i.e. mudstone, siltstone, etc.). There are no coal seams recorded to subcrop below or within close proximity to the site.

As specified by the Coal Authority (CA) Interactive Map, the site is located outwith a coal mining reporting area. However, GEO has made reference to the CA Online Database which notes the following:

- The site is not recorded as being a CA defined “Development High Risk Area”.
- The CA does not record areas of shallow coal mine workings (i.e. less than c.30m depth) either on site or close to the site.
- No coal mine entries are recorded by the CA as being on site or immediately adjacent to the site.
- Shallow sub-cropping coal seams are not recorded by the CA on site although a seam is shown by the BGS as being present on the southern boundary.
- Areas of former opencast (surface) coal mining are not recorded by the CA within close proximity to the site boundaries.

As a result of the above information, in-conjunction with the geological review using the desk-based information available from the CA, BGS and GSR, the development area is not currently considered to be at potential risk of shallow coal mining related geohazards.

Shallow coal is not anticipated beneath the site as a geohazard or potential resource.

### 3.1.7 Radon Gas Assessment

In accordance with the GSR, part of the site falls within an area that is located within a Radon Affected Area as defined by the British Geological Survey (BGS) and the Health Security Agency (HSA), as between 5% and 10% of properties are above the action level. Given that this is the case and radon

affected areas are located within close proximity to the site, any proposed properties will require the installation of BASIC radon protection measures.

## 3.2 Development Area Hydrogeology (Groundwater)

### 3.2.1 Made Ground/Soils

The near surface materials on site are likely to be classified as a high permeability due to the urbanised setting (i.e. worst-case scenario adopted until proven otherwise).

### 3.2.2 Drift Geology

The site is recorded by the BGS as being in an area devoid of drift deposits and therefore the EA have no designated aquifer status.

However, the previous fieldworks have identified “firm to stiff red brown clay” which in accordance with the aquifer status in the GSR, these deposits would be designated to be a Secondary Undifferentiated Aquifer.

### 3.2.3 Solid Geology

The GSR records the site to be underlain by a Secondary A Aquifer. They are considered to be capable of supporting water supplies at local rather than a strategic scale.

## 3.3 Development Area Hydrology

### 3.3.1 Groundwater

Groundwater (unlikely to be a resource) is unlikely to be encountered at shallow depth given the impermeable nature of the deposits identified on site during the previous site works. A review of the information in the GSR indicates the following:

- No “active” groundwater abstractions are recorded within c.1km of the site.
- No “active” surface water abstractions are recorded within c.1km of the development area.
- No “active” potable water abstraction licences are held within c.1km of the site.
- The site is not recorded as being within a Source Protection Zone.

### 3.3.2 Surface Water Features

No surface water features are noted on site although two features are recorded at within c.250m of the site, the closest point being located c.147m southeast (Eller Gill) with Winder Beck c.186m south.

No WFD classified rivers, canals, ponds or lakes (Biological or Chemical Monitoring Points) are recorded within c.250m of the development area.

### 3.3.3 Current Surface Water Run-off

It is considered that the current surface water will infiltrate directly into made ground / topsoil on site or be directed in to the dedicated onsite drainage system, where present and undamaged.

### 3.3.4 Ground Infiltration Potential

Previous fieldworks completed on the site by GEO (see Section 2.6 & Appendix V) have identified impermeable deposits (i.e. clay) which have been proven not to be suitable for soakaways.

## 3.4 Development Area Environmental Sensitivity

### 3.4.1 Site Ecology

The majority of the Environmental Designations (Special Areas of Conservation, RAMSAR, SAC,) are absent within c.250m.

Although the site is located within a SSSI Impact Risk Zone, the proposed redevelopment for residential purposes falls outwith the type of developments requiring consultation.

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

### 3.4.2 Authorisations, Incidents and Registers

Once again, the majority of the data suggests a lack of any Authorisations, Incidents or Registers recorded within c.250m of the site. The Design Team should refer to Section 4.0 of the GSR in Appendix II.

However, there are ten Licensed Discharges to Controlled Waters, the nearest being c.35m east associated with sewage discharge.

It is recommended that reference be made to Section 4.0 of the GSR for further information (Appendix II).

### 3.4.3 Determination of Contaminated Land (Part IIA)

A review of the GSR 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 indicates the following historical land uses:

- Potentially Contaminative Uses (PCU) – The site as a whole is recorded as being part of a Tile Works back in c.1863 although the historical plans appear to show building structures only extending across the southeastern boundary. No excavations are shown to be present on site. An area of “Unspecified Ground Workings” is shown to extend on to the southeastern part of the site (c.1923). As part of the fieldworks completed in the central and western portion of the site, topsoil overlying firm to stiff clays were present to at least c.1.60m so on the evidence of these fieldworks suggest that no significant made ground is present. It is unknown if this is the case in the east of the site.
- Historical Tanks – None recorded on site or within c.250m of the site.
- Historical Energy Features – None recorded on site or within c.250m of the site.
- Historical Petrol and Fuel Site Database – None recorded on site or within c.250m of the site.
- Historical Garage and Motor Vehicle Repair Database – None recorded on site or within c.250m of the site.
- Historical Military Land – None recorded on site or within c.250m of the site.

### 3.4.5 Current Industrial Land Uses

Given the site is surrounded by residential properties and possible agricultural buildings within a rural setting, no industrial land uses are recorded to be present within a potentially influencing distance.

### 3.4.6 Fuel Station Entries

According to information presented in the GSR (Section 4.2 – Appendix II) there are no fuel filling sites recorded within c.250m of the site.

### 3.4.7 Landfill and Waste Regulation/Management – Landfill 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 note any Landfill Sites within c.250m.
- No Ground Sure Local Authority Landfill Sites are recorded within c.250m.

### 3.4.8 Landfill and Waste Regulation/Management – Other Waste Sites

- No Operational / Non-Operational Waste Treatment, Transfer or Disposal Sites are recorded within c.250m.
- No Environment Agency Registered Landfill Sites are recorded within c.250m.
- No Waste Exceptions are recorded within c.250m.

It is recommended that reference be made to Section 3.0 of the GSR (Appendix II) for further information.

## 3.5 Development Area Historical Plan Appraisal

This section is based on historical Ordnance Survey map data and provides a summary of the site history, highlighting any industries, processes or activities that may be considered as Geohazards. Copies of historical maps which date back to the late c.1860's are provided in Appendix III and a summary of the site history is included on the following page.

### 3.5.1 On site

From the early c.1860's, a Tile Works (several buildings) is shown in the eastern part although no excavations or brickfields are noted. A circular "dashed" feature is shown in the central part of the site. Although this feature is unknown, it is not thought to be an excavation.

By the late c.1890's the Tile Works and the circular feature are no longer recorded.

No other significant changes are noted on the site by way of the historical plans and the site is "undeveloped" which was confirmed during the fieldworks and subsequent walkover.

Site photographs are included in Appendix I.

### 3.5.2 Off site

The earliest plan (c.1863) recorded the surrounding area to be largely undeveloped land with sporadic structures present as well as a railway line c.219m southeast.

Between the late c.1890's and c.1960, a Coal Depot is shown to be adjacent to the southern boundary with Arlecdon Goods Station c.50m southwest as well as a railway line. A small mound is shown to be adjacent to the southern boundary.

The early c.1990's, continued development has taken place with more residential properties, schools and possible agricultural buildings.

### 3.5.3 Overview

From the review of historical plans available, the site walkover and previous fieldworks (see Section 2.6) it appears that the site has largely remained undeveloped.

Previous investigations in the central and western parts of the site encountered shallow topsoil with occasional sporadic anthropogenic materials including brick and metal overlying natural drift deposits comprising clay. Excavations in the far eastern part have recorded made ground, possibly associated with the former Tile Works, however, it is understood that this area will be used for tank storage and will not be included in the proposed residential development.

No other significant changes are noted on the site and the site is “undeveloped” which was confirmed during the fieldworks and subsequent walkover.

At this stage, no significant sources of ground gas (i.e. infilling, made ground, organic rich soils) have been identified within close proximity to the site and therefore a period of ground gas monitoring for carbon dioxide and methane is not considered necessary.

# 4.0 Conceptual Site Model

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

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

Depending on the results of the ground investigation, the CSM can be refined based upon the outcomes of the intrusive works to ensure that appropriate remediation (if required) is completed to ensure the development area is “fit for purpose”.

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

## Conceptual Site Model (Source-Pathway-Receptor Pollutant Linkage Model)

| **Sources:** |
|---|
| **S1 = Made Ground** – Made ground is a potential source of contamination which could pose a risk to human health. Based on the historical maps, the only area of previous development was a former tile works in the far east of the site during the mid-1800s. The rest of the site appears to have remained undeveloped.<br><br>Previous investigations in the central and western parts of the site encountered shallow topsoil with occasional sporadic anthropogenic materials including brick and metal overlying natural drift deposits comprising clay. Excavations in the far eastern part encountered made ground, possibly associated with the former Tile Works, however, it is understood that this area will be used for tank storage and will not be included in the proposed residential development. The made ground is unlikely to pose a risk to the end user if the land is used for tank storage.<br><br>No visual and/or olfactory evidence of any hydrocarbons was noted in the form of AST's or staining of the existing ground. |
| **S2** = Ground Gas – At this stage, a lack of any significant sources of ground gas have been identified (i.e. infilling, excavations, organic rich soils), it is considered that no ground gas monitoring or assessments are required.<br><br>Basic radon protection measures are required. |
| **Pathways:** |
| P1 = Inhalation of indoor / outdoor air (wind-blown particles/vapours) |
| P2 = Dermal/direct contact (limited risk present through areas of soft landscaping) |
| P3 = Ingestion (limited risk present through areas of soft landscaping) |
| P4 = Migration through existing services |
| P5 = Direct contact with building materials |
| P6 = Surface Run-off |
| P7 = Leaching from Soils (risk present where sources are exposed to surface water infiltration) |
| **Receptors:** |
| R1 = Human Health (Residents) |
| R2 = Human Health (Construction Workforce – redevelopment works – lies outside this scope of works) |
| R3 = Groundwater (Secondary A Aquifer) |
| R4 = Building Materials and Buried Utilities |
| R5 = Flora and Fauna (potential future soft landscaping – lies outside this scope of works) |

# 5.0 Preliminary Qualitative Risk Assessment (PQRA)

## 5.1 Preliminary Qualitative Geotechnical Risk Assessment

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 is currently determined appropriate for this development area for the following reasons:

- Topsoil has been identified to depths of c.0.25m and c.0.30m across the central and western part of the site.
- Made ground is present in the east where the former Tile Works was present during the mid-1800s.
    - It is understood that this land will be used for tank storage (attenuation).
- Relict structures (i.e. walls, floor slabs, foundations) may be encountered in the area of the former Tile Works in the east.
- The site is indicated to be devoid of superficial deposits although the previous fieldworks have identified firm to stiff clay deposits to at least c.1.60m. Previous trial pit logs are included in Appendix V.
- Geological and mining information suggests that the site is not at risk of shallow coal mining hazards (i.e. ground disturbance/movement etc.) and therefore no further works or remedial measures are considered necessary at this time.
- Shallow groundwater is not expected given the cohesive nature of the soils encountered on site although some minor ingresses may be encountered where any made ground or granular deposits are identified.
- Surface water ponding and overland flow may occur particularly following periods of heavy rainfall.
- The clay soils could potentially be affected by the surrounding vegetation (shrubs and trees), potentially requiring an increase in foundation depths.
- Previous investigations have identified that the clay soils are not suitable for soakaways.

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

## 5.2 Qualitative Contamination Risk Assessment – Risk Meter

The following Ground Contamination, Groundwater Contamination and Ground Gas Risk Meter determines the potential level of risk associated with the redevelopment of the site when taking into account the anticipated *Sources – Pathways – Receptors* within the pollutant linkage model and CSM.

| | | | | | | |
|---|---|---|---|---|---|---|
| **Ground Contamination:** | ⇩ | | | | | |
| **RISK =** | NEGLIGIBLE | VERY LOW | LOW | MODERATE | HIGH | VERY HIGH |
| **Groundwater Contamination:** | ⇩ | | | | | |
| **RISK =** | NEGLIGIBLE | VERY LOW | LOW | MODERATE | HIGH | VERY HIGH |
| **Ground Gas:** | ⇩ | | | | | |
| **RISK =** | NEGLIGIBLE | VERY LOW | LOW | MODERATE | HIGH | VERY HIGH |
| **Radon Gas:** | | | | ⇩ | | |
| | **<1%** | **1%-3%** | **3%-5%** | **5%-10%** | **10%-30%** | **>30%*** |
| | Estimated Percentage of Dwellings Exceeding the Radon Action Level | | | | | |

**Ground Contamination:** A risk level of NEGLIGIBLE to VERY LOW is deemed appropriate with respect to ground contamination. Historical records indicate a former tile works in the far east of the site, however, the rest of the site has remained undeveloped.

Previous investigations across the central and western parts encountered shallow topsoil with occasional sporadic anthropogenic materials including brick and metal overlying firm natural clay deposits. No evidence of any significant contamination source was encountered.

Made ground was encountered in the far east of the site associated with the former tile works (mid-1800s), however, it is understood that this area will be used for tank storage (surface water attenuation) and will not be included within the proposed residential development (i.e., it will not form part of the gardens or soft landscaping and is separate to the site).

It is likely that the proposed surface water attenuation tank will be buried. Any made ground generated during the burial of the tank is not considered suitable for re-use elsewhere on site. Therefore, the materials may need to be disposed of offsite at an appropriate landfill.

A watching brief is recommended during the development works to ensure that if made ground (that includes anthropogenic debris, i.e. ash, clinker etc.) and/or visual/olfactory evidence of potential contamination are identified then works should be stopped and advice sought from an appropriately qualified and experienced Geo-environmental Engineer.

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

Although Eller Gill and Winder Beck are present within c.250m of the site, given that the site has been proven to be underlain by impermeable deposits (i.e. firm to stiff clay) these will inhibit the movement of any water or leachable materials. In addition, there is a lack of any “active” groundwater abstractions, surface water abstractions and potable water abstractions within c.1km of the site. The site also lies outwith a Source Protection Zone and therefore at this stage no significant concerns are present.

**Ground Gas**: A risk level of NEGLIGIBLE is currently considered appropriate for the site with respect to potential harmful ground gas since no significant sources of ground gas have been identified. Therefore, ground gas monitoring is not considered necessary.

**Radon Gas:** In accordance with the GSR, part of the site falls within an area that is located within a Radon Affected Area as defined by the British Geological Survey (BGS) and the Health Security Agency (HSA), as between 5% and 10% of properties are above the action level. Therefore, BASIC radon protection measures should be installed within the proposed houses.

# 6.0 Conclusions & Recommendations

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

- The site is currently considered to pose a *low* geotechnical risk (proposed structures).
- The site is currently considered to pose a *negligible to 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 in respect of ground gas.
- BASIC radon gas protection measures are required.

It is likely that the attenuation tank will be buried. Any made ground generated during the burial of the tank is not considered suitable for re-use elsewhere on site. Therefore, the materials may need to be disposed of offsite at an appropriate landfill.

A “watching brief” should be applied to ensure that if ground conditions vary from those inferred within this report (i.e., if the off-site made ground encroaches into the development area) then advice should be sought from a suitably qualified and experienced Geo-Environmental Engineer.

In the event that made ground is identified during works, then sampling of those materials should be completed by an appropriate Geo-Environmental Engineer to facilitate contamination screening and a Human Health Risk Assessment.

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

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

## End of Report

# Appendix I

- Site Location Plan
- Aerial Photograph Extract
- Site Photographs
- Proposed Site Layout
- Exploratory Hole Location Plan
- Trial Pit Logs

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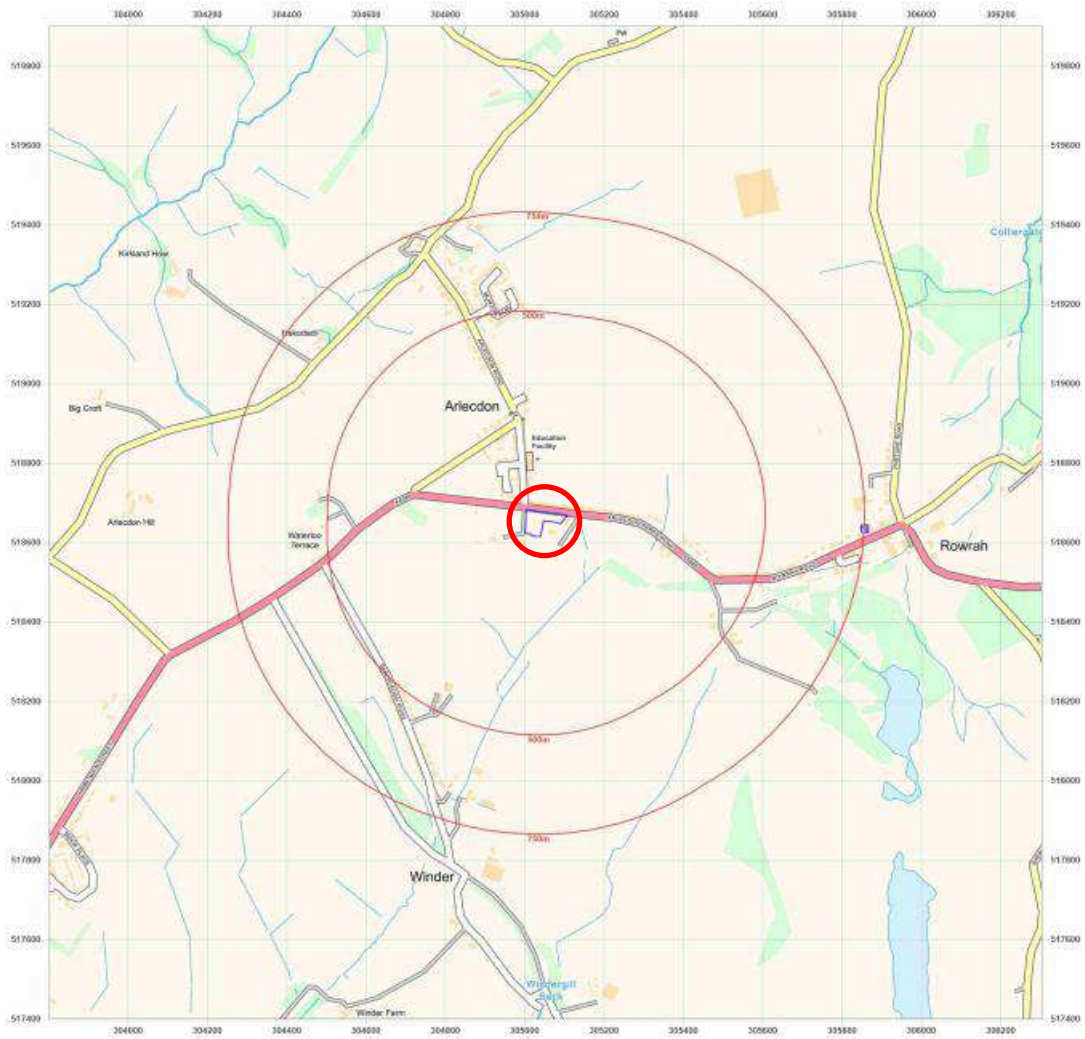
## GEO2023-6003: Site Location Plan (Not to Scale)

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## GEO2023-6003: Aerial Photograph Extract


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## GEO2023-6003: Existing Site Plan


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## GEO2023-6003: Site Images





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# PRELIMINARY ISSUE 14/11/23

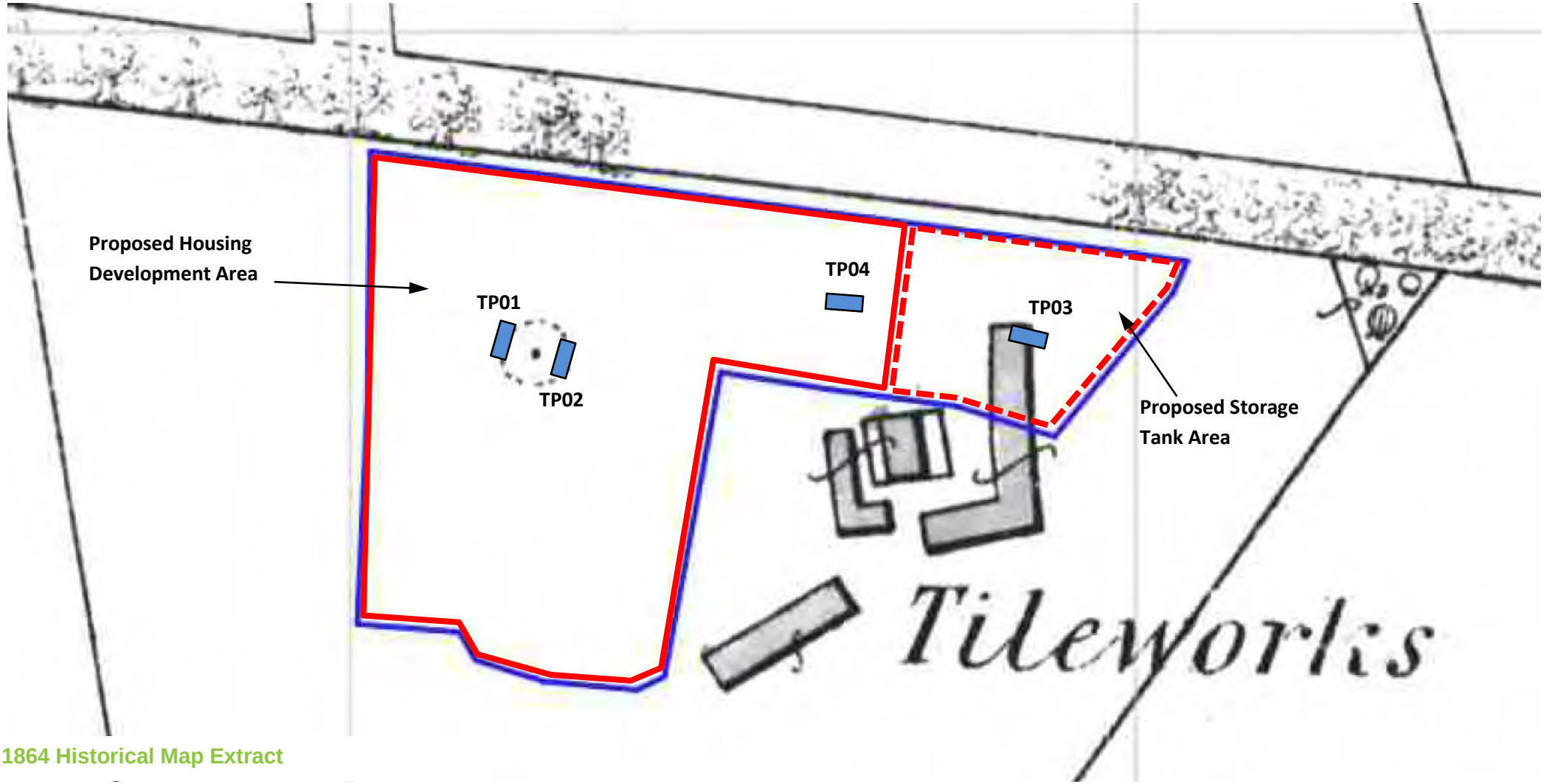
**MARTIN CUTHELL**
ARCHITECTURAL SERVICES

**LAND AT ARLECDON PARKS ROAD**
**PROPOSED HOUSING SITE LAYOUT**

| SCALE | DATE | DRAWN | NUMBER |
|---|---|---|---|
| 1:200 @ A1 | Nov.'23 | mc | 23.07 - 01 |

– Arlecdon Road –
– footpath –
kerb
cover
IC
W
sign
telecoms cover
ridge: 108.0m
#1
eaves: 105.4m
ridge: 107.5m
eaves: 104.8m
ridge: 105.0m
eaves: 102.9m
ridge: 104.2m
eaves: 102.0m
ridge: 103.8m
eaves: 101.3m
ridge: 103.4m
eaves: 100.6m
ridge: 102.5m
eaves: 99.54m
ridge: 101.0m
eaves: 98.2m
ridge: 100.0m
eaves: 97.4m
ridge: 98.54m
eaves: 96.3m
crown: 100.26m
– Arlecdon Parks Road –
FH
TP
G
cabinet
Datum ref.=100.0m
concrete
new access
A5086 to Rowrah –>
path of footpath
– hedge –
fence (P&W)
haunch
99
98
97
96
95
94
93
92
91
90
89
88
87
footpath
7
6
2
1
5
4
3
vis.
turning head
– access road (Watson's) –
fence (P&R)
gate
hedge
Storage Tank
as engineers spec
– Wynfield –
building continues
ridge: 98.1m
"Parkhwaite"
ridge: 96.8m
ridge: 96.5m
– private road –
dropped kerb
new foul manhole, 1050mm dia ring, depth apprx. 1200mm
new foul manhole, 1050mm dia ring, depth apprx. 1200mm
new 150mm dia sw drain
new 150mm dia foul drain
Exg Gully reconnected to new MH
new foul manhole, 1050mm dia ring, apprx. 1200mm depth with 150mm dia saddle/'Y' connection to ex. foul drain
150mm SW Pipe
150mm FW Pipe
Exg Culvert
Ex. gullys re-piped into new ring manhole with outlet connected into existing gully connection pipe to culvert manhole
Exg Culvert (Line/condition TBC)
Exg Ø1225mm Combined Sewer
cover level: 91.54m
cover level: 91.95m
cover level: 90.34m
cover level: 89.98m
cover level: 89.09m
IL 92.80
IL 93.00
IL 93.00
150mm FW Pipe 1:141
Swale Secondary Treatment
Existing seepage from watercourse/blockage in this area
plastic pipe
clay pipe
General dilapidation of pipe outfalls in this area
(clay) pipe invert: 87.47m
dropped kerb
– Commercial property –
"Watsons of Arlecdon"
ridge: 102.6m
+100m
+150m
+200m
+250m
– field (grass & scrub) –
N

## GEO2023-6003: Arlecdon Park Rd, Arlecdon – Exploratory Hole Location Plan (Based on the 1864 Historical Map Extract)




1864 Historical Map Extract

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## GEO2023-6003: Arlecdon Park Rd, Arlecdon – TP01

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.30 | TOPSOIL: Dark grey brown very silty/clayey sandy gravelly LOAM with occasional fragments of metal. | | |
| 0.30 | 0.70 | Firm brown slightly gravelly CLAY. | | |
| | | Trial hole remained open and dry on completion.<br>Trial hole backfilled with arisings on completion. | | |

**Engineer:** J.Brock
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
LP = Limited Penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub


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## GEO2023-6003: Arlecdon Park Rd, Arlecdon – TP02

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.27 | TOPSOIL: Dark grey brown very silty/clayey sandy gravelly LOAM. | | |
| 0.27 | 0.60 | Firm brown slightly gravelly CLAY. | | |
| | | Trial hole remained open and dry on completion.<br>Trial hole backfilled with arisings on completion. | | |

**Engineer:** J.Brock
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
LP = Limited Penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub


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## GEO2023-6003: Arlecdon Park Rd, Arlecdon – TP03

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.70 | MADE GROUND / TOPSOIL: Dark grey brown silty sandy gravelly LOAM with occasional brick, tile and plastic. Occasional pockets of firm brown clay. | | |
| 0.70 | 0.80 | MADE GROUND: Reddish brown and grey angular GRAVEL of red shale and clinker. | | |
| | | Trial pit terminated as Client concerned about damage to possible water pipe (exact route unknown).<br>Trial hole remained open and dry on completion.<br>Trial hole backfilled with arisings on completion. | | |

**Engineer:** J.Brock
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
LP = Limited Penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub


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## GEO2023-6003: Arlecdon Park Rd, Arlecdon – TP04

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.21 | TOPSOIL: Dark grey brown very silty/clayey sandy gravelly LOAM. Occasional brick fragments. | | |
| 0.21 | 0.70 | Firm brown slightly gravelly CLAY. | | |
| | | Trial hole remained open and dry on completion.<br>Trial hole backfilled with arisings on completion. | | |

**Engineer:** J.Brock
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
LP = Limited Penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub


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## Appendix II

- Ground Sure Report (GSR)

Groundsure
LOCATION INTELLIGENCE

# Enviro+Geo
Insight

unspecified

## Order Details

**Date:** 14/09/2023

**Your ref:** EMS_894102_1106747

**Our Ref:** EMS-894102_1142020

## Site Details

**Location:** 305039 518655

**Area:** 0.39 ha

**Authority:** Cumberland Council ↗






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

# Summary of findings

| Page | Section | Past land use > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| 15 > | 1.1 > | Historical industrial land uses > | 2 | 8 | 12 | 27 | - |
| 17 > | 1.2 > | Historical tanks > | 0 | 0 | 1 | 0 | - |
| 18 > | 1.3 > | Historical energy features > | 0 | 0 | 0 | 1 | - |
| 18 | 1.4 | Historical petrol stations | 0 | 0 | 0 | 0 | - |
| 18 | 1.5 | Historical garages | 0 | 0 | 0 | 0 | - |
| 19 | 1.6 | Historical military land | 0 | 0 | 0 | 0 | - |
| Page | Section | Past land use - un-grouped > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 20 > | 2.1 > | Historical industrial land uses > | 3 | 9 | 17 | 37 | - |
| 23 > | 2.2 > | Historical tanks > | 0 | 0 | 1 | 0 | - |
| 23 > | 2.3 > | Historical energy features > | 0 | 0 | 0 | 1 | - |
| 24 | 2.4 | Historical petrol stations | 0 | 0 | 0 | 0 | - |
| 24 | 2.5 | Historical garages | 0 | 0 | 0 | 0 | - |
| Page | Section | Waste and landfill > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 25 | 3.1 | Active or recent landfill | 0 | 0 | 0 | 0 | - |
| 25 | 3.2 | Historical landfill (BGS records) | 0 | 0 | 0 | 0 | - |
| 26 | 3.3 | Historical landfill (LA/mapping records) | 0 | 0 | 0 | 0 | - |
| 26 | 3.4 | Historical landfill (EA/NRW records) | 0 | 0 | 0 | 0 | - |
| 26 | 3.5 | Historical waste sites | 0 | 0 | 0 | 0 | - |
| 26 | 3.6 | Licensed waste sites | 0 | 0 | 0 | 0 | - |
| 26 > | 3.7 > | Waste exemptions > | 0 | 0 | 0 | 22 | - |
| Page | Section | Current industrial land use > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 30 | 4.1 | Recent industrial land uses | 0 | 0 | 0 | - | - |
| 30 | 4.2 | Current or recent petrol stations | 0 | 0 | 0 | 0 | - |
| 31 | 4.3 | Electricity cables | 0 | 0 | 0 | 0 | - |
| 31 | 4.4 | Gas pipelines | 0 | 0 | 0 | 0 | - |
| 31 | 4.5 | Sites determined as Contaminated Land | 0 | 0 | 0 | 0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 31 | 4.6 | Control of Major Accident Hazards (COMAH) | 0 | 0 | 0 | 0 | - |
| 31 | 4.7 | Regulated explosive sites | 0 | 0 | 0 | 0 | - |
| 32 | 4.8 | Hazardous substance storage/usage | 0 | 0 | 0 | 0 | - |
| 32 | 4.9 | Historical licensed industrial activities (IPC) | 0 | 0 | 0 | 0 | - |
| 32 | 4.10 | Licensed industrial activities (Part A(1)) | 0 | 0 | 0 | 0 | - |
| 32 | 4.11 | Licensed pollutant release (Part A(2)/B) | 0 | 0 | 0 | 0 | - |
| 32 | 4.12 | Radioactive Substance Authorisations | 0 | 0 | 0 | 0 | - |
| **33 >** | **4.13 >** | **Licensed Discharges to controlled waters >** | 0 | 4 | 6 | 0 | - |
| 34 | 4.14 | Pollutant release to surface waters (Red List) | 0 | 0 | 0 | 0 | - |
| 34 | 4.15 | Pollutant release to public sewer | 0 | 0 | 0 | 0 | - |
| 35 | 4.16 | List 1 Dangerous Substances | 0 | 0 | 0 | 0 | - |
| 35 | 4.17 | List 2 Dangerous Substances | 0 | 0 | 0 | 0 | - |
| 35 | 4.18 | Pollution Incidents (EA/NRW) | 0 | 0 | 0 | 0 | - |
| 35 | 4.19 | Pollution inventory substances | 0 | 0 | 0 | 0 | - |
| 35 | 4.20 | Pollution inventory waste transfers | 0 | 0 | 0 | 0 | - |
| 36 | 4.21 | Pollution inventory radioactive waste | 0 | 0 | 0 | 0 | - |

| Page | Section | **Hydrogeology >** | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| **37 >** | **5.1 >** | **Superficial aquifer >** | Identified (within 500m) | | | | |
| **39 >** | **5.2 >** | **Bedrock aquifer >** | Identified (within 500m) | | | | |
| **41 >** | **5.3 >** | **Groundwater vulnerability >** | Identified (within 50m) | | | | |
| **42 >** | **5.4 >** | **Groundwater vulnerability- soluble rock risk >** | Identified (within 0m) | | | | |
| 42 | 5.5 | Groundwater vulnerability- local information | None (within 0m) | | | | |
| **44 >** | **5.6 >** | **Groundwater abstractions >** | 0 | 0 | 0 | 0 | 8 |
| **46 >** | **5.7 >** | **Surface water abstractions >** | 0 | 0 | 0 | 0 | 4 |
| 48 | 5.8 | Potable abstractions | 0 | 0 | 0 | 0 | 0 |
| 48 | 5.9 | Source Protection Zones | 0 | 0 | 0 | 0 | - |
| 48 | 5.10 | Source Protection Zones (confined aquifer) | 0 | 0 | 0 | 0 | - |

| Page | Section | **Hydrology >** | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|---|---|---|---|---|---|---|---|
| **49 >** | **6.1 >** | **Water Network (OS MasterMap) >** | 0 | 1 | 12 | - | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 51 > | 6.2 > | Surface water features > | 0 | 1 | 8 | - | - |
| 51 > | 6.3 > | WFD Surface water body catchments > | 1 | - | - | - | - |
| 51 > | 6.4 > | WFD Surface water bodies > | 0 | 0 | 0 | - | - |
| 52 > | 6.5 > | WFD Groundwater bodies > | 1 | - | - | - | - |
| Page | Section | River and coastal flooding | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 53 | 7.1 | Risk of flooding from rivers and the sea | None (within 50m) | | | | |
| 53 | 7.2 | Historical Flood Events | 0 | 0 | 0 | - | - |
| 53 | 7.3 | Flood Defences | 0 | 0 | 0 | - | - |
| 54 | 7.4 | Areas Benefiting from Flood Defences | 0 | 0 | 0 | - | - |
| 54 | 7.5 | Flood Storage Areas | 0 | 0 | 0 | - | - |
| 55 | 7.6 | Flood Zone 2 | None (within 50m) | | | | |
| 55 | 7.7 | Flood Zone 3 | None (within 50m) | | | | |
| Page | Section | Surface water flooding | | | | | |
| 56 | 8.1 | Surface water flooding | Negligible (within 50m) | | | | |
| Page | Section | Groundwater flooding > | | | | | |
| 57 > | 9.1 > | Groundwater flooding > | Low (within 50m) | | | | |
| Page | Section | Environmental designations > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 58 > | 10.1 > | Sites of Special Scientific Interest (SSSI) > | 0 | 0 | 0 | 0 | 2 |
| 59 | 10.2 | Conserved wetland sites (Ramsar sites) | 0 | 0 | 0 | 0 | 0 |
| 59 | 10.3 | Special Areas of Conservation (SAC) | 0 | 0 | 0 | 0 | 0 |
| 59 | 10.4 | Special Protection Areas (SPA) | 0 | 0 | 0 | 0 | 0 |
| 59 > | 10.5 > | National Nature Reserves (NNR) > | 0 | 0 | 0 | 0 | 1 |
| 60 | 10.6 | Local Nature Reserves (LNR) | 0 | 0 | 0 | 0 | 0 |
| 60 | 10.7 | Designated Ancient Woodland | 0 | 0 | 0 | 0 | 0 |
| 60 | 10.8 | Biosphere Reserves | 0 | 0 | 0 | 0 | 0 |
| 60 | 10.9 | Forest Parks | 0 | 0 | 0 | 0 | 0 |
| 61 | 10.10 | Marine Conservation Zones | 0 | 0 | 0 | 0 | 0 |
| 61 | 10.11 | Green Belt | 0 | 0 | 0 | 0 | 0 |
| 61 | 10.12 | Proposed Ramsar sites | 0 | 0 | 0 | 0 | 0 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 61 | 10.13 | Possible Special Areas of Conservation (pSAC) | 0 | 0 | 0 | 0 | 0 |
| 61 | 10.14 | Potential Special Protection Areas (pSPA) | 0 | 0 | 0 | 0 | 0 |
| 62 | 10.15 | Nitrate Sensitive Areas | 0 | 0 | 0 | 0 | 0 |
| 62 | 10.16 | Nitrate Vulnerable Zones | 0 | 0 | 0 | 0 | 0 |
| 63 > | 10.17 > | SSSI Impact Risk Zones > | 1 | - | - | - | - |
| 64 > | 10.18 > | SSSI Units > | 0 | 0 | 0 | 0 | 4 |
| Page | Section | Visual and cultural designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 66 | 11.1 | World Heritage Sites | 0 | 0 | 0 | - | - |
| 66 | 11.2 | Area of Outstanding Natural Beauty | 0 | 0 | 0 | - | - |
| 66 | 11.3 | National Parks | 0 | 0 | 0 | - | - |
| 66 | 11.4 | Listed Buildings | 0 | 0 | 0 | - | - |
| 67 | 11.5 | Conservation Areas | 0 | 0 | 0 | - | - |
| 67 | 11.6 | Scheduled Ancient Monuments | 0 | 0 | 0 | - | - |
| 67 | 11.7 | Registered Parks and Gardens | 0 | 0 | 0 | - | - |
| Page | Section | Agricultural designations > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 68 > | 12.1 > | Agricultural Land Classification > | Grade 4 (within 250m) | | | | |
| 69 | 12.2 | Open Access Land | 0 | 0 | 0 | - | - |
| 69 | 12.3 | Tree Felling Licences | 0 | 0 | 0 | - | - |
| 69 > | 12.4 > | Environmental Stewardship Schemes > | 0 | 0 | 2 | - | - |
| 70 > | 12.5 > | Countryside Stewardship Schemes > | 0 | 0 | 1 | - | - |
| Page | Section | Habitat designations | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 71 | 13.1 | Priority Habitat Inventory | 0 | 0 | 0 | - | - |
| 71 | 13.2 | Habitat Networks | 0 | 0 | 0 | - | - |
| 71 | 13.3 | Open Mosaic Habitat | 0 | 0 | 0 | - | - |
| 71 | 13.4 | Limestone Pavement Orders | 0 | 0 | 0 | - | - |
| Page | Section | Geology 1:10,000 scale > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 72 > | 14.1 > | 10k Availability > | Identified (within 500m) | | | | |
| 73 | 14.2 | Artificial and made ground (10k) | 0 | 0 | 0 | 0 | - |
| 74 | 14.3 | Superficial geology (10k) | 0 | 0 | 0 | 0 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 74 | 14.4 | Landslip (10k) | 0 | 0 | 0 | 0 | - |
| 75 | 14.5 | Bedrock geology (10k) | 0 | 0 | 0 | 0 | - |
| 75 | 14.6 | Bedrock faults and other linear features (10k) | 0 | 0 | 0 | 0 | - |
| Page | Section | **Geology 1:50,000 scale >** | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 76 > | 15.1 > | 50k Availability > | Identified (within 500m) | | | | |
| 77 | 15.2 | Artificial and made ground (50k) | 0 | 0 | 0 | 0 | - |
| 77 | 15.3 | Artificial ground permeability (50k) | 0 | 0 | - | - | - |
| 78 > | 15.4 > | Superficial geology (50k) > | 0 | 1 | 0 | 1 | - |
| 79 > | 15.5 > | Superficial permeability (50k) > | Identified (within 50m) | | | | |
| 79 | 15.6 | Landslip (50k) | 0 | 0 | 0 | 0 | - |
| 79 | 15.7 | Landslip permeability (50k) | None (within 50m) | | | | |
| 80 > | 15.8 > | Bedrock geology (50k) > | 1 | 1 | 2 | 3 | - |
| 81 > | 15.9 > | Bedrock permeability (50k) > | Identified (within 50m) | | | | |
| 81 > | 15.10 > | Bedrock faults and other linear features (50k) > | 0 | 1 | 2 | 1 | - |
| Page | Section | **Boreholes >** | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 82 > | 16.1 > | BGS Boreholes > | 0 | 0 | 1 | - | - |
| Page | Section | **Natural ground subsidence >** | | | | | |
| 83 > | 17.1 > | Shrink swell clays > | Very low (within 50m) | | | | |
| 84 > | 17.2 > | Running sands > | Very low (within 50m) | | | | |
| 86 > | 17.3 > | Compressible deposits > | Negligible (within 50m) | | | | |
| 87 > | 17.4 > | Collapsible deposits > | Very low (within 50m) | | | | |
| 88 > | 17.5 > | Landslides > | Low (within 50m) | | | | |
| 90 > | 17.6 > | Ground dissolution of soluble rocks > | Negligible (within 50m) | | | | |
| Page | Section | **Mining and ground workings >** | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 92 > | 18.1 > | BritPits > | 0 | 0 | 0 | 1 | - |
| 93 > | 18.2 > | Surface ground workings > | 2 | 1 | 12 | - | - |
| 94 > | 18.3 > | Underground workings > | 0 | 0 | 0 | 0 | 7 |
| 94 | 18.4 | Underground mining extents | 0 | 0 | 0 | 0 | - |
| 94 > | 18.5 > | Historical Mineral Planning Areas > | 0 | 0 | 0 | 1 | - |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 95 > | 18.6 > | Non-coal mining > | 2 | 2 | 0 | 0 | 15 |
| 97 | 18.7 | JPB mining areas | None (within 0m) | | | | |
| 97 | 18.8 | The Coal Authority non-coal mining | 0 | 0 | 0 | 0 | - |
| 98 | 18.9 | Researched mining | 0 | 0 | 0 | 0 | - |
| 98 > | 18.10 > | Mining record office plans > | 0 | 0 | 0 | 1 | - |
| 98 > | 18.11 > | BGS mine plans > | 0 | 0 | 0 | 2 | - |
| 99 | 18.12 | Coal mining | None (within 0m) | | | | |
| 99 | 18.13 | Brine areas | None (within 0m) | | | | |
| 99 | 18.14 | Gypsum areas | None (within 0m) | | | | |
| 99 | 18.15 | Tin mining | None (within 0m) | | | | |
| 99 | 18.16 | Clay mining | None (within 0m) | | | | |
| Page | Section | Ground cavities and sinkholes | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 100 | 19.1 | Natural cavities | 0 | 0 | 0 | 0 | - |
| 100 | 19.2 | Mining cavities | 0 | 0 | 0 | 0 | 0 |
| 100 | 19.3 | Reported recent incidents | 0 | 0 | 0 | 0 | - |
| 100 | 19.4 | Historical incidents | 0 | 0 | 0 | 0 | - |
| 101 | 19.5 | National karst database | 0 | 0 | 0 | 0 | - |
| Page | Section | Radon > | | | | | |
| 102 > | 20.1 > | Radon > | Between 5% and 10% (within 0m) | | | | |
| Page | Section | Soil chemistry > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 104 > | 21.1 > | BGS Estimated Background Soil Chemistry > | 1 | 4 | - | - | - |
| 104 | 21.2 | BGS Estimated Urban Soil Chemistry | 0 | 0 | - | - | - |
| 104 | 21.3 | BGS Measured Urban Soil Chemistry | 0 | 0 | - | - | - |
| Page | Section | Railway infrastructure and projects > | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 105 | 22.1 | Underground railways (London) | 0 | 0 | 0 | - | - |
| 105 | 22.2 | Underground railways (Non-London) | 0 | 0 | 0 | - | - |
| 106 | 22.3 | Railway tunnels | 0 | 0 | 0 | - | - |
| 106 > | 22.4 > | Historical railway and tunnel features > | 0 | 8 | 1 | - | - |
| 106 | 22.5 | Royal Mail tunnels | 0 | 0 | 0 | - | - |

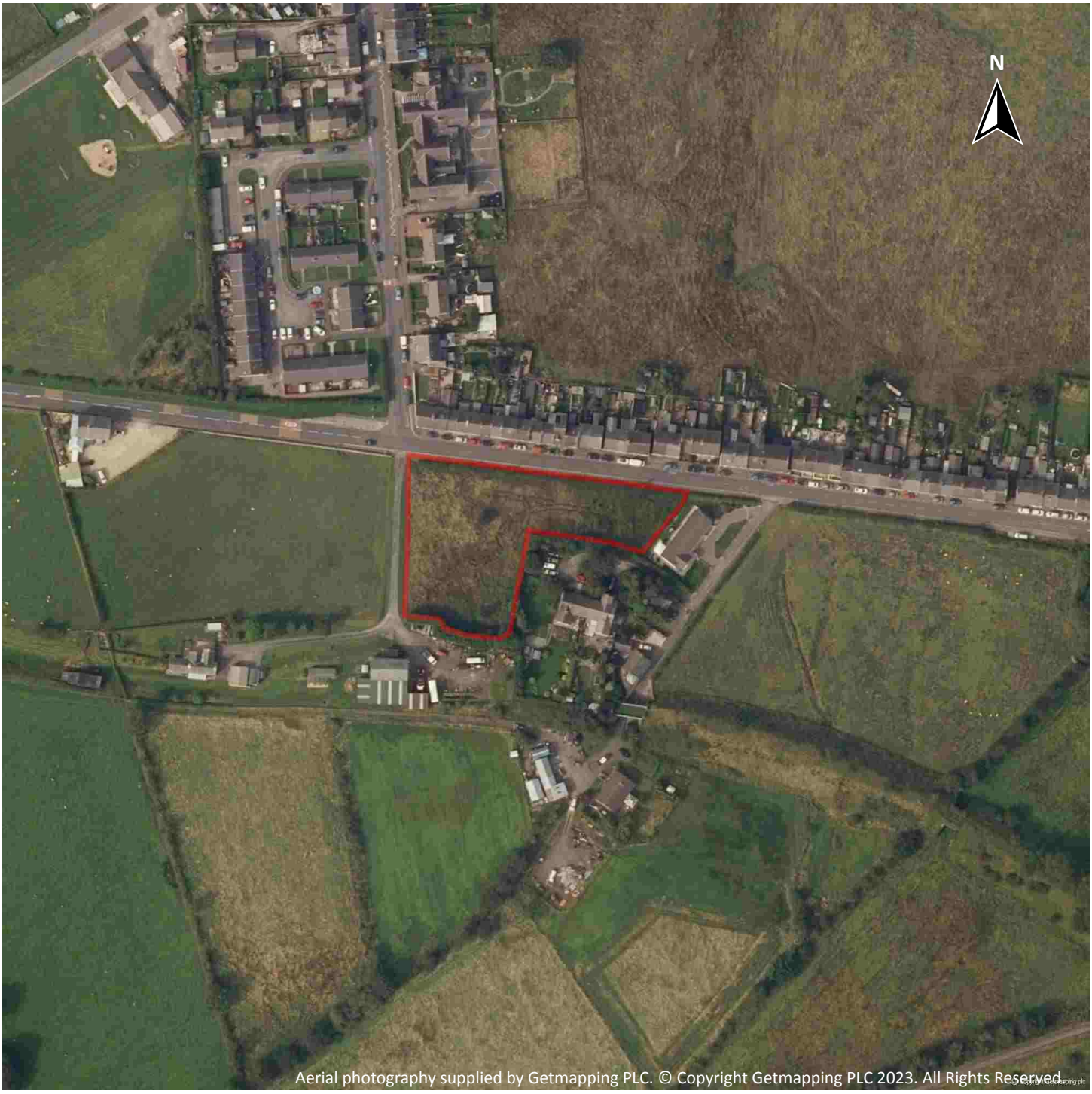
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **107 >** | **22.6 >** | **Historical railways >** | 0 | 2 | 3 | - | - |
| 107 | 22.7 | Railways | 0 | 0 | 0 | - | - |
| 107 | 22.8 | Crossrail 1 | 0 | 0 | 0 | 0 | - |
| 107 | 22.9 | Crossrail 2 | 0 | 0 | 0 | 0 | - |
| 108 | 22.10 | HS2 | 0 | 0 | 0 | 0 | - |

## Recent aerial photograph


Capture Date: 20/04/2022

Site Area: 0.39ha

## Recent site history - 2019 aerial photograph




Capture Date: 24/08/2019

Site Area: 0.39ha

## Recent site history - 2016 aerial photograph


Capture Date: 16/08/2016

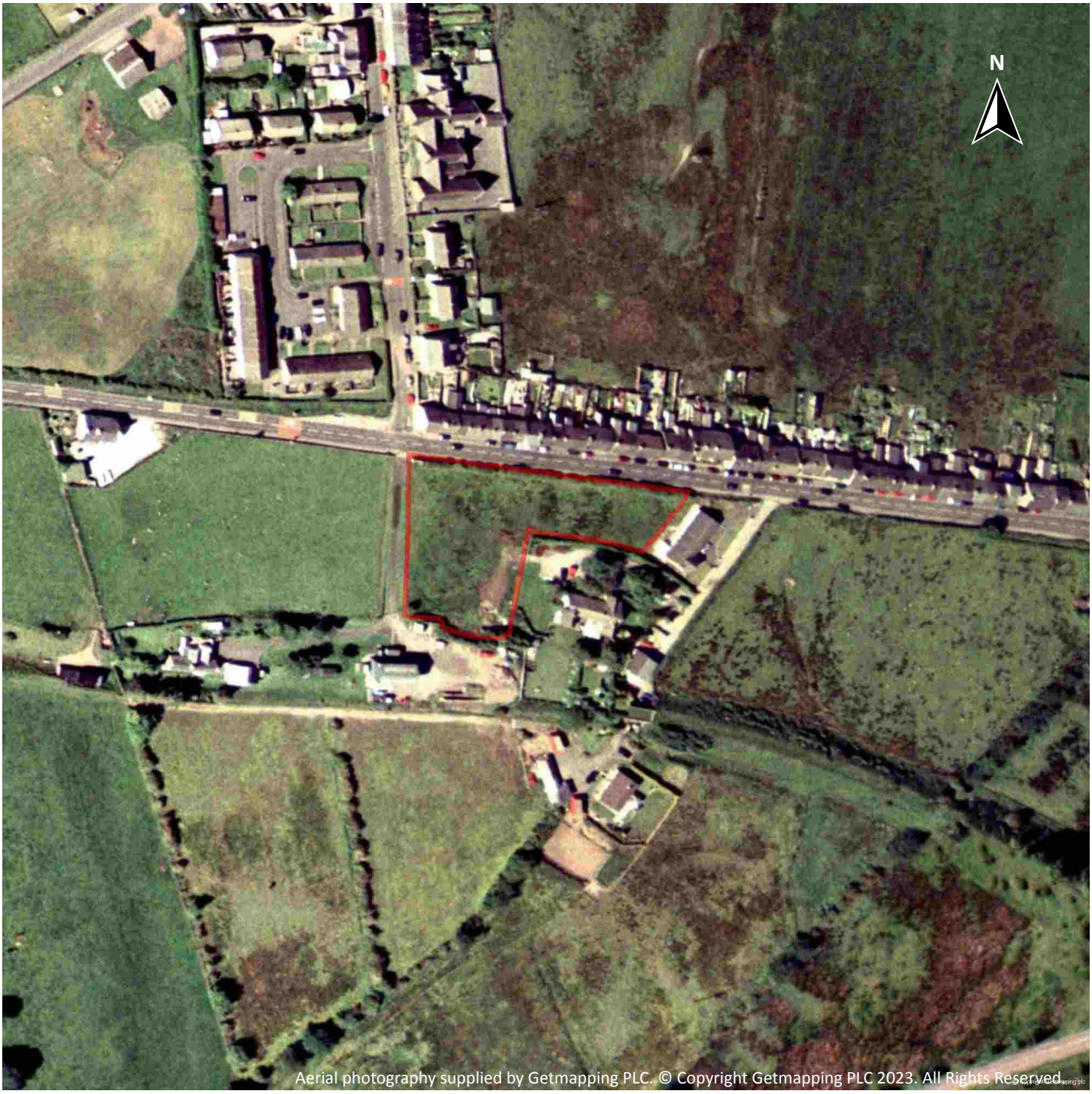
Site Area: 0.39ha

## Recent site history - 2008 aerial photograph


Capture Date: 05/10/2008

Site Area: 0.39ha

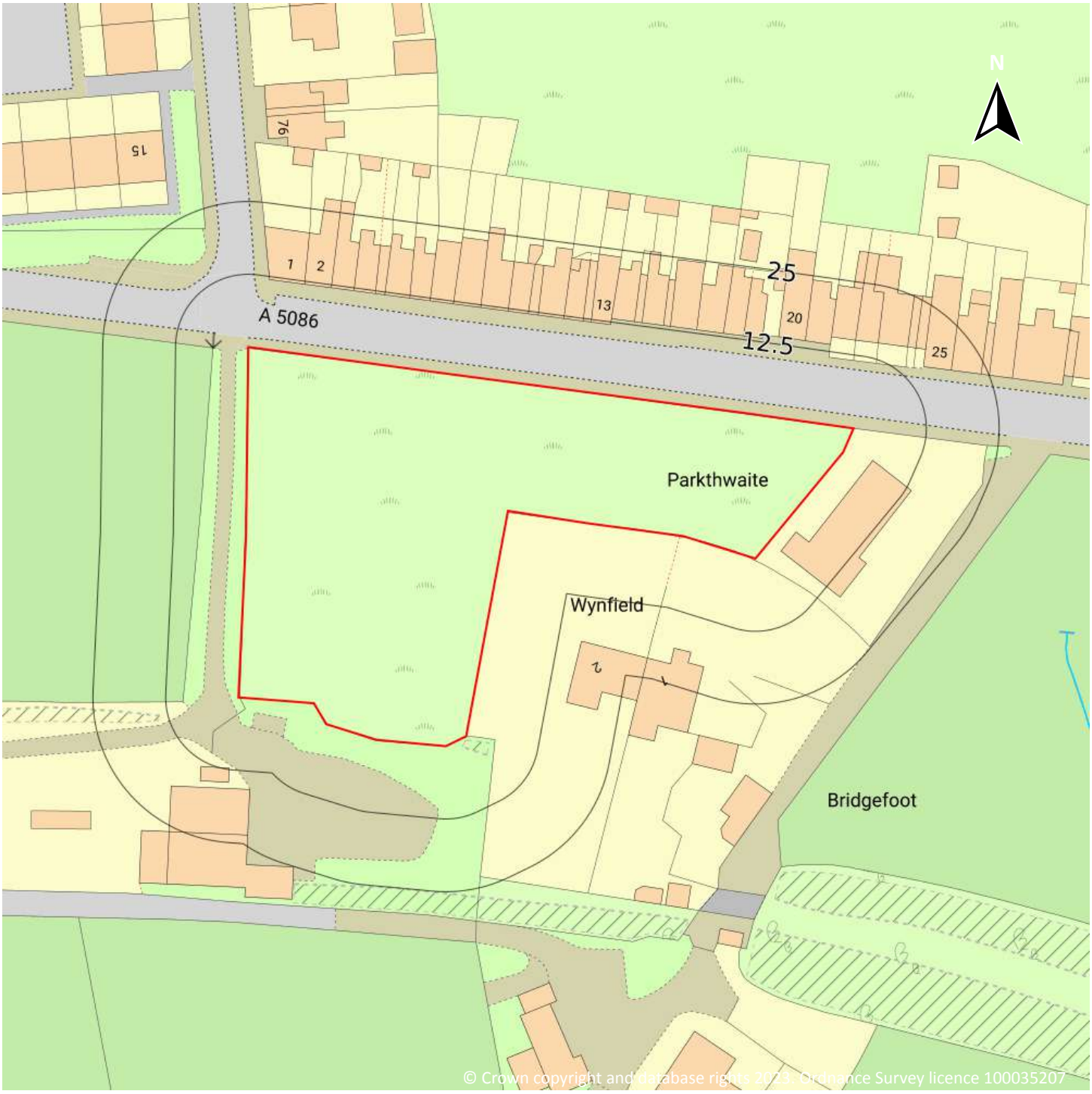
## Recent site history - 2000 aerial photograph




Capture Date: 16/06/2000

Site Area: 0.39ha

## OS MasterMap site plan




Site Area: 0.39ha

# 1 Past land use




## 1.1 Historical industrial land uses

| Records within 500m | 49 |
|---|---|

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

Features are displayed on the Past land use map on **page 15 >**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| **A** | **On site** | **Tile Works** | **1863** | **580900** |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| **A** | **On site** | **Unspecified Ground Workings** | **1923** | **602280** |
| A | 3m S | Unspecified Ground Workings | 1951 | 598715 |
| A | 11m S | Railway Sidings | 1926 | 604467 |
| A | 11m S | Railway Sidings | 1898 | 611527 |
| A | 12m S | Railway Sidings | 1923 | 591652 |
| A | 12m S | Railway Sidings | 1923 | 592527 |
| A | 15m S | Railway Sidings | 1926 | 626588 |
| B | 28m S | Railway Sidings | 1951 | 627873 |
| C | 48m SW | Goods Station | 1923 | 617994 |
| C | 66m SW | Goods Station | 1926 | 591160 |
| C | 72m W | Railway Station | 1926 | 579218 |
| C | 75m SW | Goods Station | 1898 | 601655 |
| B | 96m SE | Mineral Railway Sidings | 1973 | 625581 |
| D | 115m W | Cuttings | 1969 - 1993 | 595380 |
| D | 125m W | Cuttings | 1923 - 1926 | 603563 |
| D | 131m W | Cuttings | 1926 | 631061 |
| D | 133m W | Cuttings | 1898 | 596515 |
| D | 136m W | Cuttings | 1951 | 599674 |
| 1 | 143m S | Sewage Works | 1926 | 596784 |
| E | 204m SW | Sewing Works | 1926 | 554252 |
| E | 205m SW | Sewage Works | 1923 | 630309 |
| B | 289m SE | Cuttings | 1923 | 591963 |
| B | 291m SE | Cuttings | 1926 | 600302 |
| 3 | 293m N | Unspecified Quarry | 1863 | 558725 |
| B | 298m SE | Cuttings | 1926 - 1951 | 608575 |
| B | 304m SE | Cuttings | 1863 | 593142 |
| B | 309m SE | Cuttings | 1973 | 608122 |
| 4 | 328m S | Railway Sidings | 1951 | 586580 |

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 5 | 329m SE | Mineral Railway Sidings | 1926 | 618843 |
| 6 | 336m E | Police Station | 1973 | 580953 |
| B | 387m SE | Junction Station | 1926 | 576772 |
| B | 388m SE | Railway Building | 1898 | 557834 |
| B | 404m SE | Railway Sidings | 1926 | 621933 |
| F | 410m E | Cuttings | 1863 | 619355 |
| 7 | 429m SE | Railway Sidings | 1898 | 586581 |
| B | 436m SE | Unspecified Pit | 1926 | 615952 |
| B | 436m SE | Unspecified Pit | 1923 - 1926 | 608039 |
| B | 436m SE | Unspecified Pit | 1951 | 603440 |
| F | 443m SE | Railway Sidings | 1898 | 607674 |
| F | 443m SE | Mineral Railway Sidings | 1923 | 630094 |
| F | 449m SE | Railway Sidings | 1926 | 603750 |
| G | 452m W | Unspecified Pit | 1923 - 1926 | 616161 |
| G | 455m W | Gravel Pit | 1898 | 570614 |
| G | 456m W | Unspecified Pit | 1926 - 1951 | 624249 |
| F | 465m E | Railway Sidings | 1926 | 605765 |
| H | 488m S | Railway Sidings | 1923 | 548064 |
| H | 488m S | Railway Sidings | 1923 | 548067 |
| 9 | 497m NW | Unspecified Works | 1969 | 552688 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.2 Historical tanks

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Past land use map on **page 15 >**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 2 | 246m SW | Tanks or Troughs | 1864 | 74920 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.3 Historical energy features

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Past land use map on **page 15 >**

| ID | Location | Land use | Dates present | Group ID |
|---|---|---|---|---|
| 8 | 454m N | Electricity Substation | 1986 | 42082 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.4 Historical petrol stations

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.5 Historical garages

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.6 Historical military land

| Records within 500m | 0 |
|---|---|

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

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

# 2 Past land use - un-grouped




Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

## 2.1 Historical industrial land uses

| Records within 500m | 66 |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| **A** | **On site** | **Tile Works** | **1863** | **580900** |
| **A** | **On site** | **Unspecified Ground Workings** | **1923** | **602280** |
| **A** | **On site** | **Unspecified Ground Workings** | **1923** | **602280** |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| A | 3m S | Unspecified Ground Workings | 1951 | 598715 |
| A | 11m S | Railway Sidings | 1926 | 604467 |
| A | 11m S | Railway Sidings | 1898 | 611527 |
| A | 12m S | Railway Sidings | 1923 | 591652 |
| A | 12m S | Railway Sidings | 1923 | 592527 |
| A | 15m S | Railway Sidings | 1926 | 626588 |
| B | 28m S | Railway Sidings | 1951 | 627873 |
| C | 48m SW | Goods Station | 1923 | 617994 |
| C | 48m SW | Goods Station | 1923 | 617994 |
| C | 66m SW | Goods Station | 1926 | 591160 |
| C | 72m W | Railway Station | 1926 | 579218 |
| C | 75m SW | Goods Station | 1898 | 601655 |
| B | 96m SE | Mineral Railway Sidings | 1973 | 625581 |
| D | 115m W | Cuttings | 1969 | 595380 |
| D | 115m W | Cuttings | 1993 | 595380 |
| D | 125m W | Cuttings | 1923 | 603563 |
| D | 125m W | Cuttings | 1923 | 603563 |
| D | 131m W | Cuttings | 1926 | 631061 |
| D | 133m W | Cuttings | 1898 | 596515 |
| D | 135m W | Cuttings | 1926 | 603563 |
| D | 136m W | Cuttings | 1951 | 599674 |
| E | 143m S | Sewage Works | 1926 | 596784 |
| E | 143m S | Sewage Works | 1926 | 596784 |
| F | 204m SW | Sewage Works | 1926 | 554252 |
| F | 205m SW | Sewage Works | 1923 | 630309 |
| F | 205m SW | Sewage Works | 1923 | 630309 |
| B | 289m SE | Cuttings | 1923 | 591963 |
| B | 289m SE | Cuttings | 1923 | 591963 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| B | 291m SE | Cuttings | 1926 | 600302 |
| 2 | 293m N | Unspecified Quarry | 1863 | 558725 |
| B | 298m SE | Cuttings | 1951 | 608575 |
| B | 298m SE | Cuttings | 1926 | 608575 |
| B | 304m SE | Cuttings | 1863 | 593142 |
| B | 309m SE | Cuttings | 1973 | 608122 |
| 3 | 328m S | Railway Sidings | 1951 | 586580 |
| 4 | 329m SE | Mineral Railway Sidings | 1926 | 618843 |
| 5 | 336m E | Police Station | 1973 | 580953 |
| B | 387m SE | Junction Station | 1926 | 576772 |
| B | 388m SE | Railway Building | 1898 | 557834 |
| B | 404m SE | Railway Sidings | 1926 | 621933 |
| G | 410m E | Cuttings | 1863 | 619355 |
| 6 | 429m SE | Railway Sidings | 1898 | 586581 |
| B | 436m SE | Unspecified Pit | 1926 | 615952 |
| B | 436m SE | Unspecified Pit | 1923 | 608039 |
| B | 436m SE | Unspecified Pit | 1923 | 608039 |
| B | 436m SE | Unspecified Pit | 1951 | 603440 |
| B | 438m SE | Unspecified Pit | 1926 | 608039 |
| B | 438m SE | Unspecified Pit | 1926 | 608039 |
| G | 443m SE | Railway Sidings | 1898 | 607674 |
| G | 443m SE | Mineral Railway Sidings | 1923 | 630094 |
| G | 443m SE | Mineral Railway Sidings | 1923 | 630094 |
| G | 449m SE | Railway Sidings | 1926 | 603750 |
| H | 452m W | Unspecified Pit | 1923 | 616161 |
| H | 452m W | Unspecified Pit | 1923 | 616161 |
| H | 452m W | Unspecified Pit | 1926 | 616161 |
| H | 452m W | Unspecified Pit | 1926 | 616161 |

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| H | 455m W | Gravel Pit | 1898 | 570614 |
| H | 456m W | Unspecified Pit | 1926 | 624249 |
| H | 457m W | Unspecified Pit | 1951 | 624249 |
| G | 465m E | Railway Sidings | 1926 | 605765 |
| I | 488m S | Railway Sidings | 1923 | 548067 |
| I | 488m S | Railway Sidings | 1923 | 548064 |
| 8 | 497m NW | Unspecified Works | 1969 | 552688 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.2 Historical tanks

| **Records within 500m** | **1** |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| 1 | 246m SW | Tanks or Troughs | 1864 | 74920 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.3 Historical energy features

| **Records within 500m** | **1** |
|---|---|

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

Features are displayed on the Past land use - un-grouped map on **page 20 >**

| ID | Location | Land Use | Date | Group ID |
|---|---|---|---|---|
| 7 | 454m N | Electricity Substation | 1986 | 42082 |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.4 Historical petrol stations

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.5 Historical garages

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey / Groundsure.*

# 3 Waste and landfill




Site Outline

Search buffers in metres (m)

Waste exemptions

## 3.1 Active or recent landfill

| Records within 500m | 0 |
|---|---|

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

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

## 3.2 Historical landfill (BGS records)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

## 3.3 Historical landfill (LA/mapping records)

| Records within 500m | 0 |
|---|---|

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

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

## 3.4 Historical landfill (EA/NRW records)

| Records within 500m | 0 |
|---|---|

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

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

## 3.5 Historical waste sites

| Records within 500m | 0 |
|---|---|

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

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

## 3.6 Licensed waste sites

| Records within 500m | 0 |
|---|---|

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

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

## 3.7 Waste exemptions

| Records within 500m | 22 |
|---|---|

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

Features are displayed on the Waste and landfill map on **page 25 >**

| ID | Location | Site | Reference | Category | Sub-Category | Description |
|---|---|---|---|---|---|---|
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Disposing of waste exemption | Both agricultural and non-agricultural waste | Deposit of waste from dredging of inland waters |
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Disposing of waste exemption | Both agricultural and non-agricultural waste | Burning waste in the open |
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Treating waste exemption | Both agricultural and non-agricultural waste | Cleaning, washing, spraying or coating relevant waste |
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Treating waste exemption | Both agricultural and non-agricultural waste | Preparatory treatments (baling, sorting, shredding etc) |
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Using waste exemption | Both agricultural and non-agricultural waste | Use of waste in construction |
| A | 465m SW | Skelsceugh Farm Skelsceugh Road FRIZINGTON Cumbria CA26 3UE | EPR/TH0478MP/A001 | Using waste exemption | Both agricultural and non-agricultural waste | Use of waste for a specified purpose |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX173128 | Using waste exemption | On a farm | Use of waste for a specified purpose |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX173128 | Disposing of waste exemption | On a farm | Deposit of waste from dredging of inland waters |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX173128 | Treating waste exemption | On a farm | Cleaning, washing, spraying or coating relevant waste |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX173128 | Disposing of waste exemption | On a farm | Burning waste in the open |

| ID | Location | Site | Reference | Category | Sub-Category | Description |
|---|---|---|---|---|---|---|
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX173128 | Using waste exemption | On a farm | Use of waste in construction |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Disposing of waste exemption | On a farm | Deposit of waste from dredging of inland waters |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Disposing of waste exemption | On a farm | Burning waste in the open |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Storing waste exemption | On a farm | Storage of waste in secure containers |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Treating waste exemption | On a farm | Cleaning, washing, spraying or coating relevant waste |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Using waste exemption | On a farm | Use of waste in construction |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX010757 | Using waste exemption | On a farm | Use of waste for a specified purpose |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX310605 | Disposing of waste exemption | On a farm | Burning waste in the open |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX310605 | Disposing of waste exemption | On a farm | Deposit of waste from dredging of inland waters |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX310605 | Treating waste exemption | On a farm | Cleaning, washing, spraying or coating relevant waste |

| ID | Location | Site | Reference | Category | Sub-Category | Description |
|---|---|---|---|---|---|---|
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX310605 | Using waste exemption | On a farm | Use of waste for a specified purpose |
| A | 478m SW | SKELSCEUGH FARM, SKELSCEUGH ROAD, WINDER, FRIZINGTON, CA26 3UE | WEX310605 | Using waste exemption | On a farm | Use of waste in construction |

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

# 4 Current industrial land use




## 4.1 Recent industrial land uses

| Records within 250m | 0 |
|---|---|

Current potentially contaminative industrial sites.

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

| Records within 500m | 0 |
|---|---|

Open, closed, under development and obsolete petrol stations.

*This data is sourced from Experian.*

## 4.3 Electricity cables

| Records within 500m | 0 |
|---|---|

High voltage underground electricity transmission cables.

*This data is sourced from National Grid.*

## 4.4 Gas pipelines

| Records within 500m | 0 |
|---|---|

High pressure underground gas transmission pipelines.

*This data is sourced from National Grid.*

## 4.5 Sites determined as Contaminated Land

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Local Authority records.*

## 4.6 Control of Major Accident Hazards (COMAH)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the Health and Safety Executive.*

## 4.7 Regulated explosive sites

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the Health and Safety Executive.*

## 4.8 Hazardous substance storage/usage

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

| Records within 500m | 0 |
|---|---|

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

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

## 4.10 Licensed industrial activities (Part A(1))

| Records within 500m | 0 |
|---|---|

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

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

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

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Local Authority records.*

## 4.12 Radioactive Substance Authorisations

| Records within 500m | 0 |
|---|---|

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

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

## 4.13 Licensed Discharges to controlled waters

| Records within 500m | 10 |
|---|---|

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

Features are displayed on the Current industrial land use map on **page 30 >**

| ID | Location | Address | Details | |
|---|---|---|---|---|
| A | 35m E | 28/29 ARLECDON PARKS ROAD CSO, ARLECDON PARKS ROAD, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0017<br>Permit Version: 2<br>Receiving Water: WINDER BECK | Status: VARIED UNDER EPR 2010<br>Issue date: 03/09/2010<br>Effective Date: 03/09/2010<br>Revocation Date: 04/02/2016 |
| A | 35m E | 28/29 ARLECDON PARKS ROAD CSO, ARLECDON PARKS ROAD, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0017<br>Permit Version: 1<br>Receiving Water: WINDER BECK | Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY)<br>Issue date: -<br>Effective Date: 01/01/1995<br>Revocation Date: 02/09/2010 |
| A | 46m E | 28/29 ARLECDON PARKS ROAD CSO, ARLECDON PARKS ROAD, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0017<br>Permit Version: 3<br>Receiving Water: WINDER BECK | Status: VARIED UNDER EPR 2010<br>Issue date: 05/02/2016<br>Effective Date: 05/02/2016<br>Revocation Date: 05/11/2019 |
| A | 49m E | 28/29 ARLECDON PARKS ROAD CSO, ARLECDON PARKS ROAD, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0017<br>Permit Version: 4<br>Receiving Water: TRIB OF WINDER BECK | Status: VARIED UNDER EPR 2010<br>Issue date: 06/11/2019<br>Effective Date: 06/11/2019<br>Revocation Date: - |
| 1 | 106m S | ARLECDON COMBINED SEWER OVERFLOW, ARLECDON PARKS ROAD, NEAR TILEKILN, ARLECDON / FRIZINGTON, CUMBRIA, CA26 3XF | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0001<br>Permit Version: 1<br>Receiving Water: WINDER BECK | Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1))<br>Issue date: 01/01/1995<br>Effective Date: 01/01/1995<br>Revocation Date: 02/02/2005 |
| B | 152m E | ARLECDON PARKS ROAD CSO, 47 ARLECDON PARKS ROAD A5086, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0018<br>Permit Version: 2<br>Receiving Water: ELLER GILL | Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995)<br>Issue date: -<br>Effective Date: 03/02/2005<br>Revocation Date: 22/10/2019 |

| ID | Location | Address | Details | |
|---|---|---|---|---|
| B | 155m E | ARLECDON PARKS ROAD CSO, 47 ARLECDON PARKS ROAD A5086, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 017480419<br>Permit Version: 1<br>Receiving Water: ELLER GILL | Status: VARIED UNDER EPR 2010<br>Issue date: 23/10/2019<br>Effective Date: 23/10/2019<br>Revocation Date: - |
| B | 173m E | 28/29 ARLECDON PARKS ROAD CSO, ARLECDON PARKS ROAD, ARLECDON, FRIZINGTON, CUMBRIA, CA26 3XG | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0018<br>Permit Version: 1<br>Receiving Water: WINDER BECK | Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1))<br>Issue date: -<br>Effective Date: 01/01/1995<br>Revocation Date: 02/02/2005 |
| C | 186m S | ARLECDON COMBINED SEWER OVERFLOW, ARLECDON PARKS ROAD, NEAR TILEKILN, ARLECDON / FRIZINGTON, CUMBRIA, CA26 3XF | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 017480418<br>Permit Version: 1<br>Receiving Water: WINDER BECK | Status: VARIED UNDER EPR 2010<br>Issue date: 06/11/2019<br>Effective Date: 06/11/2019<br>Revocation Date: - |
| C | 191m S | ARLECDON COMBINED SEWER OVERFLOW, ARLECDON PARKS ROAD, NEAR TILEKILN, ARLECDON / FRIZINGTON, CUMBRIA, CA26 3XF | Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY<br>Permit Number: 01COP0001<br>Permit Version: 2<br>Receiving Water: WINDER BECK | Status: MODIFIED - (WRA 91 SCHED 10 - AS AMENDED BY ENV ACT 1995)<br>Issue date: 03/02/2005<br>Effective Date: 03/02/2005<br>Revocation Date: 05/11/2019 |

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

## 4.14 Pollutant release to surface waters (Red List)

| Records within 500m | 0 |
|---|---|

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

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

## 4.15 Pollutant release to public sewer

| Records within 500m | 0 |
|---|---|

Discharges of Special Category Effluents to the public sewer.

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

## 4.16 List 1 Dangerous Substances

| Records within 500m | 0 |
|---|---|

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

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

## 4.17 List 2 Dangerous Substances

| Records within 500m | 0 |
|---|---|

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

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

## 4.18 Pollution Incidents (EA/NRW)

| Records within 500m | 0 |
|---|---|

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

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

## 4.19 Pollution inventory substances

| Records within 500m | 0 |
|---|---|

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

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

## 4.20 Pollution inventory waste transfers

| Records within 500m | 0 |
|---|---|

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

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

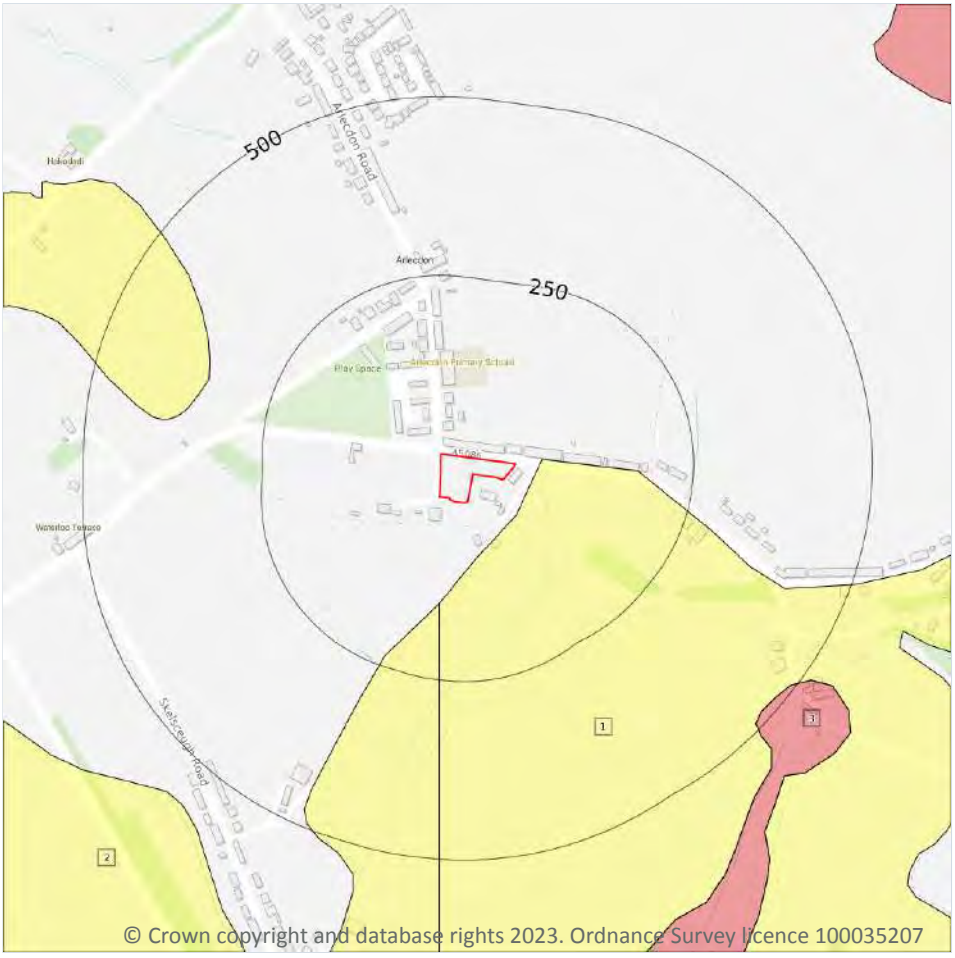
## 4.21 Pollution inventory radioactive waste

| Records within 500m | 0 |
|---|---|

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

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

# 5 Hydrogeology - Superficial aquifer




Site Outline

Search buffers in metres (m)

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

## 5.1 Superficial aquifer

| Records within 500m | 3 |
|---|---|

Aquifer status of groundwater held within superficial geology.

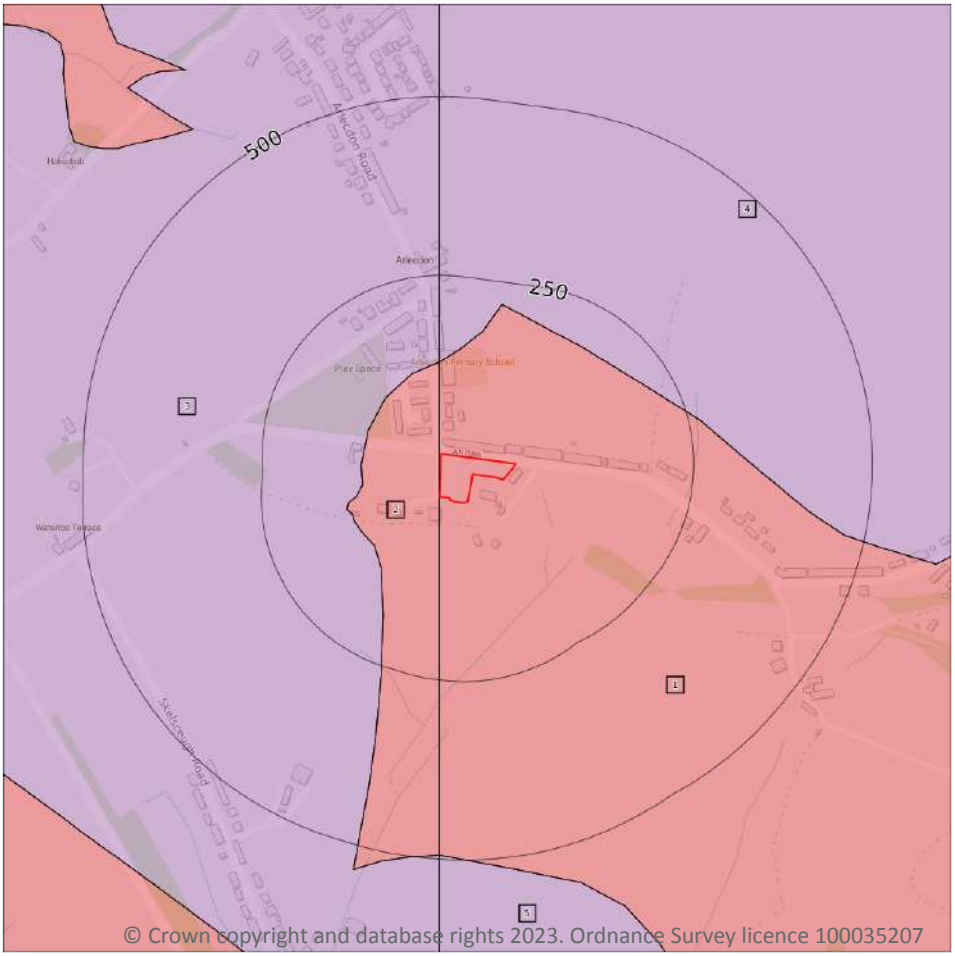
Features are displayed on the Hydrogeology map on **page 37 >**

| ID | Location | Designation | Description |
|---|---|---|---|
| 1 | 31m E | Secondary Undifferentiated | Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type |
| 2 | 144m S | 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 |

| ID | Location | Designation | Description |
|---|---|---|---|
| 3 | 486m SE | Secondary A | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers |

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

# Bedrock aquifer




## 5.2 Bedrock aquifer

| Records within 500m | 5 |
|---|---|

Aquifer status of groundwater held within bedrock geology.

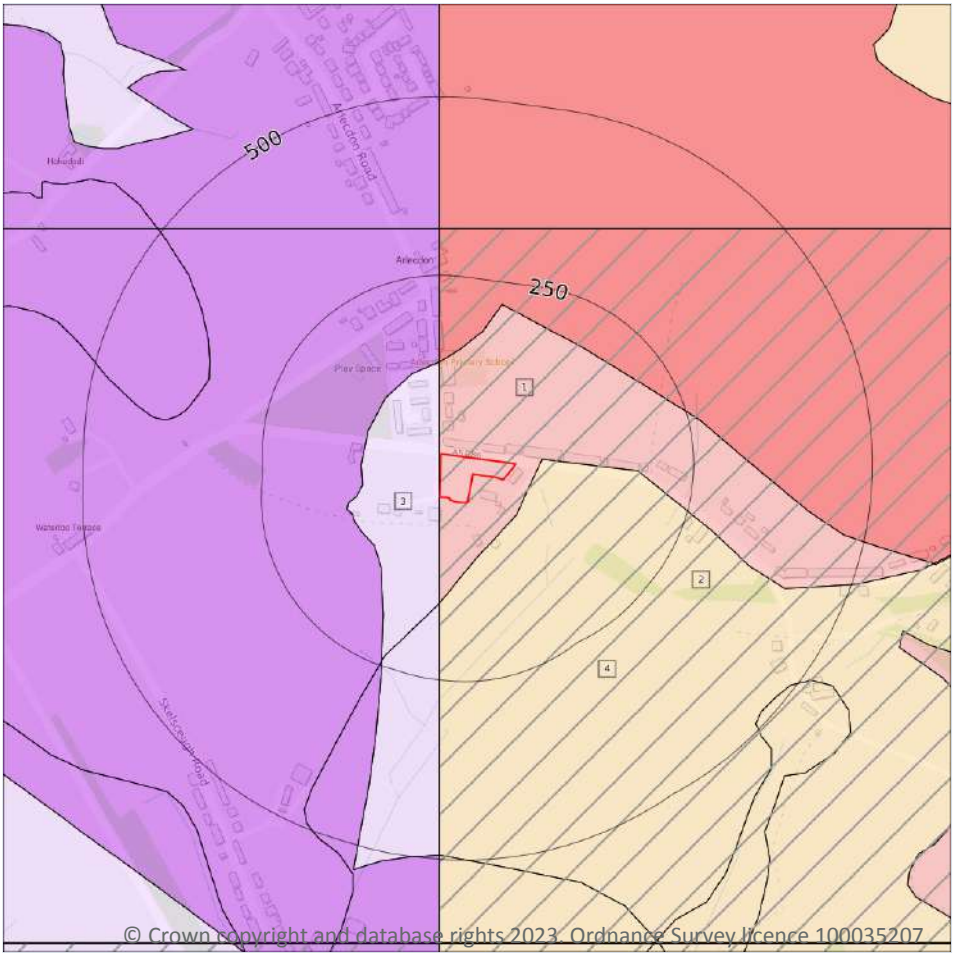
Features are displayed on the Bedrock aquifer map on **page 39 >**

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

| ID | Location | Designation | Description |
|---|---|---|---|
| 3 | 105m NW | 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 |
| 4 | 128m N | 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 |
| 5 | 494m S | 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 |

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

# Groundwater vulnerability





## 5.3 Groundwater vulnerability

| Records within 50m | 3 |
|---|---|

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

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

Features are displayed on the Groundwater vulnerability map on **page 41 >**

| ID | Location | Summary | Soil / surface | Superficial geology | Bedrock geology |
|---|---|---|---|---|---|
| **1** | **On site** | **Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer** | **Leaching class: High Infiltration value: >70% Dilution value: >550mm/year** | **Vulnerability: - Aquifer type: - Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data** | **Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures** |
| **3** | **On site** | **Summary Classification: Secondary bedrock aquifer - Medium Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer** | **Leaching class: Low Infiltration value: <40% Dilution value: >550mm/year** | **Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data** | **Vulnerability: Medium Aquifer type: Secondary Flow mechanism: Well connected fractures** |
| 4 | 31m E | Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer | Leaching class: High Infiltration value: >70% Dilution value: >550mm/year | Vulnerability: High Aquifer type: Secondary Thickness: 3-10m Patchiness value: <90% Recharge potential: No Data | Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures |

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

## 5.4 Groundwater vulnerability- soluble rock risk

| **Records on site** | **1** |
|---|---|

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

| ID | Maximum soluble risk category | Percentage of grid square covered by maximum risk |
|---|---|---|
| **2** | **Significant soluble rocks are likely to be present. Low possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, but may be possible in adverse conditions such as high surface or subsurface water flow.** | **11.0%** |

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

## 5.5 Groundwater vulnerability- local information

| **Records on site** | **0** |
|---|---|

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by

email on enquiries@environment-agency.gov.uk ↗.

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

# Abstractions and Source Protection Zones




Site Outline

Search buffers in metres (m)

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

## 5.6 Groundwater abstractions

| Records within 2000m | 8 |
|---|---|

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 44 >**

| ID | Location | Details | |
|---|---|---|---|
| - | 830m W | Status: Historical<br>Licence No: 2774004004<br>Details: General Farming & Domestic<br>Direct Source: Ground Water - North West Region<br>Point: "WELL AT ARLECDON,FRIZINGTON, CUMBRIA"<br>Data Type: Point<br>Name: NOLAN<br>Easting: 304200<br>Northing: 518900 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 16/12/1965<br>Version End Date: - |
| - | 830m W | Status: Historical<br>Licence No: 2774004004<br>Details: General Farming & Domestic<br>Direct Source: Ground Water - North West Region<br>Point: WELL AT ARLECDON,FRIZINGTON, CUMBRIA<br>Data Type: Point<br>Name: NOLAN<br>Easting: 304200<br>Northing: 518900 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 16/12/1965<br>Version End Date: - |
| - | 1797m S | Status: Active<br>Licence No: NW/074/0003/003<br>Details: Dewatering<br>Direct Source: Ground Water - North West Region<br>Point: 'ABSTRACTION AREA' AT ESKETT QUARRY, FRIZINGTON<br>Data Type: Poly4<br>Name: Tendley Quarries Limited<br>Easting: 305194<br>Northing: 516826 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: NPS/NA/000359<br>Original Start Date: 02/09/2021<br>Expiry Date: 31/03/2038<br>Issue No: 1<br>Version Start Date: 02/09/2021<br>Version End Date: - |
| - | 1883m SE | Status: Historical<br>Licence No: 2774003001<br>Details: General Farming & Domestic<br>Direct Source: Ground Water - North West Region<br>Point: "WELL AT STOCKHOW HALL,FRIZINGTON"<br>Data Type: Point<br>Name: MESSRS J IRELAND & SON<br>Easting: 306500<br>Northing: 517400 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 16/12/1995<br>Version End Date: - |
| - | 1883m SE | Status: Historical<br>Licence No: 2774003001<br>Details: General Farming & Domestic<br>Direct Source: Ground Water - North West Region<br>Point: WELL AT STOCKHOW HALL,FRIZINGTON<br>Data Type: Point<br>Name: MESSRS J IRELAND & SON<br>Easting: 306500<br>Northing: 517400 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 16/12/1995<br>Version End Date: - |

| ID | Location | Details | |
|---|---|---|---|
| - | 1940m S | Status: Active<br>Licence No: NW/074/0003/011<br>Details: Dust Suppression<br>Direct Source: Ground Water - North West Region<br>Point: ESKETT QUARRY, FRIZINGTON<br>Data Type: Point<br>Name: Tendley Quarries Limited<br>Easting: 305534<br>Northing: 516740 | Annual Volume ($m^3$): 135600<br>Max Daily Volume ($m^3$): 565<br>Original Application No: NPS/NA/001126<br>Original Start Date: 02/09/2021<br>Expiry Date: 31/03/2038<br>Issue No: 1<br>Version Start Date: 02/09/2021<br>Version End Date: - |
| - | 1950m NW | Status: Historical<br>Licence No: 2774004003<br>Details: General use relating to Secondary Category (Medium Loss)<br>Direct Source: Ground Water - North West Region<br>Point: "WELL AT ARLECDON, FRIZINGTON, CUMBRIA"<br>Data Type: Point<br>Name: REAY<br>Easting: 303640<br>Northing: 520080 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 03/11/1998<br>Version End Date: - |
| - | 1950m NW | Status: Historical<br>Licence No: 2774004003<br>Details: General use relating to Secondary Category (Medium Loss)<br>Direct Source: Ground Water - North West Region<br>Point: WELL AT ARLECDON, FRIZINGTON, CUMBRIA<br>Data Type: Point<br>Name: REAY<br>Easting: 303640<br>Northing: 520080 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: 16/12/1965<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 03/11/1998<br>Version End Date: - |

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

## 5.7 Surface water abstractions

| **Records within 2000m** | **4** |
|---|---|

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 44 >**

| ID | Location | Details | |
|---|---|---|---|
| - | 1869m S | Status: Historical<br>Licence No: 2774003015<br>Details: General use relating to Secondary Category (Medium Loss)<br>Direct Source: "Surface, Non-Tidal - North West Region"<br>Point: "LAGOON @ ESKETT QUARRY, WINDER, FRIZINGTON, CUMBRIA"<br>Data Type: Point<br>Name: AGGREGATE INDUSTRIES UK LTD<br>Easting: 305590<br>Northing: 516830 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: 05-Mar-05<br>Issue No: 2<br>Version Start Date: 06/07/2001<br>Version End Date: - |
| - | 1869m S | Status: Historical<br>Licence No: 2774003015<br>Details: General Washing/Process Washing<br>Direct Source: "Surface, Non-Tidal - North West Region"<br>Point: "LAGOON @ ESKETT QUARRY, WINDER, FRIZINGTON, CUMBRIA"<br>Data Type: Point<br>Name: AGGREGATE INDUSTRIES UK LTD<br>Easting: 305590<br>Northing: 516830 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: 05-Mar-05<br>Issue No: 2<br>Version Start Date: 06/07/2001<br>Version End Date: - |
| - | 1869m S | Status: Historical<br>Licence No: 2774003015<br>Details: General use relating to Secondary Category (Medium Loss)<br>Direct Source: Surface, Non-Tidal - North West Region<br>Point: LAGOON @ ESKETT QUARRY, WINDER, FRIZINGTON, CUMBRIA<br>Data Type: Point<br>Name: AGGREGATE INDUSTRIES UK LTD<br>Easting: 305590<br>Northing: 516830 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: 05/03/2005<br>Issue No: 2<br>Version Start Date: 06/07/2001<br>Version End Date: - |
| - | 1869m S | Status: Historical<br>Licence No: 2774003015<br>Details: General Washing/Process Washing<br>Direct Source: Surface, Non-Tidal - North West Region<br>Point: LAGOON @ ESKETT QUARRY, WINDER, FRIZINGTON, CUMBRIA<br>Data Type: Point<br>Name: AGGREGATE INDUSTRIES UK LTD<br>Easting: 305590<br>Northing: 516830 | Annual Volume ($m^3$): -<br>Max Daily Volume ($m^3$): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: 05/03/2005<br>Issue No: 2<br>Version Start Date: 06/07/2001<br>Version End Date: - |

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

## 5.8 Potable abstractions

| Records within 2000m | 0 |
|---|---|

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

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

## 5.9 Source Protection Zones

| Records within 500m | 0 |
|---|---|

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

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

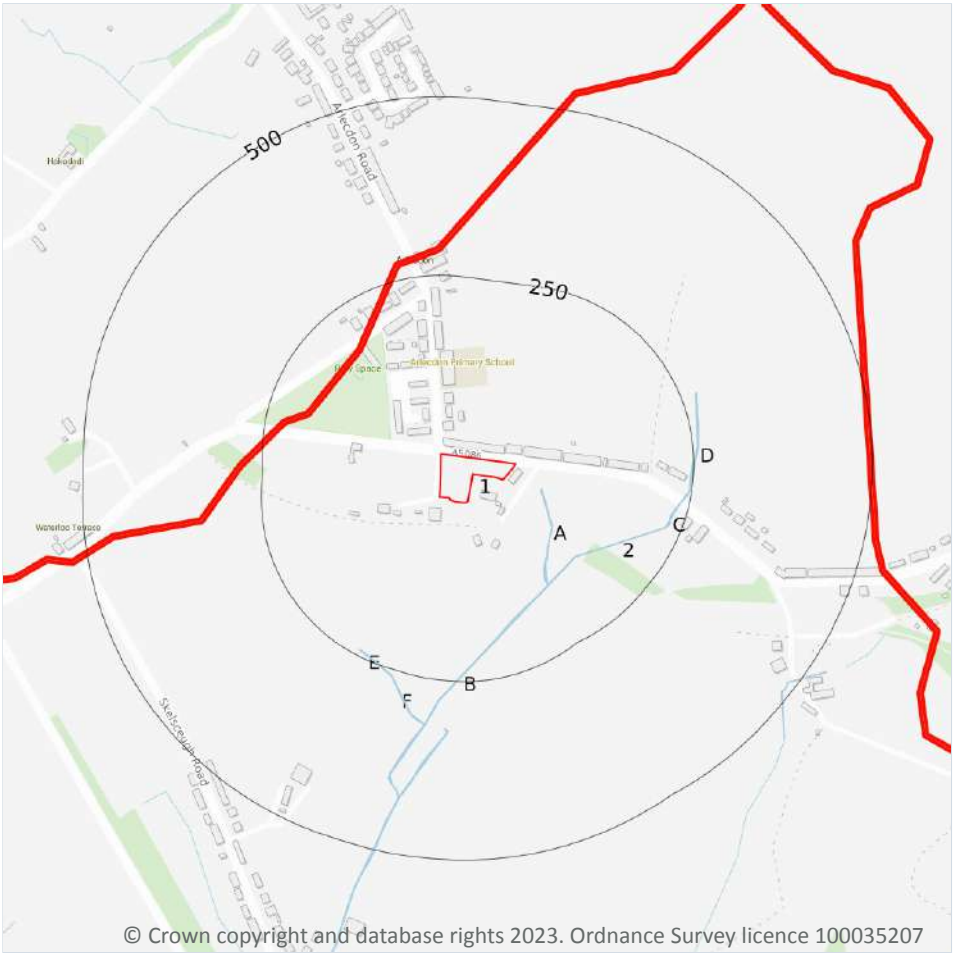
## 5.10 Source Protection Zones (confined aquifer)

| Records within 500m | 0 |
|---|---|

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

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

# 6 Hydrology






Site Outline

Search buffers in metres (m)

Water Network (OS MasterMap)

Surface water features (wider than 5m)

Surface water features (narrower than 5m)

WFD River, canal and surface water transfer water bodies

WFD Lake water bodies

WFD Transitional and coastal water bodies

WFD Surface water body catchments boundaries

WFD Groundwater body boundaries

## 6.1 Water Network (OS MasterMap)

| Records within 250m | 13 |
|---|---|

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

Features are displayed on the Hydrology map on **page 49 >**

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| A | 49m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

| ID | Location | Type of water feature | Ground level | Permanence | Name |
|---|---|---|---|---|---|
| A | 129m SE | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| A | 132m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| 2 | 147m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| A | 147m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| A | 160m SE | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| B | 186m S | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Winder Beck |
| C | 229m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| C | 236m E | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| D | 241m E | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | Eller Gill |
| E | 241m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |
| E | 246m SW | Inland river not influenced by normal tidal action. | Underground | Watercourse contains water year round (in normal circumstances) | - |
| F | 247m SW | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | - |

*This data is sourced from the Ordnance Survey.*

## 6.2 Surface water features

| Records within 250m | 9 |
|---|---|

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

Features are displayed on the Hydrology map on **page 49 >**

*This data is sourced from the Ordnance Survey.*

## 6.3 WFD Surface water body catchments

| Records on site | 1 |
|---|---|

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

Features are displayed on the Hydrology map on **page 49 >**

| ID | Location | Type | Water body catchment | Water body ID | Operational catchment | Management catchment |
|---|---|---|---|---|---|---|
| **A** | **On site** | **River** | **Ehen (upper including Liza)** | **GB112074070010** | **Ehen-Calder** | **South West Lakes** |

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

## 6.4 WFD Surface water bodies

| Records identified | 1 |
|---|---|

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

Features are displayed on the Hydrology map on **page 49 >**

| ID | Location | Type | Name | Water body ID | Overall rating | Chemical rating | Ecological rating | Year |
|---|---|---|---|---|---|---|---|---|
| - | 2577m S | River | Ehen (upper including Liza) | GB112074070010 ↗ | Moderate | Fail | Good | 2019 |

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

## 6.5 WFD Groundwater bodies

| **Records on site** | **1** |
|---|---|

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

Features are displayed on the Hydrology map on **page 49 >**

| ID | Location | Name | Water body ID | Overall rating | Chemical rating | Quantitative | Year |
|---|---|---|---|---|---|---|---|
| **1** | **On site** | **Derwent and West Cumbria Lower Palaeozoic and Carboniferous Aquifers** | **GB41202G103700** ↗ | **Poor** | **Poor** | **Good** | **2019** |

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

# 7 River and coastal flooding

## 7.1 Risk of flooding from rivers and the sea

| Records within 50m | 0 |
|---|---|

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

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

## 7.2 Historical Flood Events

| Records within 250m | 0 |
|---|---|

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

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

## 7.3 Flood Defences

| Records within 250m | 0 |
|---|---|

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

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

## 7.4 Areas Benefiting from Flood Defences

| Records within 250m | 0 |
|---|---|

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

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

## 7.5 Flood Storage Areas

| Records within 250m | 0 |
|---|---|

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

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

# River and coastal flooding - Flood Zones

## 7.6 Flood Zone 2

| Records within 50m | 0 |
|---|---|

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

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

## 7.7 Flood Zone 3

| Records within 50m | 0 |
|---|---|

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

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

# 8 Surface water flooding

## 8.1 Surface water flooding

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

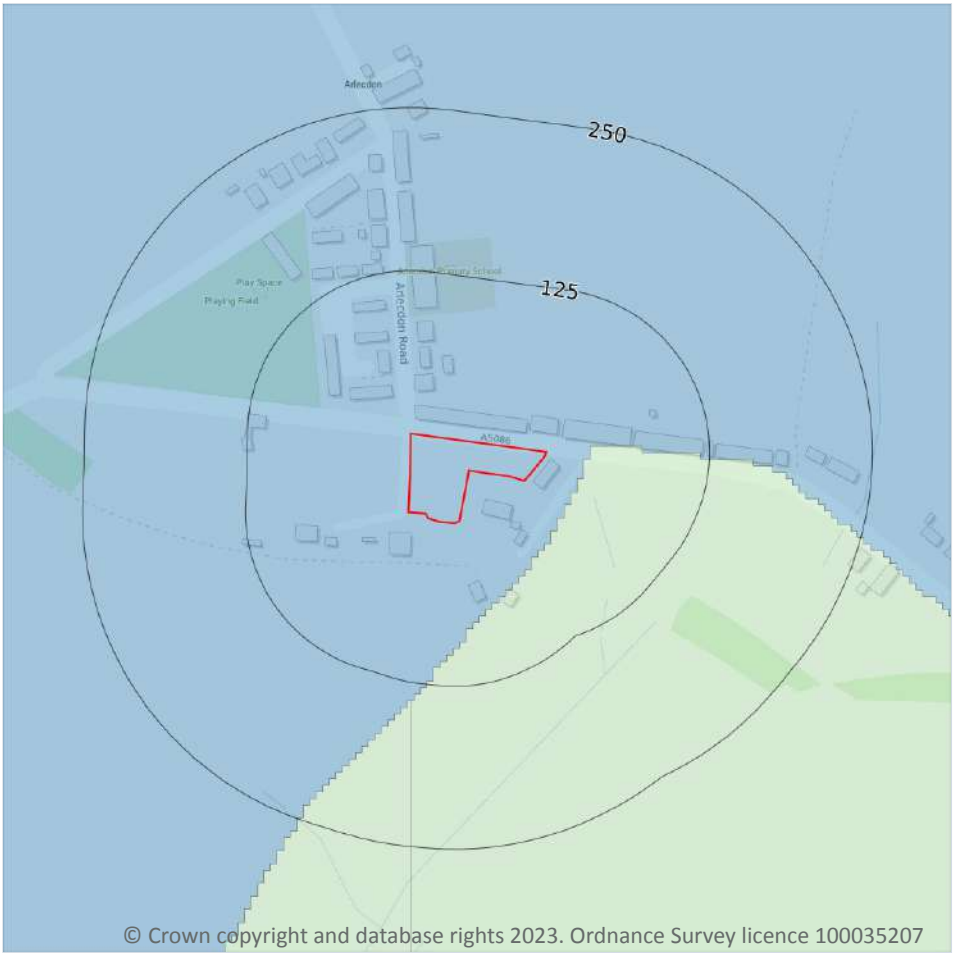
Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year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

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

| Return period | Maximum modelled depth |
|---|---|
| 1 in 1000 year | Negligible |
| 1 in 250 year | Negligible |
| 1 in 100 year | Negligible |
| 1 in 30 year | Negligible |

*This data is sourced from Ambiental Risk Analytics.*

# 9 Groundwater flooding




Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

## 9.1 Groundwater flooding

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

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

Features are displayed on the Groundwater flooding map on **page 57 >**

*This data is sourced from Ambiental Risk Analytics.*

# 10 Environmental designations


Site Outline

Search buffers in metres (m)

Sites of Special Scientific Interest (SSSI)

National Nature Reserves (NNR)

## 10.1 Sites of Special Scientific Interest (SSSI)

| Records within 2000m | 2 |
|---|---|

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

Features are displayed on the Environmental designations map on **page 58 >**

| ID | Location | Name | Data source |
|---|---|---|---|
| A | 1063m E | High Leys | Natural England |

| ID | Location | Name | Data source |
|---|---|---|---|
| - | 1781m SW | Yeathouse Quarry | Natural England |

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

## 10.2 Conserved wetland sites (Ramsar sites)

| Records within 2000m | 0 |
|---|---|

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

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

## 10.3 Special Areas of Conservation (SAC)

| Records within 2000m | 0 |
|---|---|

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

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

## 10.4 Special Protection Areas (SPA)

| Records within 2000m | 0 |
|---|---|

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

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

## 10.5 National Nature Reserves (NNR)

| Records within 2000m | 1 |
|---|---|

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

Features are displayed on the Environmental designations map on **page 58 >**

| ID | Location | Name | Data source |
|---|---|---|---|
| A | 1063m E | High Leys | Natural England |

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

## 10.6 Local Nature Reserves (LNR)

| Records within 2000m | 0 |
|---|---|

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

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

## 10.7 Designated Ancient Woodland

| Records within 2000m | 0 |
|---|---|

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

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

## 10.8 Biosphere Reserves

| Records within 2000m | 0 |
|---|---|

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

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

## 10.9 Forest Parks

| Records within 2000m | 0 |
|---|---|

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

*This data is sourced from the Forestry Commission.*

## 10.10 Marine Conservation Zones

| Records within 2000m | 0 |
|---|---|

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

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

## 10.11 Green Belt

| Records within 2000m | 0 |
|---|---|

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

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

## 10.12 Proposed Ramsar sites

| Records within 2000m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 10.13 Possible Special Areas of Conservation (pSAC)

| Records within 2000m | 0 |
|---|---|

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

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

## 10.14 Potential Special Protection Areas (pSPA)

| Records within 2000m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 10.15 Nitrate Sensitive Areas

| Records within 2000m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

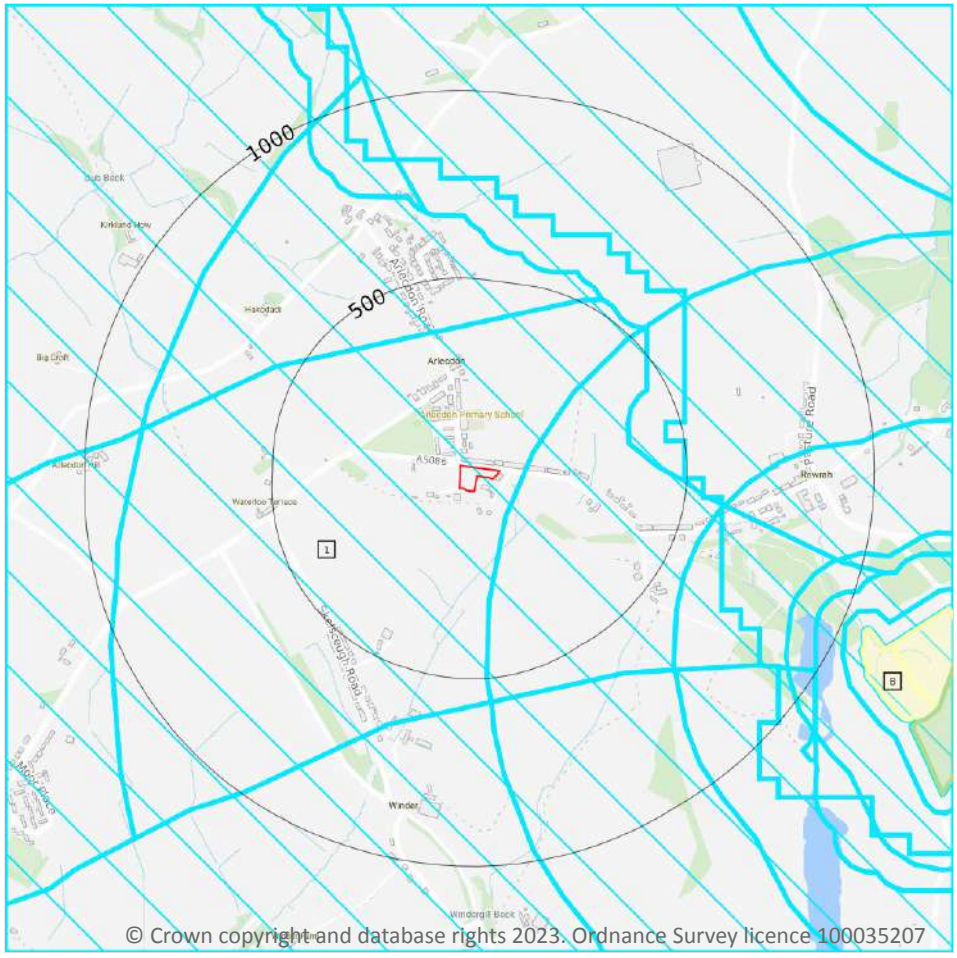
## 10.16 Nitrate Vulnerable Zones

| Records within 2000m | 0 |
|---|---|

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

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

# SSSI Impact Zones and Units




Site Outline

Search buffers in metres (m)

SSSI Impact Risk Zones

SSSI Units

- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

## 10.17 SSSI Impact Risk Zones

| Records on site | 1 |
|---|---|

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

Features are displayed on the SSSI Impact Zones and Units map on **page 63 >**

| ID | Location | Type of developments requiring consultation |
|---|---|---|
| 1 | On site | **Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.<br>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.<br>Air pollution - Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 200m², manure stores > 250t).<br>Combustion - General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion<br>Waste - Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.<br>Composting - Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management<br>Discharges - Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream.<br>Water supply - Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.** |

*This data is sourced from Natural England.*

## 10.18 SSSI Units

| **Records within 2000m** | **4** |
|---|---|

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

Features are displayed on the SSSI Impact Zones and Units map on **page 63 >**

ID: B
Location: 1063m E
SSSI name: High Leys
Unit name: 2 - Rushy Pasture - Field 5
Broad habitat: Neutral Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

| Feature name | Feature condition | Date of assessment |
|---|---|---|
| Lowland mire grassland and rush pasture | Unfavourable - Recovering | 01/10/2010 |

ID: B
Location: 1144m E
SSSI name: High Leys
Unit name: Unit 3 - Marshy Grassland - Field 4
Broad habitat: Neutral Grassland - Lowland
Condition: Unfavourable - Recovering
Reportable features:

| Feature name | Feature condition | Date of assessment |
|---|---|---|
| Lowland neutral grassland (MG8) | Unfavourable - Recovering | 01/10/2010 |

ID: 23
Location: 1295m SE
SSSI name: High Leys
Unit name: Neutral Grassland - Fields 1, 2 And 3
Broad habitat: Neutral Grassland - Upland
Condition: Favourable
Reportable features:

| Feature name | Feature condition | Date of assessment |
|---|---|---|
| Lowland neutral grassland (MG5) | Favourable | 01/10/2010 |

ID: -
Location: 1781m SW
SSSI name: Yeathouse Quarry
Unit name: 1
Broad habitat: Earth Heritage
Condition: Favourable
Reportable features:

| Feature name | Feature condition | Date of assessment |
|---|---|---|
| ED - Dinantian | Favourable | 15/05/2012 |

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

# 11 Visual and cultural designations

## 11.1 World Heritage Sites

| Records within 250m | 0 |
|---|---|

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

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

## 11.2 Area of Outstanding Natural Beauty

| Records within 250m | 0 |
|---|---|

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

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

## 11.3 National Parks

| Records within 250m | 0 |
|---|---|

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

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

## 11.4 Listed Buildings

| Records within 250m | 0 |
|---|---|

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

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

## 11.5 Conservation Areas

| Records within 250m | 0 |
|---|---|

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

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

## 11.6 Scheduled Ancient Monuments

| Records within 250m | 0 |
|---|---|

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

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

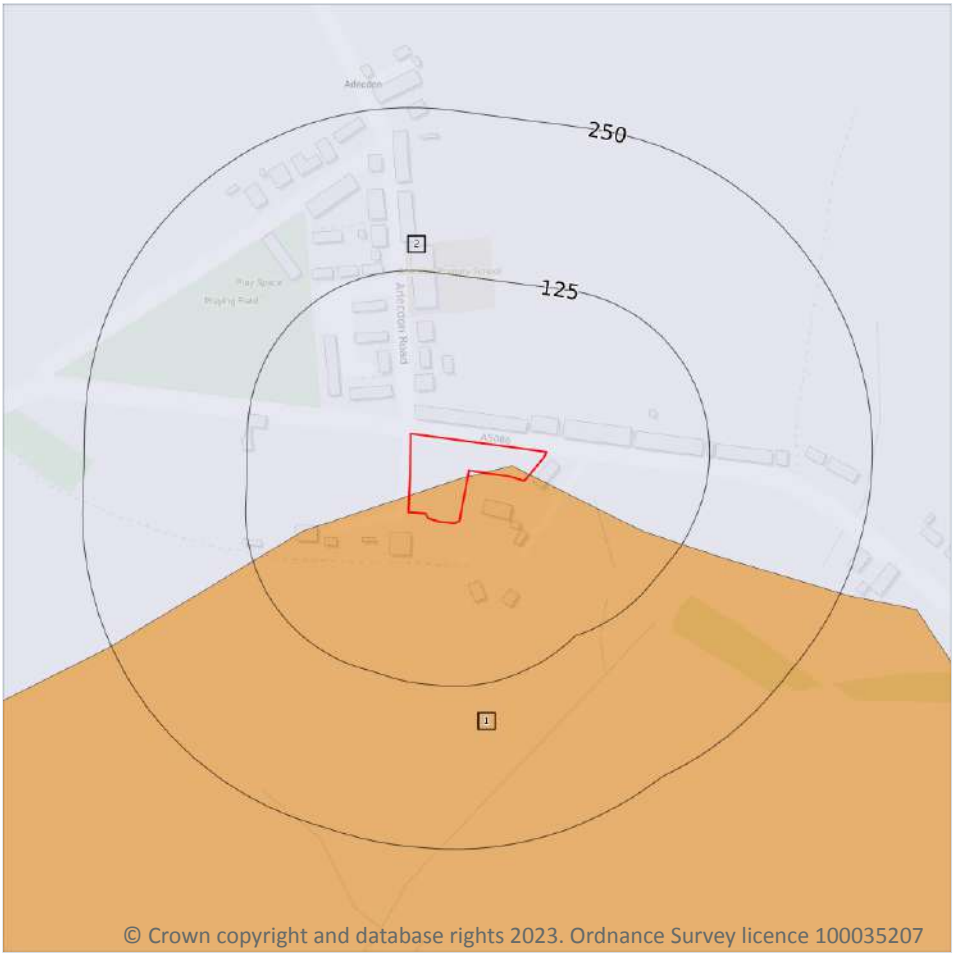
## 11.7 Registered Parks and Gardens

| Records within 250m | 0 |
|---|---|

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

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

# 12 Agricultural designations




Site Outline

Search buffers in metres (m)

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

## 12.1 Agricultural Land Classification

| Records within 250m | 2 |
|---|---|

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

Features are displayed on the Agricultural designations map on **page 68 >**

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

| ID | Location | Classification | Description |
|---|---|---|---|
| **2** | **On site** | **Grade 4** | **Poor quality agricultural land. Land with severe limitations which significantly restrict the range of crops and/or level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.** |

*This data is sourced from Natural England.*

## 12.2 Open Access Land

| **Records within 250m** | **0** |
|---|---|

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

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

## 12.3 Tree Felling Licences

| **Records within 250m** | **0** |
|---|---|

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

*This data is sourced from the Forestry Commission.*

## 12.4 Environmental Stewardship Schemes

| **Records within 250m** | **2** |
|---|---|

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

| Location | Reference | Scheme | Start Date | End date |
|---|---|---|---|---|
| 108m SW | AG00455927 | Entry Level Stewardship | 01/05/2013 | 30/04/2018 |
| 230m SE | AG00464332 | Entry Level Stewardship | 01/05/2013 | 30/04/2018 |

*This data is sourced from Natural England.*

## 12.5 Countryside Stewardship Schemes

| **Records within 250m** | **1** |
|---|---|

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

| Location | Reference | Scheme | Start Date | End Date |
|---|---|---|---|---|
| 230m SE | 825837 | Countryside Stewardship (Middle Tier) | 01/01/2020 | 31/12/2024 |

*This data is sourced from Natural England.*

# 13 Habitat designations

## 13.1 Priority Habitat Inventory

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.2 Habitat Networks

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.3 Open Mosaic Habitat

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

## 13.4 Limestone Pavement Orders

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Natural England.*

# 14 Geology 1:10,000 scale - Availability


Site Outline

Search buffers in metres (m)

Full coverage

Partial coverage

No coverage

## 14.1 10k Availability

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 72 >**

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

*This data is sourced from the British Geological Survey.*

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

## 14.2 Artificial and made ground (10k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# Geology 1:10,000 scale - Superficial

## 14.3 Superficial geology (10k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# Geology 1:10,000 scale - Bedrock

## 14.5 Bedrock geology (10k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

## 14.6 Bedrock faults and other linear features (10k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# 15 Geology 1:50,000 scale - Availability


Site Outline

Search buffers in metres (m)

Geological map tile

## 15.1 50k Availability

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 76 >**

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

*This data is sourced from the British Geological Survey.*

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

## 15.2 Artificial and made ground (50k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

## 15.3 Artificial ground permeability (50k)

| Records within 50m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# Geology 1:50,000 scale - Superficial




Site Outline

Search buffers in metres (m)

Landslip (50k)

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

## 15.4 Superficial geology (50k)

**Records within 500m** **2**

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

Features are displayed on the Geology 1:50,000 scale - Superficial map on **page 78 >**

| ID | Location | LEX Code | Description | Rock description |
|---|---|---|---|---|
| 1 | 31m E | TILLD-DMTN | TILL, DEVENSIAN | DIAMICTON |
| 2 | 486m SE | ALV-XCZSV | ALLUVIUM | CLAY, SILT, SAND AND GRAVEL |

*This data is sourced from the British Geological Survey.*

## 15.5 Superficial permeability (50k)

| Records within 50m | 1 |
|---|---|

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

| Location | Flow type | Maximum permeability | Minimum permeability |
|---|---|---|---|
| 31m E | Mixed | High | Low |

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

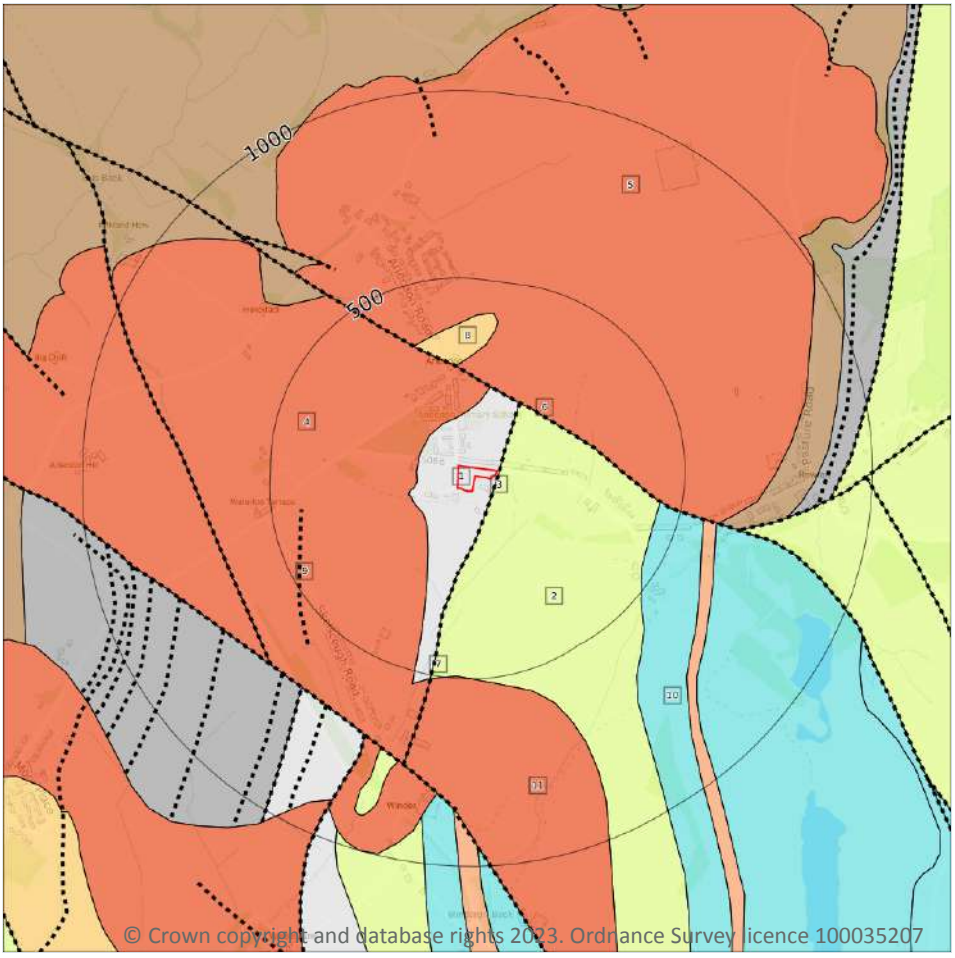
## 15.7 Landslip permeability (50k)

| Records within 50m | 0 |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# Geology 1:50,000 scale - Bedrock




Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

## 15.8 Bedrock geology (50k)

**Records within 500m** **7**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 80 >**

| ID | Location | LEX Code | Description | Rock age |
|---|---|---|---|---|
| **1** | **On site** | **PLCM-MDSS** | **PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE** | **WESTPHALIAN** |
| 2 | 5m E | SMGP-MDSS | STAINMORE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE | NAMURIAN |
| 4 | 105m NW | BK-BREC | BROCKRAM - BRECCIA | - |

| ID | Location | LEX Code | Description | Rock age |
|---|---|---|---|---|
| 5 | 188m NE | BK-BREC | BROCKRAM - BRECCIA | - |
| 8 | 265m N | SBS-SDST | ST BEES SANDSTONE MEMBER - SANDSTONE | - |
| 10 | 440m E | ESKT-LMST | ESKETT LIMESTONE FORMATION - LIMESTONE | VISEAN |
| 11 | 494m S | BK-BREC | BROCKRAM - BRECCIA | - |

*This data is sourced from the British Geological Survey.*

## 15.9 Bedrock permeability (50k)

**Records within 50m** **3**

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

| Location | Flow type | Maximum permeability | Minimum permeability |
|---|---|---|---|
| **On site** | **Fracture** | **Moderate** | **Low** |
| 1m SW | Fracture | Moderate | Low |
| 5m E | Fracture | Moderate | Low |

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

**Records within 500m** **4**

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

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 80 >**

| ID | Location | Category | Description |
|---|---|---|---|
| 3 | 5m E | FAULT | Fault, inferred, displacement unknown |
| 6 | 188m NE | FAULT | Fault, inferred, displacement unknown |
| 7 | 225m S | FAULT | Fault, inferred, displacement unknown |
| 9 | 420m W | LANDFORM | Glacial meltwater channel centre line, undifferentiated |

*This data is sourced from the British Geological Survey.*

# 16 Boreholes




Site Outline

Search buffers in metres (m)

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

## 16.1 BGS Boreholes

| Records within 250m | 1 |
|---|---|

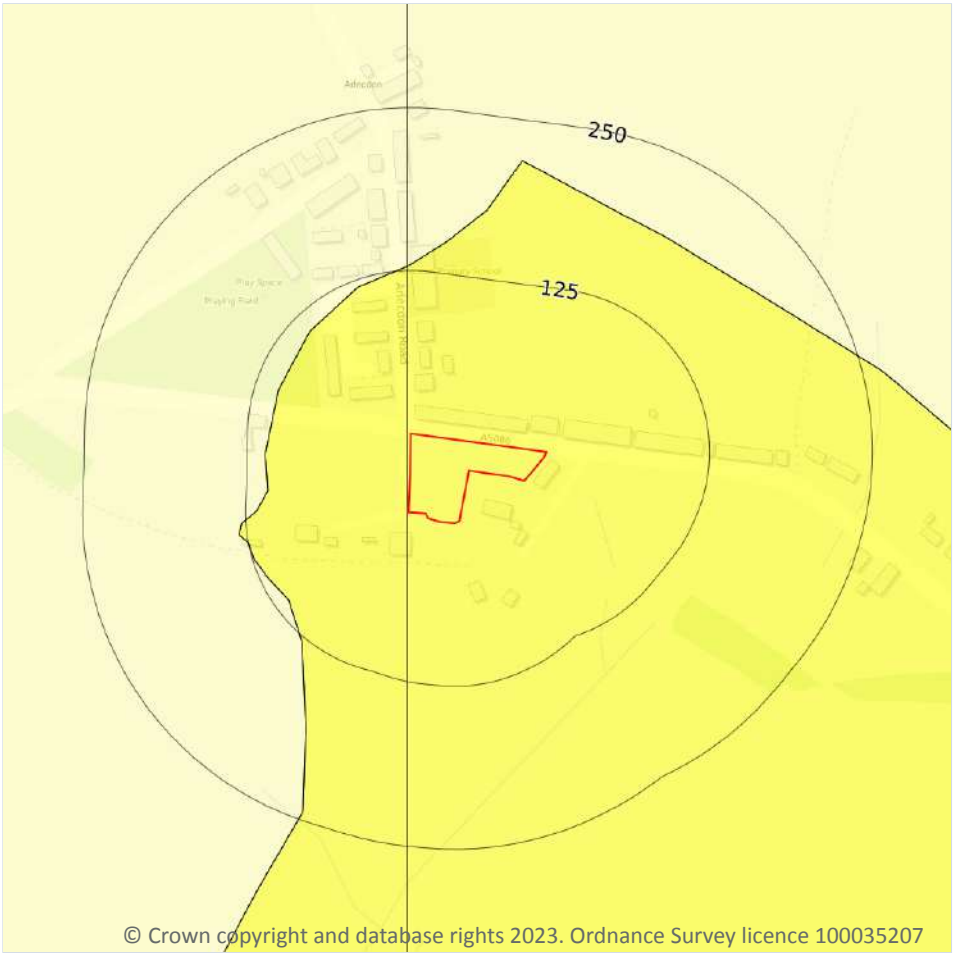
The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several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

Features are displayed on the Boreholes map on **page 82 >**

| ID | Location | Grid reference | Name | Length | Confidential | Web link |
|---|---|---|---|---|---|---|
| 1 | 225m SW | 304925 518413 | HARRISONS WINDER 1 | 91.93 | N | 837833 ↗ |

*This data is sourced from the British Geological Survey.*

# 17 Natural ground subsidence - Shrink swell clays




Site Outline

Search buffers in metres (m)

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

## 17.1 Shrink swell clays

| Records within 50m | 2 |
|---|---|

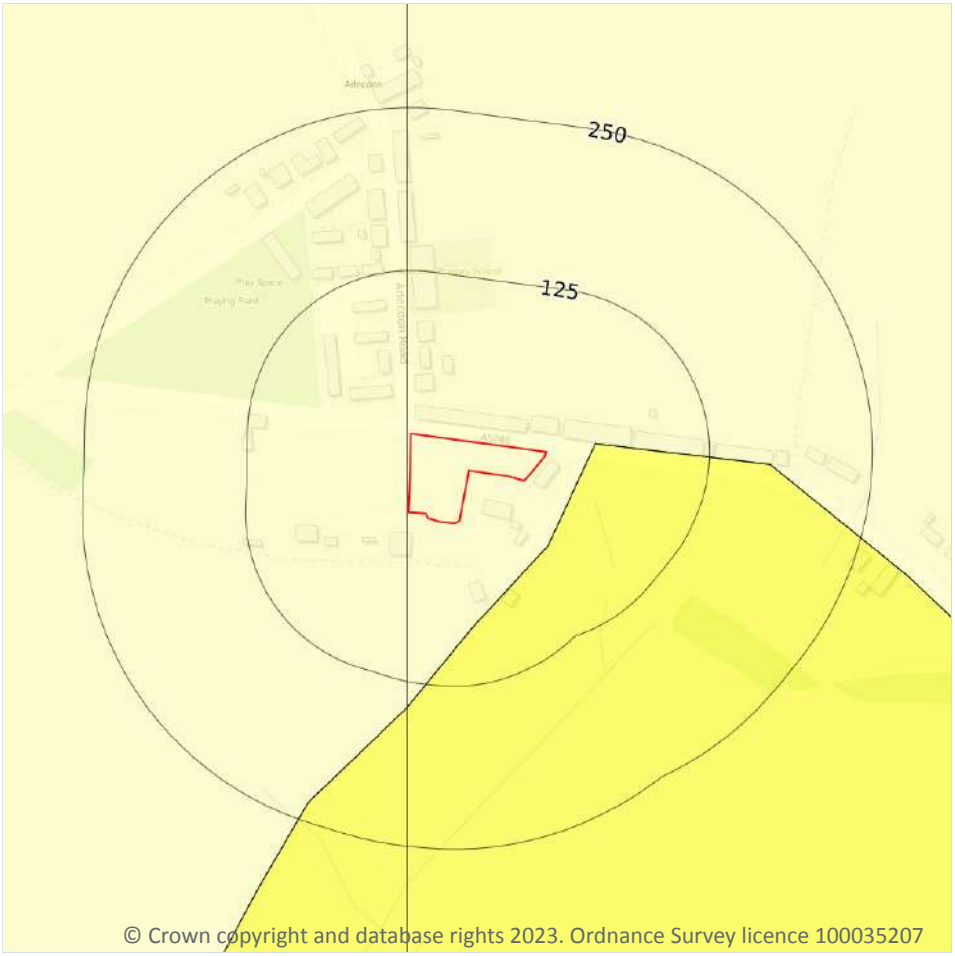
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 83 >**

| Location | Hazard rating | Details |
|---|---|---|
| **On site** | **Very low** | **Ground conditions predominantly low plasticity.** |
| 1m SW | Very low | Ground conditions predominantly low plasticity. |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Running sands




Site Outline

Search buffers in metres (m)

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

## 17.2 Running sands

| Records within 50m | 3 |
|---|---|

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

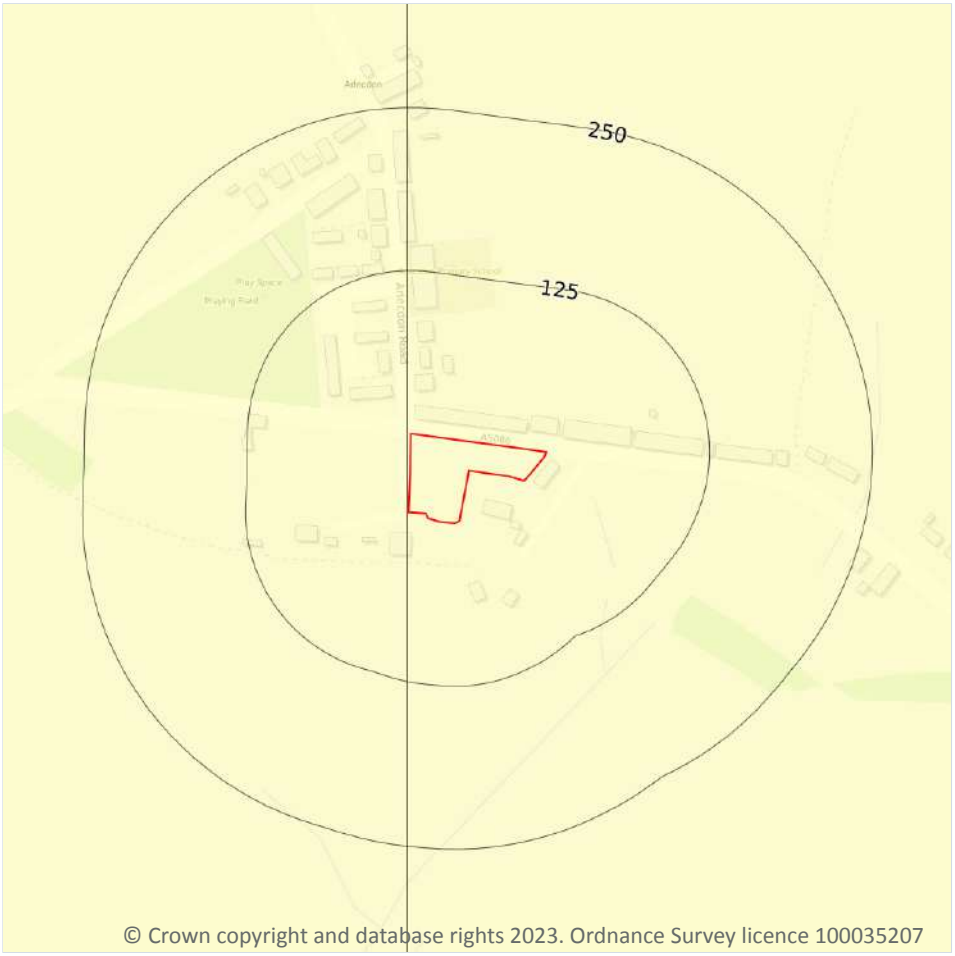
Features are displayed on the Natural ground subsidence - Running sands map on **page 84 >**

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

| Location | Hazard rating | Details |
|---|---|---|
| 1m SW | Negligible | Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions. |
| 31m E | Very low | Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Compressible deposits






Site Outline

Search buffers in metres (m)

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

## 17.3 Compressible deposits

| Records within 50m | 2 |
|---|---|

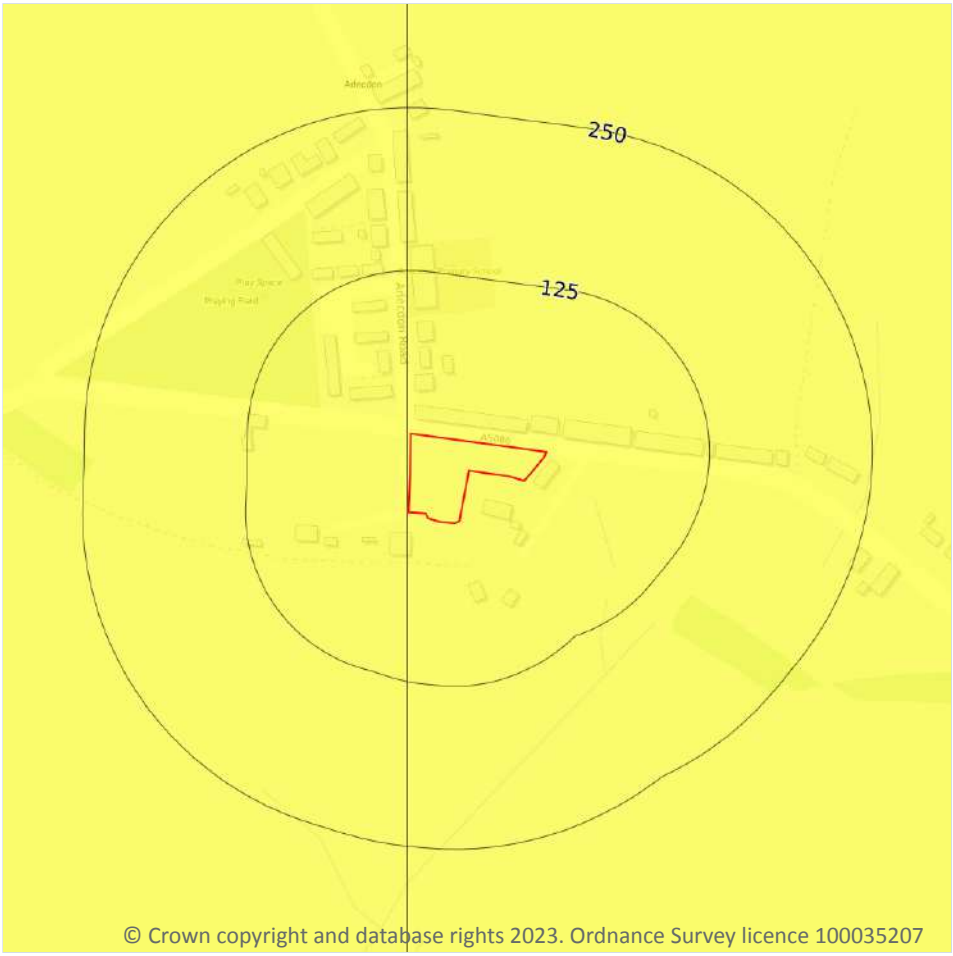
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 86 >**

| Location | Hazard rating | Details |
|---|---|---|
| **On site** | **Negligible** | **Compressible strata are not thought to occur.** |
| 1m SW | Negligible | Compressible strata are not thought to occur. |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Collapsible deposits






Site Outline

Search buffers in metres (m)

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

## 17.4 Collapsible deposits

| Records within 50m | 2 |
|---|---|

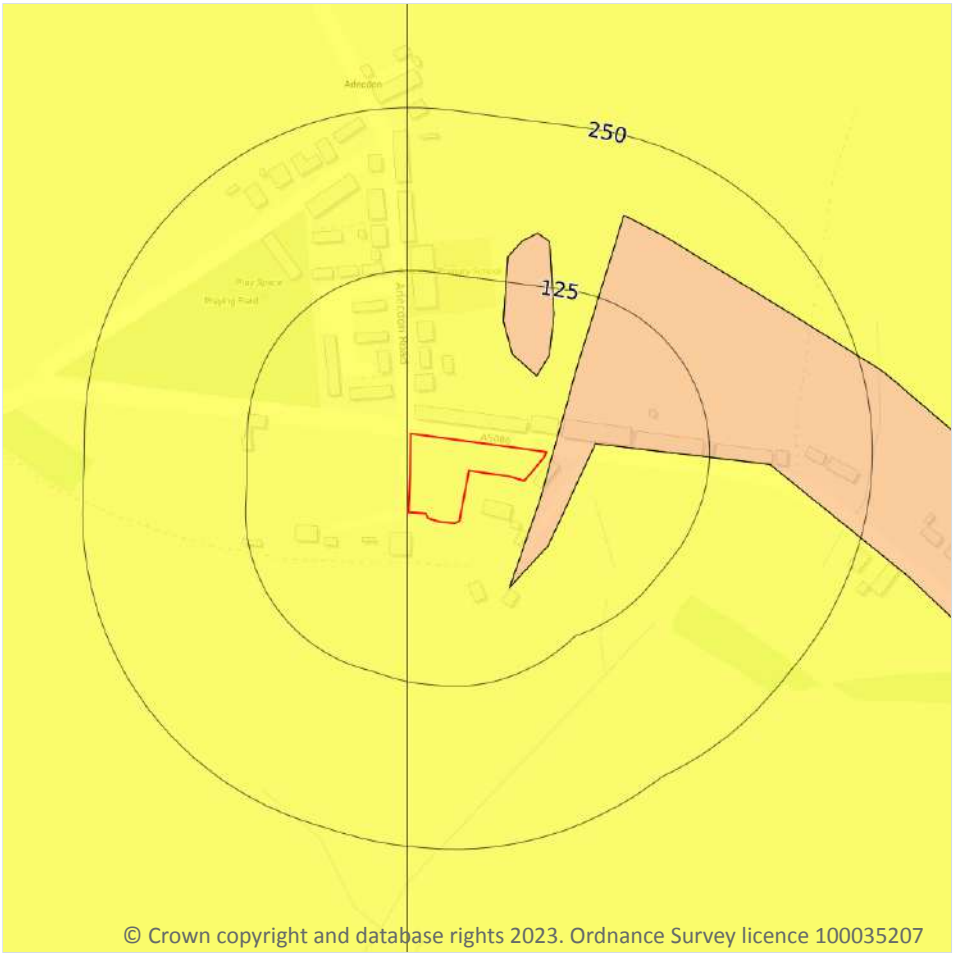
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 87 >**

| Location | Hazard rating | Details |
|---|---|---|
| **On site** | **Very low** | **Deposits with potential to collapse when loaded and saturated are unlikely to be present.** |
| 1m SW | Very low | Deposits with potential to collapse when loaded and saturated are unlikely to be present. |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Landslides






Site Outline

Search buffers in metres (m)

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

## 17.5 Landslides

| Records within 50m | 3 |
|---|---|

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

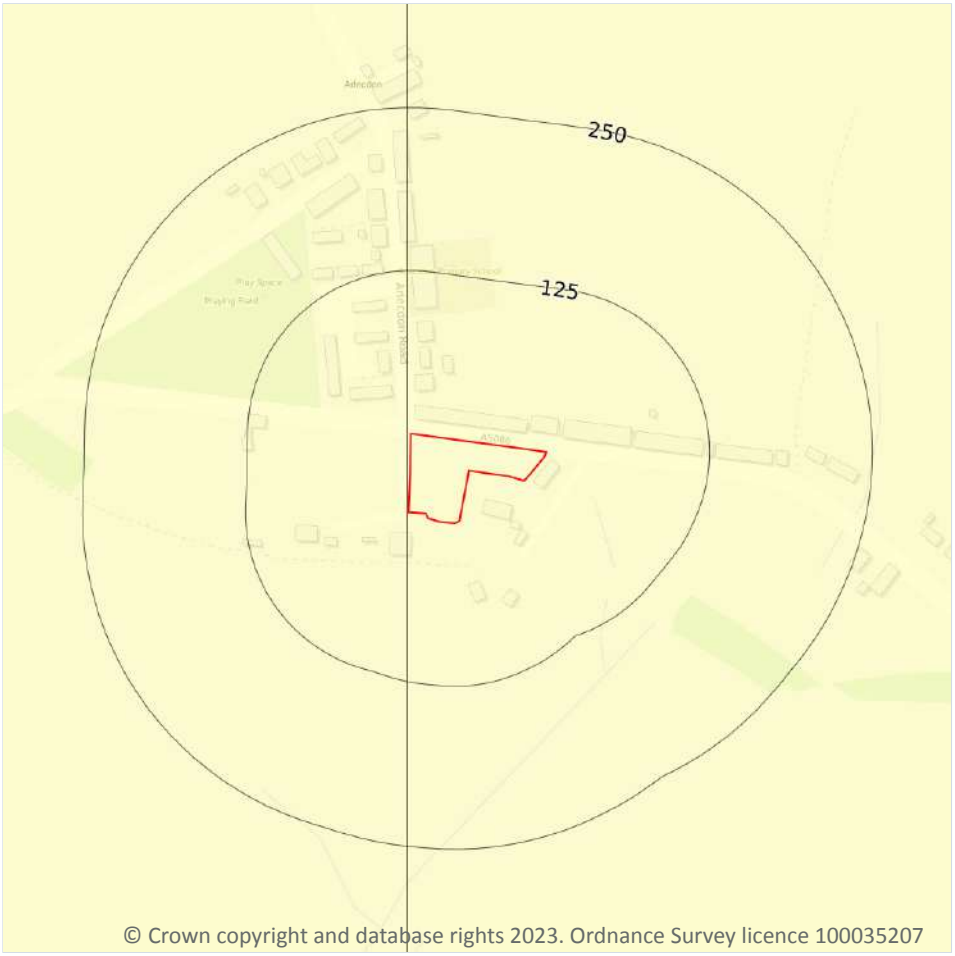
Features are displayed on the Natural ground subsidence - Landslides map on **page 88 >**

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

| Location | Hazard rating | Details |
|---|---|---|
| 1m SW | Very low | Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered. |
| 5m E | Low | Slope instability problems may be present or anticipated. Site investigation should consider specifically the slope stability of the site. |

*This data is sourced from the British Geological Survey.*

# Natural ground subsidence - Ground dissolution of soluble rocks






Site Outline

Search buffers in metres (m)

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

## 17.6 Ground dissolution of soluble rocks

| Records within 50m | 2 |
|---|---|

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

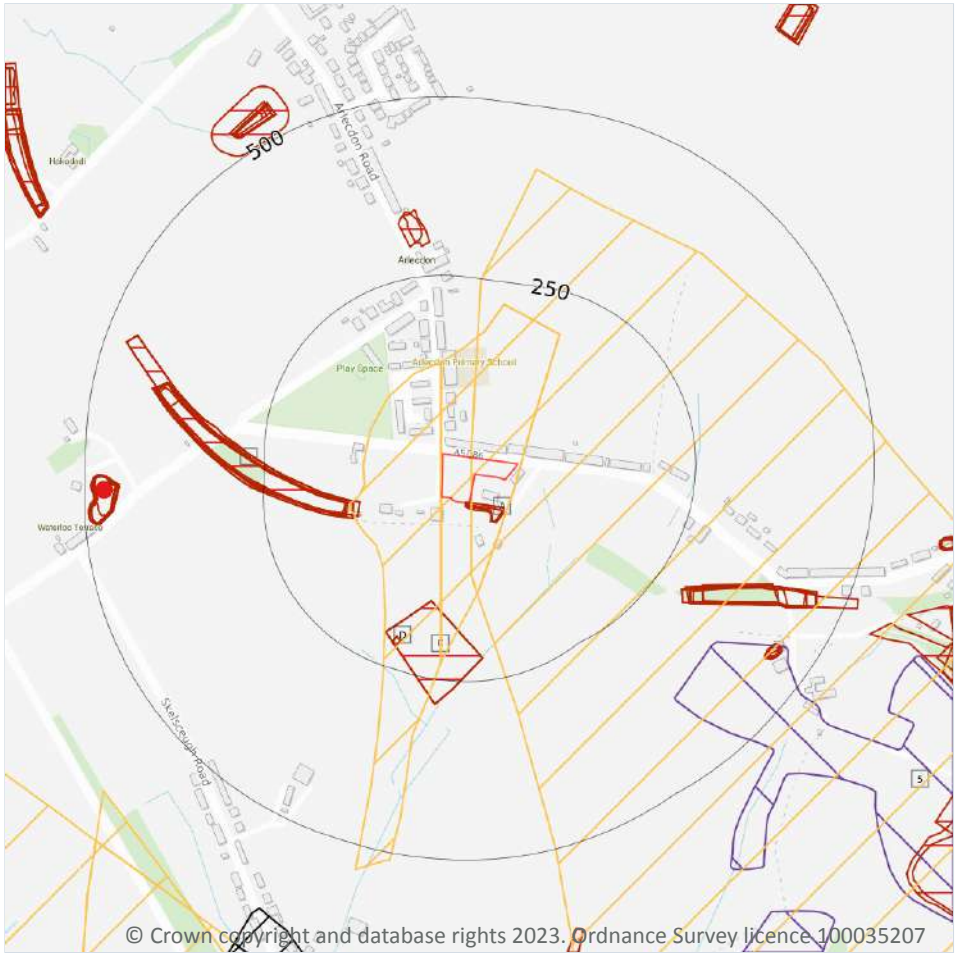
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 90 >**

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

| Location | Hazard rating | Details |
|---|---|---|
| 1m SW | Negligible | Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present. |

*This data is sourced from the British Geological Survey.*

# 18 Mining and ground workings




Site Outline

Search buffers in metres (m)

BritPits

Surface ground workings

Underground workings

Underground mining extents

Historical mineral planning areas

TCA non-coal mining

Non Coal Mining

Sporadic underground mining of restricted extent possible

Localised small scale underground mining possible

Small scale mining possible

Underground mining known or likely within or in close proximity

Underground mining known within or in very close proximity

## 18.1 BritPits

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Mining and ground workings map on **page 92 >**

| ID | Location | Details | Description |
|---|---|---|---|
| H | 472m W | Name: Arlecdon<br>Address: Arlecdon, FRIZINGTON, Cumbria<br>Commodity: Sand & Gravel<br>Status: Ceased | Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site<br>Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority |

*This data is sourced from the British Geological Survey.*

## 18.2 Surface ground workings

**Records within 250m** **15**

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

Features are displayed on the Mining and ground workings map on **page 92 >**

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| **A** | **On site** | **Unspecified Ground Workings** | **1923** | **1:10560** |
| **A** | **On site** | **Unspecified Ground Workings** | **1923** | **1:10560** |
| A | 3m S | Unspecified Ground Workings | 1951 | 1:10560 |
| B | 115m W | Cuttings | 1969 | 1:10560 |
| B | 115m W | Cuttings | 1993 | 1:10000 |
| B | 125m W | Cuttings | 1923 | 1:10560 |
| B | 125m W | Cuttings | 1923 | 1:10560 |
| B | 131m W | Cuttings | 1926 | 1:10560 |
| B | 133m W | Cuttings | 1898 | 1:10560 |
| B | 135m W | Cuttings | 1926 | 1:10560 |
| B | 136m W | Cuttings | 1951 | 1:10560 |
| C | 143m S | Sewage Works | 1926 | 1:10560 |
| C | 143m S | Sewage Works | 1926 | 1:10560 |
| D | 205m SW | Sewage Works | 1923 | 1:10560 |
| D | 205m SW | Sewage Works | 1923 | 1:10560 |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.3 Underground workings

| Records within 1000m | 7 |
|---|---|

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

Features are displayed on the Mining and ground workings map on **page 92 >**

| ID | Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|---|
| - | 777m S | Iron Ore mine pit | 1898 | 1:10560 |
| - | 811m S | Unspecified Old Shaft | 1926 | 1:10560 |
| - | 811m S | Unspecified Old Shaft | 1951 | 1:10560 |
| - | 955m E | Old Iron Shaft | 1863 | 1:10560 |
| - | 966m S | Unspecified Old Shaft | 1951 | 1:10560 |
| - | 967m S | Unspecified Old Shaft | 1898 | 1:10560 |
| - | 967m S | Iron Ore Old Shaft | 1926 | 1:10560 |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground mining extents

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Groundsure.*

## 18.5 Historical Mineral Planning Areas

| Records within 500m | 1 |
|---|---|

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

Features are displayed on the Mining and ground workings map on **page 92 >**

| ID | Location | Site Name | Mineral | Type | Planning Status | Planning Status Date |
|---|---|---|---|---|---|---|
| 5 | 371m SE | Rowrah Hall | Limestone | Surface mineral working | Application | Not available |

*This data is sourced from the British Geological Survey.*

## 18.6 Non-coal mining

| Records within 1000m | 19 |
|---|---|

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

Features are displayed on the Mining and ground workings map on **page 92 >**

| ID | Location | Name | Commodity | Class | Likelihood |
|---|---|---|---|---|---|
| **1** | **On site** | **Not available** | **Iron Ore (Bedded)** | **B** | **Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.** |
| **2** | **On site** | **Not available** | **Iron Ore (Bedded)** | **B** | **Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered.** |
| 3 | 1m SW | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 4 | 5m E | Not available | Iron Ore (Non Vein) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 8 | 627m SW | Not available | Iron Ore (Non Vein) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 9 | 630m SW | Not available | Iron Ore (Non Vein) | E | Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered. |

| ID | Location | Name | Commodity | Class | Likelihood |
|---|---|---|---|---|---|
| 11 | 674m SW | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 12 | 677m SW | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 13 | 683m SW | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 14 | 689m SW | Not available | Iron Ore (Bedded) | E | Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered. |
| - | 715m E | Not available | Vein Mineral | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 763m S | Not available | Iron Ore (Non Vein) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 784m E | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 849m S | Not available | Vein Mineral | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 859m S | Not available | Vein Mineral | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |

| ID | Location | Name | Commodity | Class | Likelihood |
|---|---|---|---|---|---|
| - | 918m SW | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 920m E | Not available | Iron Ore (Non Vein) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 923m E | Not available | Iron Ore (Bedded) | B | Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| - | 957m S | Not available | Iron Ore (Non Vein) | E | Underground mining is known or considered likely within or very close to the area. The location, extent and nature of mining should be considered in any site investigation. Potential for difficult ground conditions should be considered. |

*This data is sourced from the British Geological Survey.*

## 18.7 JPB mining areas

| Records on site | 0 |
|---|---|

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

*This data is sourced from Johnson Poole and Bloomer.*

## 18.8 The Coal Authority non-coal mining

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from The Coal Authority.*

## 18.9 Researched mining

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Groundsure.*

## 18.10 Mining record office plans

| Records within 500m | 1 |
|---|---|

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

| Location | Mineral |
|---|---|
| 478m S | Iron ore |

*This data is sourced from Groundsure.*

## 18.11 BGS mine plans

| Records within 500m | 2 |
|---|---|

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

| Location | Mineral |
|---|---|
| 258m SE | Limestone |
| 493m S | Iron ore |

*This data is sourced from Groundsure.*

## 18.12 Coal mining

| Records on site | 0 |
|---|---|

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

*This data is sourced from the Coal Authority.*

## 18.13 Brine areas

| Records on site | 0 |
|---|---|

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

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

## 18.14 Gypsum areas

| Records on site | 0 |
|---|---|

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.15 Tin mining

| Records on site | 0 |
|---|---|

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Groundsure.*

## 18.16 Clay mining

| Records on site | 0 |
|---|---|

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

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

# 19 Ground cavities and sinkholes

## 19.1 Natural cavities

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Stantec UK Ltd.*

## 19.2 Mining cavities

| Records within 1000m | 0 |
|---|---|

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

*This data is sourced from Stantec UK Ltd.*

## 19.3 Reported recent incidents

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from Groundsure.*

## 19.4 Historical incidents

| Records within 500m | 0 |
|---|---|

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

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

*This data is sourced from Groundsure.*

## 19.5 National karst database

| Records within 500m | 0 |
|---|---|

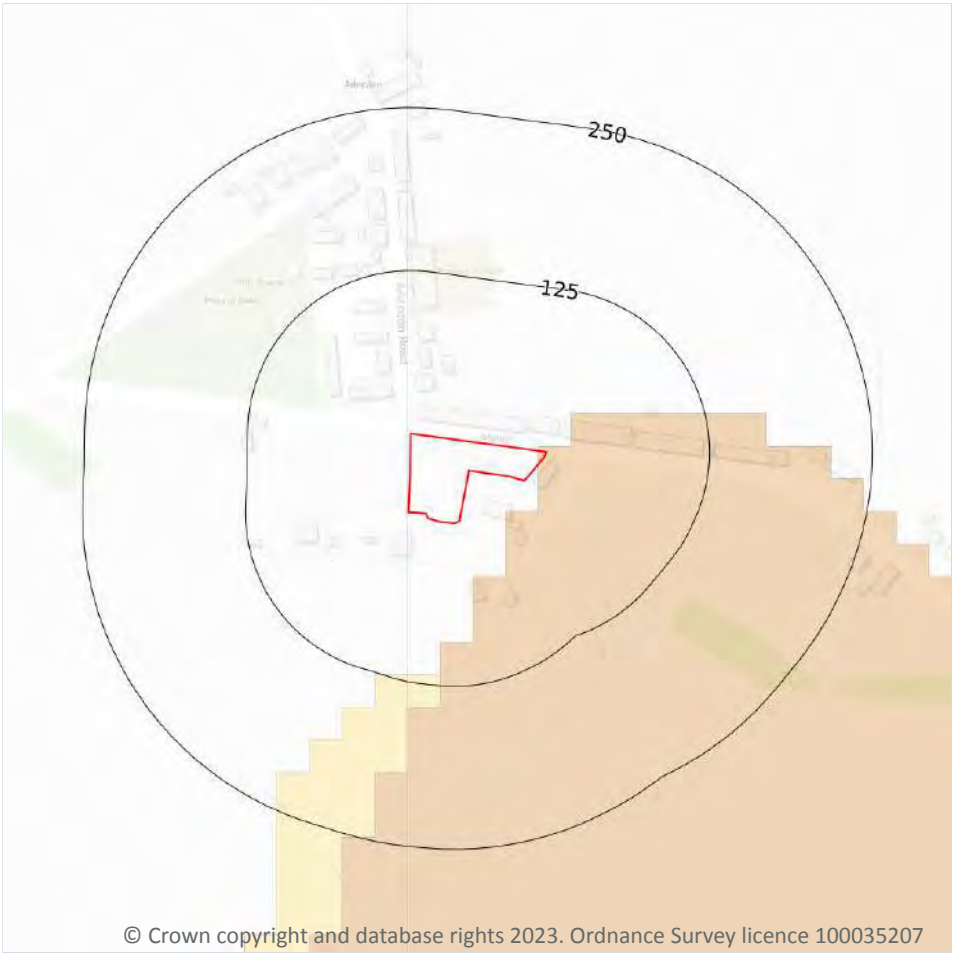
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

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

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

*This data is sourced from the British Geological Survey.*

# 20 Radon




Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

## 20.1 Radon

| Records on site | 2 |
|---|---|

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

Features are displayed on the Radon map on **page 102 >**

| Location | Estimated properties affected | Radon Protection Measures required |
|---|---|---|
| **On site** | **Between 5% and 10%** | **Basic** |

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

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

# 21 Soil chemistry

## 21.1 BGS Estimated Background Soil Chemistry

| **Records within 50m** | **5** |
|---|---|

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

| Location | Arsenic | Bioaccessible Arsenic | Lead | Bioaccessible Lead | Cadmium | Chromium | Nickel |
|---|---|---|---|---|---|---|---|
| **On site** | **15 mg/kg** | **No data** | **100 mg/kg** | **60 mg/kg** | **1.8 mg/kg** | **60 - 90 mg/kg** | **15 - 30 mg/kg** |
| 1m SW | 15 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |
| 1m SW | 15 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |
| 5m E | 15 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |
| 31m E | 15 mg/kg | No data | 100 mg/kg | 60 mg/kg | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |

*This data is sourced from the British Geological Survey.*

## 21.2 BGS Estimated Urban Soil Chemistry

| **Records within 50m** | **0** |
|---|---|

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

*This data is sourced from the British Geological Survey.*

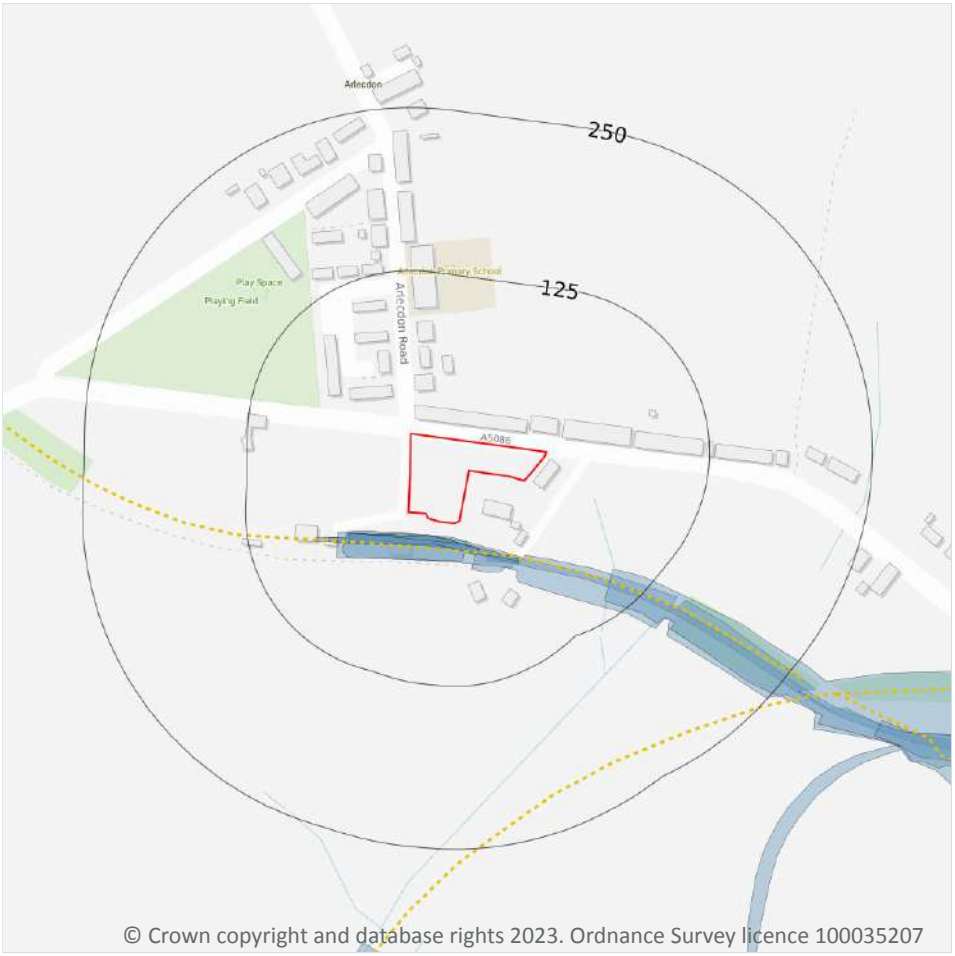
## 21.3 BGS Measured Urban Soil Chemistry

| **Records within 50m** | **0** |
|---|---|

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

*This data is sourced from the British Geological Survey.*

# 22 Railway infrastructure and projects






Site Outline
Search buffers in metres (m)
Crossrail 1 Stations
Crossrail 1 Route
Crossrail 2 Stations
Crossrail 2 Route
Crossrail 2 Worksites
Crossrail 2 Safeguarding
Crossrail 2 Headhouses
Railway stations
Active railways
Active tunnels
Abandoned railways
Historic railways
Historic tunnels
Underground stations
Underground Lines
Royal Mail tunnels
HS2 optimised route
HS2 Stations
HS2 Depots
HS2 Surface Safeguarding
HS2 Subsurface Safeguarding

## 22.1 Underground railways (London)

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 22.2 Underground railways (Non-London)

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 22.3 Railway tunnels

| Records within 250m | 0 |
|---|---|

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

## 22.4 Historical railway and tunnel features

| Records within 250m | 9 |
|---|---|

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

Features are displayed on the Railway infrastructure and projects map on **page 105 >**

| Location | Land Use | Year of mapping | Mapping scale |
|---|---|---|---|
| 11m S | Railway Sidings | 1926 | 10560 |
| 11m S | Railway Sidings | 1898 | 10560 |
| 12m S | Railway Sidings | 1923 | 10560 |
| 13m S | Railway Sidings | 1899 | 2500 |
| 13m S | Railway Sidings | 1925 | 2500 |
| 15m S | Railway Sidings | 1926 | 10560 |
| 28m S | Railway Sidings | 1951 | 10560 |
| 30m S | Mineral Railway Sidings | 1960 | 2500 |
| 96m SE | Mineral Railway Sidings | 1973 | 10000 |

*This data is sourced from Ordnance Survey/Groundsure.*

## 22.5 Royal Mail tunnels

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Groundsure/the Postal Museum.*

## 22.6 Historical railways

| Records within 250m | 5 |
|---|---|

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

Features are displayed on the Railway infrastructure and projects map on **page 105 >**

| Location | Description |
|---|---|
| 21m S | Abandoned |
| 46m SE | Abandoned |
| 63m SE | Abandoned |
| 133m W | Abandoned |
| 219m SE | Abandoned |

*This data is sourced from OpenStreetMap.*

## 22.7 Railways

| Records within 250m | 0 |
|---|---|

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

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 22.8 Crossrail 1

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 22.9 Crossrail 2

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from publicly available information by Groundsure.*

## 22.10 HS2

| Records within 500m | 0 |
|---|---|

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

*This data is sourced from HS2 ltd.*

## Data providers

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

## Terms and conditions

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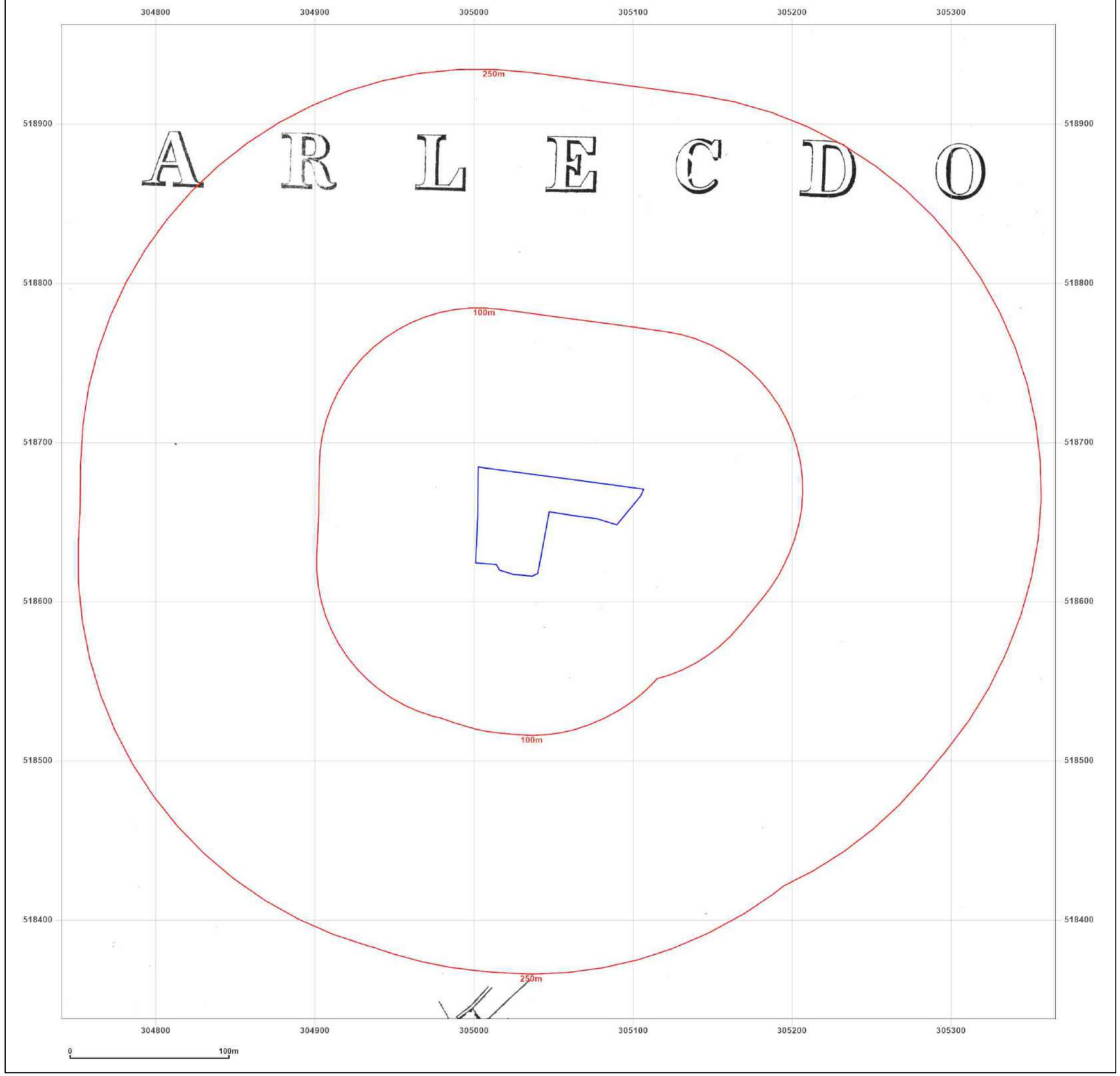
# Appendix III

- Historical Map Extracts




EMAPSITE™

**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1863**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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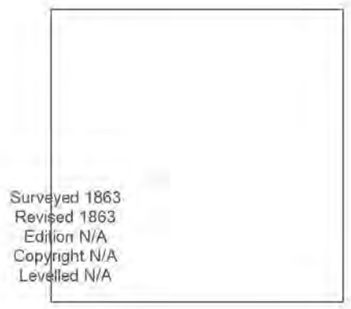


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Production date: 14 September 2023

Map legend available at:
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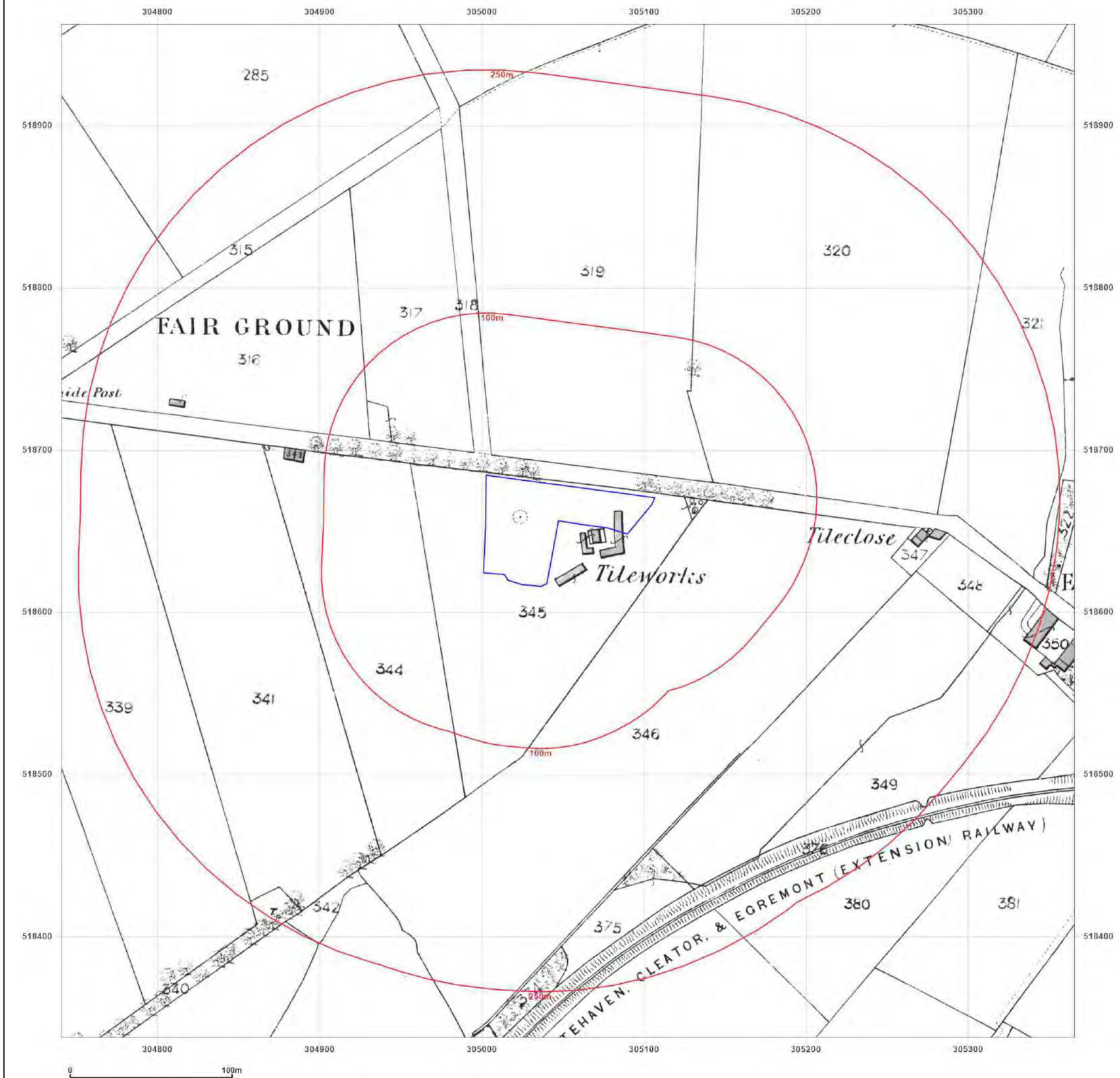


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**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1864**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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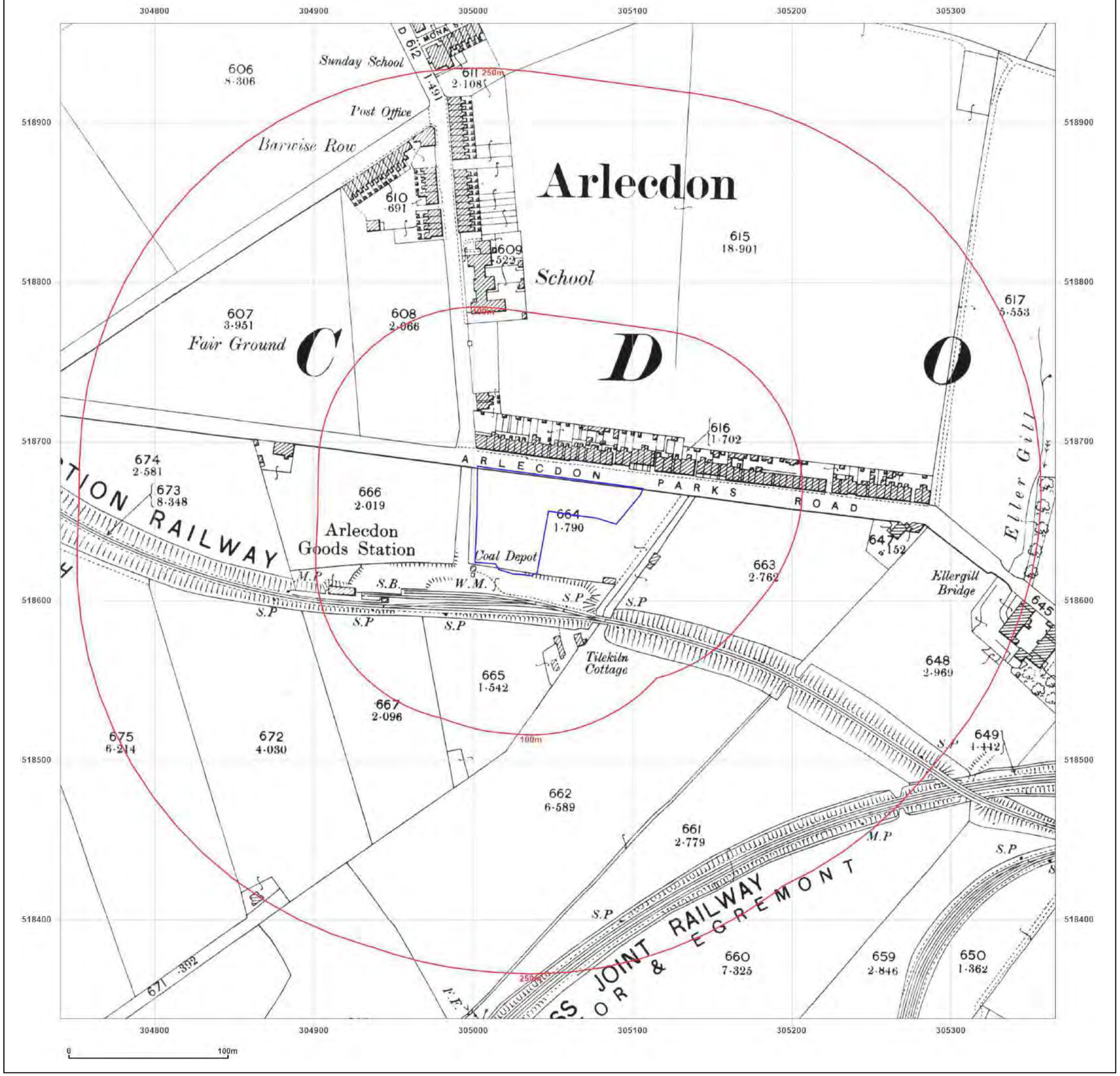


EMAPSITE™

**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1899**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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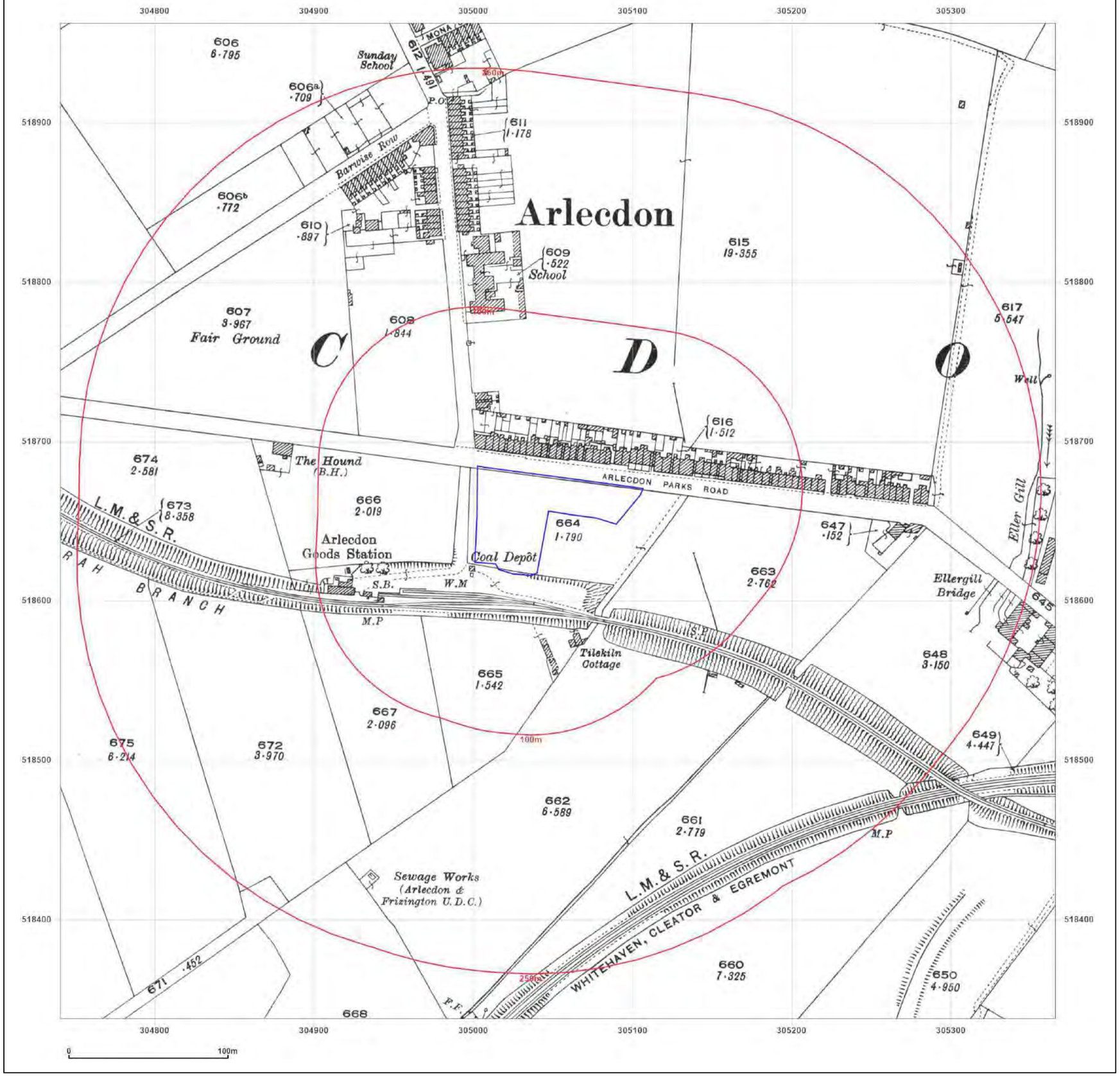


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**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1925**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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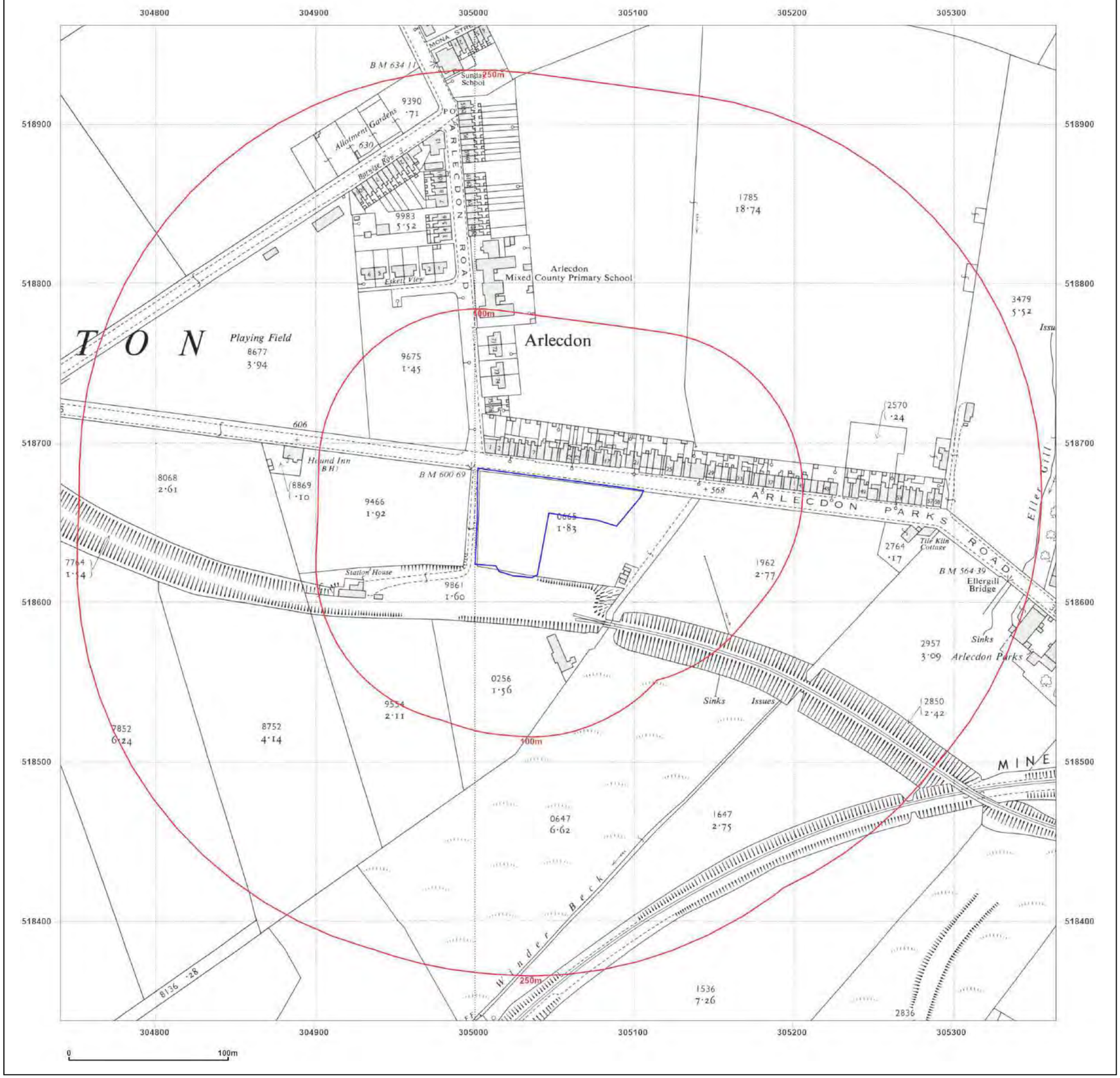


EMAPSITE™

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unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** National Grid

**Map date:** **1960**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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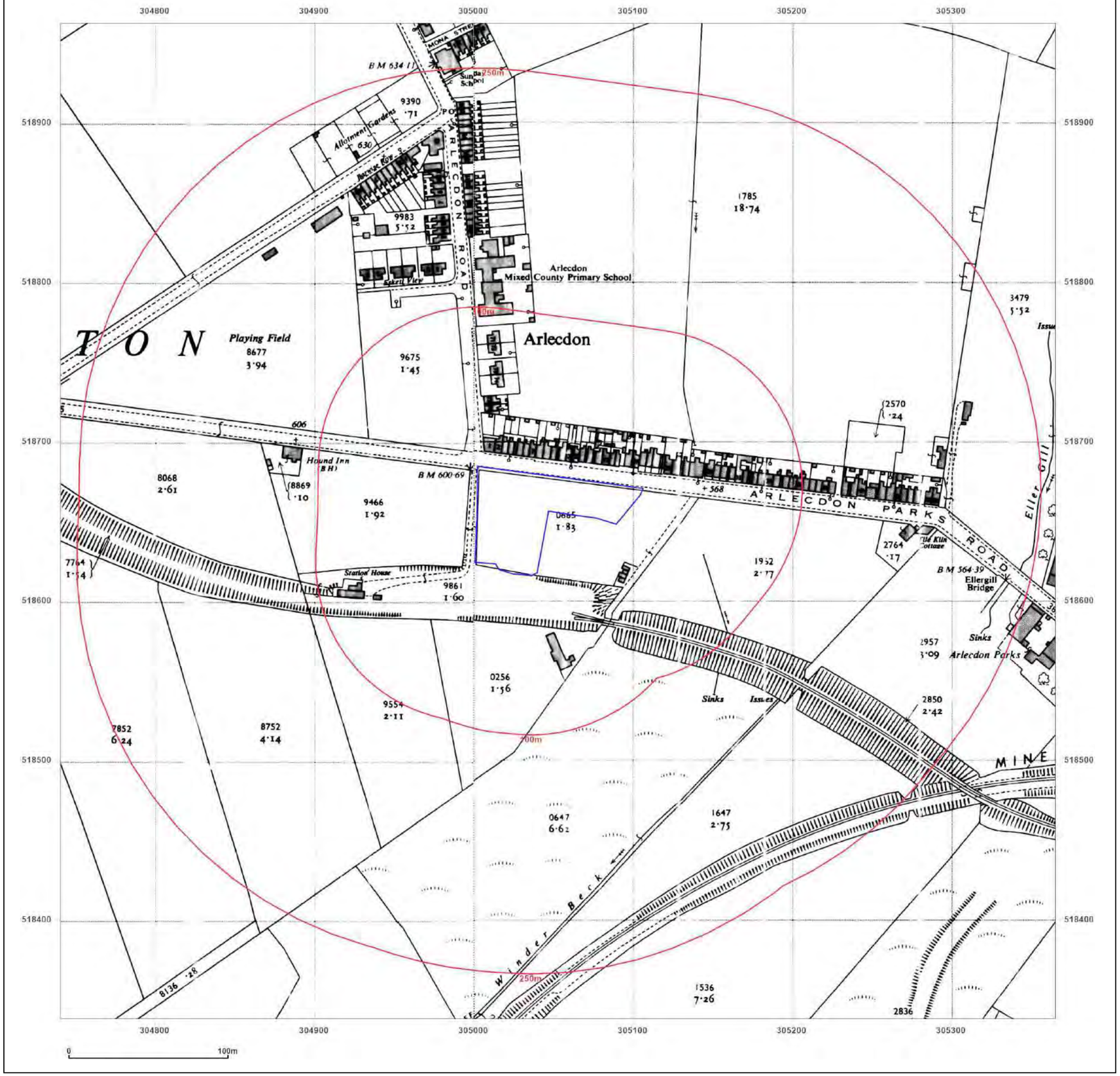


EMAPSITE™

**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** National Grid

**Map date:** **1962**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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

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**Site Details:**

unspecified

**Client Ref:** EMS_894102_1106747
**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** National Grid

**Map date:** **1991-1993**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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

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**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** National Grid

**Map date:** **1991-1994**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

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

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unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** National Grid

**Map date:** **1992-1994**

**Scale:** 1:2,500

**Printed at:** 1:2,500

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

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1992
Levelled 1965

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Production date: 14 September 2023

Map legend available at:
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**Site Details:**

unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

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

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Map legend available at:
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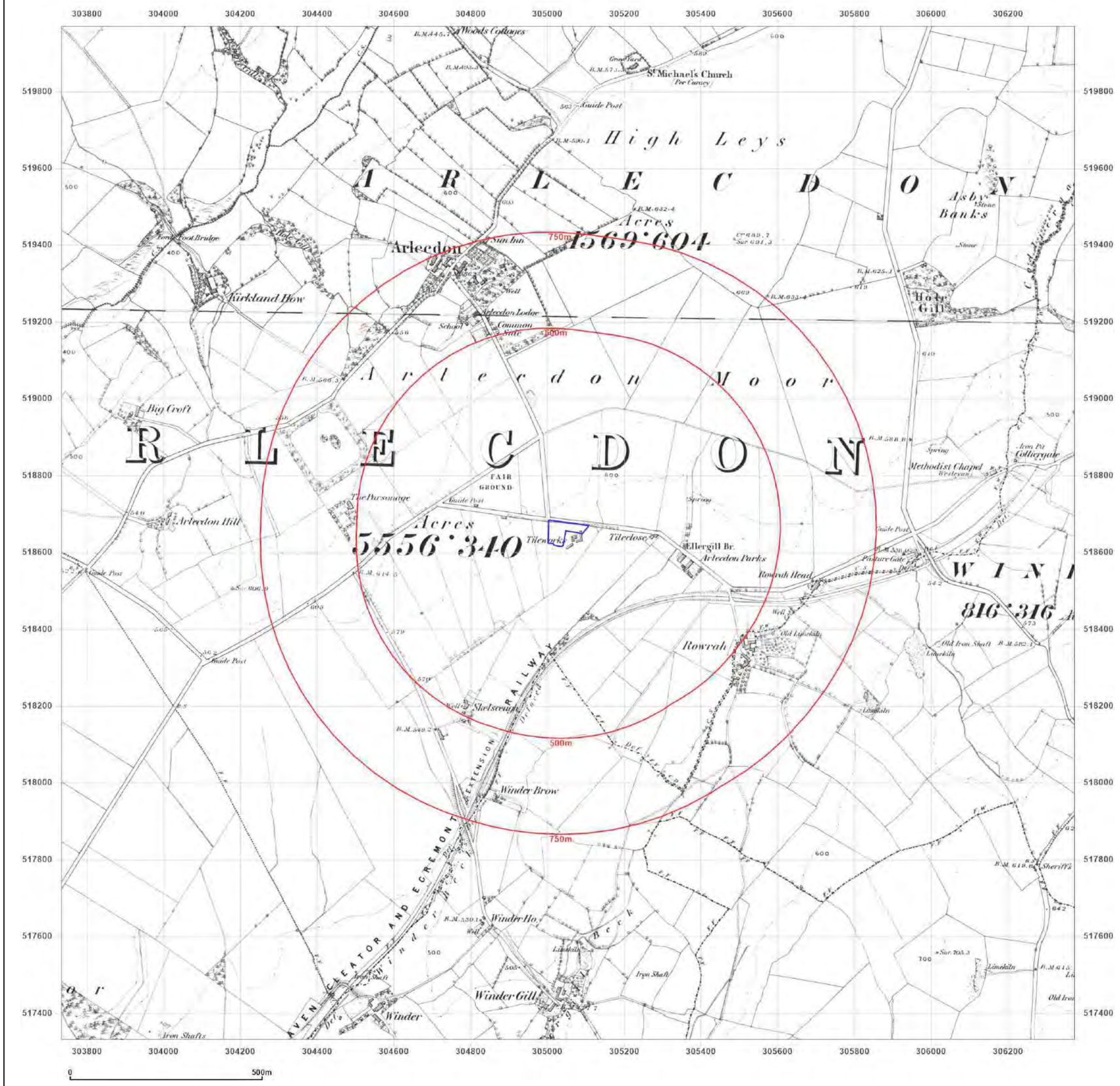


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**Site Details:**

unspecified

**Client Ref:** EMS_894102_1106747
**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1863-1864**

**Scale:** 1:10,560

**Printed at:** 1:10,560

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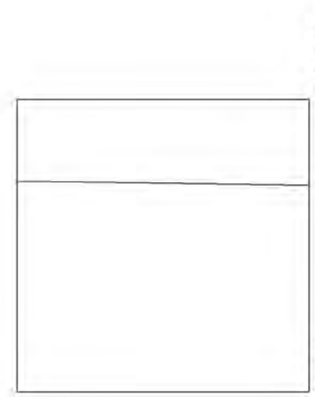


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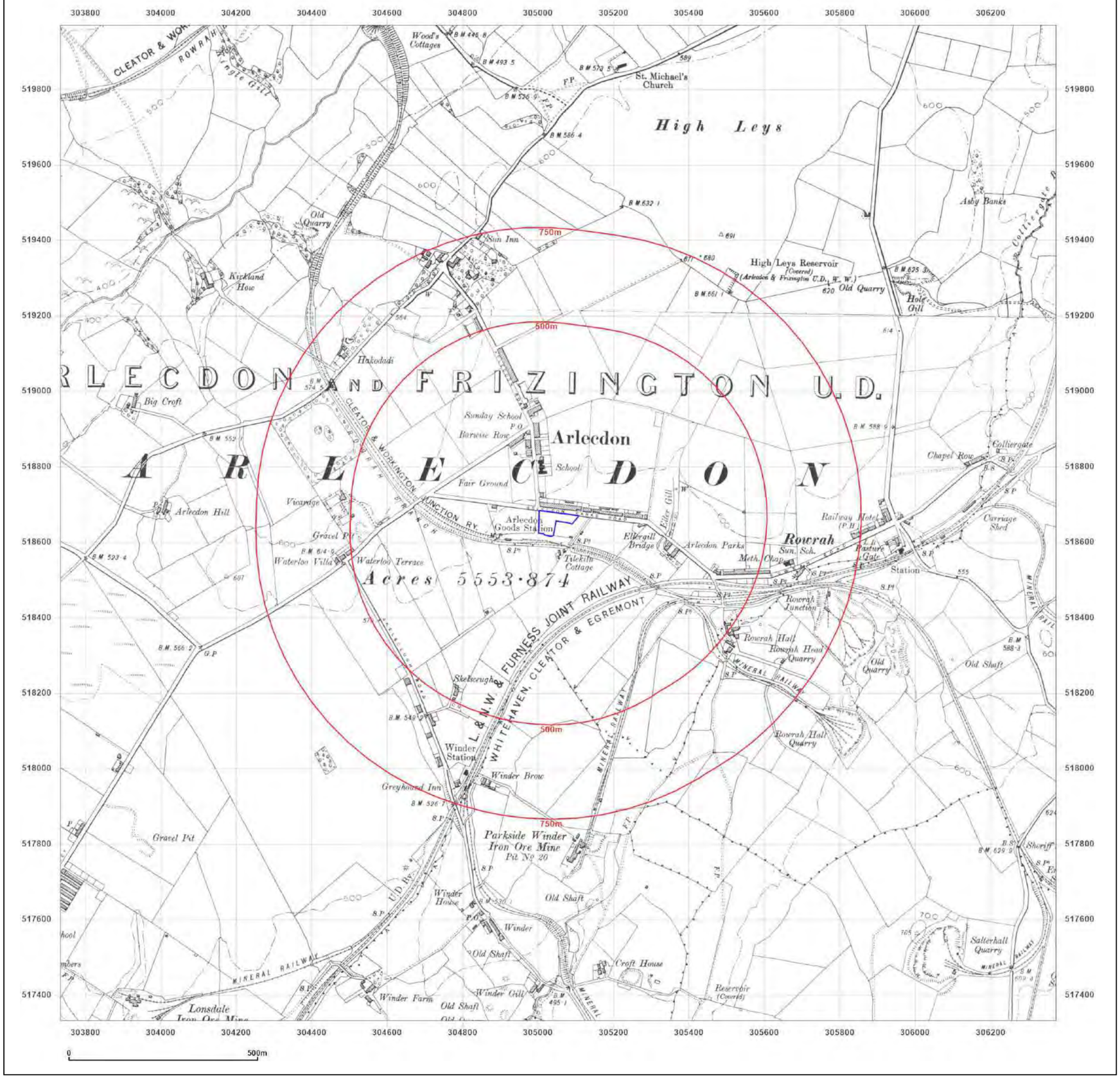


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**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1898**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
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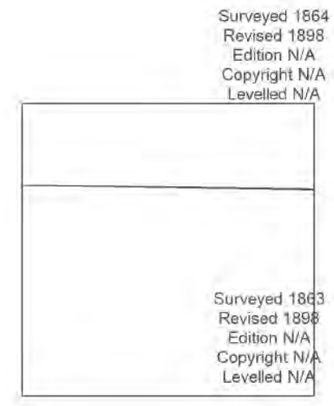


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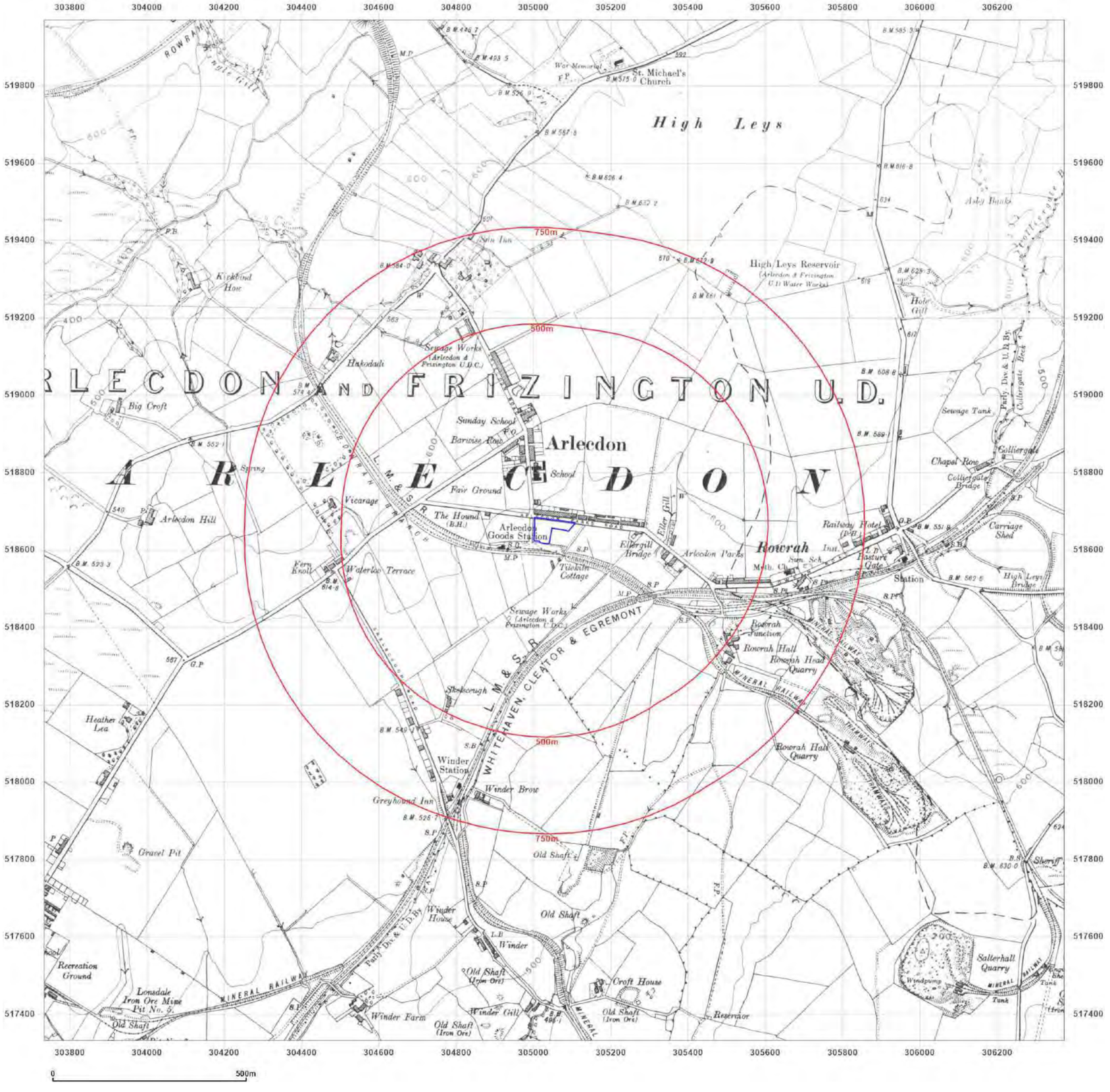


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unspecified

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**Report Ref:** EMS-894102_1142019
**Grid Ref:** 305053, 518650

**Map Name:** County Series

**Map date:** **1923**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1864
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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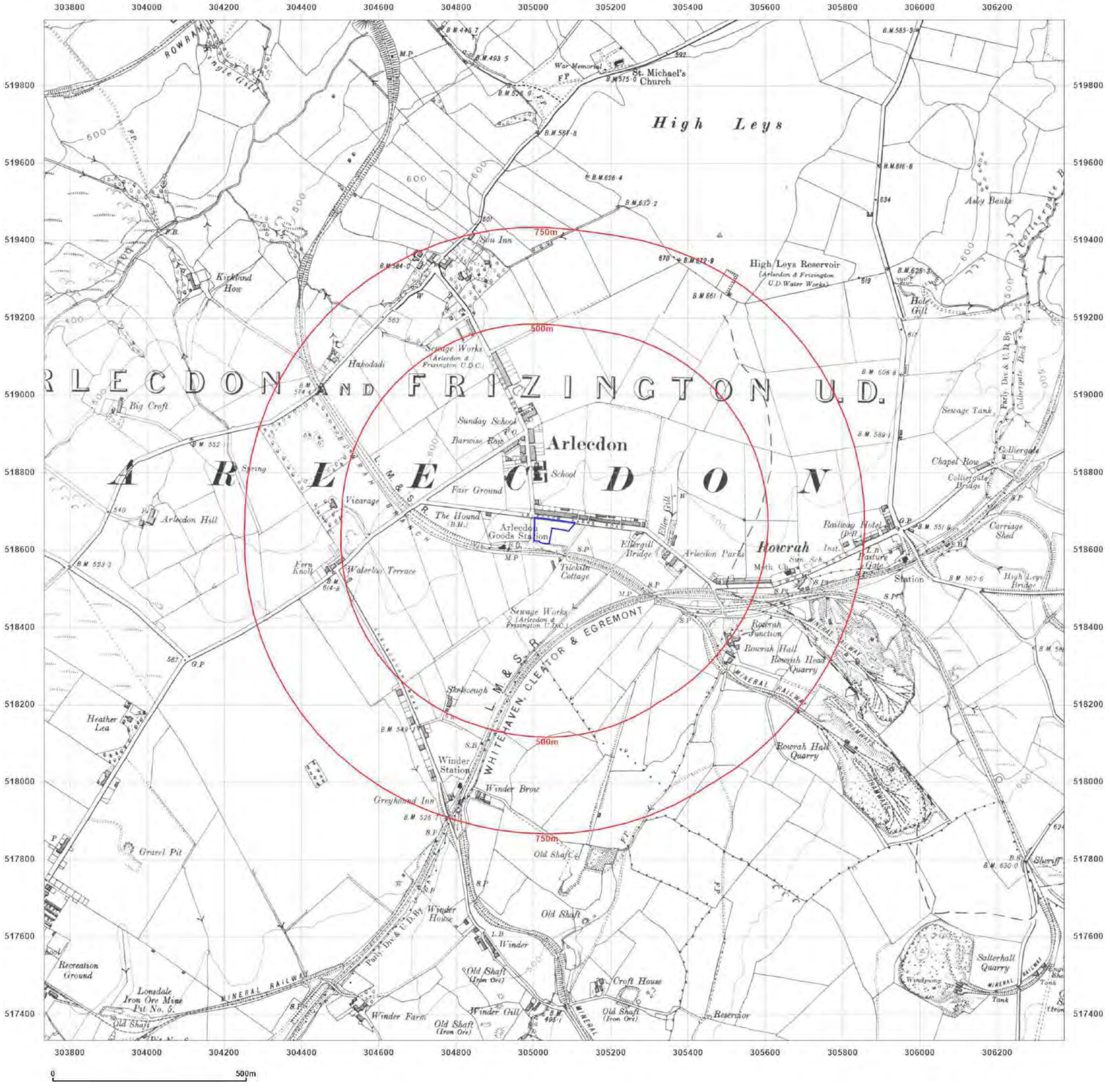


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**Map Name:** County Series

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**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1864
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1923
Edition N/A
Copyright N/A
Levelled N/A

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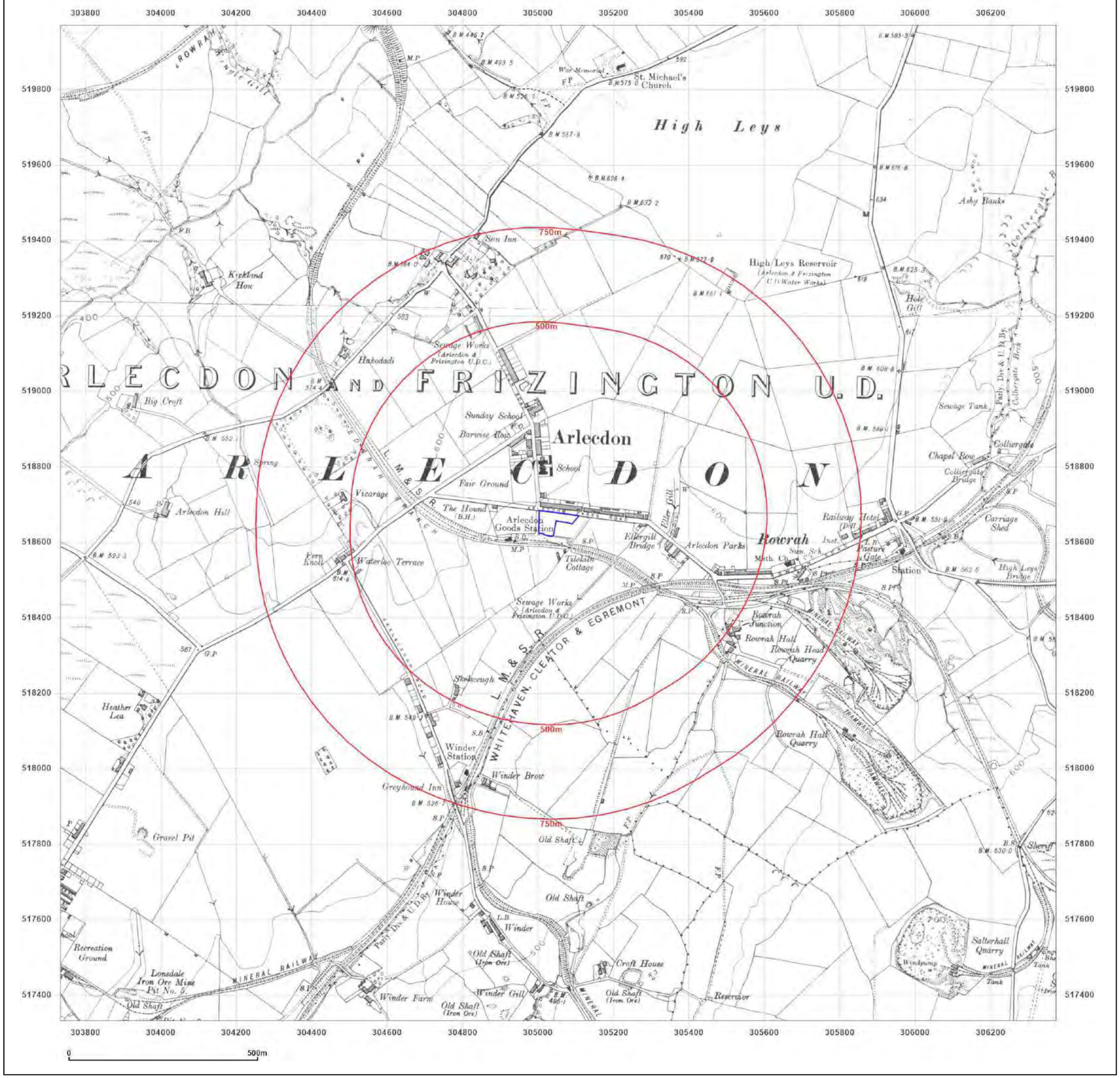


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**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
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Surveyed 1864
Revised 1926
Edition 1926
Copyright N/A
Levelled N/A

Surveyed 1863
Revised 1926
Edition 1926
Copyright N/A
Levelled N/A

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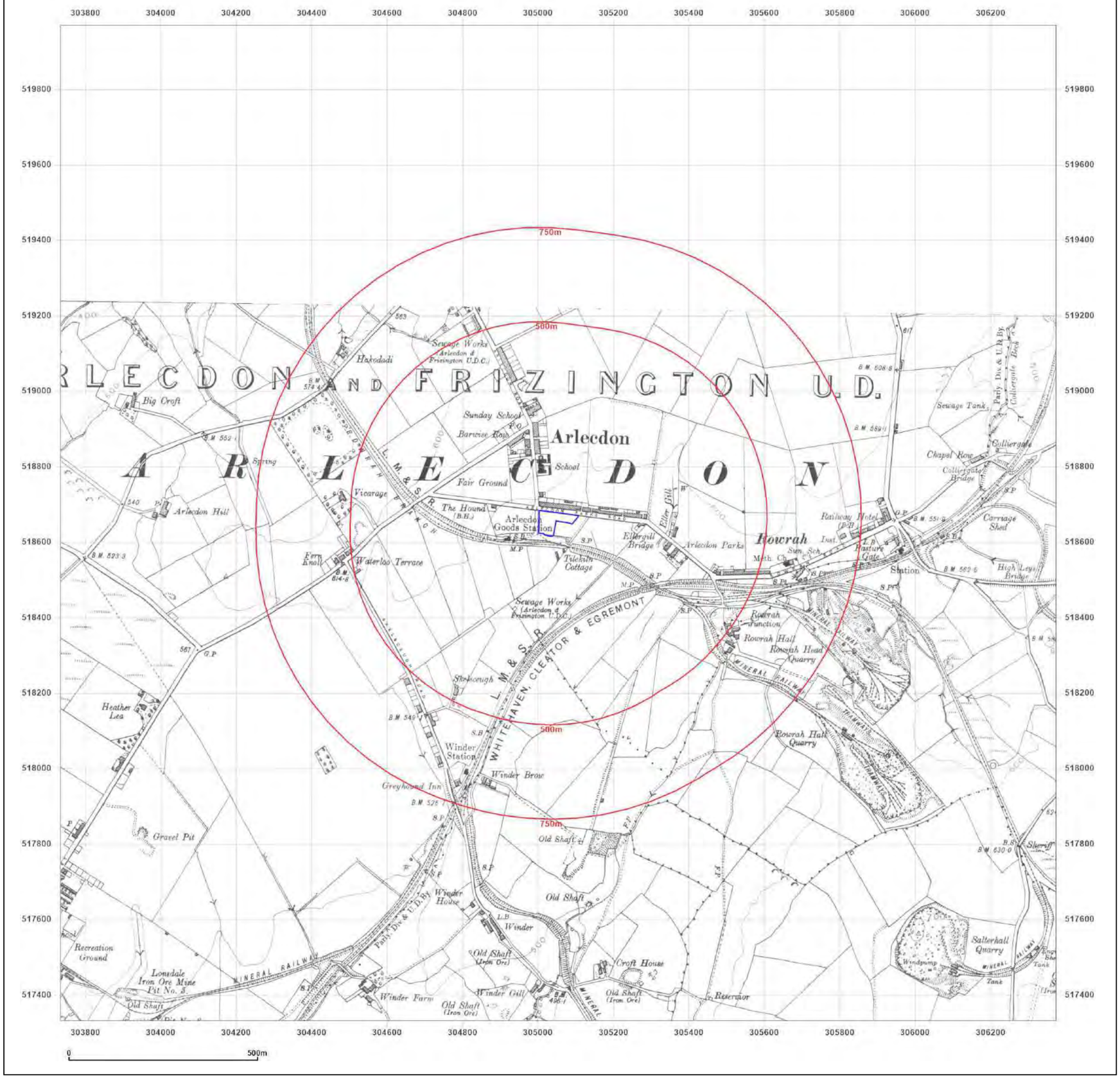


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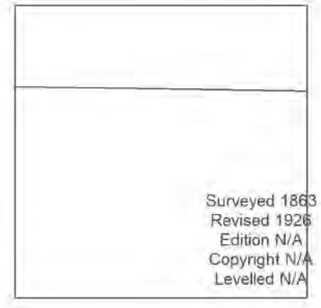
**Map date:** **1926**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

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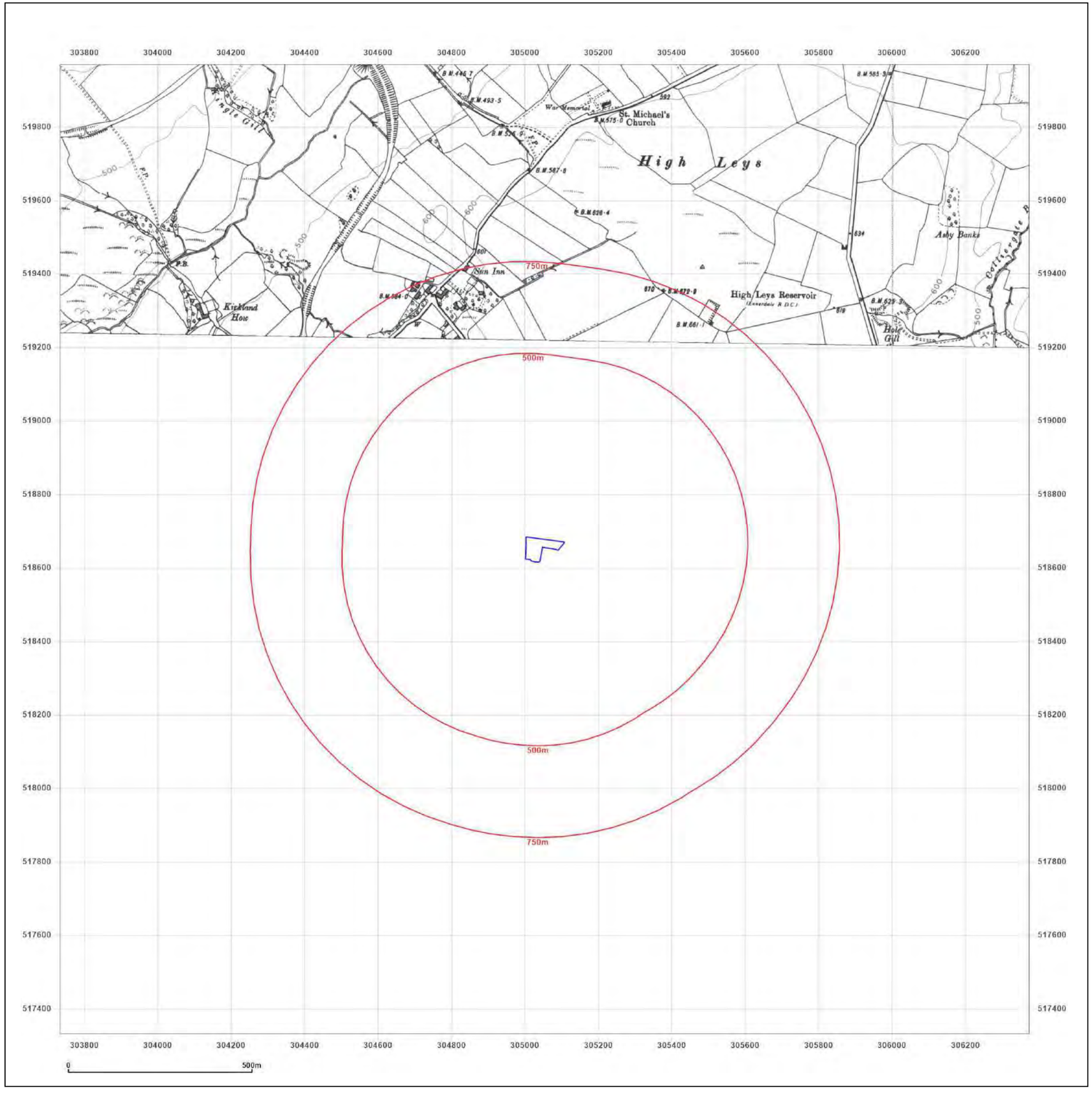


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**Report Ref:** EMS-894102_1142019
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**Map Name:** County Series

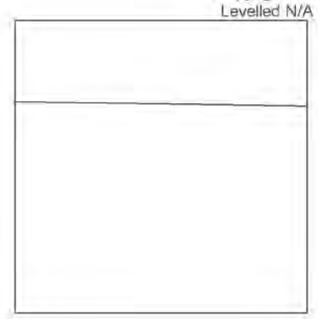
**Map date:** **1947**

**Scale:** 1:10,560

**Printed at:** 1:10,560

N
W E
S

Surveyed 1864
Revised 1947
Edition N/A
Copyright N/A
Levelled N/A



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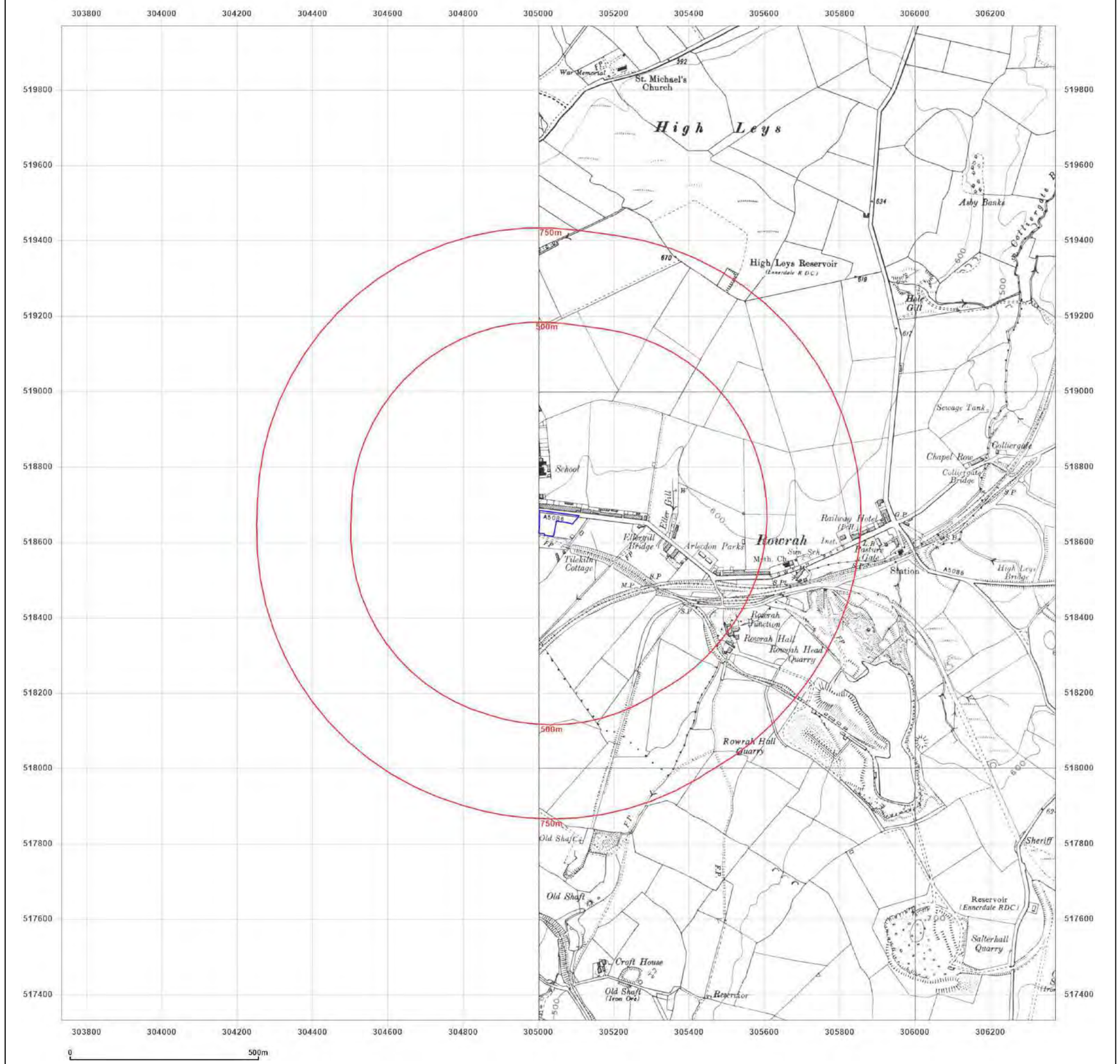


EMAPSITE™

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**Scale:** 1:10,560

**Printed at:** 1:10,560

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

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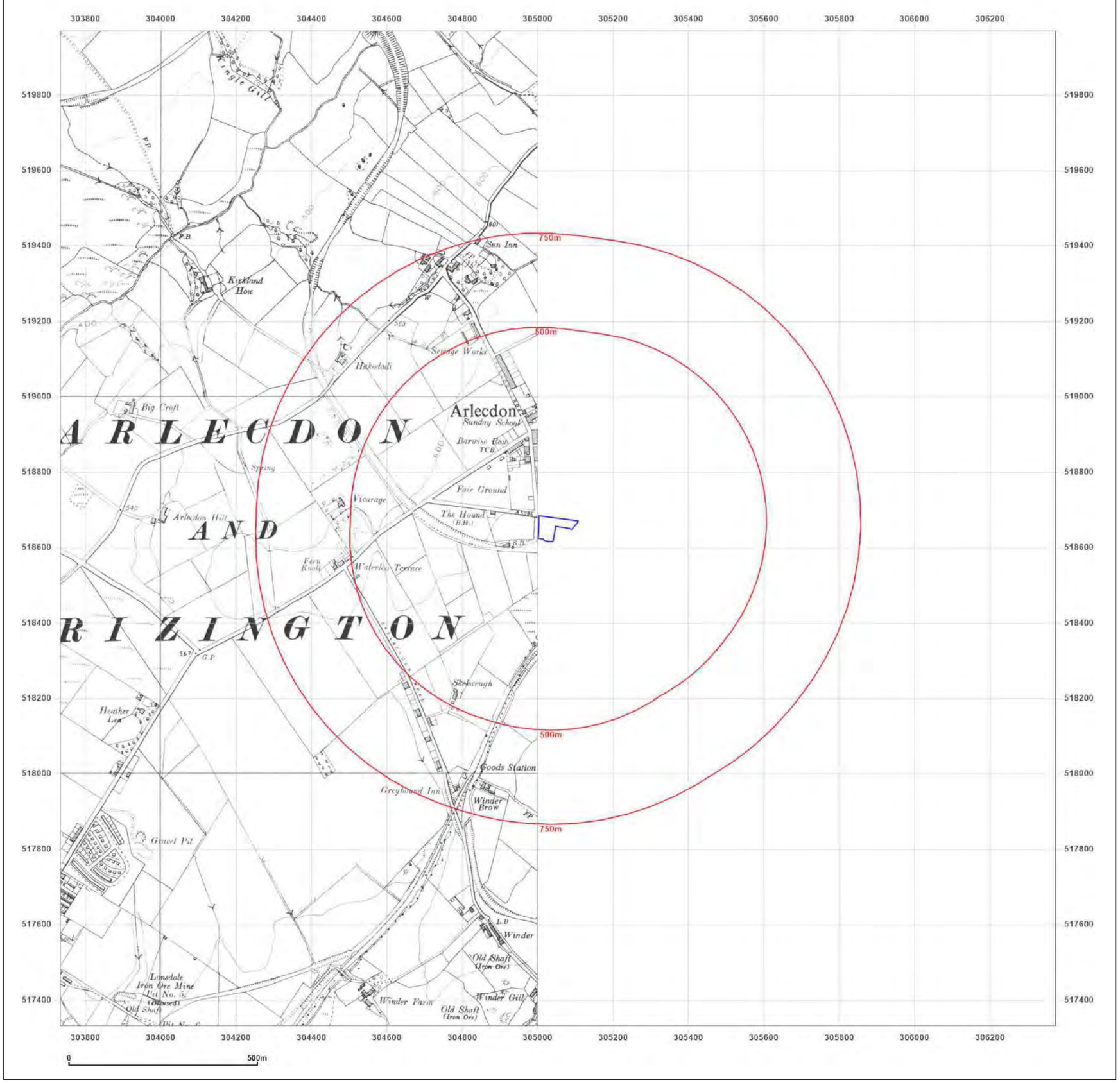


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**Map Name:** Provisional
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**Scale:** 1:10,560
**Printed at:** 1:10,560

N
W E
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Surveyed N/A
Revised 1956
Edition N/A
Copyright 1957
Levelled N/A

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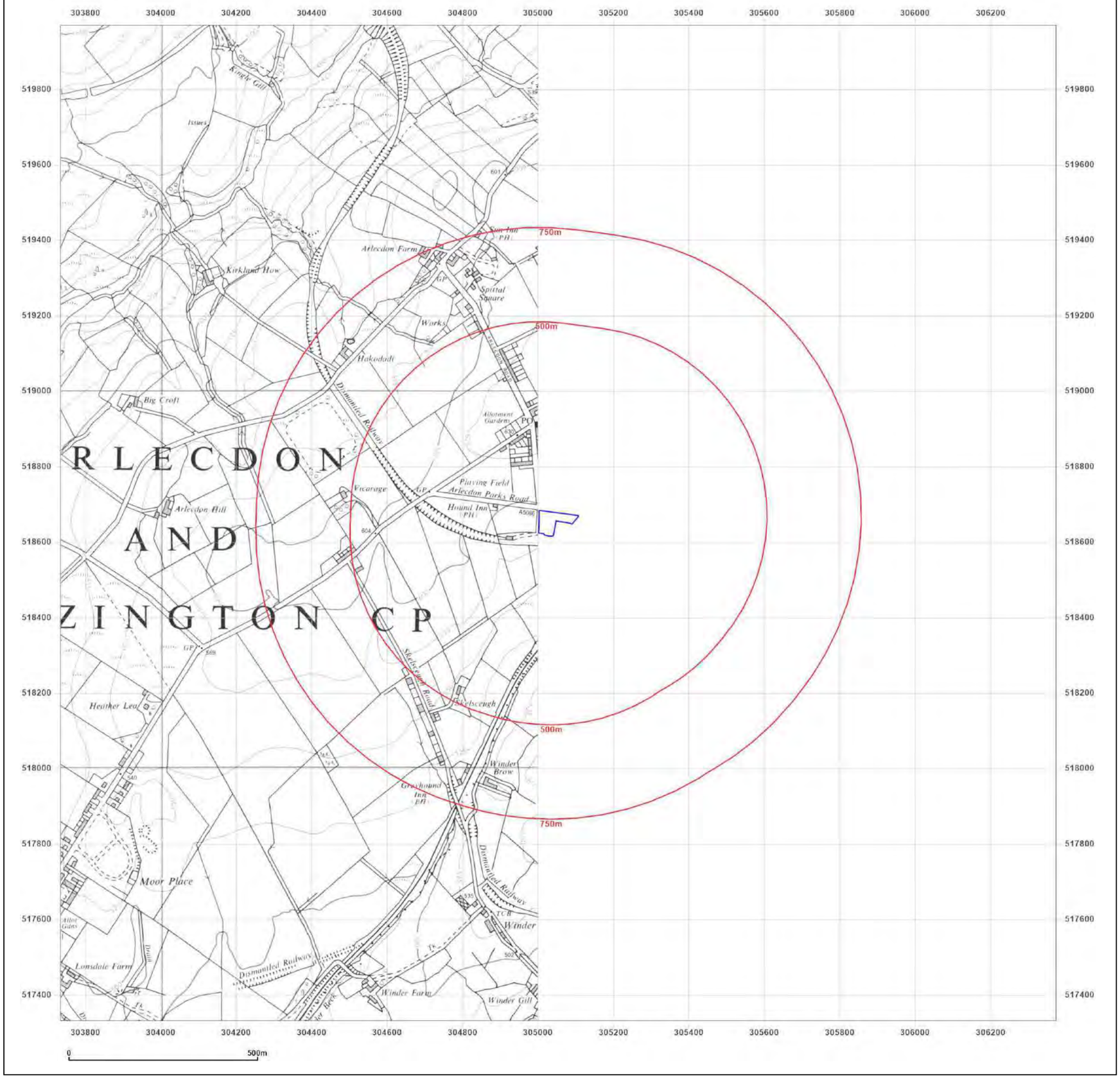


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**Map Name:** Provisional
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**Scale:** 1:10,560
**Printed at:** 1:10,560

N
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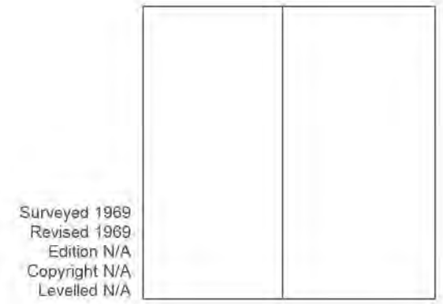


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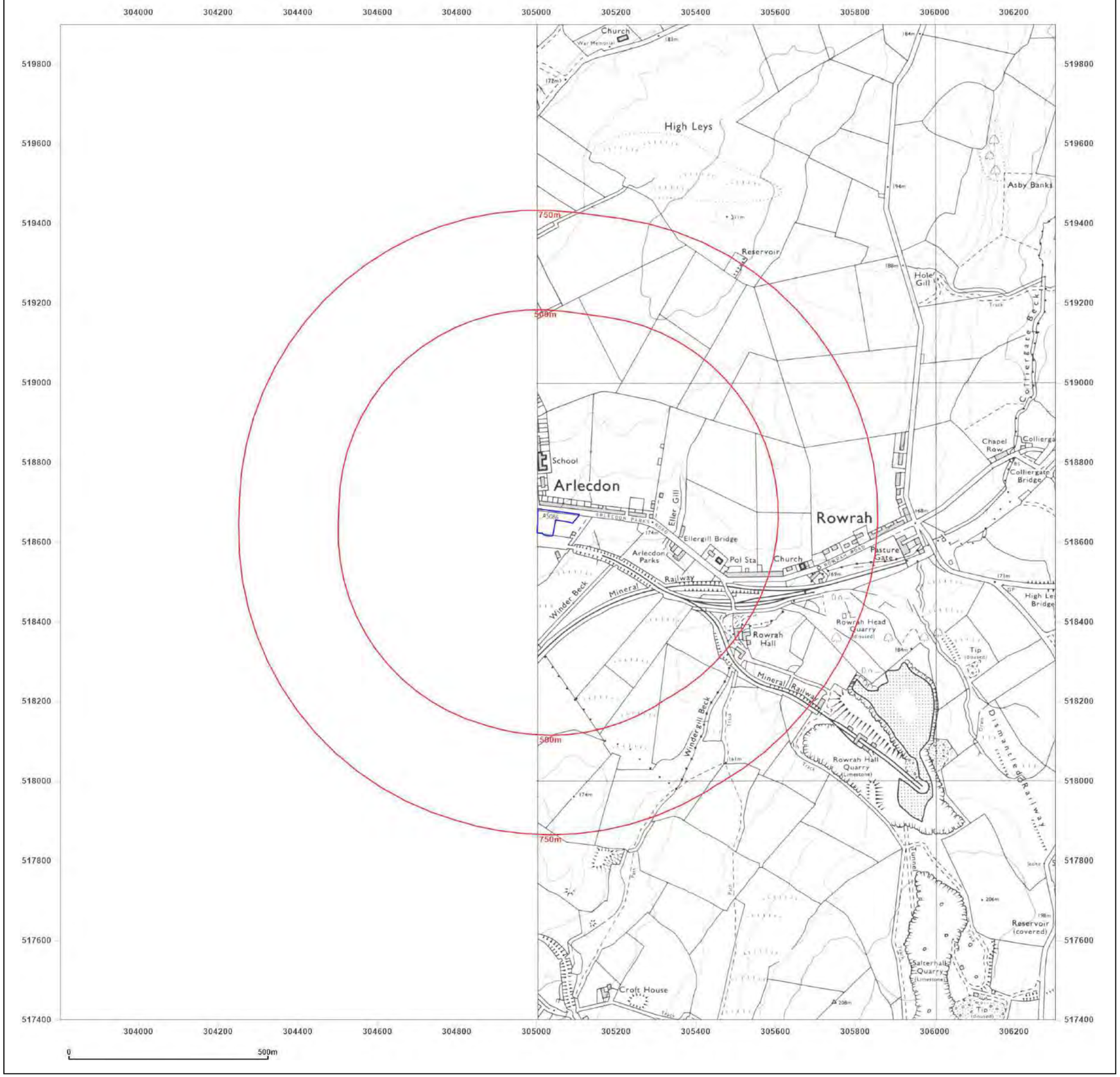


EMAPSITE™

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**Map Name:** National Grid

**Map date:** **1973**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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Surveyed 1969
Revised 1973
Edition N/A
Copyright N/A
Levelled N/A

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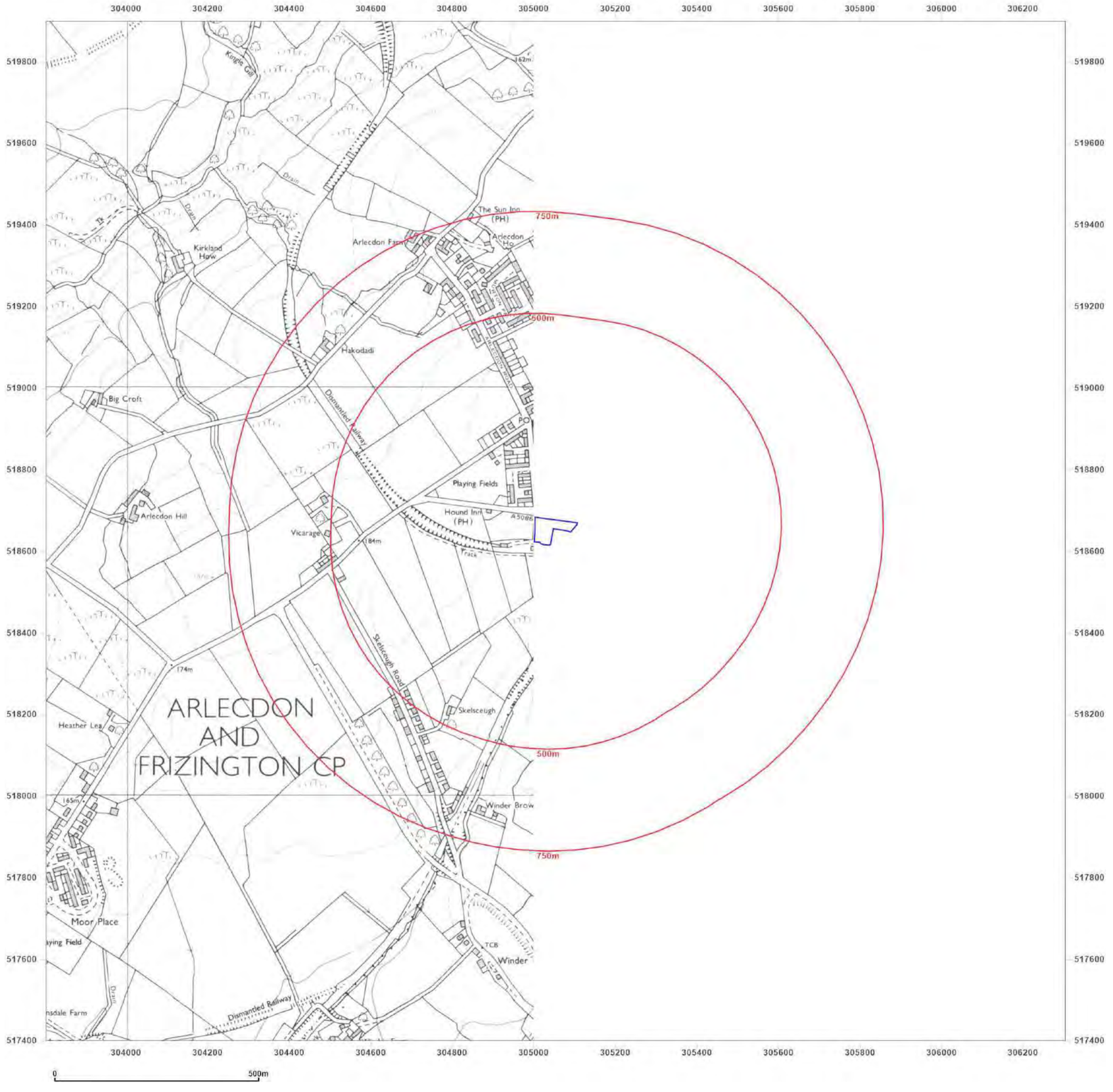


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**Map Name:** National Grid

**Map date:** **1993**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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Surveyed 1992
Revised 1993
Edition N/A
Copyright N/A
Levelled N/A

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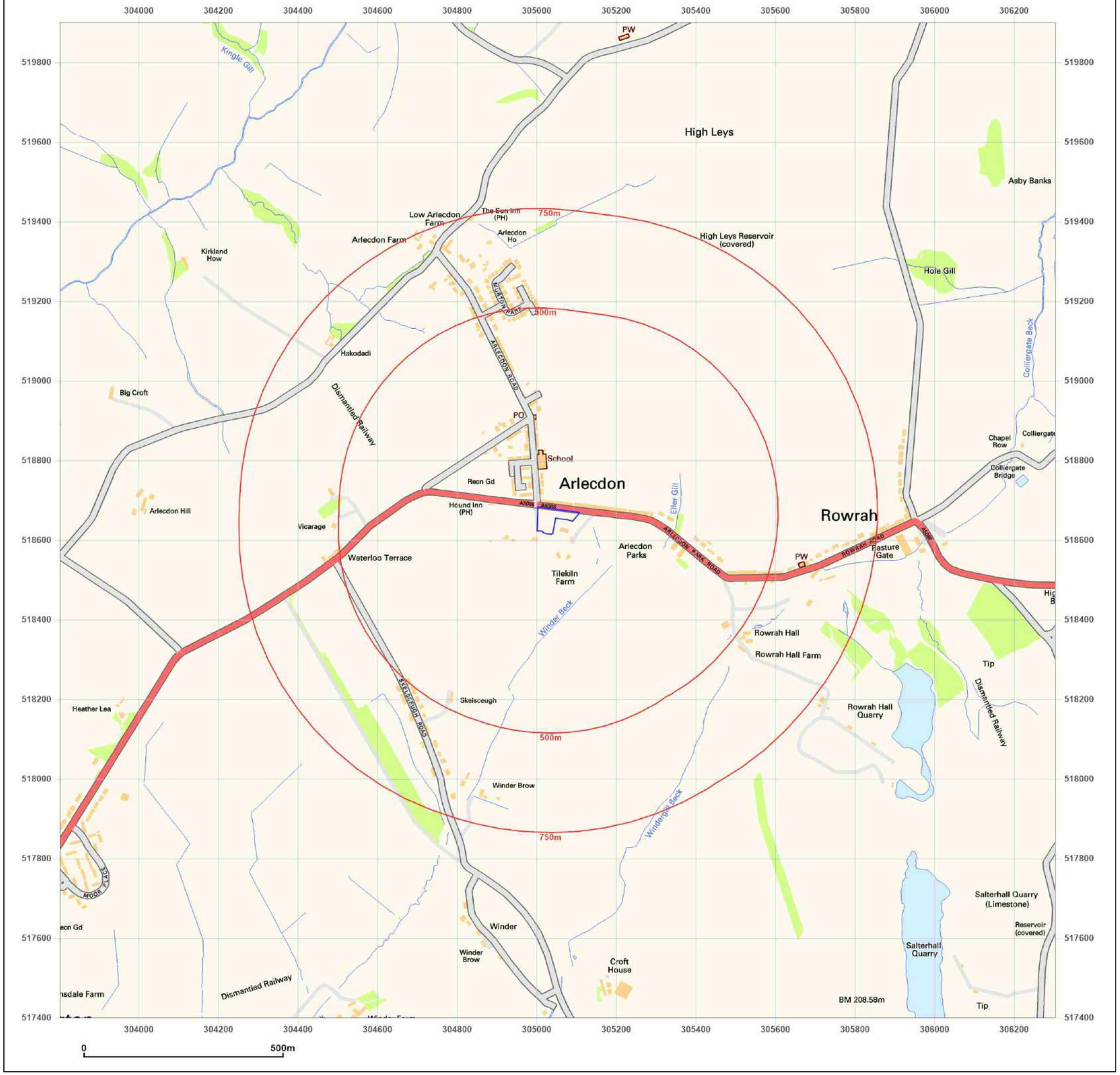


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**Map Name:** National Grid

**Map date:** **2001**

**Scale:** 1:10,000

**Printed at:** 1:10,000

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2001

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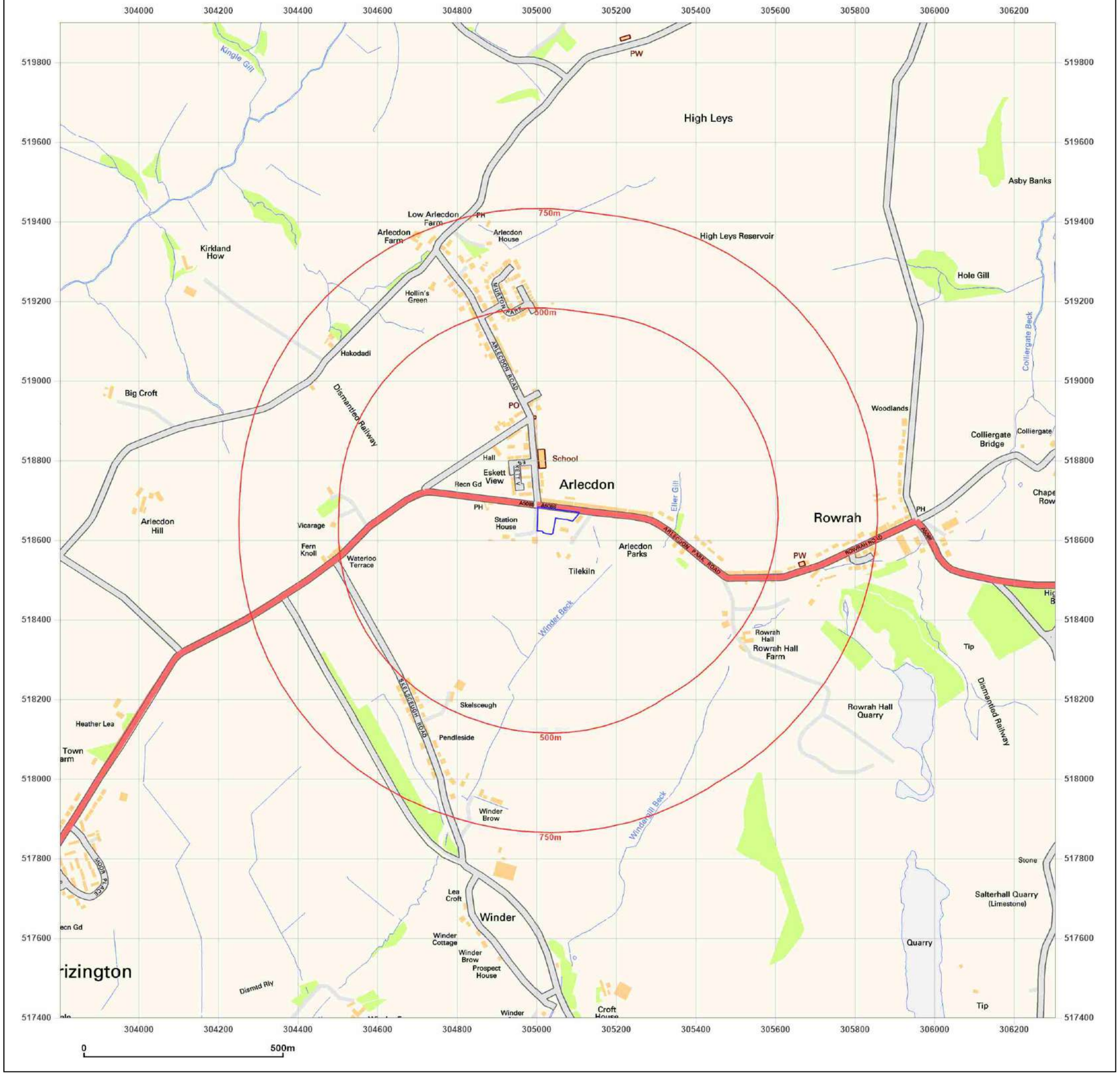


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**Map Name:** National Grid

**Map date:** **2010**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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2010

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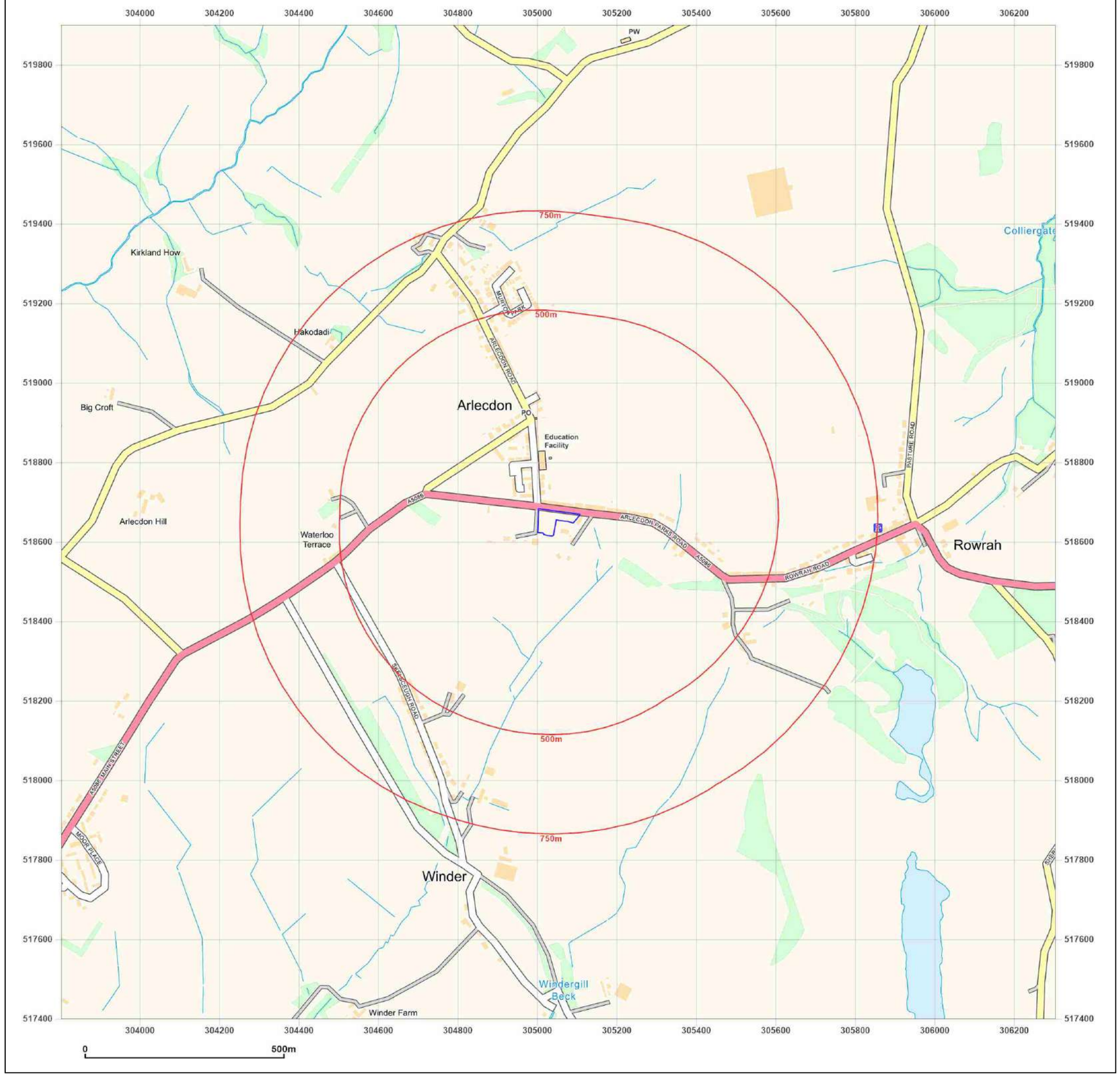


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**Map Name:** National Grid

**Map date:** **2023**

**Scale:** 1:10,000

**Printed at:** 1:10,000

N
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2023

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Production date: 14 September 2023

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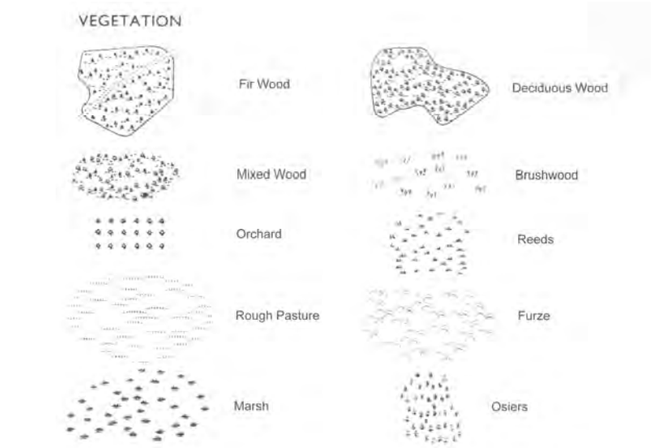


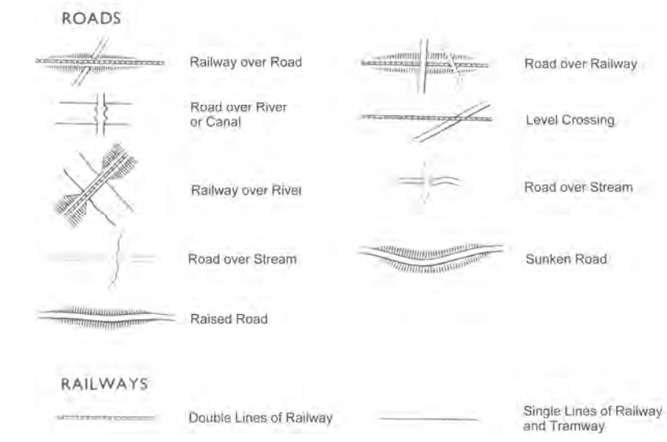



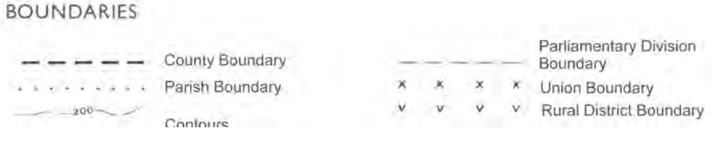


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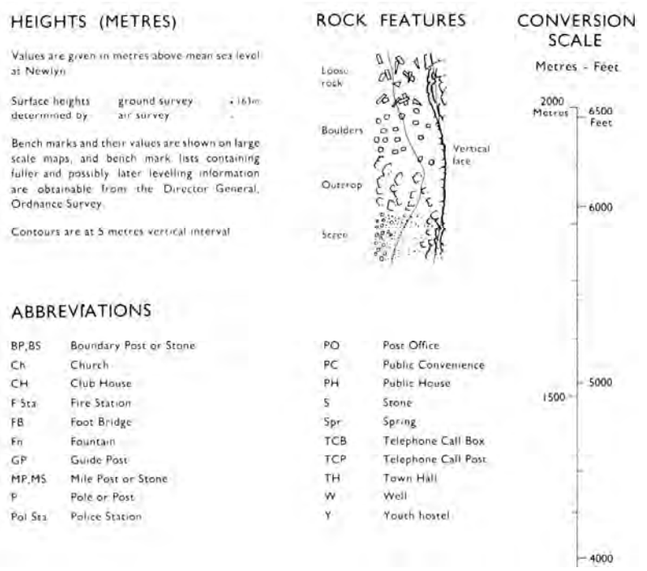


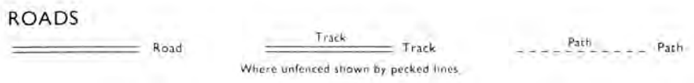


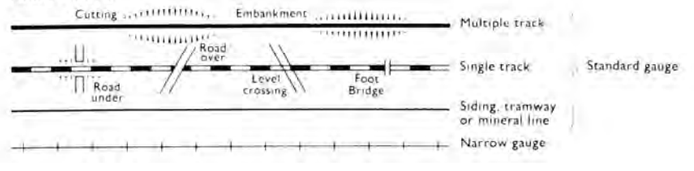


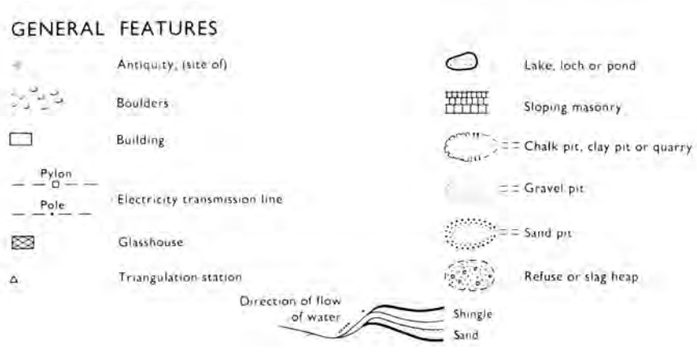


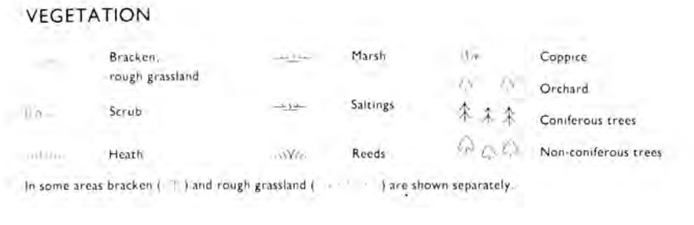


GroundSure

# Historical Map Pack Legend

## County Series & National Grid

## 1:10,560 scale

**Information present on these legends is sourced from the same Ordnance Survey mapping as the maps used in this product.**

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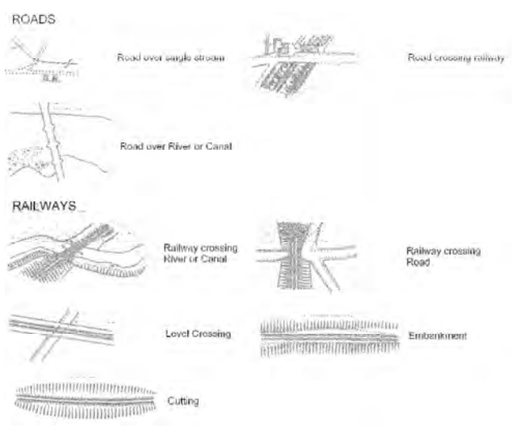
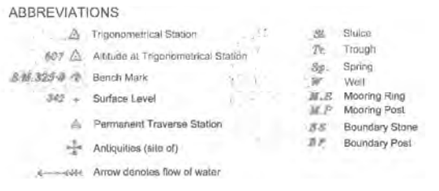
**Technical Helpline**

Tel 08444159000

groundsureinsight@groundsure.com
www.groundsure.com

## County Series 1:2,500 scale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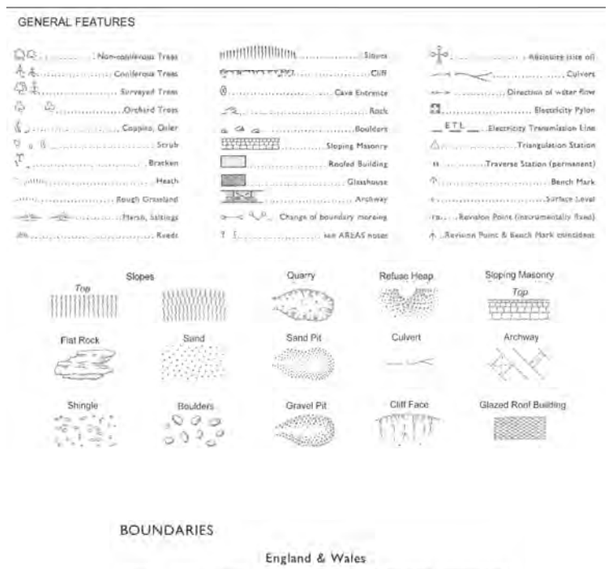




# GroundSure

# Historical Map Pack Legend

## County Series

## 1:1,250 scale

## ~

## County Series & National Grid

## 1:2,500 scale

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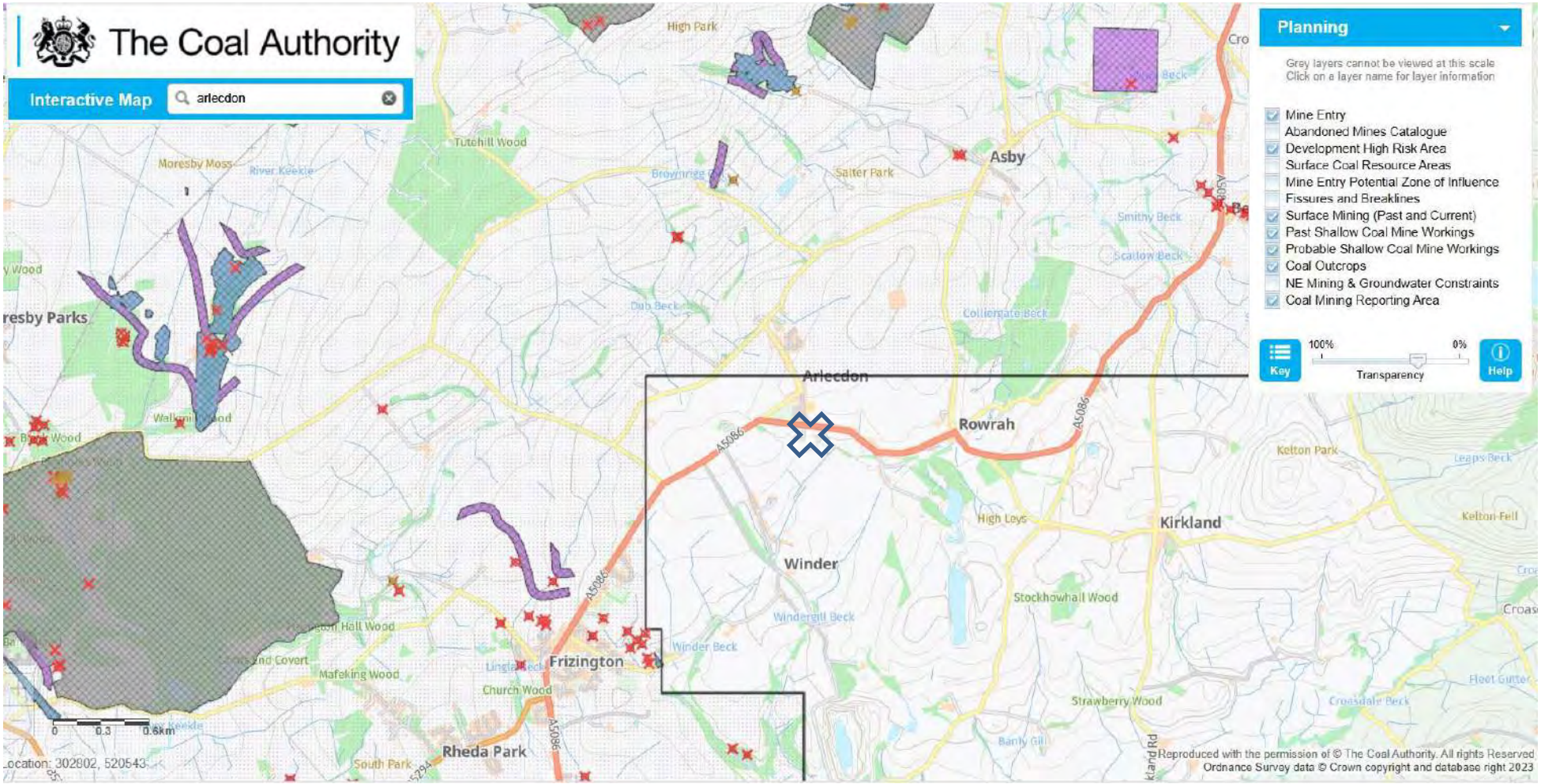
## Appendix IV

- The Coal Authority Online Database

GEO Environmental Engineering

## GEO2023-6003: Coal Authority Online Database




**Approximate Site Location marked with the** ✖

**Website:** www.geoenvironmentalengineering.com
**Email:** info@geoenvironmentalengineering.com
**Telephone:** 07883 440 186

## Appendix V

- Previous Intrusive Fieldworks (Soakaways)

Bob Metcalf
MJN Associates
Red How Lodge
Lamplugh, Workington
Cumbria, CA14 4RN.

**Date:** 23.04.2019
**Project No:** GEO2019-3642
**Project Title:** Land at Arlecdon Parks Road, Arlecdon, Cumbria

## Ground Investigation for Soil Infiltration Analysis

Introduction:

GEO were commissioned by MJN Associates on behalf of Mr S.Close (Client) to to assess the ground infiltration rate for the proposed residential development at Arlecdon Parks Road in Arlecdon, Cumbria. A site location plan is included in Appendix I.

It is understood that the Client is proposing the use of soakaways and therefore soil infiltrations tests have been undertaken in accordance with BRE365. This Ground Investigation is specific to the ground Infiltration Tests and therefore any items not specifically mentioned cannot be assumed to be covered.

Site Geological Setting:

Published geological maps indicate that the site is underlain by Glacial Till. This typically comprises sandy gravelly clay with occasional coarse material (sand, gravel, cobbles and boulders) and has been subjected to huge pressures during glacial activities. As a result, these deposits usually have a low to negligible permeability.

Site Investigation Works:

To investigate the ground conditions on site and assess the suitability for a soakaway drainage system, 3 No. mechanically excavated trial pits were completed on site as per the exploratory hole location plan in Appendix I. The excavations took place on the 10th April 2019.

Trial pit logs are included in Appendix II. The ground comprised topsoil (0.25m to 0.30m thick) overlying firm to stiff red brown clay which was proved to the base of the pits at depths of between c.1.50m and c.1.60m bgl. The trial pits were all recorded as dry prior to filling with water.

Soil Infiltration Tests (BRE365 Methodology):

The trial pits (TP01 to TP03) were filled with water from a mobile bowser and the water level recorded over a period of 27 hours, extending into the 11th April 2019.

During this time the water level in the trial pits remained relatively static (as evidenced in the photographs included in Appendix II). The water level is trial pit TP01 rose from 0.25m bgl to 0.18m bgl after 27 hours, possibly due to a partial collapse of the pit or minor groundwater ingress. The water



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**North West (Registered Office):**
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**North East:**
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level in trial pits TP02 and TP03 fell slightly from 0.25m/0.30m bgl to 0.31m/0.33m bgl respectively over the 27 hour monitoring period.

In accordance with the BRE365 Methodology, as the water added to the test pit did not fall between the 75% and 25% of the effective depth, a soil infiltration rate cannot be determined. The test is therefore considered as a fail and the soils are classified as impermeable.

Conclusions:

The ground conditions encountered on the site during the ground investigation are not considered suitable for on-site soakaways and an alternative drainage solution is required.

If there are any queries, please do not hesitate to contact Geo-Environmental Engineering Ltd.

Yours Faithfully

……

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# Appendix I

- Site Location Plan
- Exploratory Hole Location Plan

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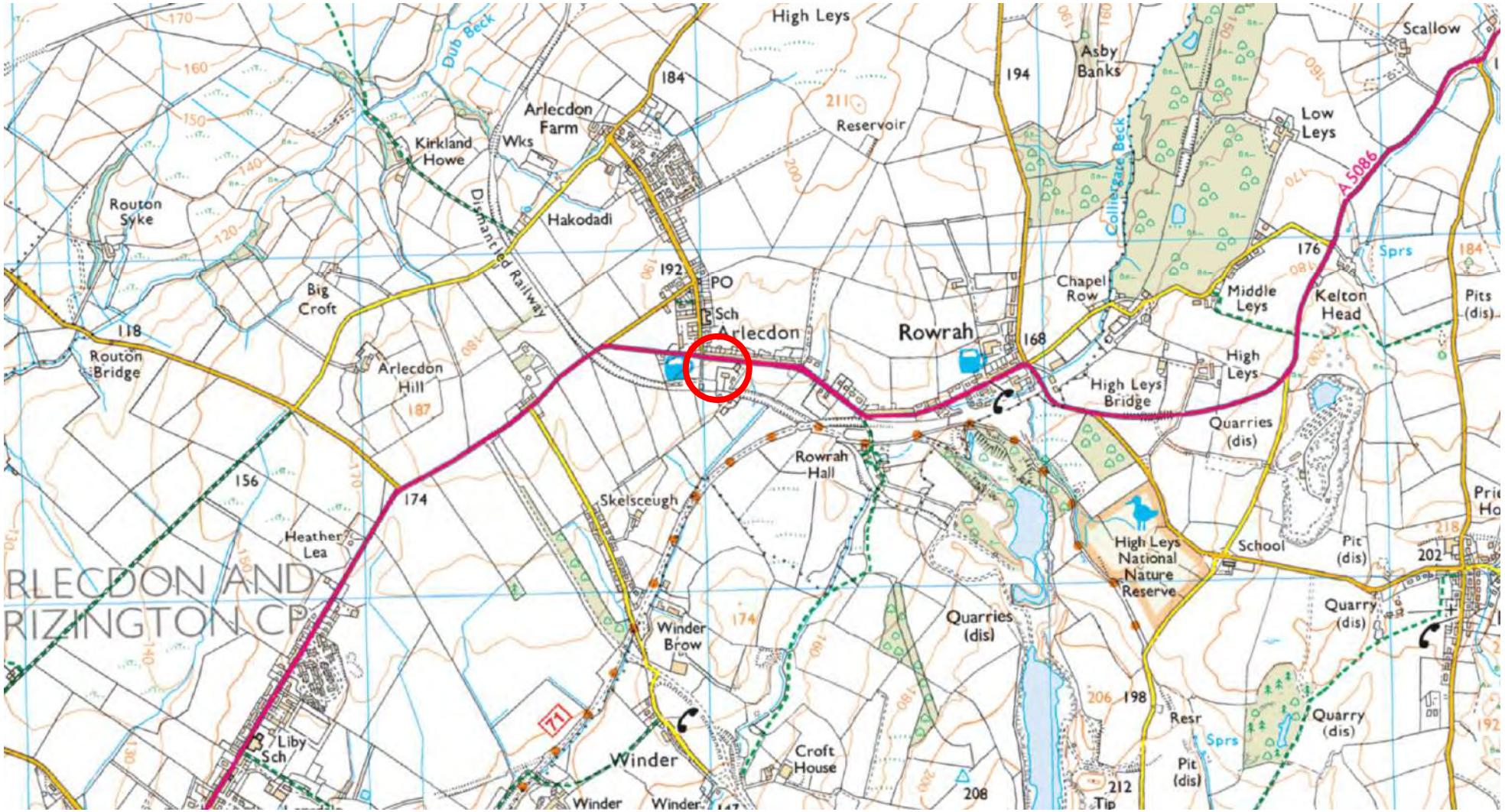
## GEO2019-3642: Arlecdon Parks Rd, Arlecdon – Site Location

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## GEO2019-3642: Arlecdon Parks Rd, Arlecdon – Exploratory Hole Location Plan


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# Appendix II

- Exploratory Hole Logs and Photographs

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## GEO2019-3642: Arlecdon Parks Rd, Arlecdon – TP01

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.30 | TOPSOIL: Very dark brown sand gravelly LOAM. | | |
| 0.30 | 1.60 | Firm to stiff dark brown red brown CLAY. | | |
| | | End of trial hole at 1.60m.<br>Trial hole remained open and dry on completion.<br>Permeability Test Completed.<br>Pit Dimensions: 0.5m x 1.8m<br>Trial hole backfilled with arisings on completion. | | |

**Site:** Arlecdon Parks Rd, Arlecdon
**Engineer:** C. Evans
**Site Works Date:** 10/04/2019
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
CBR = California Bearing Ratio (%)
LP = Limited Penetration (HSV/CBR)
NP = No penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub

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## GEO2019-3642: Arlecdon Parks Rd, Arlecdon – TP02

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.25 | TOPSOIL: Very dark brown sand gravelly LOAM. | | |
| 0.25 | 1.60 | Firm to stiff dark brown red brown CLAY. | | |
| | | End of trial hole at 1.60m.<br>Trial hole remained open and dry on completion.<br>Permeability Test Completed.<br>Pit dimensions: 0.5m x 1.6m<br>Trial hole backfilled with arisings on completion. | | |

**Site:** Arlecdon Parks Rd, Arlecdon
**Engineer:** C. Evans
**Site Works Date:** 10/04/2019
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
CBR = California Bearing Ratio (%)
LP = Limited Penetration (HSV/CBR)
NP = No penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub

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## GEO2019-3642: Arlecdon Parks Rd, Arlecdon – TP03

| Depth From (m) | Depth To (m) | Strata Description | Legend | Testing / Samples |
|---|---|---|---|---|
| 0.00 | 0.30 | TOPSOIL: Very dark brown sand gravelly LOAM. | | |
| 0.30 | 1.50 | Firm to stiff dark brown red brown CLAY. | | |
| | | End of trial hole at 1.60m.<br>Trial hole remained open and dry on completion.<br>Permeability Test Completed.<br>Pit dimensions: 0.45m x 1.9m<br>Trial hole backfilled with arisings on completion. | | |

**Site:** Arlecdon Parks Rd, Arlecdon
**Engineer:** C. Evans
**Site Works Date:** 10/04/2019
**Plant:** Tracked 360 Excavator

**Log Notes:**
HSV = Hand Shear Vane (kN/m$^2$)
CBR = California Bearing Ratio (%)
LP = Limited Penetration (HSV/CBR)
NP = No penetration (HSV/CBR)
B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub

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# GEO2019-3642: Arlecdon Parks Rd, Arlecdon – Infiltration Test Photographs

Trial Pit TP01 – Start of infiltration Test

Trial Pit TP01 – After 27 hours

Trial Pit TP02 – Start of infiltration Test

Trial Pit TP02 – After 27 hours

No Photo.

Trial Pit TP03 – After 27 hours

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