

# **enviro|solution**

**Phase 1**

## **Environmental Assessment Report**

**Belvedere, Wath Brow,  
Cleator, Cumbria, CA23 3AE**

**Date: 30<sup>th</sup> November 2022**

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## EnviroSolution Ltd

### Document Verification

<b>Site Address</b>	Belvedere, Wath Brow, Cleator, Cumbria, CA23 3AE		
<b>Report Title</b>	Phase 1 Environmental Site Assessment Report		
<b>Job Number</b>	CL101	<b>Document Ref.</b>	CL101
<b>Date Issued</b>	30 <sup>th</sup> November 2022	<b>Report Version</b>	1
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### Executive Summary

The preliminary environmental site assessment indicates that the site can be classified as high risk in terms of contamination due to the site being situated within a high-risk area for radon. However, it is considered that this risk classification can be reduced to low through the incorporation of full radon protective measures in accordance with BRE 211 Radon: Guidance on protective measures for new buildings. The completion of a Phase 2 investigation is not deemed necessary.

It is recommended that a detailed radon search report is acquired for the site to confirm the risk.

During site preparation works, if any unexpected visual or olfactory evidence of contamination is encountered, it is recommended that the material is removed and stockpiled on site and advice is sought from a suitably qualified person (Environmental Consultant) on how to deal with the material. Testing of the material will be necessary to identify whether it is suitable for re-use on site or if it will have to be taken off-site for disposal.

In addition, to ensure that they do not come into contact with contaminated soils and groundwater, it is recommended that workers wear appropriate personal protective equipment (PPE) and that suitable Health and Safety procedures be adopted to ensure that ingestion of contaminated soils and groundwater is avoided (e.g. by washing hands prior to eating, drinking and smoking).

### Disclaimer

This report has been prepared by EnviroSolution Ltd who has exercised such professional skill, care and diligence as may reasonably be expected of a properly qualified and competent consultant experienced in preparing reports of a similar scope.

However, to the extent that the report is based on or relies upon information contained in records, reports or other materials provided to EnviroSolution Ltd, which have not been independently produced or verified, EnviroSolution Ltd, gives no warranty, representation or assurance as to the accuracy or completeness of such information.

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# 1 Introduction

## 1.1 Background

EnviroSolution Ltd was commissioned to undertake a Phase 1 Environmental Site Assessment at a site located at Belvedere, Wath Brow, Cleator, Cumbria, CA23 3AE. This report was commissioned to provide information on the potential contamination status of the site.

## 1.2 Objectives

The objective of the preliminary environmental site assessment was:

1. To provide a summary of the environmental setting and historical land use of the site and immediate surrounding area.
2. To obtain information on the ground conditions present beneath the site.
3. To develop a conceptual site model and complete a generic quantitative risk assessment to identify any environmental risks and liabilities associated with ground conditions at the site.

## 1.3 Scope of Work

To achieve the objectives, the following scope of work was completed:

1. A desk-based study of the site comprising a review of available environmental information for the site such as geological and hydrogeological data and historical land use information.
2. Assessment of potential hazards and constraints during construction and longer term.

This work has been devised to generally comply with the relevant principles and requirements of the following legalisation and guidance:

- Part IIA of the Environmental Protection Act, 1990 and Section 57 of the Environmental Act 1995;
- Contaminated Land (England) (Amendment) Regulations 2012 and Contaminated Land Statutory Guidance (DEFRA, April 2012);
- National Planning Policy Framework (Ministry of Housing, Communities and Local Government, February 2019);
- BS10175: 2011 +A2:2017 “Investigation of Potentially Contaminated Sites- Code of Practice”; and
- Environment Agency (2020) Land Contamination Risk Management Report LCRM “How to assess and manage the risks from land contamination”.

## 1.4 Information Sources

Historical Ordnance Survey maps have been obtained from historical records, ranging from 1863 to 2022. These maps provide high quality information on historical site use.

The British Geological Survey Geoindex database has been used to provide information on geo-environmental aspects of the site and the immediate surrounding area such as geological, hydrogeological and hydrological data.

The Environment Agency website ([www.gov.uk/government/organisations/environment-agency](http://www.gov.uk/government/organisations/environment-agency)) and Magic website ([www.magic.gov.uk](http://www.magic.gov.uk)) was also used to obtain environmental information.

Industry Profiles produced by the Department of the Environment were utilised to obtain information on processes, materials and wastes associated with potential contaminative land uses near the site.

Readily available information sources have been used to produce this desk-based study. Additional information may be requested by the Local Planning Authority (e.g., local authority environmental information request).

## 2 The Site

### 2.1 Site Location

The site is located at Belvedere, Wath Brow, Cleator, Cumbria, CA23 3AE. The British National Grid Reference for the approximate site centre is GR: 302869, 514574.

The site location is shown on **Figure 1** in **Appendix A**.

### 2.2 Site Description

The site is an irregular shape and covers an approximate total area of 11,120 square metres.

The site is on an agricultural land, located off Frizington Road (A5086), on Cleator Moor Road. The site is currently an open field and can be accessed from a gated entrance off Frizington Road, along Cleator Moor Rd. The site is less than a 5-minute walk away from Frizington Bus Stop. The site is bounded by agricultural fields north and south as well as, bounded by residential properties east and west of the site.

The site slopes west to east from an elevation of 92m aOD to 84m aOD, and slopes north to south from an elevation of 94m aOD to 92m aOD.

Land use in the surrounding area is predominantly agricultural and residential.

No petrol filling stations have been identified within a 250m radius of the site.

The existing site plan is shown on **Figure 2** which is included in **Appendix A**. The site entrance photograph is included in **Appendix B**.

### Development Proposals

The formal development plan is to propose 15 dwellings, with an access road and footpath and a refuse collection area. The formal plans also included landscaped spaces, including a main detention pond.

The proposed development plan is shown on **Figure 3** which is included in **Appendix A**.

### 2.3 Site History

The development site and surrounding area has been reviewed with reference to historical Ordnance Survey (OS) maps. The history of the site and immediate surrounding area is summarised in Table 1. Copies of the historical OS maps are included in **Appendix C**. A search buffer of 250m has been used.

Table 1 - Historic Mapping Review

Date	Scale	On Site	Off Site
1863-78	1:2,500	The site is occupied by agricultural land.	The surrounding land is occupied by agricultural and a few residential areas. River Ehen 160m southeast. Reservoirs (Whitehaven Waterworks) 120m southwest. Public House (Little's Arms) 70m southwest.
1867	1:10,560	No significant change.	No significant change.
1899	1:2,500	No significant change.	Allotment gardens 230m northwest. Public House (Fleecy Ram) 210m southwest.
1900	1:10,560	No significant change.	No significant change.
1925	1:2,500	No significant change.	Public Houses, 150m 240m west.
1926	1:10,560	No significant change.	Allotment gardens 230m northwest.
1938	1:10,560	No significant change.	Allotment garden removed.
1956-57	1:10,000	No significant change.	Further residential developments northwest. Electricity Pylons 80m northeast, 60m and 250m southwest.
1962	1:2,500	No significant change.	Reservoirs have been removed.
1981-87	1:2,500	No significant change.	Works 150m southwest. Garage 80m southwest.

Date	Scale	On Site	Off Site
1985-1991	1:2,500	No significant change.	No significant change.
1994	1:2,500	No significant change.	Timber Yard 250m southwest.
2000	1:10,000	No significant change.	Further residential developments west to the site.
2022	1:10,000	No significant change.	No significant change.

### 3 Environmental Setting

#### 3.1 Geology

Geological maps of the area indicate that the site is directly underlain by glacial diamicton deposits (Till), deposited during the Pleistocene Epoch. The deposits mainly consist of unsorted and unstratified drift deposited directly by and underneath a glacier without subsequent reworking by water from the glacier. It consists of a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape.

The underlying bedrock is the Buttermere Formation, deposited during the Ordovician Period. The Buttermere Formation mainly consists of mudstone and sandstone, with olistostrome deposits comprise of disrupted, sheared and folded mudstone, siltstone and sandstone turbidite olistoliths.

The nearest geological fault is located approximately 300m northwest of the site.

The borehole log (Ref: NY01NW333) was obtained from BGS online records located 650m northeast of the site. The No.3 Chainage borehole penetrates 11m bgl and shows approximately 0-3m of topsoil, 3-8m of Brown/Grey organic silty clay and then 8-12 of Red Boulder Clay.

A copy of the geological maps is included in **Appendix D**. A copy of the BGS borehole records is included in **Appendix E**.

#### 3.2 Radon

The site lies within an elevated band of radon potential where it is estimated that 10-30% of the properties are above the action level (high probability). According to the UK radon department, full radon protective measures are required for this site. It is also recommended to carry out a detailed radon search report for a site-specific assessment.

### 3.3 Coal Mining Activity

The site does not fall within a Coal Mining Reporting Area described as having minable coal deposits and does not lie within a 'Development High Risk Area' for coal mining, as defined by the Coal Authority. As such, it is considered that there are no coal mining related hazards which could affect the site.

### 3.4 Hydrogeology

The underlying superficial diamicton deposits (Till) is designated as a Secondary (undifferentiated) Aquifer, defined as; cases where it has not been possible to attribute either category A or B to a rock type. In most cases this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type.

The underlying Buttermere Formation is designated as Secondary B, defined as; predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

The site is not located within a Source Protection Zone.

There are no groundwater abstraction licences located within a 1km radius.

A copy of the hydrogeological maps is included in **Appendix F**.

### 3.5 Hydrology

There is 1 no. significant surface water feature (rivers, lakes and reservoirs) located within a 1km radius of the site. The River Ehen is located 160m southeast.

There are no minor surface water features located within a 250m radius of the site.

### 3.6 Flood Risk

The site lies within a Flood Zone 1 (low probability), land assessed as having less than a 1 in 1,000 annual probability of river flooding (0.01%) in any year (low risk). The completion of a detailed Flood Risk Assessment is not deemed necessary for this site.

A copy of the flood risk map is included in **Appendix G**.

### 3.7 Waste Management Facilities

There are 2 records of historical landfill sites located within a 1km radius of the site.

*Table 2 – Historic Landfill Summary*

Historic Landfill Site	Operation Dates	Waste Type	Distance from Site
Parkside	Unknown	Unknown	870m NE
Parkside North	1931-95	Inert	930m NE

A copy of the historic landfill map is included in **Appendix H**.

There are no records of currently authorised landfill sites or sites operating under an environmental permit for waste operations within a 1km radius of the site.

### 3.8 Environmental Permits, Incidents and Registers

There are 3 no. records of sites located within a 1km radius of the development site operating under an environmental permit for discharges to water and groundwater.

*Table 3 – Environmental Permit for Discharges to Water and Groundwater*

Permit Holder Name	Site Name	Start Date	Site Type	Distance from Site
United Utilities Water PLC.	2005-Unknown	Pumping Station on Sewerage Network (water company)	700m NE	United Utilities Water PLC.
United Utilities Water Ltd.	1995-Unknown	Storm Tank/CSO on sewerage Network (water company)	1000m SE	United Utilities Water Ltd.
United Utilities Water Ltd.	1992-Unknown	Storm Tank/CSO on sewerage Network (water company)	1000m NW	United Utilities Water Ltd.

There are no records of pollution incidents having occurred within a 1km radius of the site.

There are no records of development sites operating under an environmental installation permit within a 1km radius of the site.



### 3.9 Designated Environmentally Sensitive Sites

Records of designated environmentally sensitive sites located within a 1km radius of the site are summarised in Table 4 and shown on plans included in **Appendix I**.

*Table 4 – Environmental Designations Summary*

Features	Distance	Comments
National Parks	360m	The Wild Ennerdale National Park is located 360m northeast of the site.
Sites of Special Scientific Interest (England)	150m	The River Ehen (Ennerdale Water to Keekle Confluence) is a Site of Special Scientific Interest, located 150m southeast of the site.

## 4 Preliminary Conceptual Site Model

### 4.1 Introduction

To assess the environmental risks present, a preliminary conceptual model has been developed for the site. This model has been developed using best practice guidelines in conjunction with the current assessment framework considering the development proposals. This preliminary conceptual model is based on the gathered desk-based information (e.g. historical OS data and data sourced from the EA, Geoindex and Magic databases).

The conceptual site model is a representation of the hypothesised relationships between sources, pathways and receptors which allows the identification of potential pollutant linkages and whether these linkages have the potential to comprise significant harm and/or pollution of controlled waters in relation to the site. This model comprises three elements:

Source – the key pollutant hazards associated with the site

Receptor – the key targets at risk from the sources

Pathway – the means by which the contaminant can cause harm to the receptor

If all three elements are present, then a potential pollutant linkage exists, and this may require further assessment.

### 4.2 Potential Contamination Sources

The site has remained undeveloped and has previously been used as an agricultural field. Therefore, contamination of the land beneath the site is not expected.

A number of off-site land uses have been identified in the surrounding area (i.e., within a 250m radius) that have the potential to contaminate the shallow soils at the site. The land uses and their associated contaminants are summarised in Table 5 below:

*Table 5 – Off-Site Land Use Summary*

Land Use	Potential Contaminants
Allotments	Heavy metals, polyaromatic hydrocarbons (PAHs), nitrates.
Works	Heavy metals, inorganic compounds, acids/alkalis, organic compounds, pathogens.
Garages	Heavy metals, hydrocarbons, polyaromatic hydrocarbons (PAHs), solvents.

Land Use	Potential Contaminants
Timber Yard	Heavy metals, inorganic compounds, acids/alkalis, asbestos, organic solvents, preservatives, polychlorinated biphenyls (PCBs) (panel products, in older hydraulic presses only)
Historic Landfills	Ground gases (methane and carbon dioxide)

It is considered that the above land uses can be discounted as potential sources of contamination due to the distance (>80m) and the presence of low permeability diamicton deposits which underlie the area which will act as an impermeable barrier, preventing migration of contaminants towards the site. Nearby borehole records show the soils to be comprised of cohesive clays and silts.

The historic landfill sites can be discounted as potential sources of contamination due to the distance from site ( $\geq 870$ m). Geological maps show generally low permeability diamicton in the areas to the north of the site.

#### 4.3 Receptors

The potential receptors considered to be at risk from soil and groundwater contamination associated with the site are summarised in Table 6 below:

*Table 6 - Receptor Description*

Receptor	Details
Human (On Site)	<ul style="list-style-type: none"> <li>- Construction workers</li> <li>- Future site users</li> <li>- Site visitors</li> </ul>
Human (Off Site)	<ul style="list-style-type: none"> <li>- Adjacent site users</li> </ul>
Controlled Waters	<ul style="list-style-type: none"> <li>- Secondary (undifferentiated)</li> <li>- Secondary B</li> <li>- River Ehen</li> </ul>
Building/ construction materials	<ul style="list-style-type: none"> <li>- Foundations</li> <li>- Buried services</li> </ul>
Environmental Receptors	<ul style="list-style-type: none"> <li>- National Parks</li> <li>- Sites of Special Scientific Interest (England)</li> </ul>

## 4.4 Pathways

The potential exposure pathways linking contamination with the receptors identified above are summarised in Table 7 below:

*Table 7 - Exposure Pathways Summary*

Receptor	Details of Exposure Pathway
Human (on-site)	<ul style="list-style-type: none"> <li>- Direct ingestion of contaminated soil/groundwater</li> <li>- Dermal contact with soil/groundwater</li> <li>- Inhalation of gases and vapours</li> </ul>
Human (off-site)	<ul style="list-style-type: none"> <li>- Inhalation of fibres and particulates</li> <li>- Inhalation of migrating gases and vapours</li> </ul>
Controlled waters	<ul style="list-style-type: none"> <li>- Vertical and lateral migration of dissolved phase contaminants via preferential pathways to groundwater aquifers</li> <li>- Direct surface water run-off to surface water features</li> </ul>
Building/construction	<ul style="list-style-type: none"> <li>- Buried materials/services - Contact with contaminated soil and/or groundwater</li> </ul>

## 4.5 Potential Pollution Linkages

### 4.5.1 Human Health

The formal development plan includes the construction of 15 no. dwellings with landscaped spaces. This is considered to be a sensitive end use.

The presence of buildings and hardstanding would eliminate the risk of exposure, via the dermal contact and ingestion pathways to future site users to any ground contamination that may remain following development.

There could be a potential risk of exposure to any ground contamination that remains following redevelopment in any areas of soft landscaping, to future site users, via all possible exposure pathways.

Any ground gases (i.e., methane and carbon dioxide) and vapours that are present within the soils beneath the site could potentially ingress into future buildings through preferential pathways (e.g., service entry points). Therefore, there would be a risk of exposure via inhalation to future site users.

There is the potential for construction workers and adjacent land users to be exposed to soil and groundwater contamination during site redevelopment. However, the use of appropriate PPE and the adoption of suitable Health and Safety methods will help to reduce the risks posed to human health during this work.

#### 4.5.2 Controlled Waters

The site is directly underlain by diamicton deposits (Till) which are designated as Secondary (undifferentiated) Aquifer. The diamicton is generally of low permeability and will act as an impermeable barrier, preventing any migration of potential contaminants. Additionally, the site has remained undeveloped so no Made Ground is expected.

The site does not lie within a Source Protection Zone and there are no groundwater abstraction licences located within 1km radius of the site.

There is a significant surface water feature within a 1km radius, The River Ehen 160m southeast. Migration of pollutants via direct surface water run-off is deemed possible but unlikely. No contaminants are expected on site.

Overall, the risk to controlled waters is deemed to be moderate to low.

#### 4.5.3 Building/Construction Materials/Buried Services

The presence of any soil and groundwater contaminants beneath the site could potentially impact on construction materials for future new developments, such as below ground structures and services. Concrete foundations are particularly sensitive to aggressive ground conditions, i.e., sulphate attack.

If ground gases and vapour are present in the soil beneath the site, then there would be the potential risk of ingress into new properties which could present a risk of explosion.

### 4.6 Environmental Designations

The proposed development is not considered to pose a risk to the identified environmental designations.

#### 4.7 Preliminary Hazard Assessment

A preliminary hazard assessment is presented in Table 8. The preliminary hazard assessment is a qualitative assessment of the risks posed by each potential pollutant linkage described above and is used to identify the requirement for additional work (e.g., intrusive ground investigation).

Table 8 – Preliminary Hazard Assessment

Source 1	Pathway	Receptor	Likelihood	Effect	Risk	Assessment
Contaminated soil	Ingestion (via soil dust), inhalation (via soil dust and vapours), ingestion through dirty hands, dermal contact with soil/water.	Future site users Adjacent site users Construction workers	1	3	Low	No on-site contamination source potential identified.  Impermeable superficial deposits will limit the migration of off-site contaminants to the site.
Contaminated soil groundwater	Direct contact	Buildings/ services	1	3	Low	No on-site contamination source potential identified.
Contaminated groundwater	Downward or lateral migration Surface water run-off	Secondary (undifferentiated) Secondary B River Ehen	1	3	Low	No on-site contamination source identified. The site does not lie within a Source Protection Zone.  There are no sensitive groundwater abstraction licences located nearby
Ground gas / vapours Radon	Inhalation, ingress into buildings	Buildings / services Future site users	3	4	High	Off-site sources of ground gases have been discounted based on distance from site and

Source 1	Pathway	Receptor	Likelihood	Effect	Risk	Assessment
		Adjacent site users Construction workers				<p>the presence of impermeable superficial deposits.</p> <p>Site lies within a high probability area for radon. This can be suitably mitigated through the incorporation of full radon protective measures in accordance with BR 211 Radon: Guidance on protective measures for new buildings.</p>

Using Risk Matrix (Table 8) Degree of Risk (R) = Likelihood (L) x Effect (E)



Table 8 - Risk Matrix, Degree of Risk (R) = Likelihood (L) x Effect (E)

Likelihood	Description	Probability	Effect (E)	Description
5	Almost certain	>70%		
4	Probable	50-70%	4	Severe
3	Likely	30-50%	3	Medium
2	Unlikely	10-30%	2	Mild
1	Negligible	<10%	1	Minor
Risk (R)	Risk Level	Action		
1-5	Low	None required		
6-10	Moderate	Further assessment via Phase 2 intrusive ground investigation.		
>10	High	Further assessment via Phase 2 intrusive ground investigation.		

## 5 Conclusions and Recommendations

The preliminary environmental site assessment indicates that the site can be classified as high risk in terms of contamination due to the site being situated within a high-risk area for radon. However, it is considered that this risk classification can be reduced to low through the incorporation of full radon protective measures in accordance with BRE 211 Radon: Guidance on protective measures for new buildings. The completion of a Phase 2 investigation is not deemed necessary.

It is recommended that a detailed radon search report is acquired for the site to confirm the risk.

During site preparation works, if any unexpected visual or olfactory evidence of contamination is encountered, it is recommended that the material is removed and stockpiled on site and advice is sought from a suitably qualified person (Environmental Consultant) on how to deal with the material. Testing of the material will be necessary to identify whether it is suitable for re-use on site or if it will have to be taken off-site for disposal.

In addition, to ensure that they do not come into contact with contaminated soils and groundwater, it is recommended that workers wear appropriate personal protective equipment (PPE) and that suitable Health and Safety procedures be adopted to ensure that ingestion of contaminated soils and groundwater is avoided (e.g. by washing hands prior to eating, drinking and smoking).

## APPENDICES

## Appendix A – Site Location and Site Plan



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Site Location Map

Figure 1



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Existing Site Plan

Figure 2



Figure 3



## Appendix B – Site Photographs



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**Gated entrance along Cleator Moor Road.  
View of site looking north.  
Images courtesy of Google Maps.**

## Appendix C – Historic Maps



# Historical Mapping Legends

## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

**Quarry**   **Gravel Pit**   **Sand Pit**  
**Clay Pit**   **Shingle**   **Refuse Heap**  
**Sloping Masonry**   **Flat Rock**  
**Marsh**   **Reeds**   **Osiers**  
**Rough Pasture**   **Furze**   **Wood**  
**Mixed Wood**   **Brushwood**   **Orchard**  
**Fir**   **Ford**   **Stepping Stones**  
**Ferry**   **Waterfall**   **Lock**  
**Trig. Station**   **Altitude at Trig. Station**  
**B.M. 325.9**   **Bench Mark**   **Surface Level**  
**Arrow denotes flow of water**   **Antiquities (site of)**  
**Cutting**   **Embankment**  
**Railway crossing Road**   **Level Crossing**   **Road crossing Railway**  
**Railway crossing River or Canal**   **Road over single stream**   **Road over River or Canal**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Administrative County & Civil Parish Boundary**  
**County Borough Boundary (England)**  
**County Burgh Boundary (Scotland)**  
**Co. Boro. Bdy.**  
**Co. Burgh Bdy.**  
**BP BS** Boundary Post or Stone   **P.C.B** Police Call Box  
**B.R.** Bridle Road   **P** Pump  
**E.P** Electricity Pylon   **S.P** Signal Post  
**F.B.** Foot Bridge   **Sl** Sluice  
**F.P.** Foot Path   **Sp.** Spring  
**G.P** Guide Post or Board   **T.C.B** Telephone Call Box  
**M.S** Mile Stone   **Tr.** Trough  
**M.P M.R** Mooring Post or Ring   **W** Well

## Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

**Inactive Quarry, Chalk Pit or Clay Pit**   **Active Quarry, Chalk Pit or Clay Pit**  
**Rock**   **Boulders**  
**Cliff**   **Slopes**   **Top**  
**Roofed Building**   **Glazed Roof Building**  
**Sloping Masonry**   **Archway**  
**Non-Coniferous Tree (surveyed)**   **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)**   **Coniferous Trees (not surveyed)**  
**Orchard Tree**   **Scrub**   **Bracken**  
**Coppice, Osier**   **Reeds**   **Marsh, Saltings**  
**Rough Grassland**   **Heath**   **Culvert**  
**Direction of water flow**   **Bench Mark**   **Antiquity (site of)**  
**Cave Entrance**   **Triangulation Station**   **Electricity Pylon**  
**Electricity Transmission Line**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Civil Parish Boundary**  
**Admin. County or County Bor. Boundary**  
**London Borough Boundary**  
**Symbol marking point where boundary mereing changes**  
**BH** Beer House   **P** Pillar, Pole or Post  
**BP, BS** Boundary Post or Stone   **PO** Post Office  
**Cn, C** Capstan, Crane   **PC** Public Convenience  
**Chy** Chimney   **PH** Public House  
**D Fn** Drinking Fountain   **Pp** Pump  
**EI P** Electricity Pillar or Post   **SB, S Br** Signal Box or Bridge  
**FAP** Fire Alarm Pillar   **SP, SL** Signal Post or Light  
**FB** Foot Bridge   **Spr** Spring  
**GP** Guide Post   **Tk** Tank or Track  
**H** Hydrant or Hydraulic   **TCB** Telephone Call Box  
**LC** Level Crossing   **TCP** Telephone Call Post  
**MH** Manhole   **Tr** Trough  
**MP** Mile Post or Mooring Post   **Wr Pt, Wr T** Water Point, Water Tap  
**MS** Mile Stone   **W** Well  
**NTL** Normal Tidal Limit   **Wd Pp** Wind Pump

## Large-Scale National Grid Data 1:2,500 and 1:1,250

**Cliff**   **Slopes**   **Top**  
**Rock**   **Rock (scattered)**  
**Boulders**   **Boulders (scattered)**  
**Positioned Boulder**   **Scree**  
**Non-Coniferous Tree (surveyed)**   **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)**   **Coniferous Trees (not surveyed)**  
**Orchard Tree**   **Scrub**   **Bracken**  
**Coppice, Osier**   **Reeds**   **Marsh, Saltings**  
**Rough Grassland**   **Heath**   **Culvert**  
**Direction of water flow**   **Triangulation Station**   **Antiquity (site of)**  
**Electricity Transmission Line**   **Electricity Pylon**  
**B.M. 231.60m** Bench Mark   **Buildings with Building Seed**  
**Roofed Building**   **Glazed Roof Building**  
**Civil parish/community boundary**  
**District boundary**  
**County boundary**  
**Boundary post/stone**  
**Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)**  
**Bks** Barracks   **P** Pillar, Pole or Post  
**Bty** Battery   **PO** Post Office  
**Cemy** Cemetery   **PC** Public Convenience  
**Chy** Chimney   **Pp** Pump  
**Cis** Cistern   **Ppg Sta** Pumping Station  
**Dismtd Rly** Dismantled Railway   **PW** Place of Worship  
**EI Gen Sta** Electricity Generating Station   **Sewage Ppg Sta** Sewage Pumping Station  
**EI P** Electricity Pole, Pillar   **SB, S Br** Signal Box or Bridge  
**EI Sub Sta** Electricity Sub Station   **SP, SL** Signal Post or Light  
**FB** Filter Bed   **Spr** Spring  
**Fn / D Fn** Fountain / Drinking Ftn.   **Tk** Tank or Track  
**Gas Gov** Gas Valve Compound   **Tr** Trough  
**GVC** Gas Governor   **Wd Pp** Wind Pump  
**GP** Guide Post   **Wr Pt, Wr T** Water Point, Water Tap  
**MH** Manhole   **Wks** Works (building or area)  
**MP, MS** Mile Post or Mile Stone   **W** Well

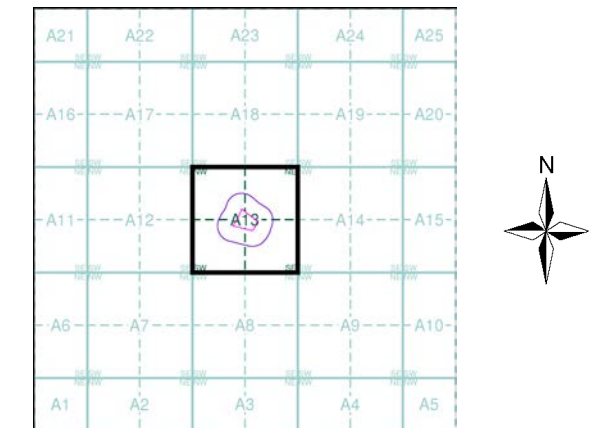
# Envirocheck®

LANDMARK INFORMATION GROUP®

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Cumberland	1:2,500	1863 - 1878	2
Cumberland	1:2,500	1899	3
Cumberland	1:2,500	1925	4
Ordnance Survey Plan	1:2,500	1962	5
Additional SIMs	1:2,500	1981 - 1987	6
Additional SIMs	1:2,500	1985 - 1991	7
Additional SIMs	1:2,500	1991	8
Large-Scale National Grid Data	1:2,500	1994	9
Large-Scale National Grid Data	1:2,500	1995	10
Large-Scale National Grid Data	1:2,500	1995	11

## Historical Map - Segment A13



## Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 100

## Site Details

Belvedere, CLEATOR, CA23 3AE

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 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

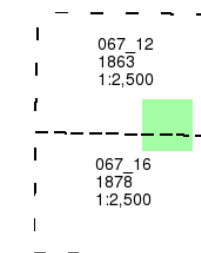
## Cumberland

Published 1863 - 1878

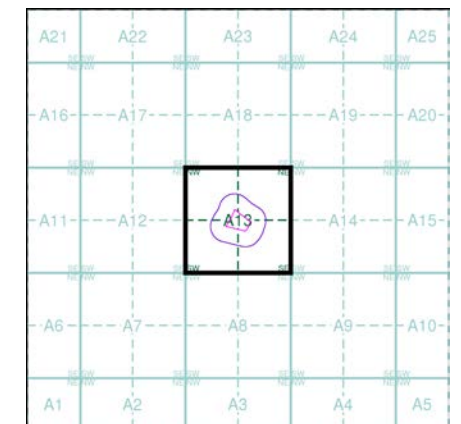
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



### Historical Map - Segment A13

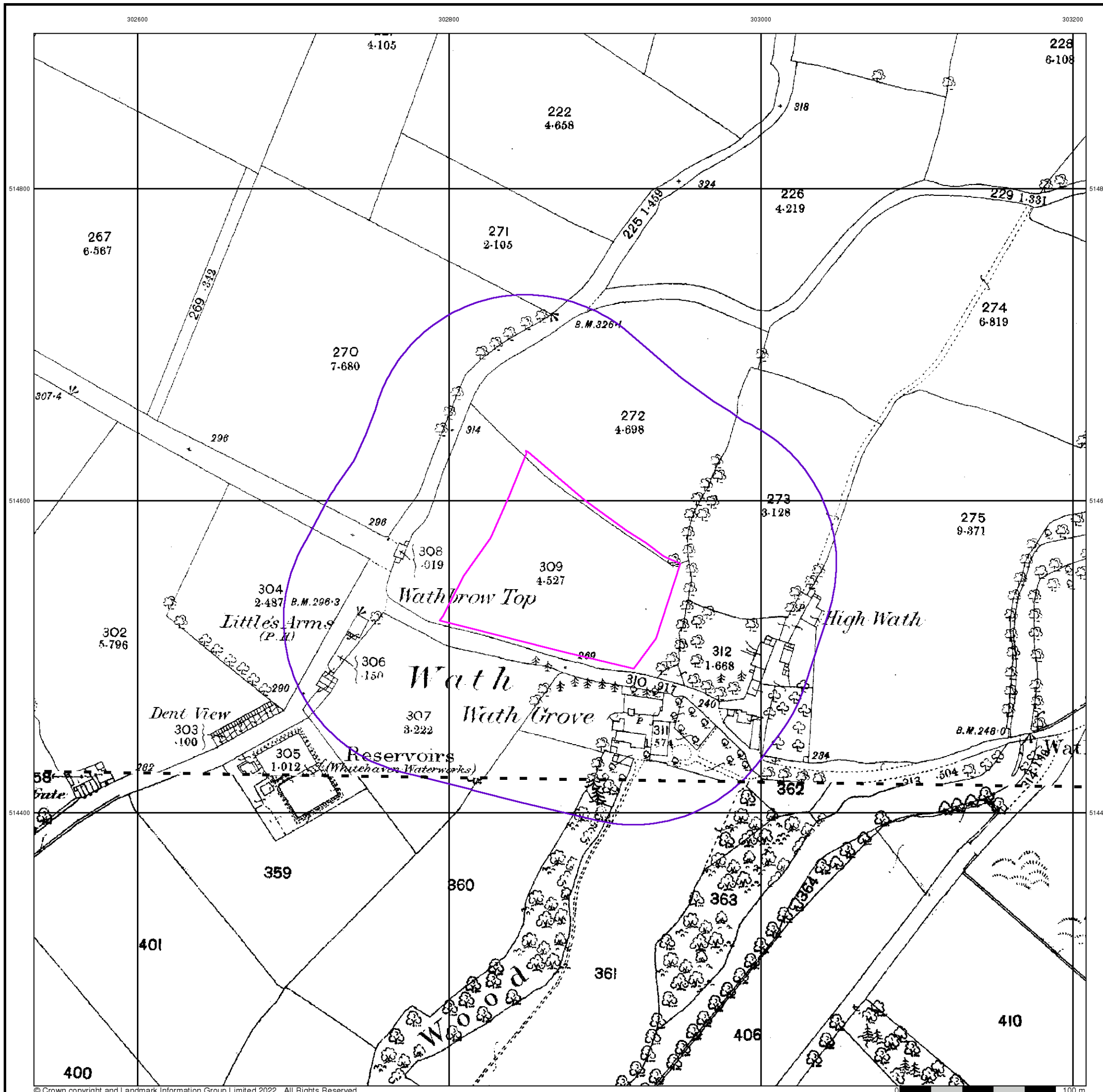


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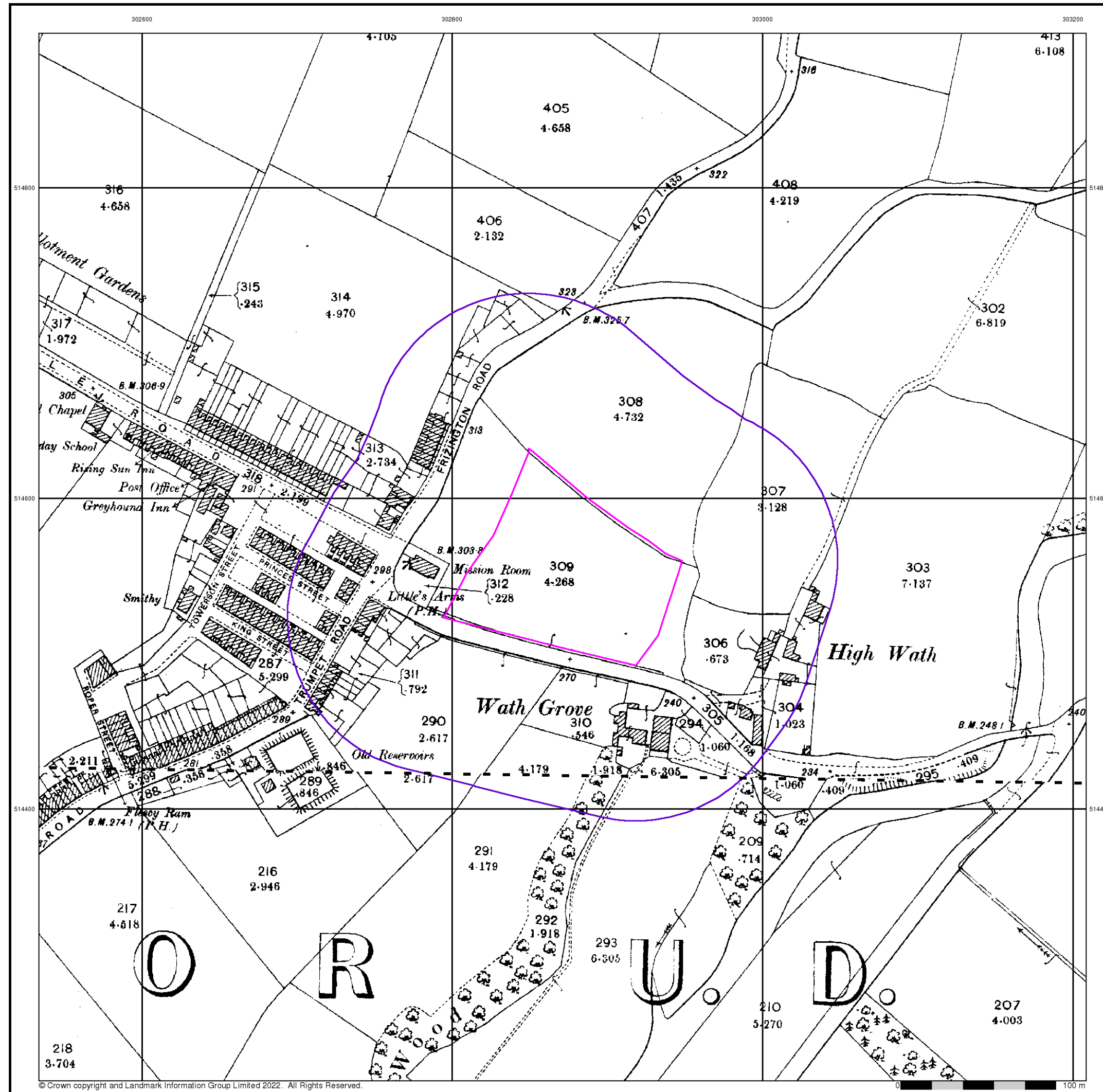
Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
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 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 100

### Site Details

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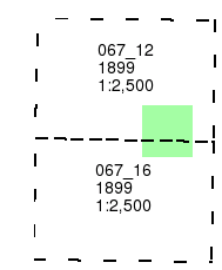
## Cumberland

Published 1899

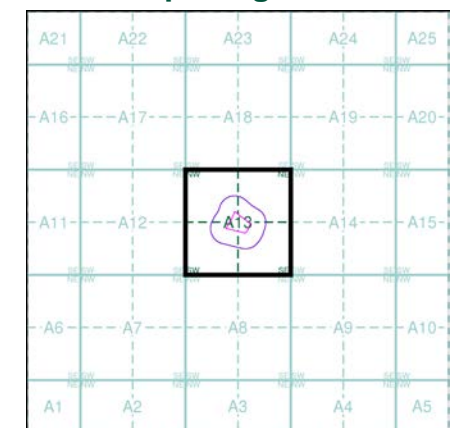
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



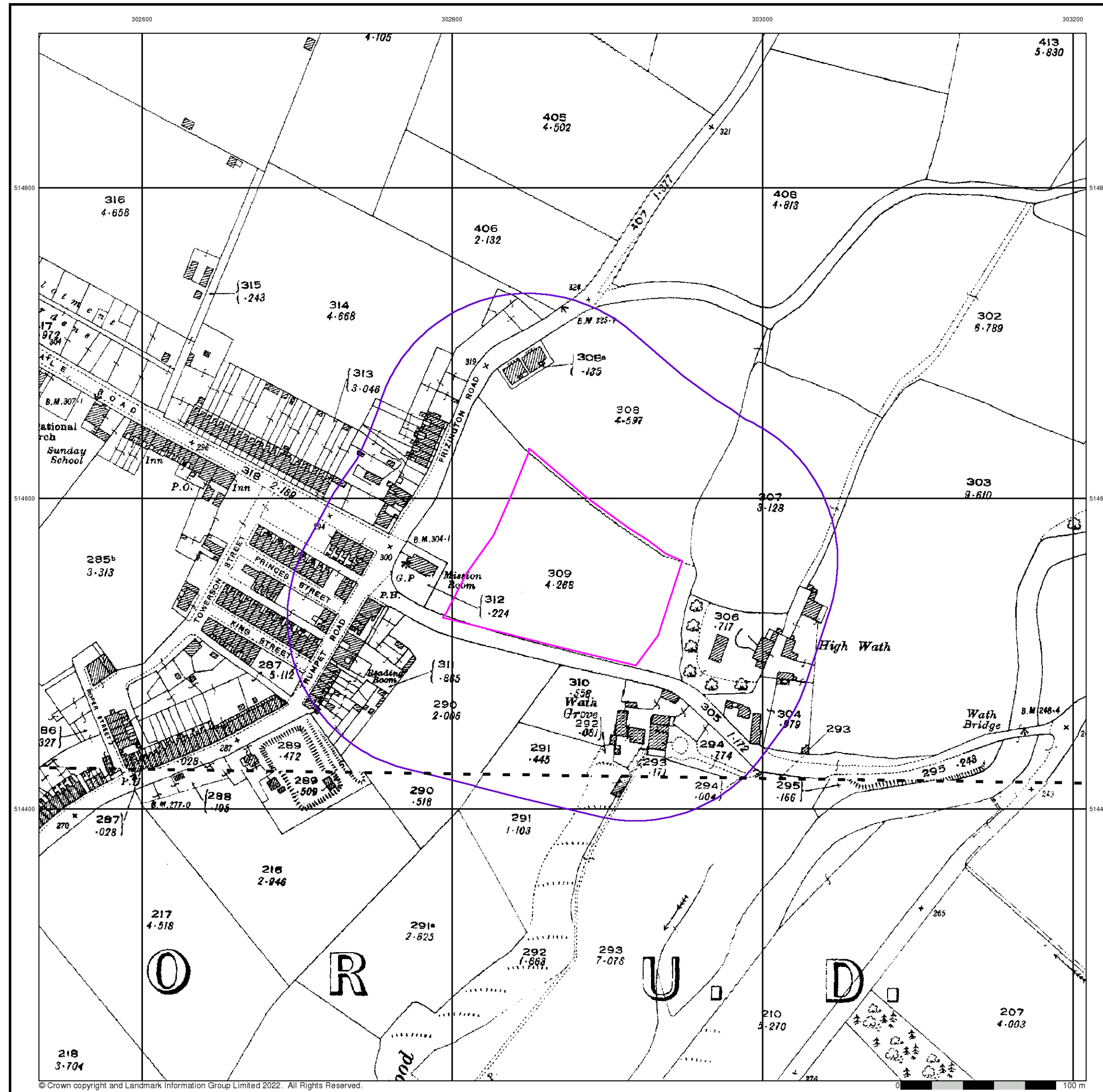
### Historical Map - Segment A13



**Order Details**

Order Number: 304423286\_1\_1  
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 National Grid Reference: 302870, 514550  
 Slice: A  
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 Search Buffer (m): 100

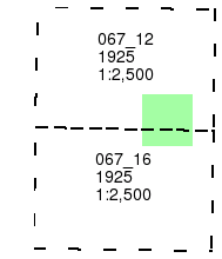
**Site Details**  
 Belvedere, CLEATOR, CA23 3AE



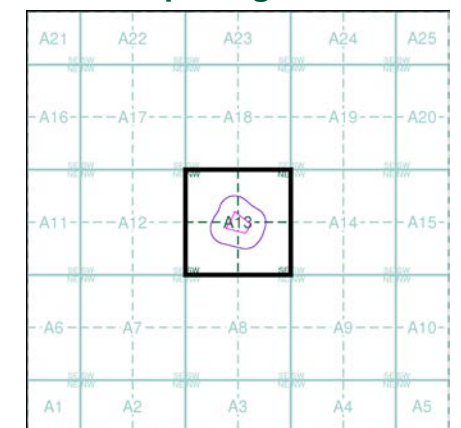
## Cumberland Published 1925 Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



**Order Details**  
 Order Number: 304423286\_1\_1  
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**Site Details**  
 Belvedere, CLEATOR, CA23 3AE



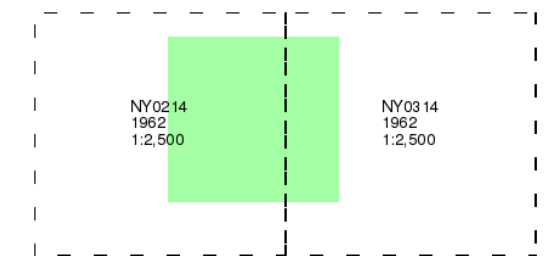
## Ordnance Survey Plan

Published 1962

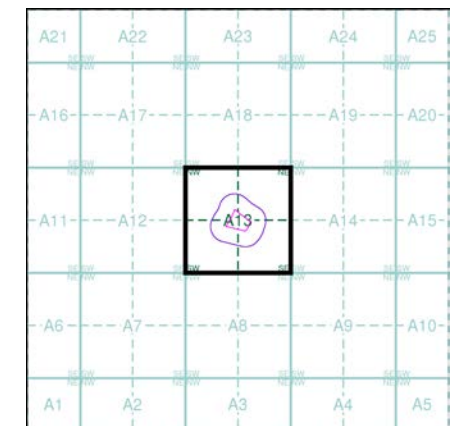
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

### Map Name(s) and Date(s)



### Historical Map - Segment A13

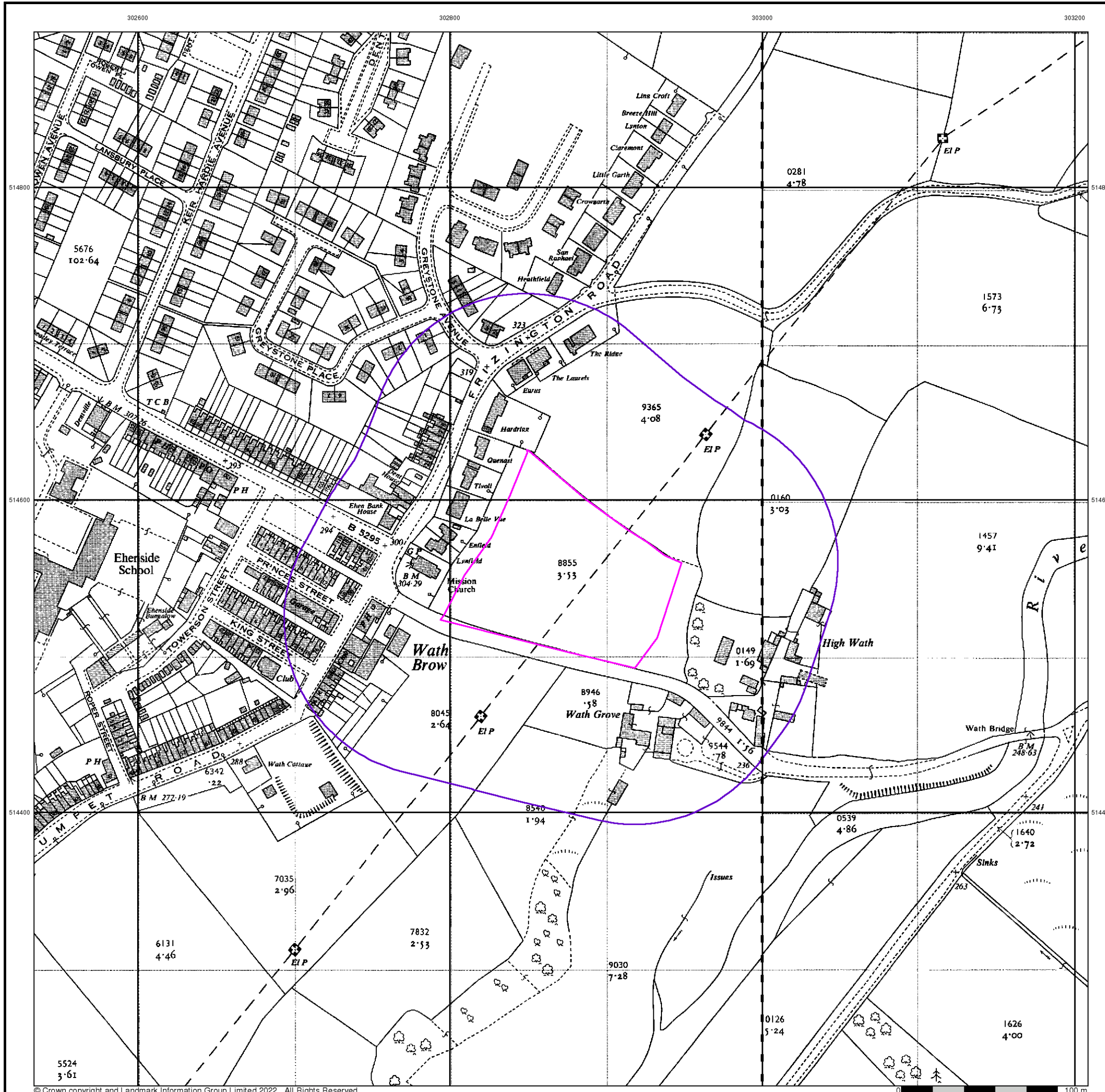


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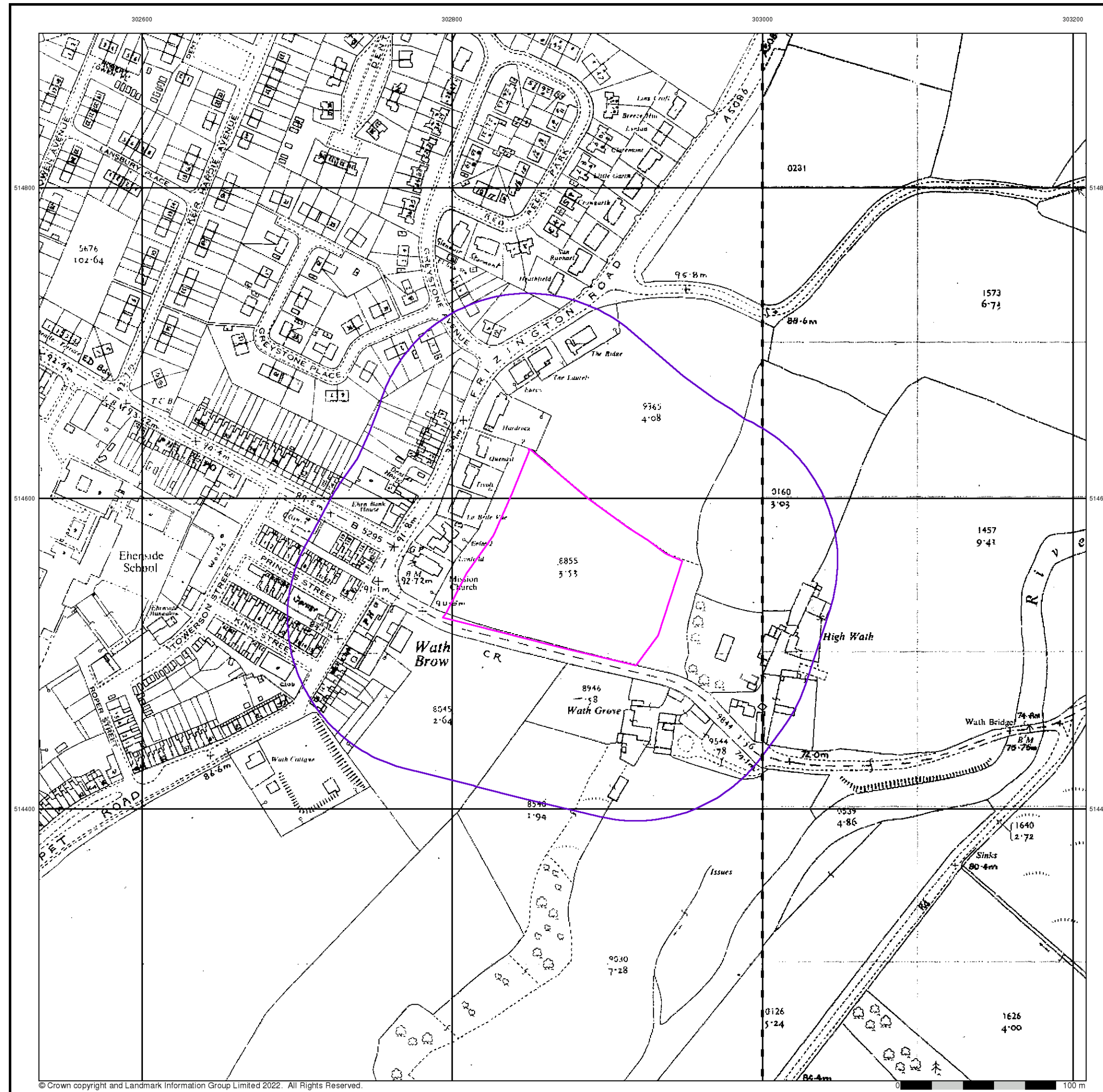
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 National Grid Reference: 302870, 514550  
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 Search Buffer (m): 100

### Site Details

Belvedere, CLEATOR, CA23 3AE







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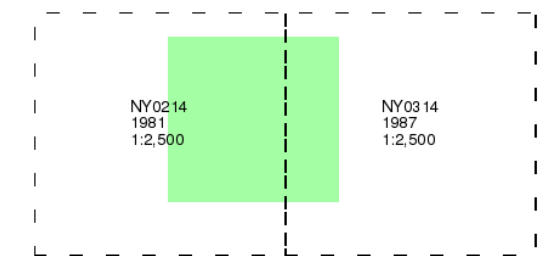
## Additional SIMs

Published 1981 - 1987

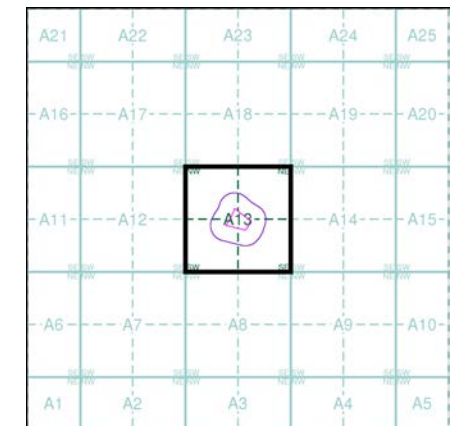
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



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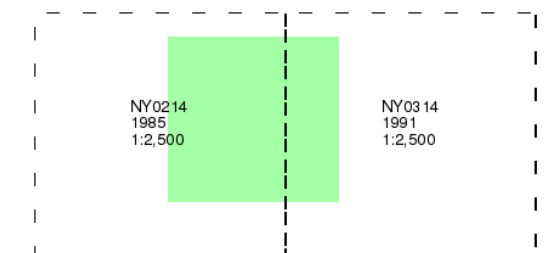
## Additional SIMs

Published 1985 - 1991

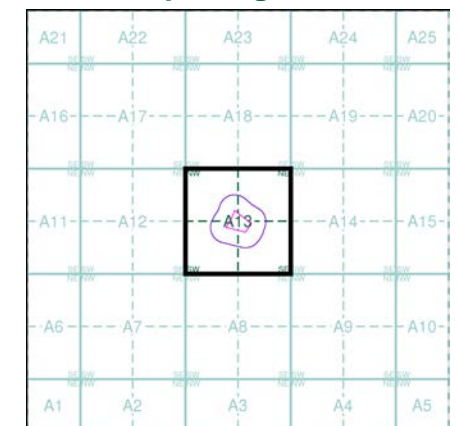
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)



## Historical Map - Segment A13

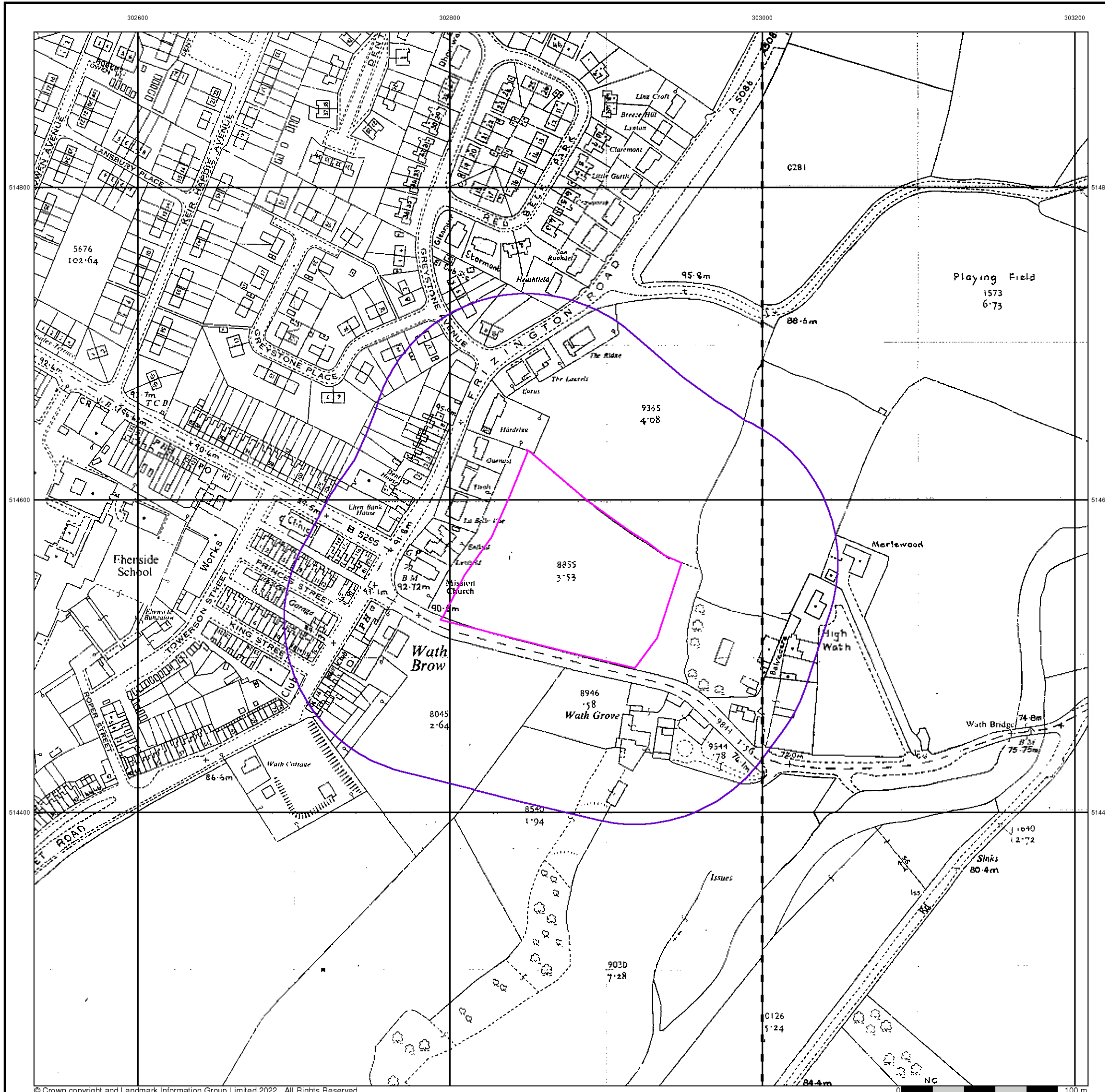


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 National Grid Reference: 302870, 514550  
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 Site Area (Ha): 1.18  
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## Site Details

Belvedere, CLEATOR, CA23 3AE





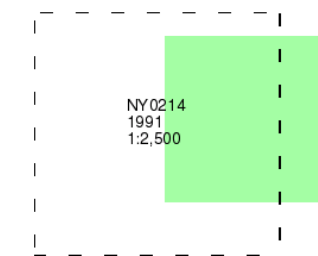
## Additional SIMs

Published 1991

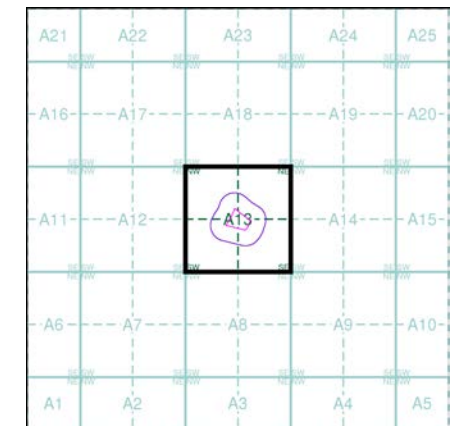
Source map scale - 1:2,500

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

## Map Name(s) and Date(s)



## Historical Map - Segment A13

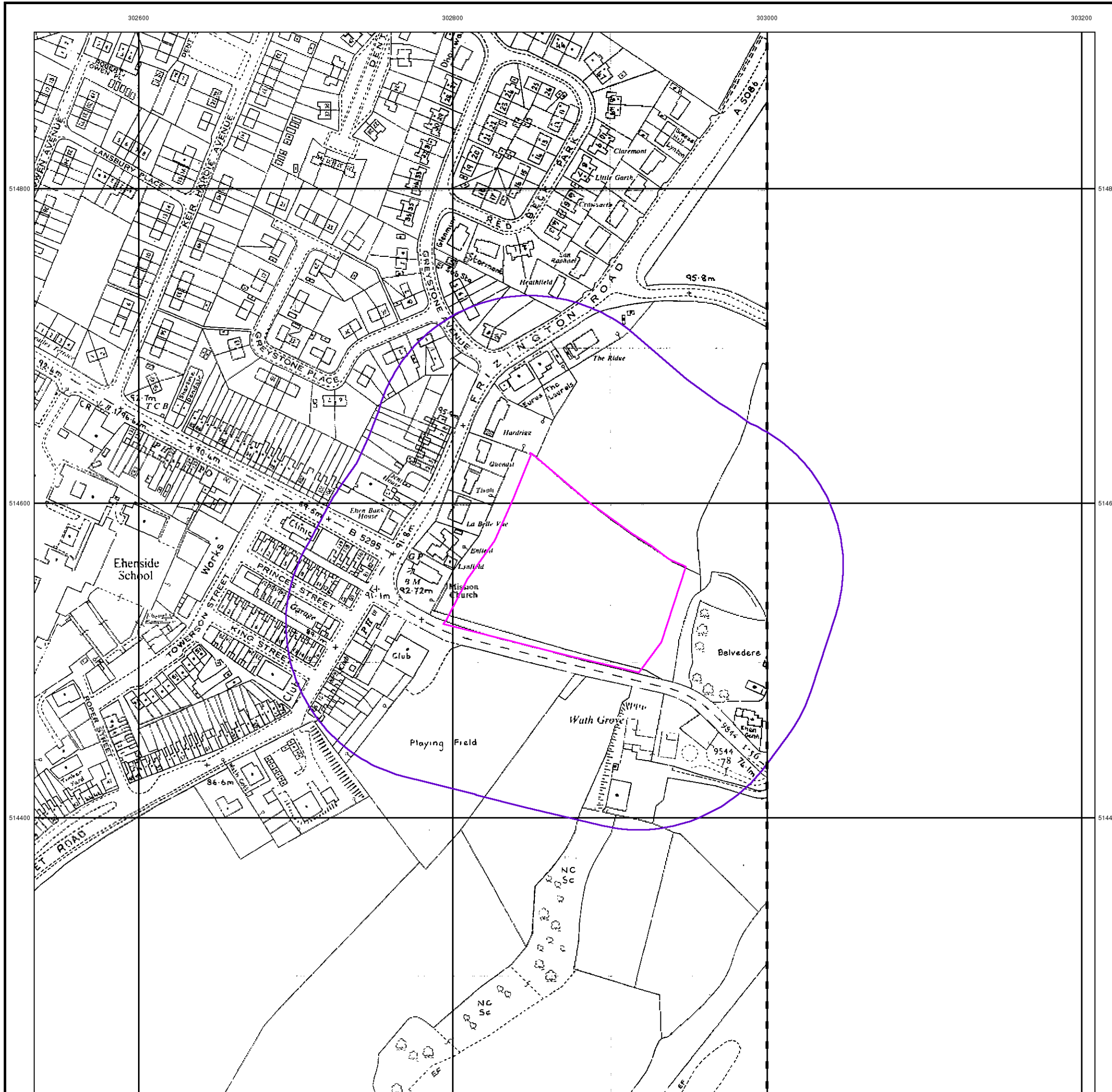


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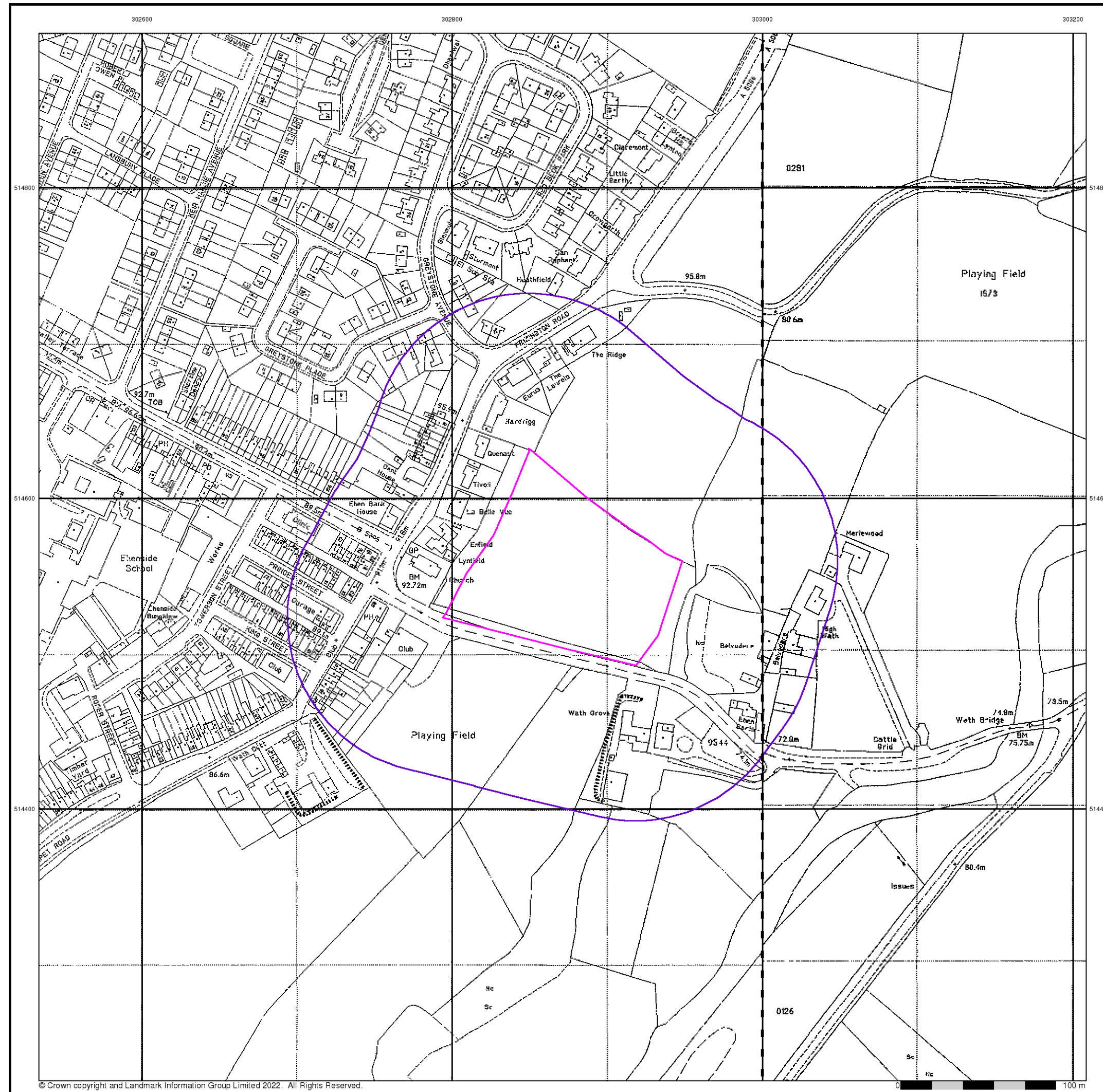
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 Search Buffer (m): 100

## Site Details

Belvedere, CLEATOR, CA23 3AE



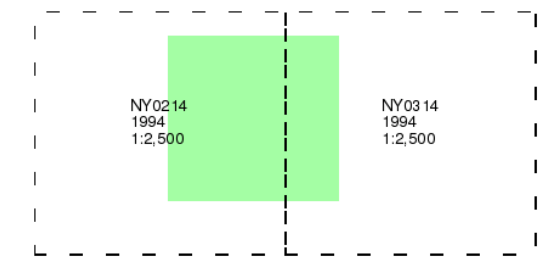




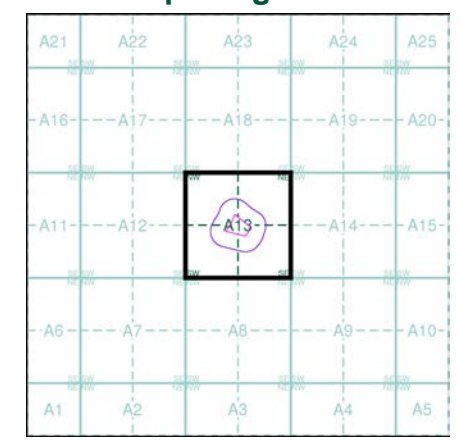
## Large-Scale National Grid Data Published 1994 Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)



### Historical Map - Segment A13

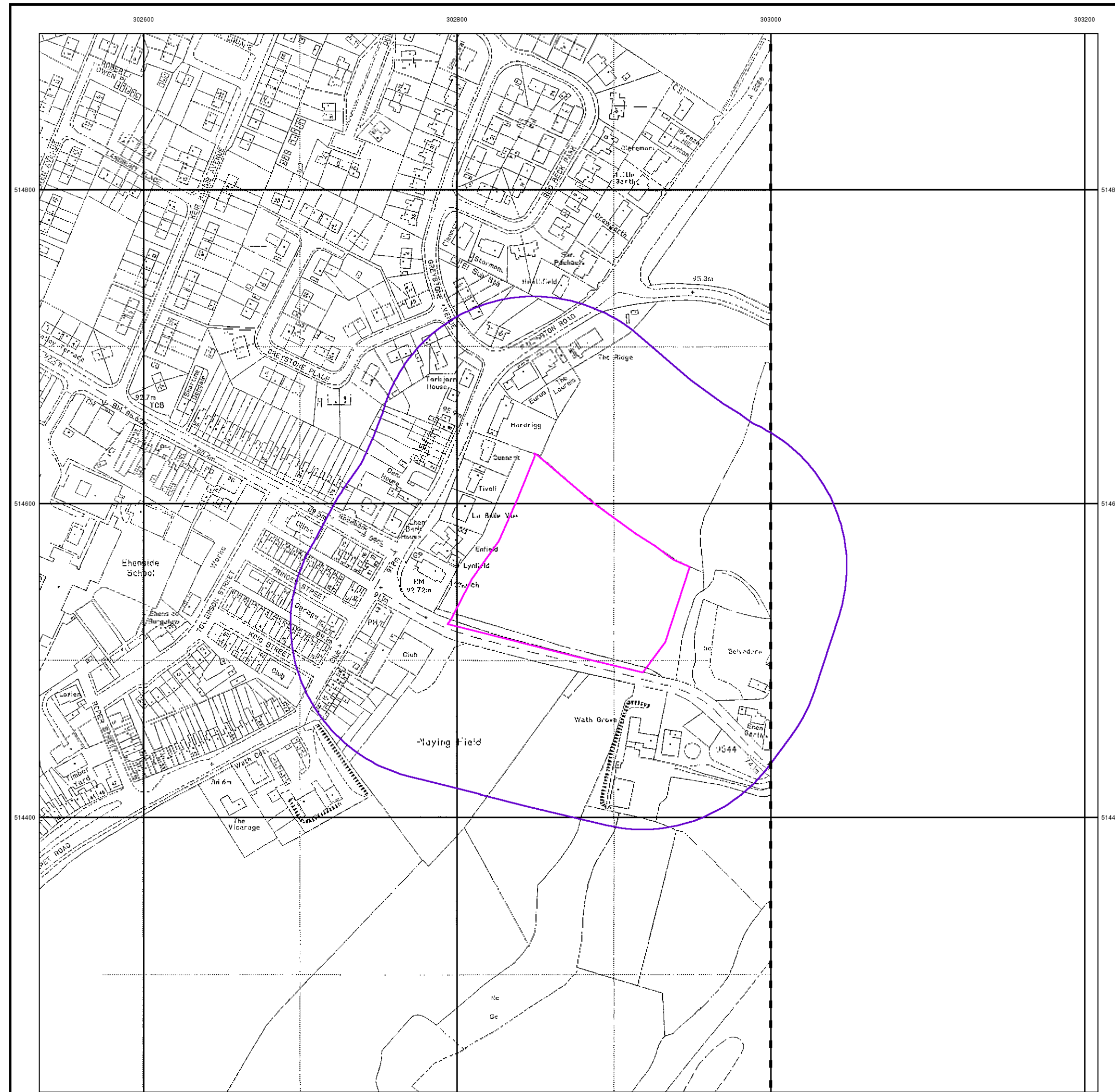


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Order Number: 304423286\_1\_1  
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 Slice: A  
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### Site Details

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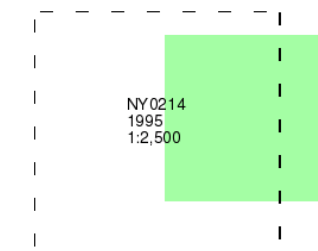
## Large-Scale National Grid Data

Published 1995

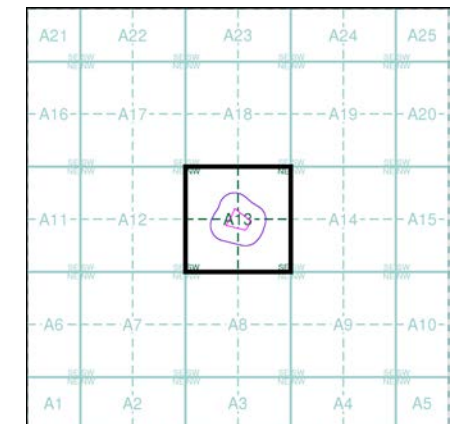
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



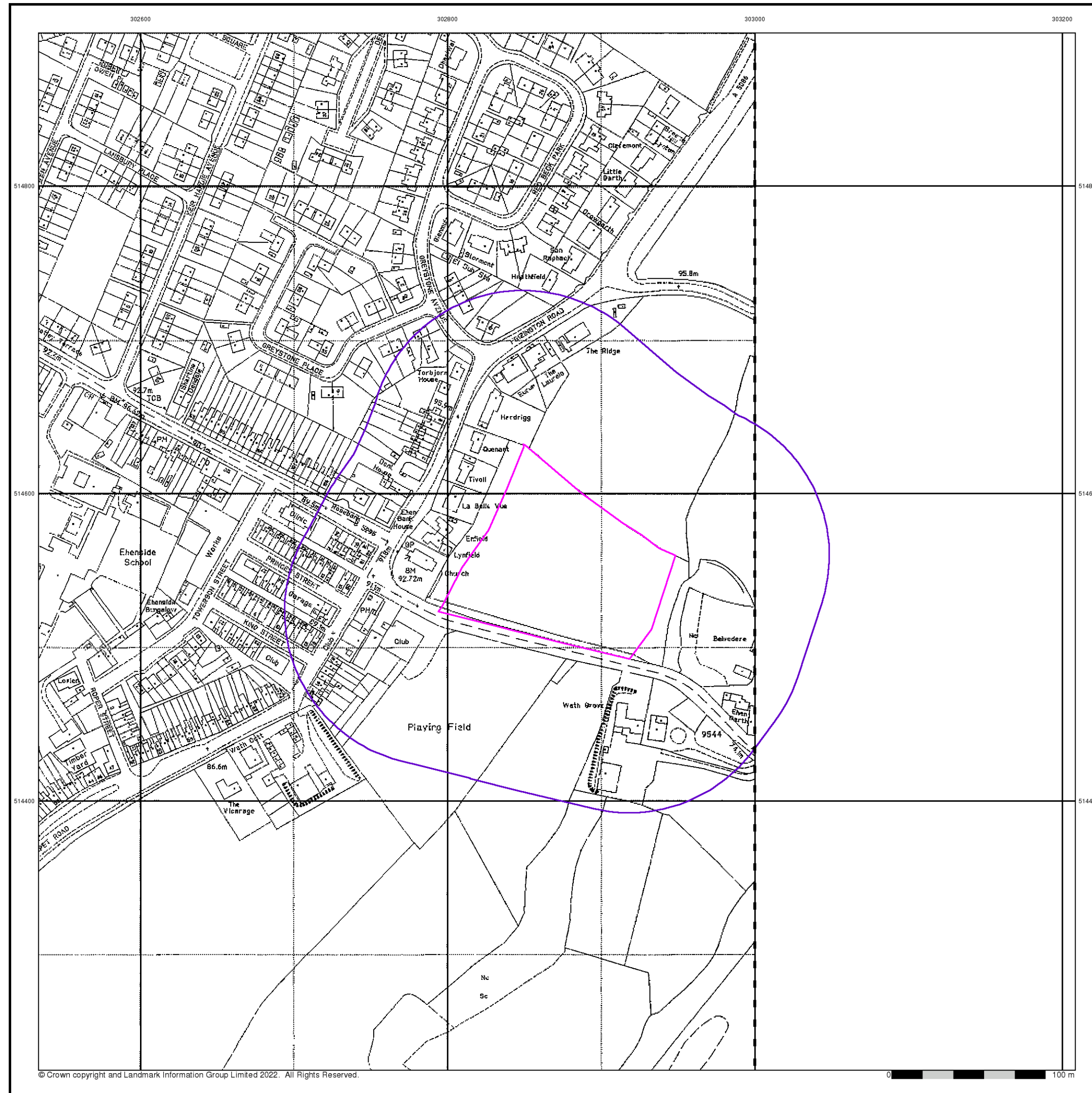
### Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 100

### Site Details

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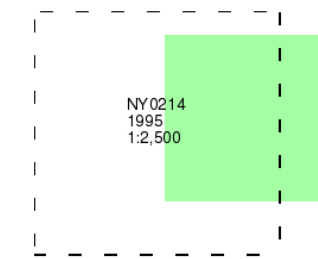
## Large-Scale National Grid Data

Published 1995

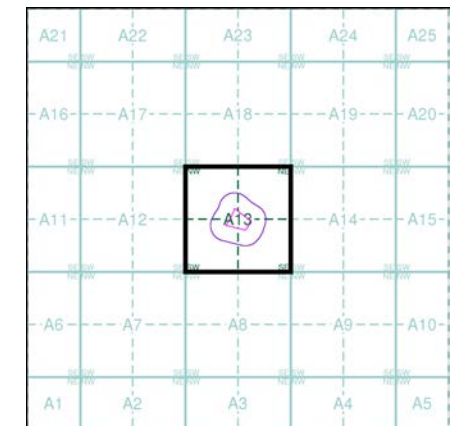
Source map scale - 1:2,500

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

### Map Name(s) and Date(s)



### Historical Map - Segment A13



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# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

	Gravel Pit		Sand Pit		Other Pits
	Quarry		Shingle		Orchard
	Osiers		Reeds		Marsh
	Mixed Wood		Deciduous		Brushwood
	Fir		Furze		Rough Pasture
	Arrow denotes flow of water		Trigonometrical Station		
	Site of Antiquities		Bench Mark		
	Pump, Guide Post, Signal Post		Well, Spring, Boundary Post		
	<b>-285</b> Surface Level				
	Sketched Contour		Instrumental Contour		
	Main Roads		Minor Roads		
	Sunken Road		Raised Road		
	Road over Railway		Railway over River		
	Railway over Road		Level Crossing		
	Road over River or Canal		Road over Stream		
	Road over Stream				
	County Boundary (Geographical)				
	County & Civil Parish Boundary				
	Administrative County & Civil Parish Boundary				
	County Borough Boundary (England)				
	County Burgh Boundary (Scotland)				
	Rural District Boundary				
	Civil Parish Boundary				

## Ordnance Survey Plan 1:10,000

	Chalk Pit, Clay Pit or Quarry		Gravel Pit
	Sand Pit		Disused Pit or Quarry
	Refuse or Slag Heap		Lake, Loch or Pond
	Dunes		Boulders
	Coniferous Trees		Non-Coniferous Trees
	Orchard		Scrub
	Coppice		Heath
	Rough Grassland		Marsh
	Reeds		Saltings
	Building		Glasshouse
	Sloping Masonry		Pylon
	Electricity Transmission Line		Pole
	Cutting		Embankment
	Standard Gauge Multiple Track		Standard Gauge Single Track
	Siding, Tramway or Mineral Line		Narrow Gauge
	Geographical County		
	Administrative County, County Borough or County of City		
	Municipal Borough, Urban or Rural District, Burgh or District Council		
	Borough, Burgh or County Constituency Shown only when not coincident with other boundaries		
	Civil Parish Shown alternately when coincidence of boundaries occurs		
	BP, BS Boundary Post or Stone		Pol Sta Police Station
	Ch Church		PO Post Office
	CH Club House		PC Public Convenience
	F E Sta Fire Engine Station		PH Public House
	FB Foot Bridge		SB Signal Box
	Fn Fountain		Spr Spring
	GP Guide Post		TCB Telephone Call Box
	MP Mile Post		TCP Telephone Call Post
	MS Mile Stone		W Well

## 1:10,000 Raster Mapping

	Gravel Pit		Refuse tip or slag heap
	Rock		Rock (scattered)
	Boulders		Boulders (scattered)
	Shingle		Mud
	Sand		Sand Pit
	Slopes		Top of cliff
	General detail		Underground detail
	Overhead detail		Narrow gauge railway
	Multi-track railway		Single track railway
	County boundary (England only)		Civil, parish or community boundary
	District, Unitary, Metropolitan, London Borough boundary		Constituency boundary
	Area of wooded vegetation		Non-coniferous trees
	Non-coniferous trees (scattered)		Coniferous trees
	Coniferous trees (scattered)		Positioned tree
	Orchard		Coppice or Osiers
	Rough Grassland		Heath
	Scrub		Marsh, Salt Marsh or Reeds
	Water feature		Flow arrows
	MHW(S) Mean high water (springs)		MLW(S) Mean low water (springs)
	Telephone line (where shown)		Electricity transmission line (with poles)
	Bench mark (where shown)		Triangulation station
	Point feature (e.g. Guide Post or Mile Stone)		Pylon, flare stack or lighting tower
	Site of (antiquity)		Glasshouse
	General Building		Important Building

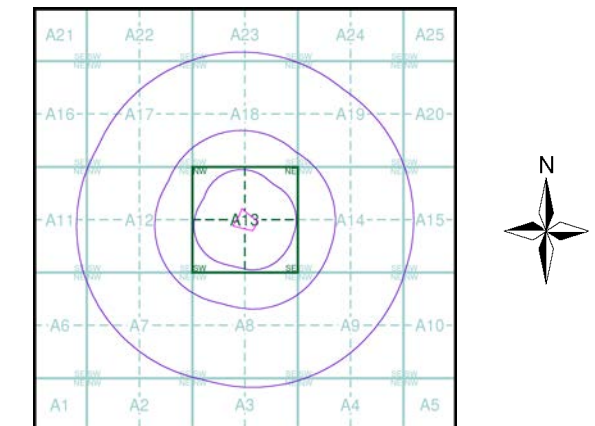
# Envirocheck

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## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Cumberland	1:10,560	1867	2
Cumberland	1:10,560	1900	3
Cumberland	1:10,560	1926	4
Cumberland	1:10,560	1938	5
Ordnance Survey Plan	1:10,000	1956 - 1957	6
Ordnance Survey Plan	1:10,000	1971	7
Ordnance Survey Plan	1:10,000	1993	8
10K Raster Mapping	1:10,000	2000	9
Street View	Variable		10

## Historical Map - Slice A



## Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
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 Site Area (Ha): 1.18  
 Search Buffer (m): 1000

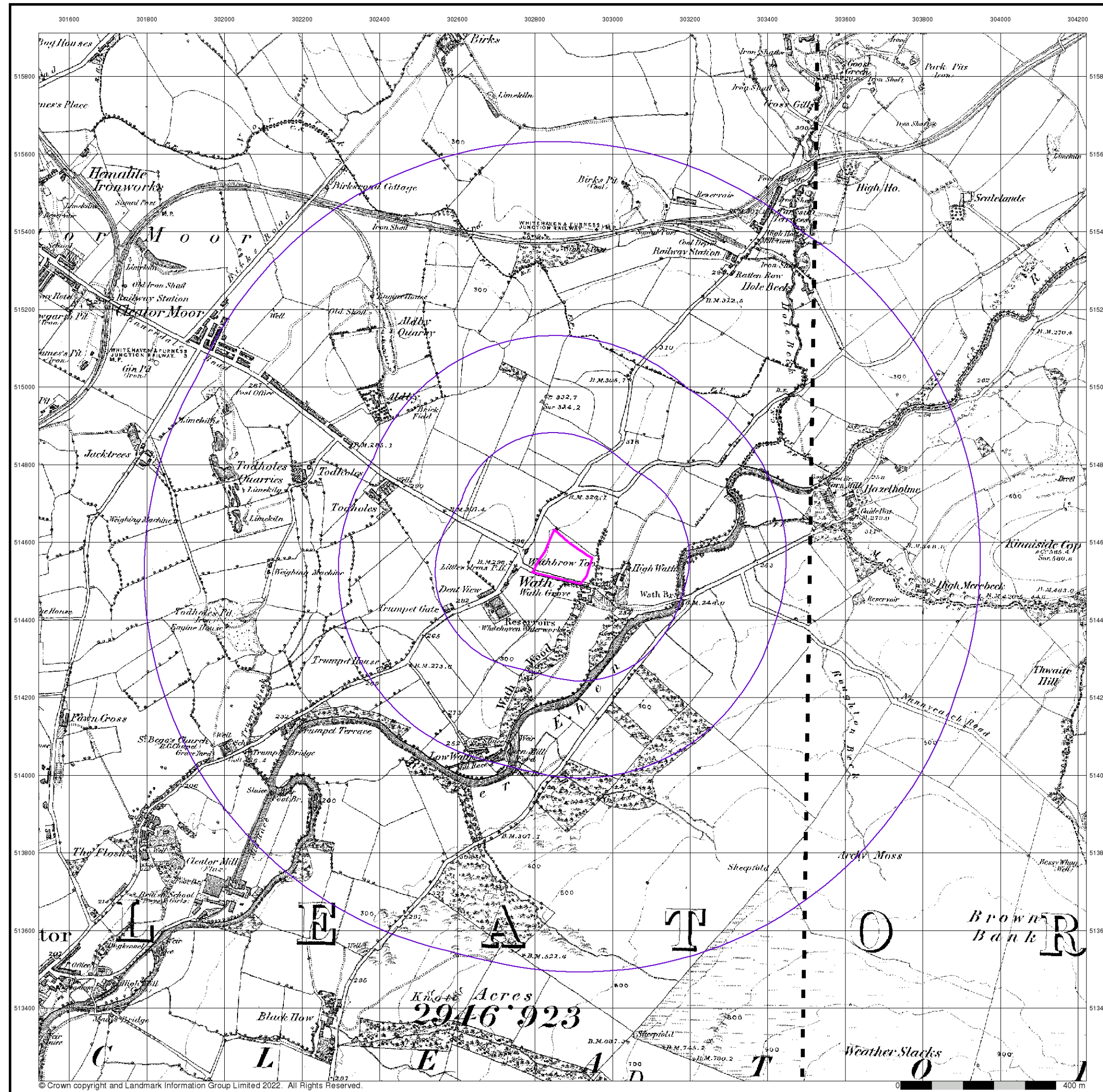
## Site Details

Belvedere, CLEATOR, CA23 3AE

**Landmark**  
 INFORMATION GROUP

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 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

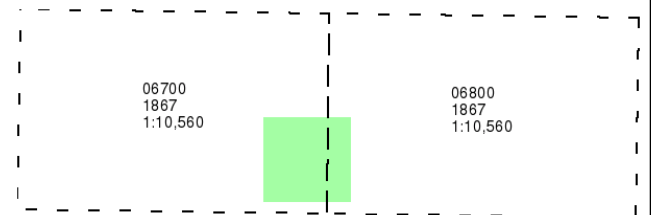




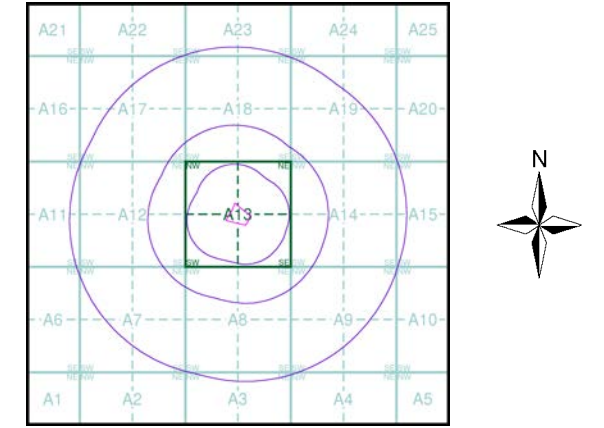
**Cumberland**  
**Published 1867**  
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**



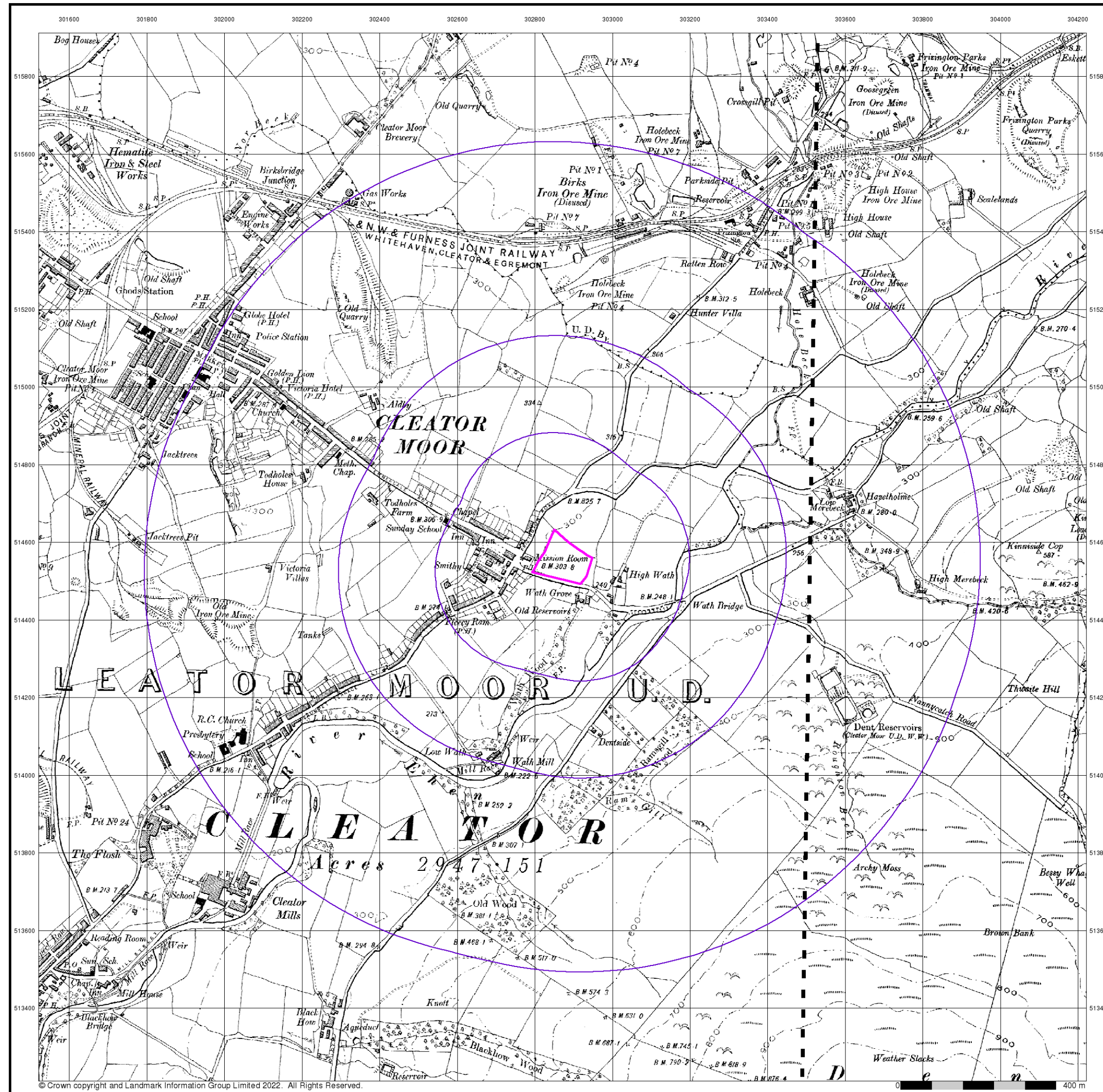
**Historical Map - Slice A**



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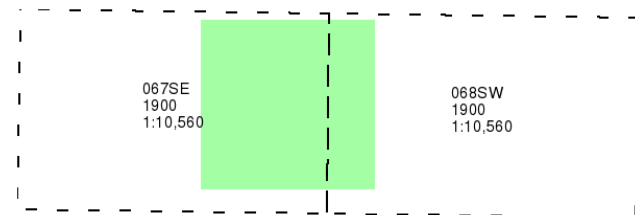




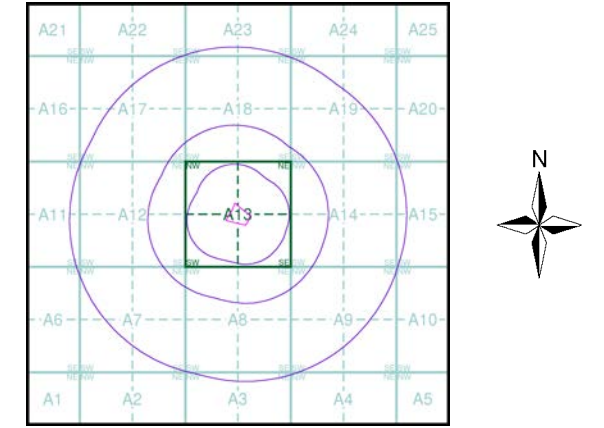
## Cumberland Published 1900 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)



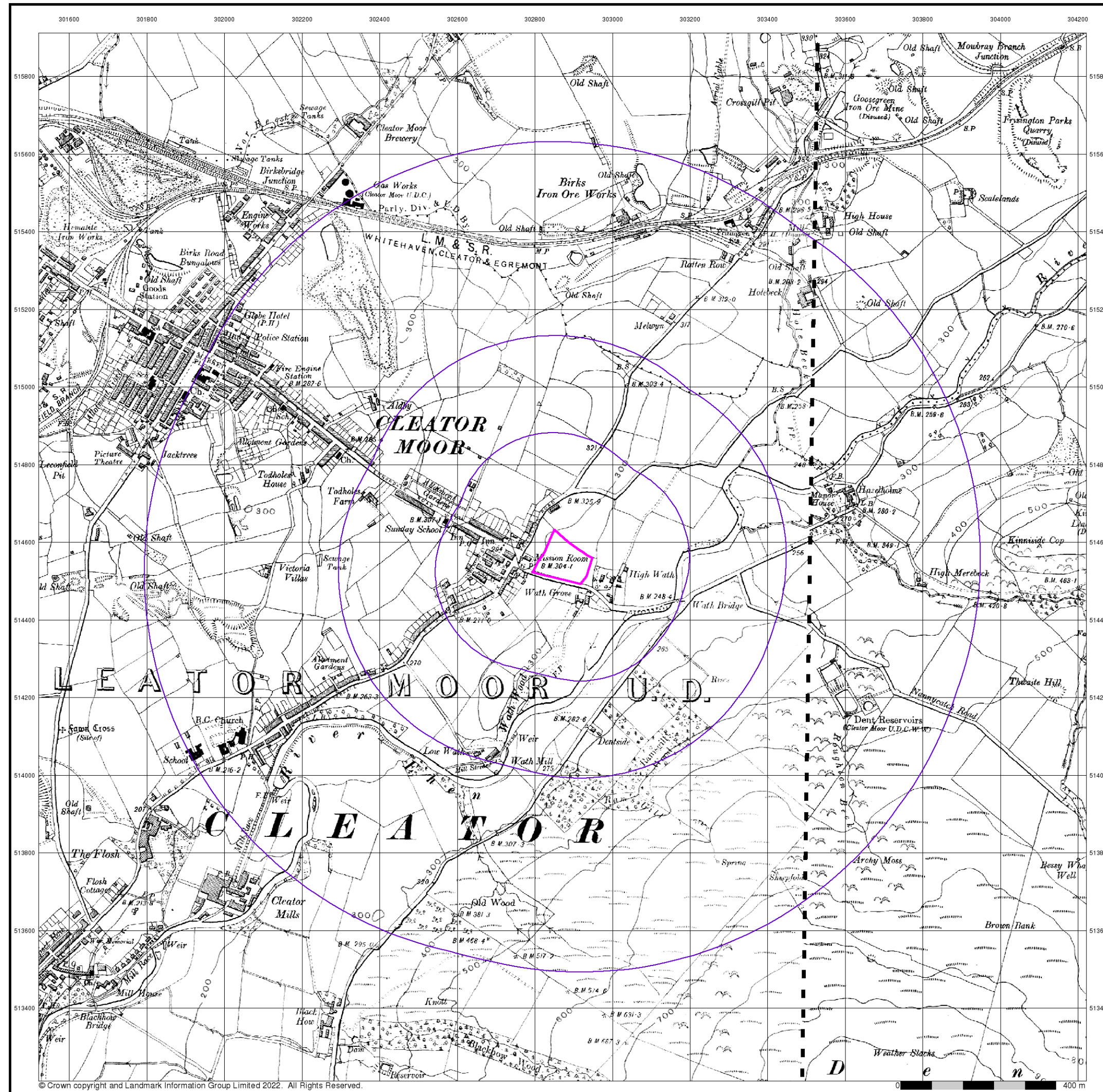
### Historical Map - Slice A



**Order Details**  
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 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
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 Search Buffer (m): 1000

**Site Details**  
 Belvedere, CLEATOR, CA23 3AE

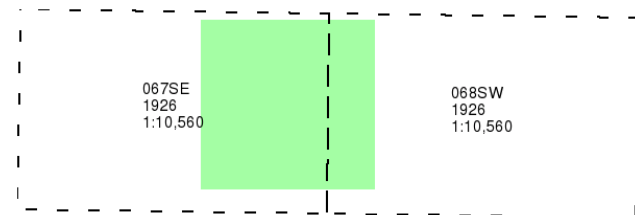




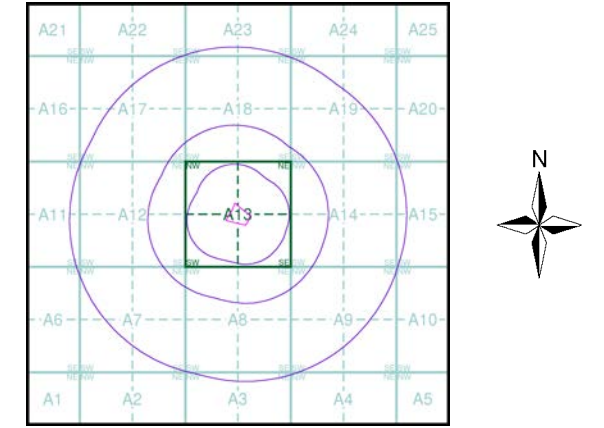
## Cumberland Published 1926 Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)



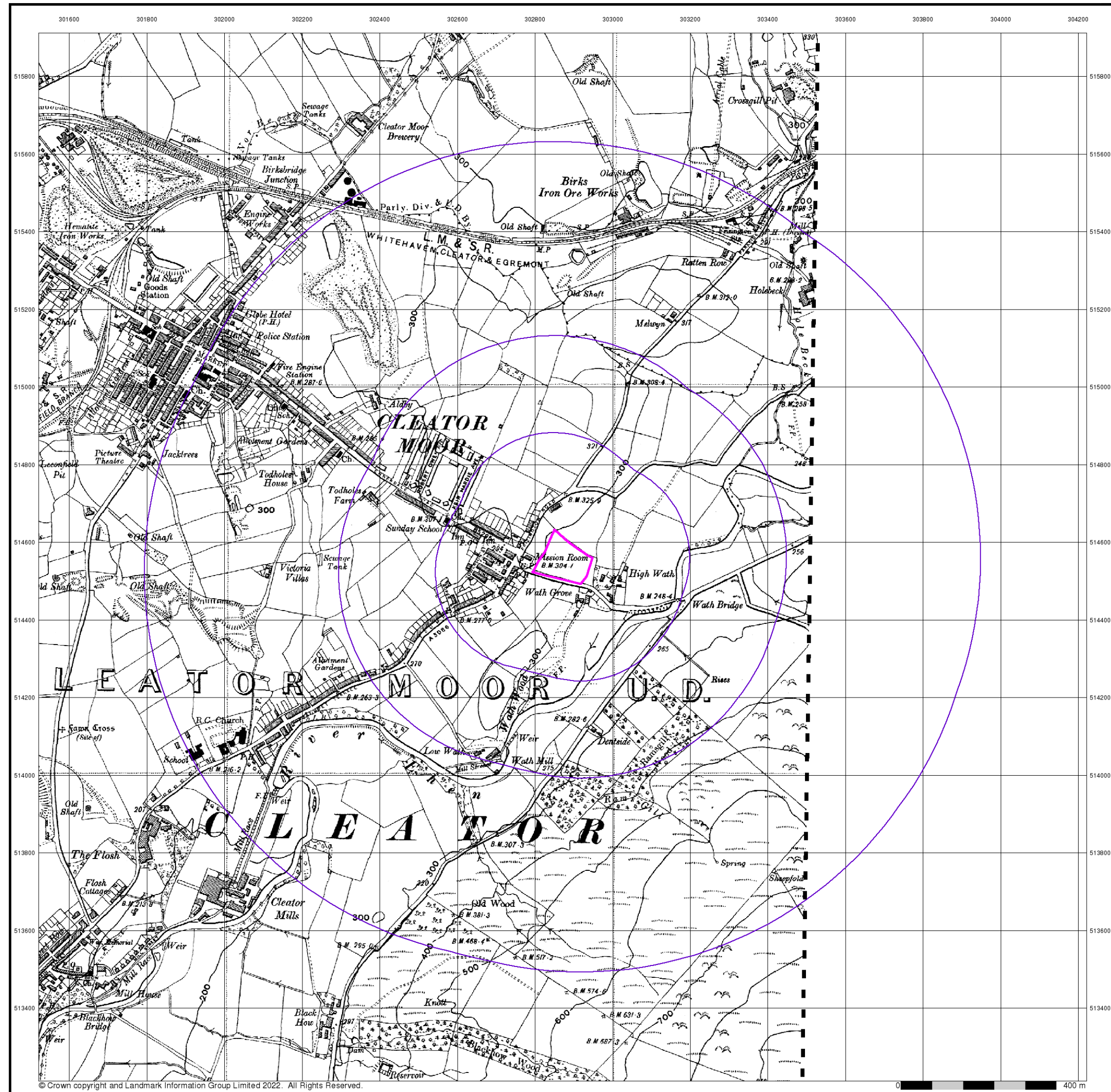
### Historical Map - Slice A



**Order Details**  
 Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
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 Search Buffer (m): 1000

**Site Details**  
 Belvedere, CLEATOR, CA23 3AE





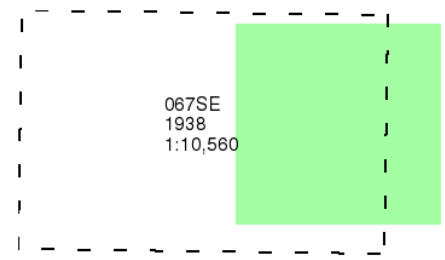
## Cumberland

### Published 1938

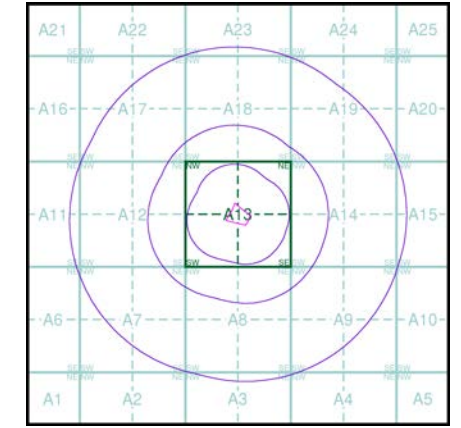
#### Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

#### Map Name(s) and Date(s)



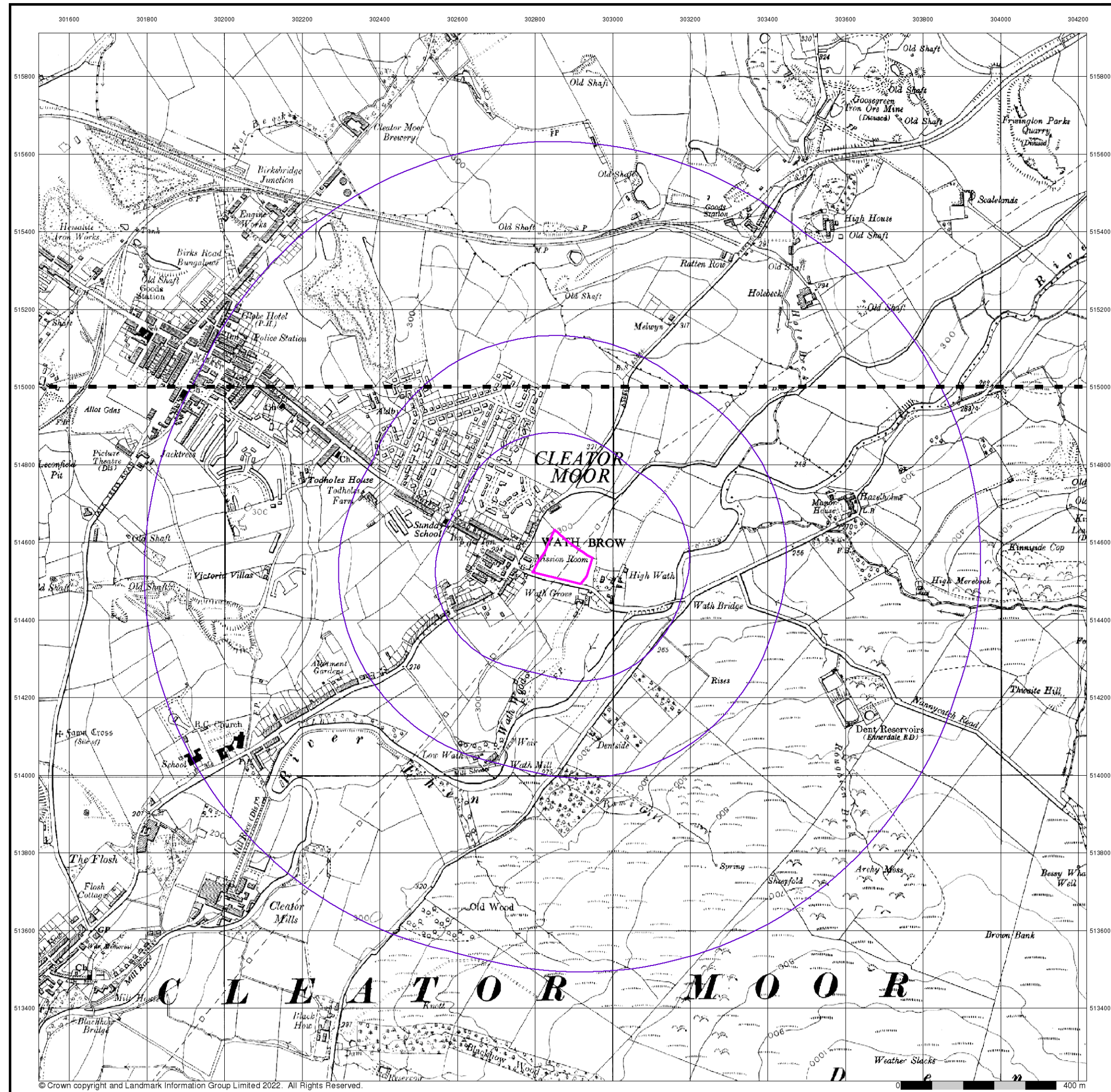
#### Historical Map - Slice A



**Order Details**  
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 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
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 Site Area (Ha): 1.18  
 Search Buffer (m): 1000

**Site Details**  
 Belvedere, CLEATOR, CA23 3AE





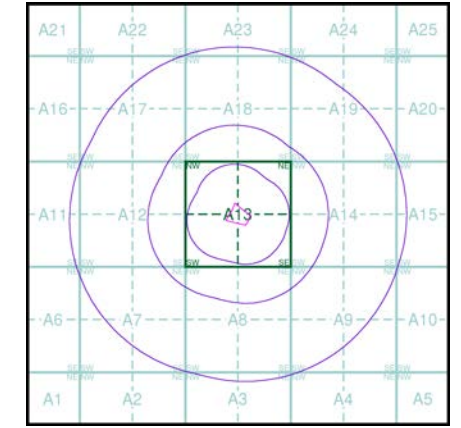
## Ordnance Survey Plan Published 1956 - 1957 Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

NY01NW	1957	1:10,560
NY01SW	1956	1:10,560

### Historical Map - Slice A



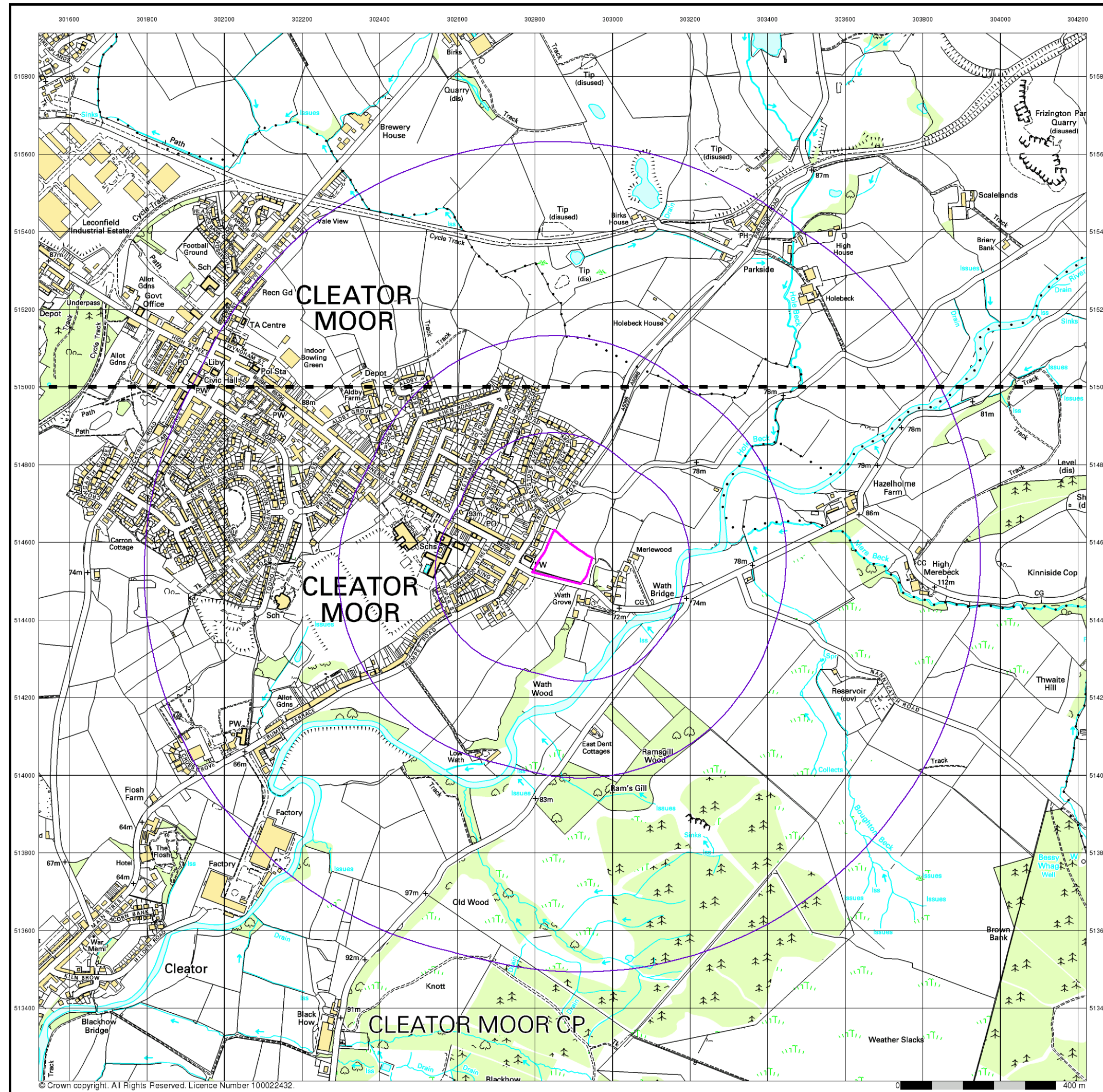
### Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 1000

### Site Details

Belvedere, CLEATOR, CA23 3AE





# Envirocheck®

LANDMARK INFORMATION GROUP®

**10k Raster Mapping**

**Published 2000**

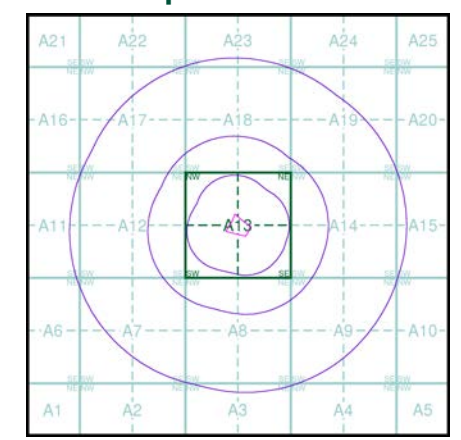
**Source map scale - 1:10,000**

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

### Map Name(s) and Date(s)

NY01NW	2000	1:10,000
NY01SW	2000	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 1000

### Site Details

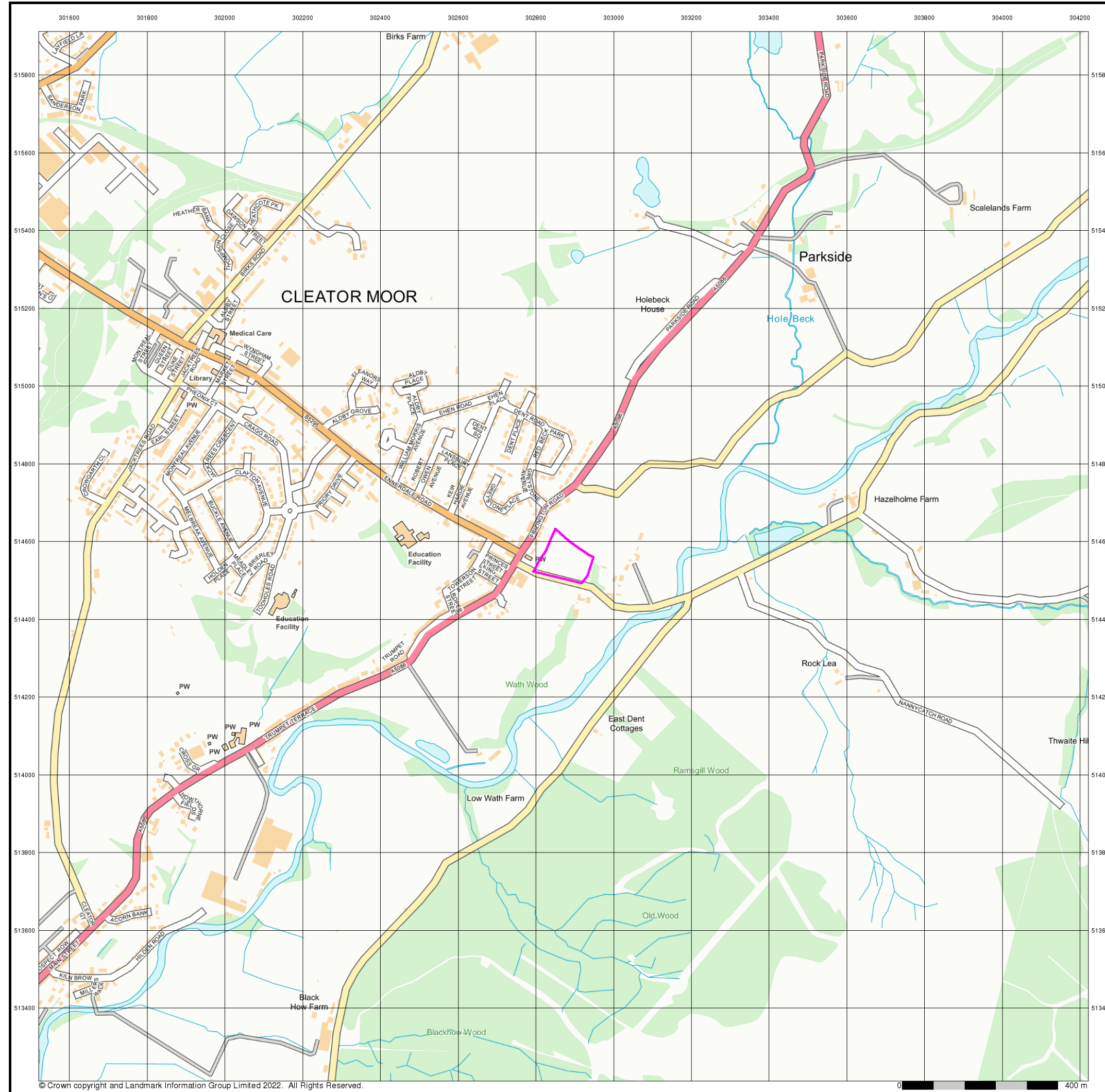
Belvedere, CLEATOR, CA23 3AE

**Landmark**  
 INFORMATION GROUP

Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

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0 400 m

# Envirocheck®

● LANDMARK INFORMATION GROUP®

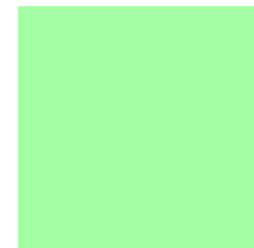
## Street View

Published 2022

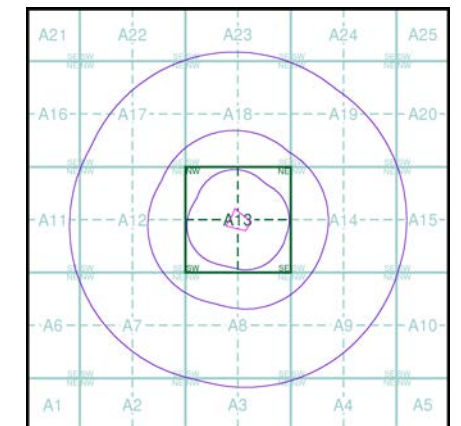
Source map scale - 1:10,000

Street View is a street-level map for the whole of Great Britain produced by the Ordnance Survey. These maps are provided at a nominal scale of 1:10,000

### Map Name(s) and Date(s)



### Street View Map - Slice A



### Order Details

Order Number: 304423286\_1\_1  
 Customer Ref: ES281122  
 National Grid Reference: 302870, 514550  
 Slice: A  
 Site Area (Ha): 1.18  
 Search Buffer (m): 1000

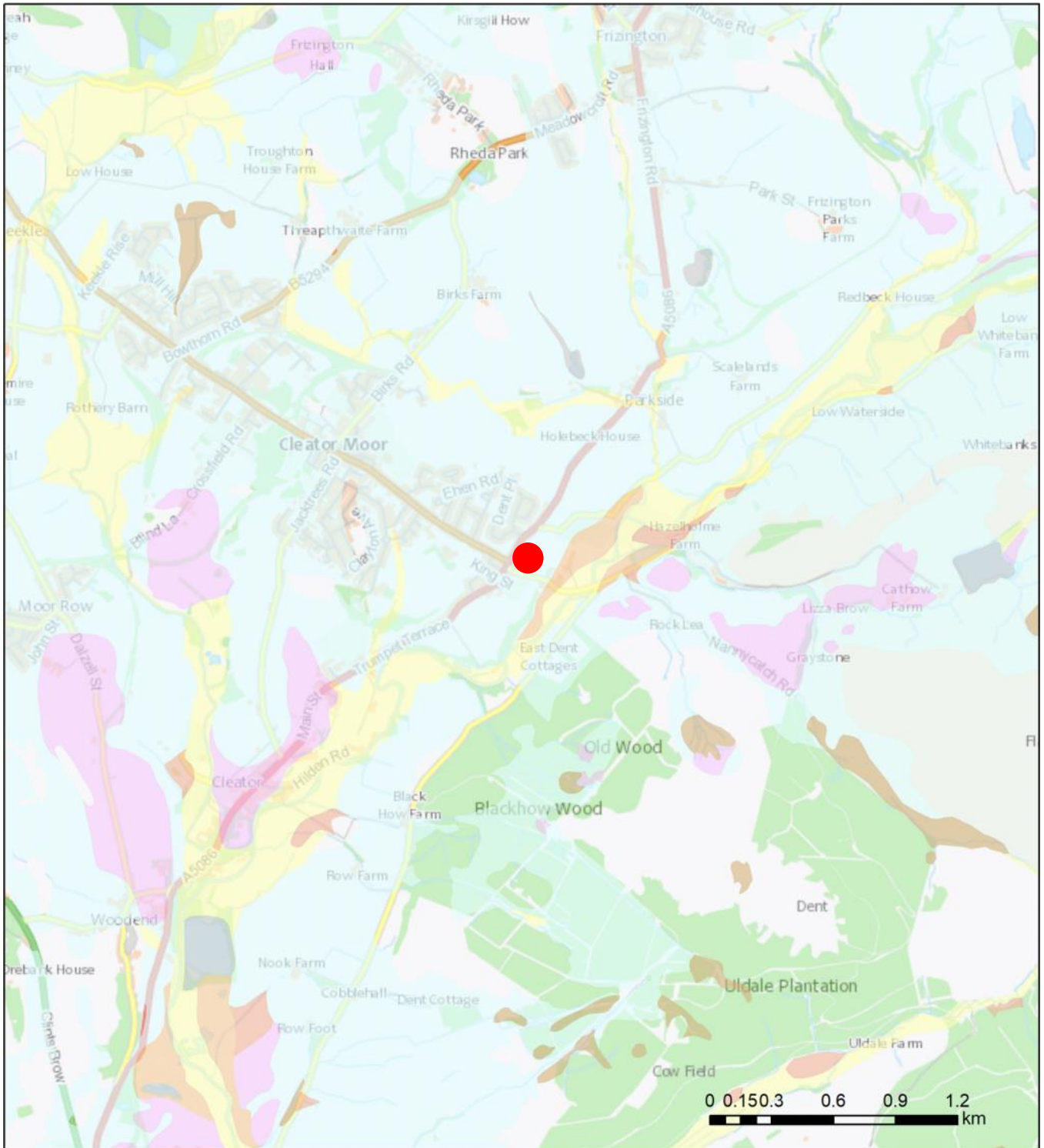
### Site Details

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 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

## Appendix D – Geological Maps



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Superficial Geology

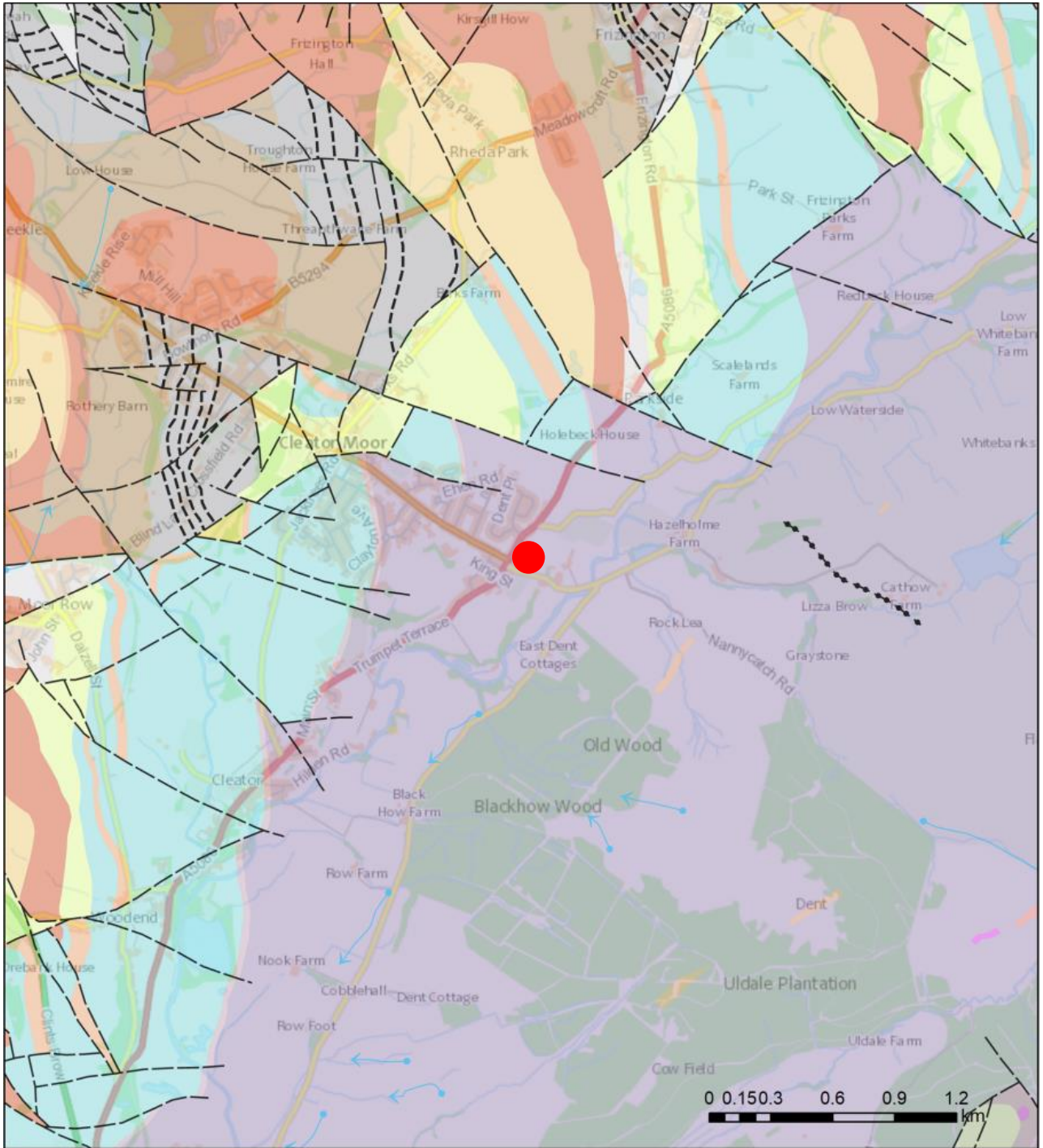
Superficial deposits 1:50,000 scale

- [GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL](#)
- [TILL, DEVENSIAN - DIAMICTON](#)
- [ALLUVIUM - CLAY, SILT, SAND AND GRAVEL](#)
- [HEAD - CLAY, SILT, SAND AND GRAVEL](#)
- [RIVER TERRACE DEPOSITS, 1 - CLAY, SAND AND GRAVEL](#)
- [ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL](#)
- [PEAT - PEAT](#)
- [SUPERFICIAL THEME NOT MAPPED \[FOR DIGITAL MAP USE ONLY\] - UNKNOWN/UNCLASSIFIED ENTRY](#)

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Superficial Geology Key






















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Bedrock Geology

Bedrock geology 1:50,000 scale

	<a href="#"><u>LAKE DISTRICT DEVONIAN MINOR INTRUSION SUITE - MICRODIORITE</u></a>
	<a href="#"><u>FIRST SHALE MEMBER - SANDSTONE, SILTSTONE AND MUDSTONE</u></a>
	<a href="#"><u>PENNINE LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE</u></a>
	<a href="#"><u>FIRST LIMESTONE (CUMBRIA) - LIMESTONE</u></a>
	<a href="#"><u>BIRKER FELL ANDESITE FORMATION - ANDESITE</u></a>
	<a href="#"><u>MARSETT SANDSTONE FORMATION - CONGLOMERATE</u></a>
	<a href="#"><u>DEVOKE WATER TUFF MEMBER - VOLCANICLASTIC-BRECCIA</u></a>
	<a href="#"><u>BUTTERMERE FORMATION - MUDSTONE AND SANDSTONE</u></a>
	<a href="#"><u>PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE</u></a>
	<a href="#"><u>STAINMORE FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE</u></a>
	<a href="#"><u>ST BEES SANDSTONE MEMBER - SANDSTONE</u></a>
	<a href="#"><u>OREBANK SANDSTONE - SANDSTONE</u></a>
	<a href="#"><u>LAKE DISTRICT DEVONIAN MINOR INTRUSION SUITE - FELSITE</u></a>
	<a href="#"><u>LAKE DISTRICT DEVONIAN MINOR INTRUSION SUITE - ANDESITE</u></a>
	<a href="#"><u>ST BEES SHALE FORMATION - SILTSTONE AND MUDSTONE, INTERBEDDED</u></a>
	<a href="#"><u>WHITEHAVEN SANDSTONE FORMATION - SANDSTONE</u></a>
	<a href="#"><u>LATTERBARROW SANDSTONE FORMATION - SANDSTONE</u></a>
	<a href="#"><u>HENSINGHAM GRIT - SANDSTONE</u></a>
	<a href="#"><u>BROCKRAM - BRECCIA</u></a>

Linear features 1:50,000 scale

	Coal_seam_Inf
	Glacial_meltwater_channel_Centre_Undiff
	Limit_Metamorphic_Aureole
	Marine_band
	Mineral_Vein_Inf

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Bedrock Geology Key

## Appendix E – BGS Borehole

NY01NW/333

### A.5086 – Wath Brow

Borehole Log.

No.1 Chainage 3 + 00

0' - 0' 3" Topsoil (very poor)  
0'3" - 4' 0" Red Boulder Clay

No.2 Chainage 9 + 00

0' - 0' 3" Topsoil (very poor)  
0'3" - 10' 0" Red Boulder Clay

No.3 Chainage 12 + 00

0' - 0' 3" Topsoil  
0'3" - 8' 0" (approx.) Brown/Grey organic silty clay  
8'0" - 11' 0" Red Boulder Clay

No.4 Chainage 13 + 50

0' - 0' 3" Topsoil  
0'3" - 10' 0" Red Boulder Clay

No.5 Chainage 15 + 00

0' - 1' 3" Ashes  
1'3" - 11' 0" Red Boulder Clay

No.6 Chainage 17 + 00

0' - 0' 3" Topsoil  
0'3" - 11' 6" Red Boulder Clay

No.7 Chainage 19 + 00

0' - 0' 3" Topsoil  
0'3" - 9' 0" Red Boulder Clay

No.8 Chainage 22 + 00

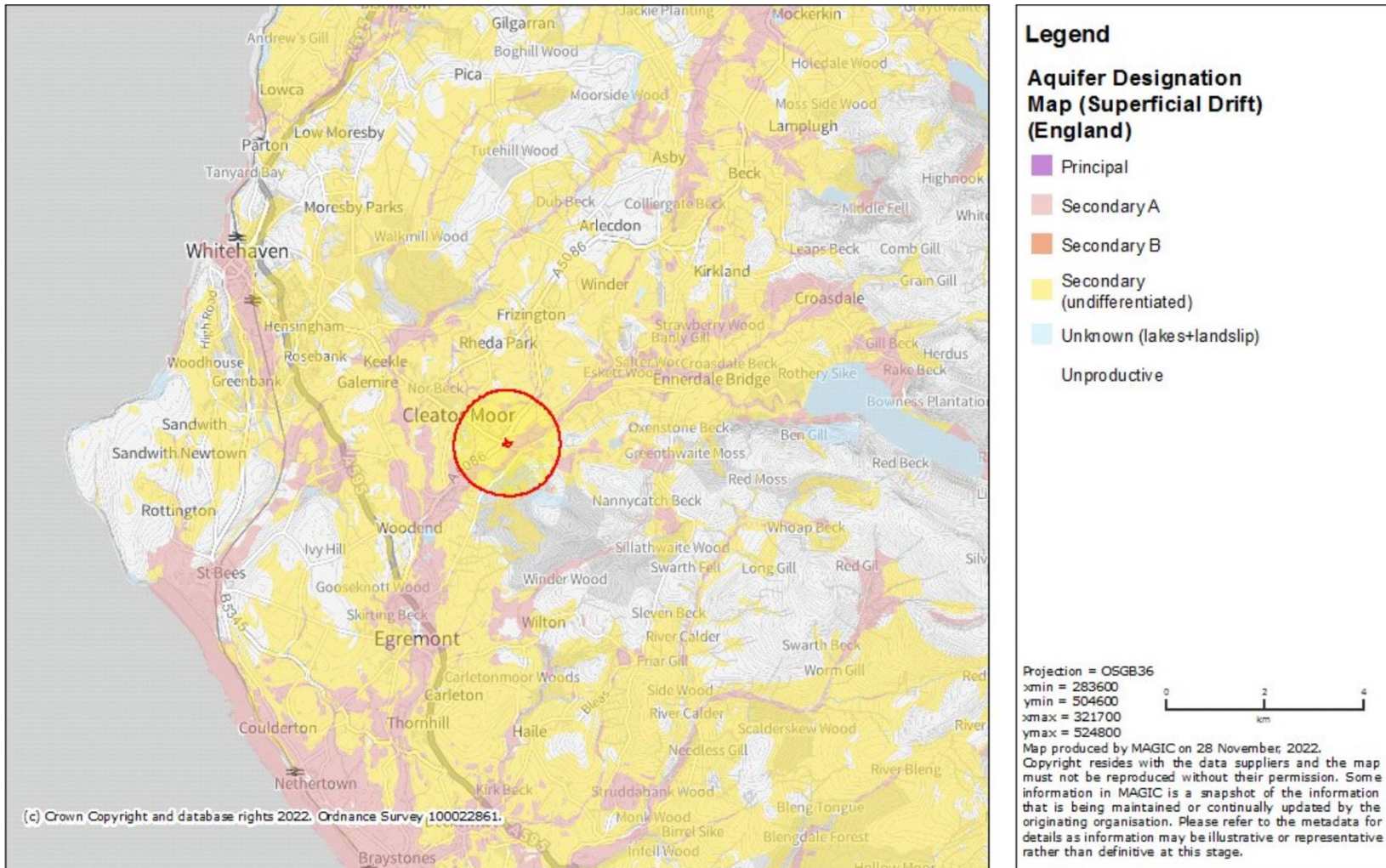
0' - 0' 3" Topsoil  
0'3" - 7' 0" Red Boulder Clay

No.9 Chainage 24 + 30

0' - 1' 0" Topsoil  
1'0" - 6' 0" Made ground - mixed clay, gravel, ashes  
6'0" - 7' 0" Red Boulder Clay

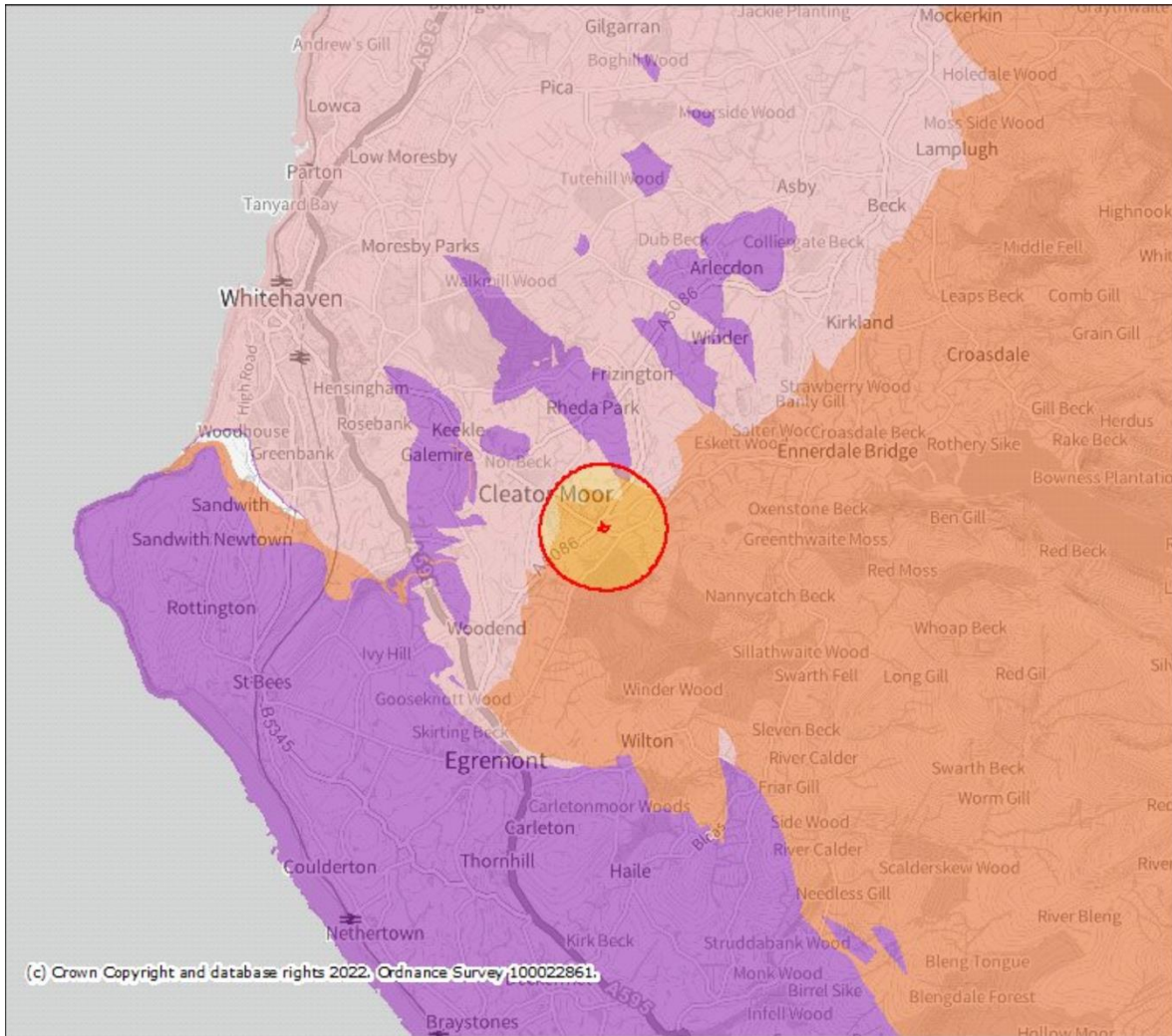


## Appendix F – Hydrogeological Maps



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Superficial Aquifer



**Legend**

**Aquifer Designation Map (Bedrock) (England)**

- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unproductive

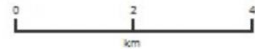
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xmin = 283600

ymin = 504600

xmax = 321700

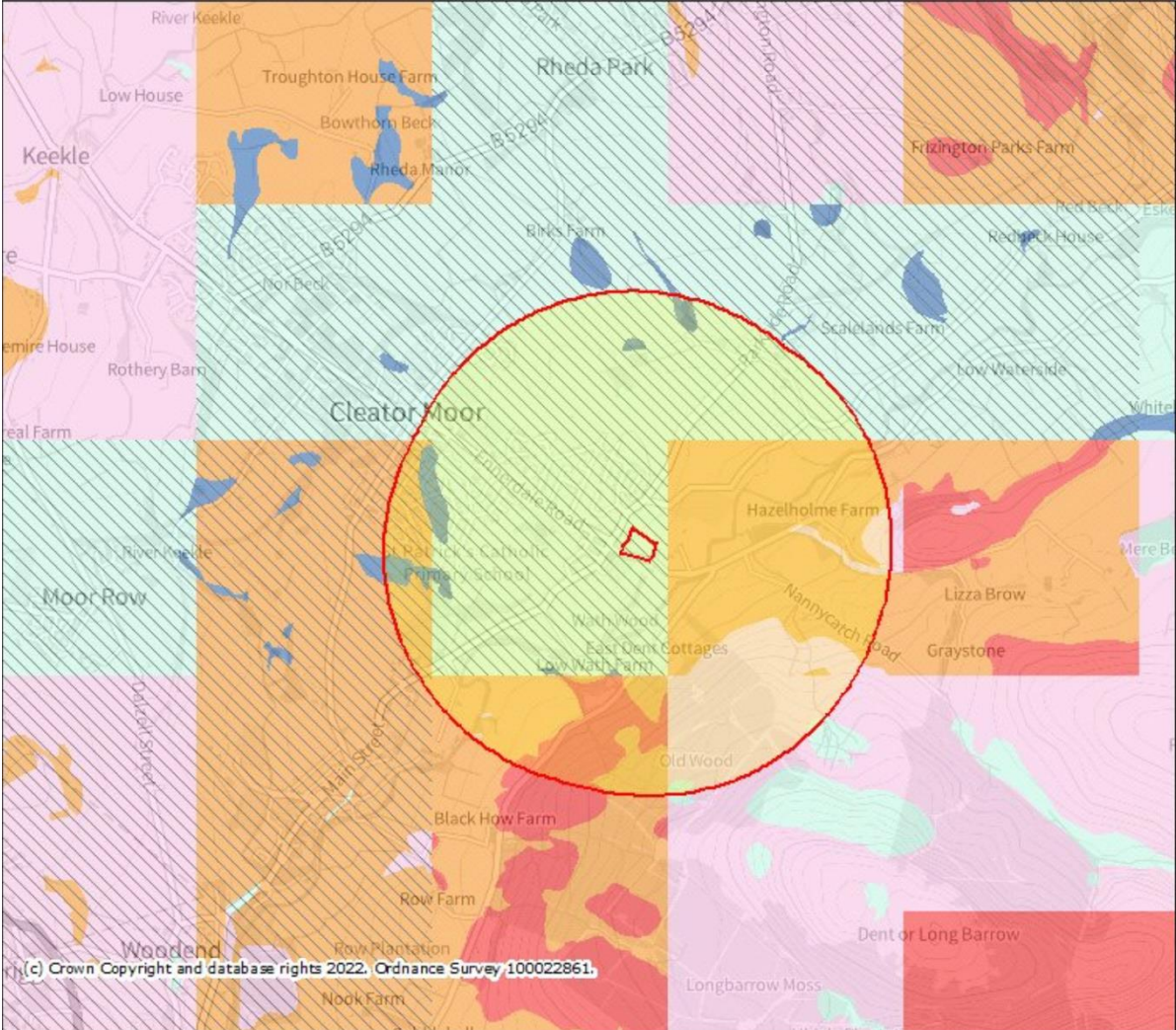
ymax = 524800



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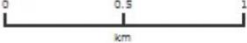


**Legend**

**Groundwater Vulnerability Map (England)**

-  Local Information
-  Soluble Rock Risk
-  High
-  Medium - High
-  Medium
-  Medium - Low
-  Low
-  Unproductive

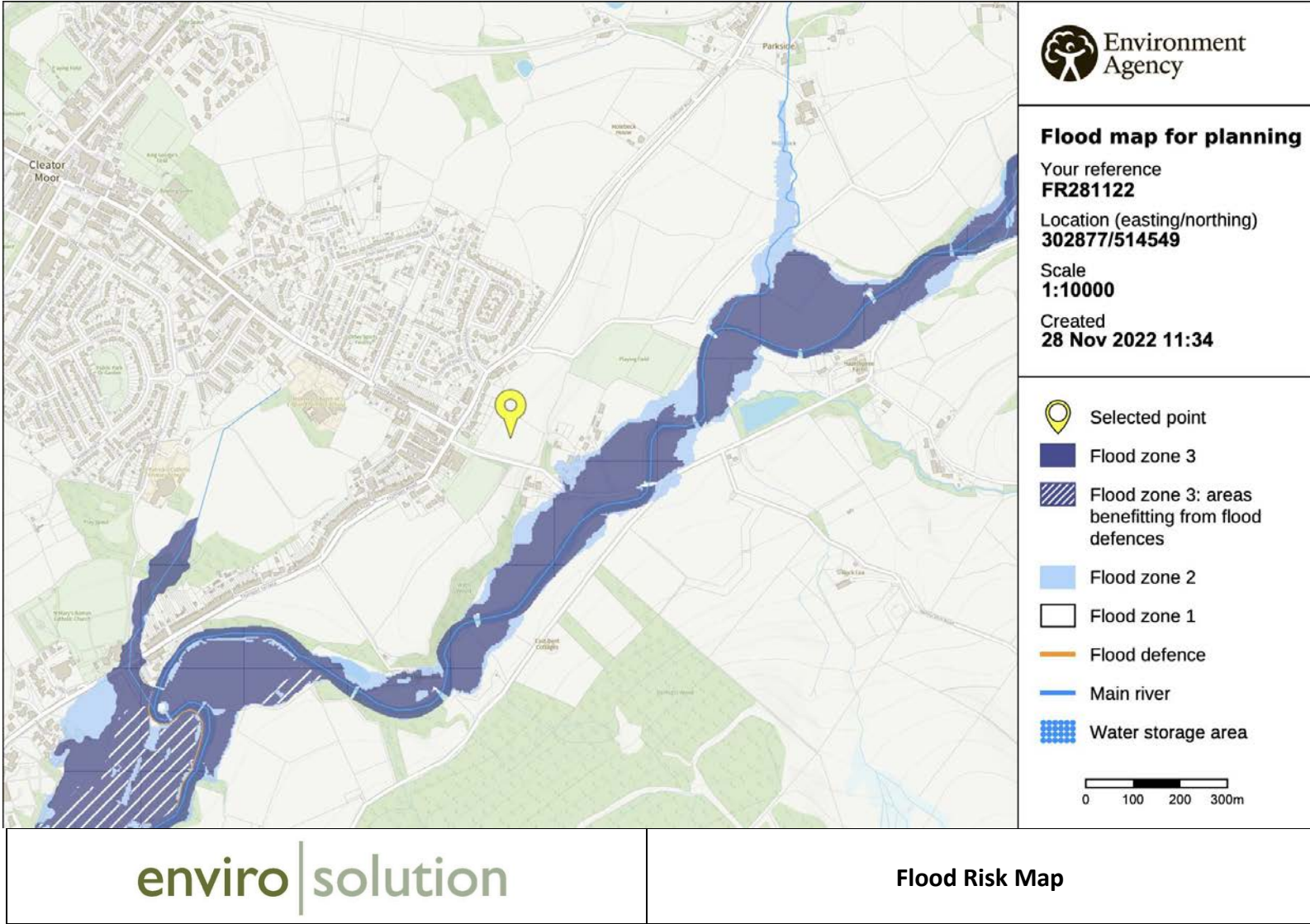
Projection = OSGB36  
 xmin = 297900  
 ymin = 512100  
 xmax = 307400  
 ymax = 517200



Map produced by MAGIC on 28 November, 2022.  
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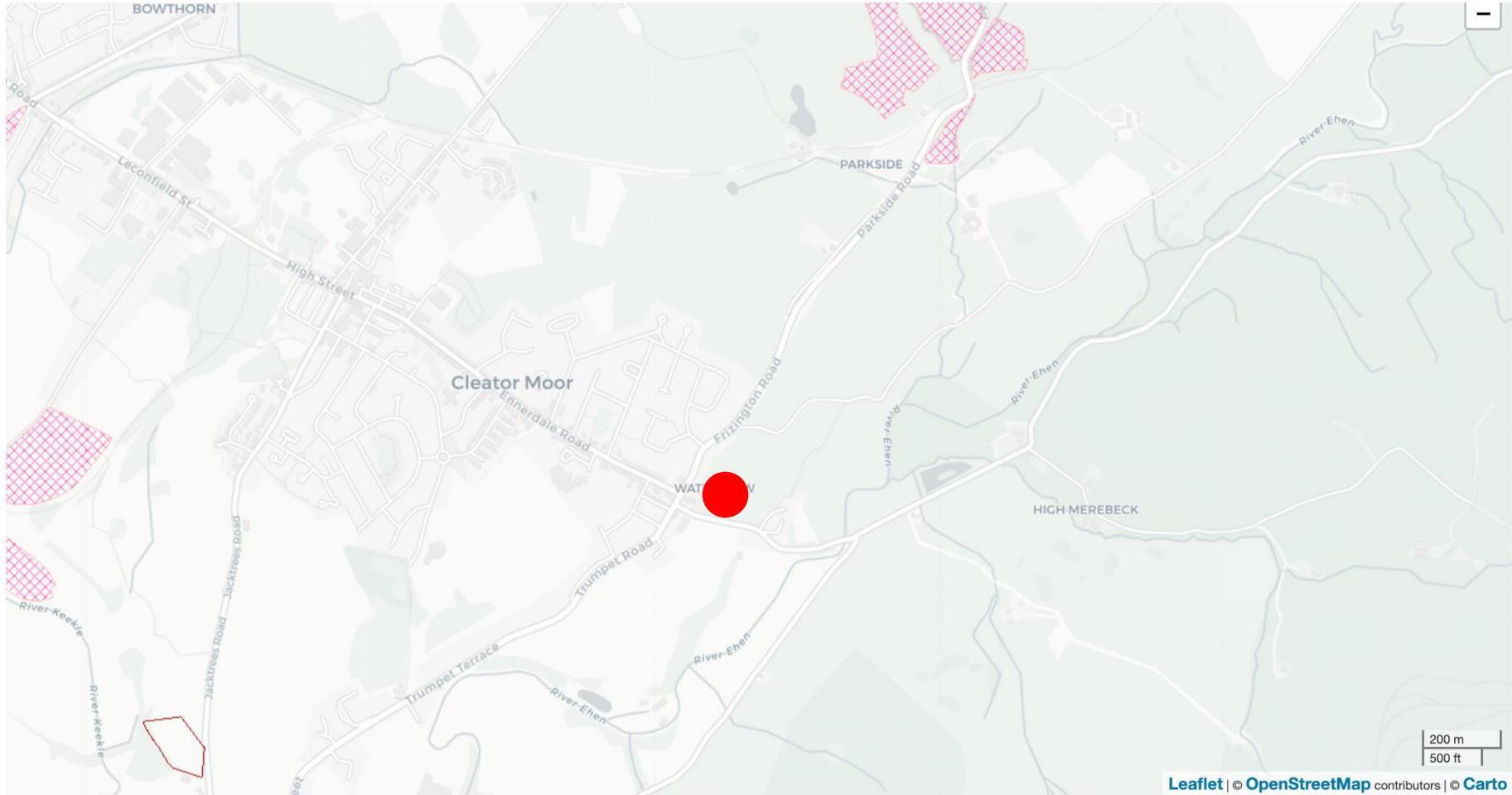
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## Appendix G – Flood Risk Map





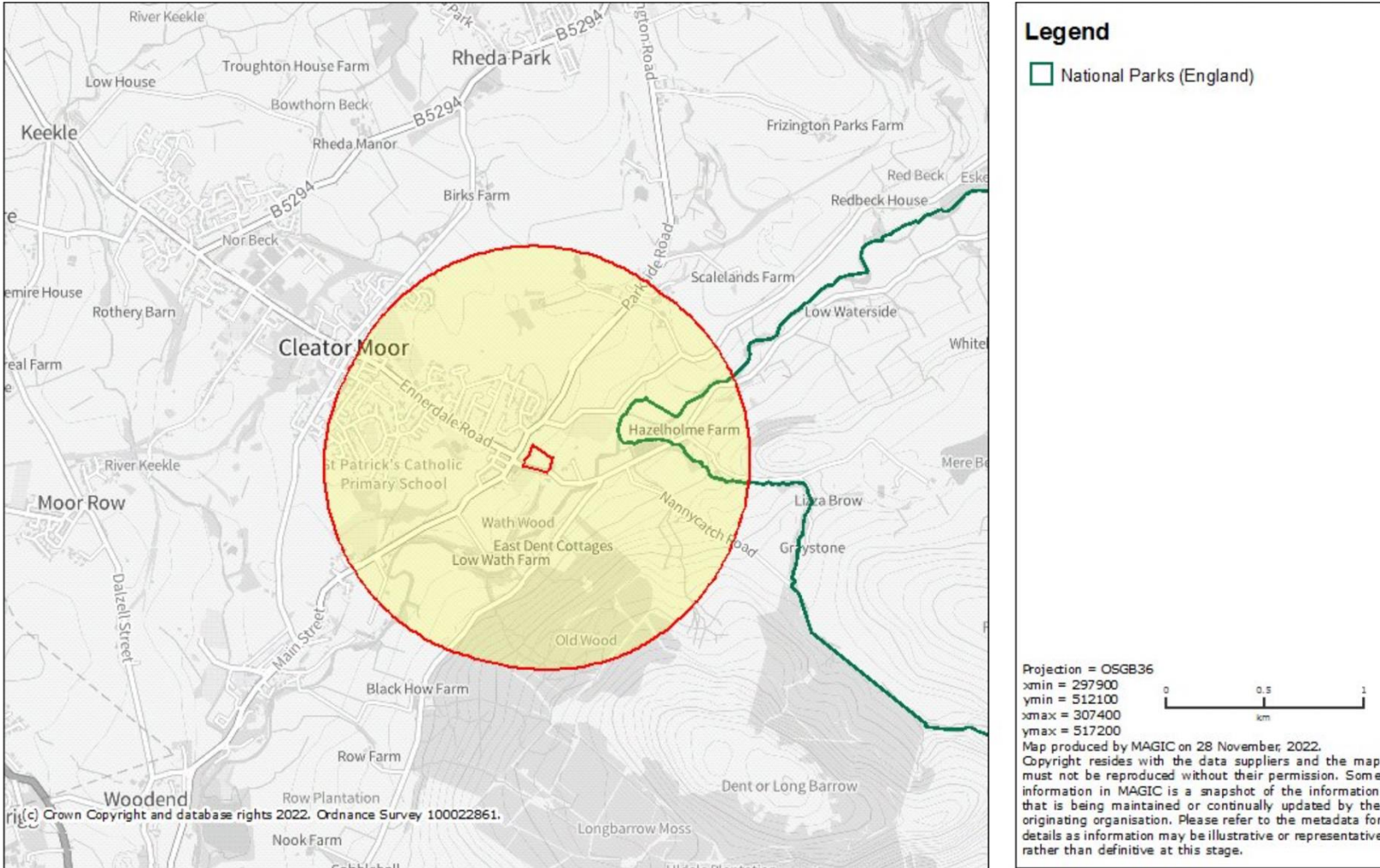
## Appendix H – Historic Landfill Map

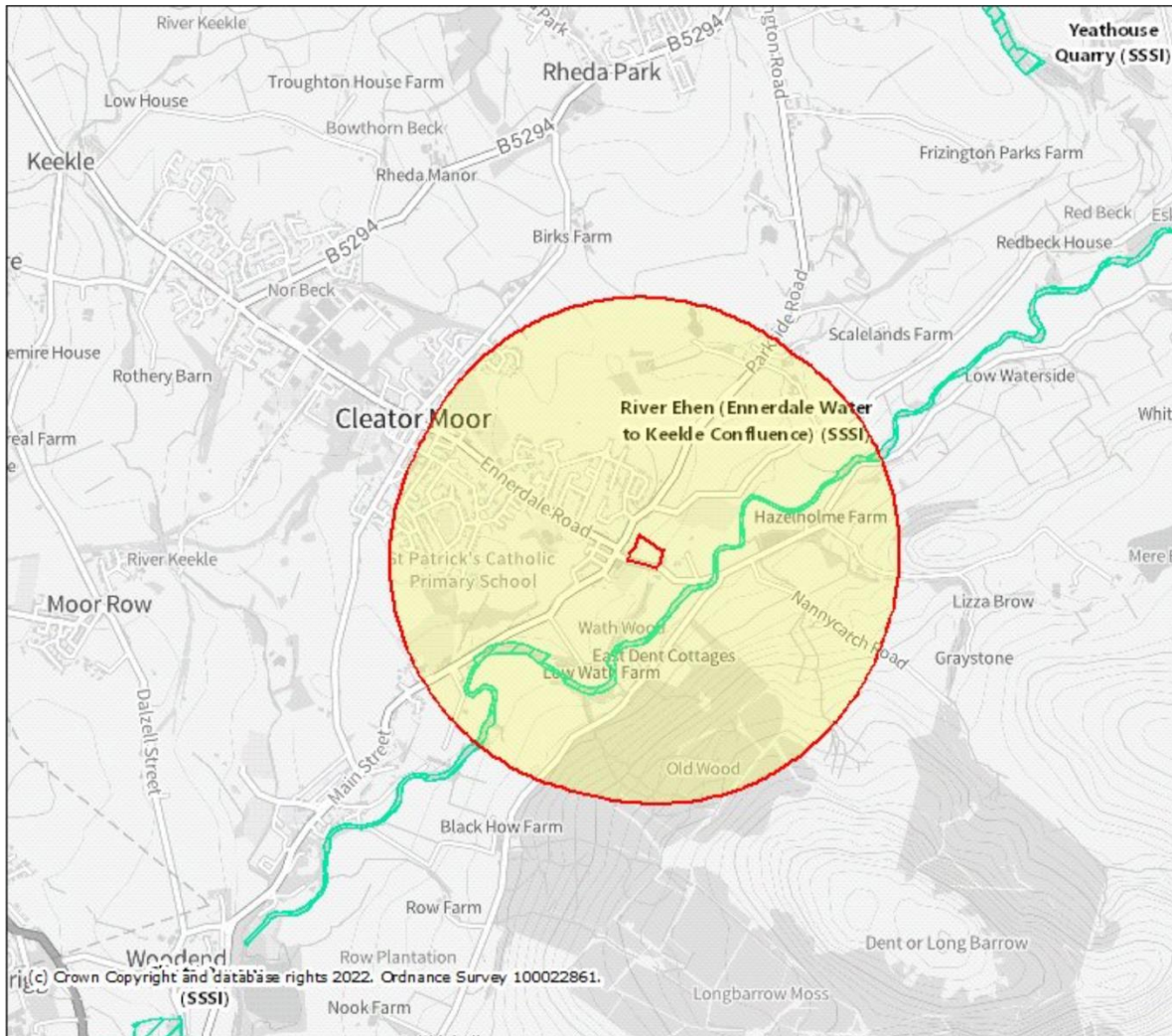


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**Historic Landfill Map**

## Appendix I – Environmental Designations





**Legend**

- ▣ Sites of Special Scientific Interest (England)

Projection = OSGB36  
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 ymin = 512100  
 xmax = 307400  
 ymax = 517200

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