

## MAIN STREET CALDERCRUIX



## INITIAL GEOLOGICAL & MINING DESK STUDY

DATE OF ISSUE	NOVEMBER 2021
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**PROJECT:** Main Street Caldercruix

**REF NO:** VG269-01/MKB

**CLIENT:** Liane Mahoney

**DEVELOPMENT PROPOSAL:** Residential

**BRIEF:** Initial Geological & Mining Risk Assessment

**DATE:** November 2021

## Introduction

Liane Mahoney is looking to redevelop a site at Main Street Caldercruix for residential purposes. The site location is as shown on the supplied land register plan-Appendix 4.

## Site Location and Description

The area of interest is located in the village of Caldercruix at Main Street. The site is centred on National Grid Reference NS 8223 6775 and occupies an area of 0.1 ha.

At the time of the study the site comprised a betting office with vacant ground to the rear

## Objective of Assessment

The objective of the assessment was to undertake a desk study review of the indicated site geology and the underlying mining conditions with a view to assessing the risk to the proposed development arising from the possible presence of mining. The report takes cognisance of the information contained in the guidance documents "Risk Based Approach to Development Management – Resources for Developers" published by the Coal Authority in May 2011 and CIRIA SP32 "Construction over Abandoned Mineworkings".

## Extent of Researches

The study has been based on initial examinations of in-house data pertaining to the ground conditions beneath the study area. During the course of the researches, the following list of information and sources was utilised. While we have endeavoured to examine all available information it is possible that further documentation may be held in private collections which are not available for public examination.

### 1) Ordnance Survey Maps

Map	Scale	Edition
Envirocheck	Historical maps of the area Report 287435860-1-1	All Available

### 2) Geological Maps

Map	Scale	Edition
Lanarkshire Sheet VIIINE	1:10,560	1911
NS 86NW	1:10,560	Solid & Drift Editions

### 3) Memoirs and Reports

Source	Reference
British Coal	Catalogue of Mine Abandonment Plans
BGS	Register of Non-Coal/Oil Shale Abandonment Plans
Mines Department	Catalogue of Plans of Abandoned Mines Vol. V (Scotland), HMSO 1931
BGS	Drift Deposits of the Clyde Valley
Geological Survey	The Economic Geology of the Central Coal field of Scotland Area V, HMSO 1926
Geological Survey	The Limestones of Scotland, HMSO 1949
DOE	Review of Mining Instability in Great Britain

#### 4) External Information

Source	Reference
BGS GeoIndex	Downloaded available borehole data (Appendix 1)
Coal Authority	Coal Mining Report Ref No. 287435860-2 dated 8/11/2021 (Appendix 2)
BGS Mining Portal	Listing of available mine plans
NLS website	Historical maps of the area

#### Historical Background

An investigation of the past usage of the site can often provide an indication of previous mining and quarrying activity in an area. These researches can help to identify any potential constraints to developments upon which future physical investigations can concentrate. To facilitate this study, past copies of Ordnance Survey Maps were examined, with particular attention being focused on the mining heritage of the study area and the changing utilisation of the site. The summary of the land uses on and off site are listed below.

Ordnance Survey Edition - Appendix 3	On Site	Surrounding Area
1860	Site is undeveloped with main street present to the north of the site	Surrounding area is also undeveloped although a well is noted, 50m to the east adjacent to the main road. Caldercruix station is present adjacent to the railway around 200m to the west of the site.
1898	Area of interest is occupied by numerous small buildings indicated to be potential residential properties with central undeveloped area probably for gardens.	The village is now called Glengowan and numerous residential properties are present to the north and south of the main street. A new railway is present approximately 50m to the south of the site leading off the main railway line at Caldercruix station.
1899	No change	Longriggend colliery pits number 2 is present 500m to the north-east. Air shafts and old shafts are noted near Caldercruix Farm approximately 500m to the north-west.
1913	No change.	Further residential noted and areas of spoil shown approximately 200m to the north of the site possibly representing former mine entry areas.
1914	No change	The collieries and main entries are no longer noted on the maps.
1935	No change.	A school is now present approximately 100m to the north of the study area. Further residential development is noted to the west and north-west
1962	Some change to the building configuration are noted on the western boundary.	The residential development to immediate east has been demolished and now occupied by telephone exchange. Further residential development is noted to the north and north-west and east. The railway to the east of the site appears to be much reduced with only localised sidings shown.
1976	No change.	No change.
1985	No change.	A club is now noticed immediately to the east of the development area. Some demolition of residential property have been noted on the northern side of main street.
1993	Properties along the western and eastern boundaries have now been demolished although the properties fronting the main street are still present.	The railway line is now noted to be completely dismantled although embankment features are still noted.
2005	No change.	Glengowan Primary School appears to be going through a period of redevelopment and extension.



## Geology

In view of the site history localised made ground deposits are anticipated to be present associated with the former buildings. The published geological maps indicate the site to be underlain by natural superficial deposits comprising glacial till (boulder clay).

The underlying rock strata are indicated to belong to the Carboniferous Lower Coal Measures. These typically comprise interbedded sandstones, siltstones and mudstones with numerous coal horizons. Based on the geological information the Lower Drumgray coal seam is indicated to outcrop to the south of the site. The strata are indicated to generally dip to the north-west therefore the Lower Drumgray Coal should underlie site at shallow depth. JPB Drawing VG269-01/R/F/01 -Appendix 4

## Quarrying

There is no indication of quarrying on site. Dolerite Quarries are present 400m to the south of the site but these igneous rocks are not indicated to be a surface beneath the area of interest.

## Mining Conditions

The objective of this part of the assessment was to undertake a desk study review of the indicated site geology and the underlying mining conditions with a view to assessing the risk to the proposed development arising from the possible presence of mining. The report takes cognisance of the information contained in the guidance documents "Risk Based Approach to Development Management – Resources for Developers" published by the Coal Authority and CIRIA C758 Abandoned mine workings manual.

The site is located in an area of known previous mining activity. There is no current mining within influencing distance, and although reserves of coal and related minerals may exist beneath the site, the possibility of future exploitation is at present considered to be unlikely.

Our researches have not encountered records of abandoned mineworkings within the area of the site. However, it did not become a statutory requirement to maintain and preserve plans of abandoned mines until 1872, by which date much unrecorded mining had taken place. Therefore, some workings could exist which have not been recorded.

The historical researches indicated a history of mining in the area and the Lower & Upper Drumgray Coals are noted in the surround collieries and mine shafts. **Based on this there is the potential for unrecorded mining related instability at the surface across the site if the Lower Drumgray has been worked.**

## Preliminary Mining Risk Assessment

The available data appears to indicate the potential that the Lower Drumgray Coal could be exploited beneath parts of the site. As such the potential for the collapse of these mineworkings causing surface instability requires to be considered. Potential instability arises from the collapse of roof strata into the former mineworkings and the initiation of upward road migration leading to surface subsidence where overburden cover is inadequate.

The potential for further residual settlement of the workings occurring in such a way as to put at risk surface structures is dependent upon several factors. These include the thickness and type of superficial materials overlying rockhead, the thickness and nature of the rock strata forming the roof to the workings, the depth of the seam, the original thickness of the seam, the extent and method of mining, the residual height and character of the seam, the geological structure and the type of development on the surface. However, in recognising all these factors, the assessment of potential surface instability is based on largely empirical methods although some semi-quantitative methods exist. The most recognised of these latter methods assumes the case of conical collapse of the roof strata, together with a bulking factor for Carboniferous strata of 30%, to derive the approximate 10 times seam thickness rule for stability.

**Based on the above there is a significant risk of mining related instability at the surface across the site due to potential shallow abandoned mineworkings in the Lower Drumgray Coal. As such further investigations are required to confirm the depth to and condition of these seams beneath the site.**

Where shallow mining is proven to constitute a potential surface stability constraint remedial works would be required. These would typically comprise stabilisation works involving consolidation of the unstable area beneath the, by means of drilling and the pressure injection of grout should be carried out. The consolidation of the unstable area would involve drilling boreholes on a regular grid to the level of the coals. These boreholes would be carried out where access is available and would be angled as required to intersect the mineworkings beneath the properties. Subsequently a cement-based grout would be injected into the mineworkings in a controlled manner to infill the remaining voids thus stabilising the relevant coal seams. After these mineworkings have been consolidated the remaining mining in these coals would be considered to lie at sufficient depth to not affect surface stability. As such after completion of the stabilisation works mining instability would not be considered to be a constraint.

### Mine Entries

During the study no evidence of any mineshafts or adits being present within the site was encountered. However, as in any areas of past mining activity, the presence of unrecorded mineshafts and adits cannot be discounted. Therefore, vigilance should be maintained by all site workers during any ground excavations to identify any features suspected to be possible mine entries.

### Summary of Mining Risks

The table below summarises the potential risks associated with former mining legacy for the proposed development site, identified from list sources of information.

Mining Issue	Yes/No	Risk Assessment
Underground mining (recorded at shallow depths)	Yes	There is the potential for mining related instability at the surface across the site due to potential unrecorded shallow abandoned mineworkings in the Lower Drumgray
Underground mining (recorded at depth)	No	No recorded mining in coals at depth.
Mine entries (shafts and adits)	No	No mine entries recorded on site, or within influencing distance of the site
Coal mining geology (fissures)	No	CA report indicates no evidence of any issues.
Record of past mine gas emissions	No	CA report indicates no evidence of any issues.
Recorded coal mining surface hazard	No	CA report indicates no evidence of any issues.
Surface mining (opencast workings)	No	CA report indicates no evidence of any issues.

### Conclusions & Recommendations

Based on the research it is concluded that there is the potential for mining related instability at the surface across the site due to unrecorded shallow abandoned mineworkings in the Lower Drumgray Coals. In order to confirm the ground conditions, it would be advisable to undertake a site investigation including rotary drilling to confirm the depth to and condition of these seams beneath the site.

## Appendix 1

### BGS GeoIndex Downloaded available borehole data

LOCATION CHLDERGRUIX  
 RIG TYPE.....  
 DATE STARTED 10/6/04  
 INITIAL WATER LEVEL.....  
 BIT SIZE.....

SHEET NO.....  
 FLUSH TYPE.....  
 DATE FINISHED.....  
 DEPTH CASSED.....  
 TOTAL DEPTH.....

STRATA DESCRIPTION	DEPTHS		THICKNESS	RECOVERY	CORE RUNS	
	FROM	TO			FROM	TO
Soil - stones	000	040				
Firm brown silty sandy clay		1 10				
Firm brown boulder clay with whin cobbles, sandy with depth		11 30				
Sandstone + mudstone bands start coring at 11.70m		11 70				
Strong cross bedded, pale grey medium grained SANDSTONE ferr, some dark silty micaceous laminae; open subvertical joint		16 30		290	11 70	14 70
				130		16 30
				70		17 70
14 20 to 14 60; broken + jointed in basal 30 cms with clay filled joints				120		19 20
				280		22 00
Runs 16 30 to 17 70, 70ms recovered				300		25 00
35ms Mudstone fairly well bedded dark grey SILTY MUDSTONE ferr, abundant graphitic plant stems dip 5°		17 70		270		27 70
				200		29 70
35ms Weak, broken + crushed dark grey SILTY MUDSTONE ferr, pieces of grey sandstone & siltstone				90		30 60
				240		33 00

## Appendix 2

Coal Mining Report Ref No. 287435860-2 dated 8/11/2021





The Coal  
Authority

# CON29M

## coal mining report

MAIN STREET,CALDERCRUIX,ML6 7RA, SOUTH LANARKSHIRE



### Known or potential coal mining risks

Past underground coal mining	Page 4
Future underground coal mining	Page 4
Mine entries	Page 5



### Further action

No further reports from the Coal Authority are required. Further information on any next steps can be found in our Professional opinion.

For more information on our reports please visit  
[www.groundstability.com](http://www.groundstability.com)



### Professional opinion

According to the official mining information records held by the Coal Authority at the time of this search, evidence of, or the potential for, coal mining related features have been identified. In view of the coal mining circumstances we would recommend that any planned or future development should follow detailed technical advice before beginning work on site. Please see **page 3** for further details on **Future development**.

Your reference: **287435860\_2**  
Our reference: **51002714605001**  
Date: **8 November 2021**

Client name:  
**NLIS Hub**

If you require any further assistance please  
contact our experts on:  
**0345 762 6848**  
[groundstability@coal.gov.uk](mailto:groundstability@coal.gov.uk)

# Enquiry boundary

## Key

Approximate position of enquiry boundary shown



We can confirm that the location is  
**on the coalfield**



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This report is prepared in accordance with the latest Law Society's Guidance Notes 2018, the User Guide 2018 and the Coal Authority's Terms and Conditions applicable at the time the report was produced.



## Accessibility

If you would like this information in an alternative format, please contact our communications team on **0345 762 6848** or email [communications@coal.gov.uk](mailto:communications@coal.gov.uk).

# Professional opinion



## Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed.

If you are looking to develop, or undertake works, within a coal mining development high risk area your Local Authority planning department may require a Coal Mining Risk Assessment to be undertaken by a qualified mining geologist or engineer. Should you require any additional information then please contact the Coal Authority on **0345 762 6848** or email **cmra@coal.gov.uk**.

# Detailed findings

Information provided by the Coal Authority in this report is compiled in response to the Law Society's CON29M Coal Mining enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL.

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## 1 Past underground coal mining

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

However the property is in an area where the Coal Authority believes there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered, particularly prior to any site works or future development activity, as ground movement could still be a risk. Your attention is drawn to the Professional opinion sections of the report.

## 2 Present underground coal mining

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

## 3 Future underground coal mining

The property is not in an area where the Coal Authority has received an application for, and is currently considering whether to grant a licence to remove or work coal by underground methods.

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

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

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

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



## 4 Mine entries

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

This information is based on the information that the Coal Authority has at the time of this enquiry.

Based on the Coal Authority's knowledge of the mining circumstances at the time of this enquiry, there may be unrecorded mine entries in the local area that do not appear on Coal Authority records.

## 5 Coal mining geology

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

## 6 Past opencast coal mining

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

## 7 Present opencast coal mining

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

## 8 Future opencast coal mining

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

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

## 9 Coal mining subsidence

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

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

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

## 10 Mine gas

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

## 11 Hazards related to coal mining

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

## 12 Withdrawal of support

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

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

## 13 Working facilities order

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

## 14 Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

# Statutory cover



## Coal mining subsidence

In the unlikely event of any coal mining related subsidence damage, the Coal Authority or the mine operator has a duty to take remedial action in respect of subsidence caused by the withdrawal of support from land or property in connection with lawful coal mining operations.

When the works are the responsibility of the Coal Authority, our dedicated public safety and subsidence team will manage the claim. The house or land owner ("the owner") is covered for these works under the terms of the Coal Mining Subsidence Act 1991 (as amended by the Coal Industry Act 1994). Please note, this Act does not apply where coal was worked or gotten by virtue of the grant of a gale in the Forest of Dean, or any other part of the Hundred of St. Briavels in the county of Gloucester.

If you believe your land or property is suffering from coal mining subsidence damage and you need more information on what to do next, please use the following link to our website which sets out what your rights are and what you need to consider before making a claim.

[www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form](http://www.gov.uk/government/publications/coal-mining-subsidence-damage-notice-form)



## Coal mining hazards

Our public safety and subsidence team provide a 24 hour a day, 7 days a week hazard reporting service, to help protect the public from hazards caused by past coal workings, such as a mine shaft or shallow working collapse. To report any hazards please call **01623 646 333**. Further information can be found on our website: [www.gov.uk/coalauthority](http://www.gov.uk/coalauthority).



# Glossary



## Key terms

**adit** - horizontal or sloped entrance to a mine

**coal mining subsidence** - ground movement caused by the removal of coal by underground mining

**Coal Mining Subsidence Act 1991** - the Act setting out the duties of the Coal Authority to repair damage caused by coal mining subsidence

**coal mining subsidence damage** - damage to land, buildings or structures caused by the removal of coal by underground mining

**coal seams** - bed of coal of varying thickness

**future opencast coal mining** - a licence granted, or licence application received, by the Coal Authority to excavate coal from the surface

**future underground coal mining** - a licence granted, or licence application received, by the Coal Authority to excavate coal underground. Although it is unlikely, remaining coal reserves could create a possibility for future mining, which would be licensed by the Coal Authority

**mine entries** - collective name for shafts and adits

**payments to owners of former copyhold land** - historically, copyhold land gave rights to coal to the copyholder. Legislation was set up to allow others to work this coal, but they had to issue a notice and pay compensation if a copyholder came forward

**shaft** - vertical entry into a mine

**site investigation** - investigations of coal mining risks carried out with the Coal Authority's permission

**stop notice** - a delay to repairs because further coal mining subsidence damage may occur and it would be unwise to carry out permanent repairs

**subsidence claim** - a formal notice of subsidence damage to the Coal Authority since it was established on 31 October 1994

**withdrawal of support** - a historic notice informing landowners that the coal beneath their property was going to be worked

**working facilities orders** - a court order which gave permission, restricted or prevented coal mine workings



**Appendix 3**  
**OS Historical Plans**

# 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)**  
**Co. Boro. Bdy.**  
**County Burgh Boundary (Scotland)**  
**Co. Burgh Bdy.**  
**B.P. B.S.** 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. 325.9** 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

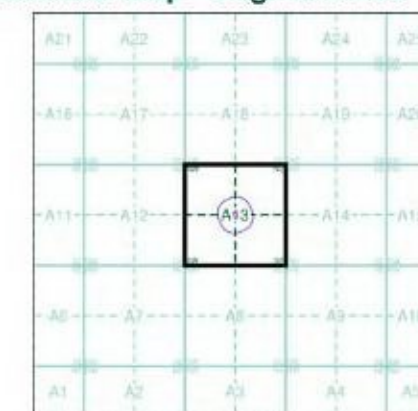


GEO-ENVIRONMENTAL & MINERALS

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lanarkshire	1:2,500	1860	2
Lanarkshire	1:2,500	1861	3
Lanarkshire	1:2,500	1898	4
Lanarkshire	1:2,500	1913	5
Lanarkshire	1:2,500	1935	6
Ordnance Survey Plan	1:2,500	1962	7
Additional SIMs	1:2,500	1962 - 1984	8
Supply of Unpublished Survey Information	1:2,500	1976	9
Ordnance Survey Plan	1:2,500	1985	10
Additional SIMs	1:2,500	1985 - 1987	11
Large-Scale National Grid Data	1:2,500	1993	12
Historical Aerial Photography	1:2,500	2005	13

## Historical Map - Segment A13



## Order Details

Order Number: 287435860\_1\_1  
 Customer Ref: VG269  
 National Grid Reference: 282230, 667750  
 Slice: A  
 Site Area (Ha): 0.1  
 Search Buffer (m): 100

## Site Details

Main Street, Caldercruix, ML6 7RA

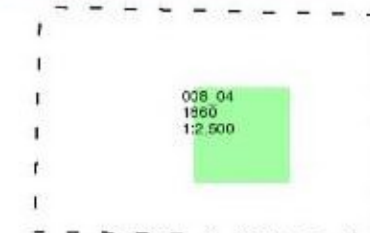


Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk

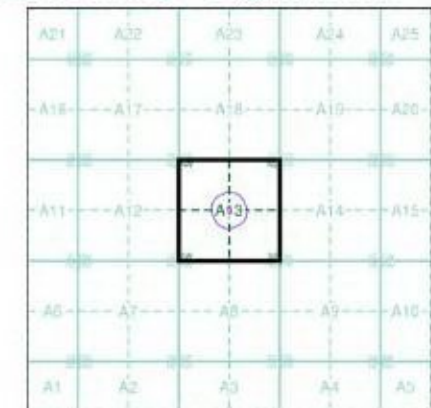


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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**

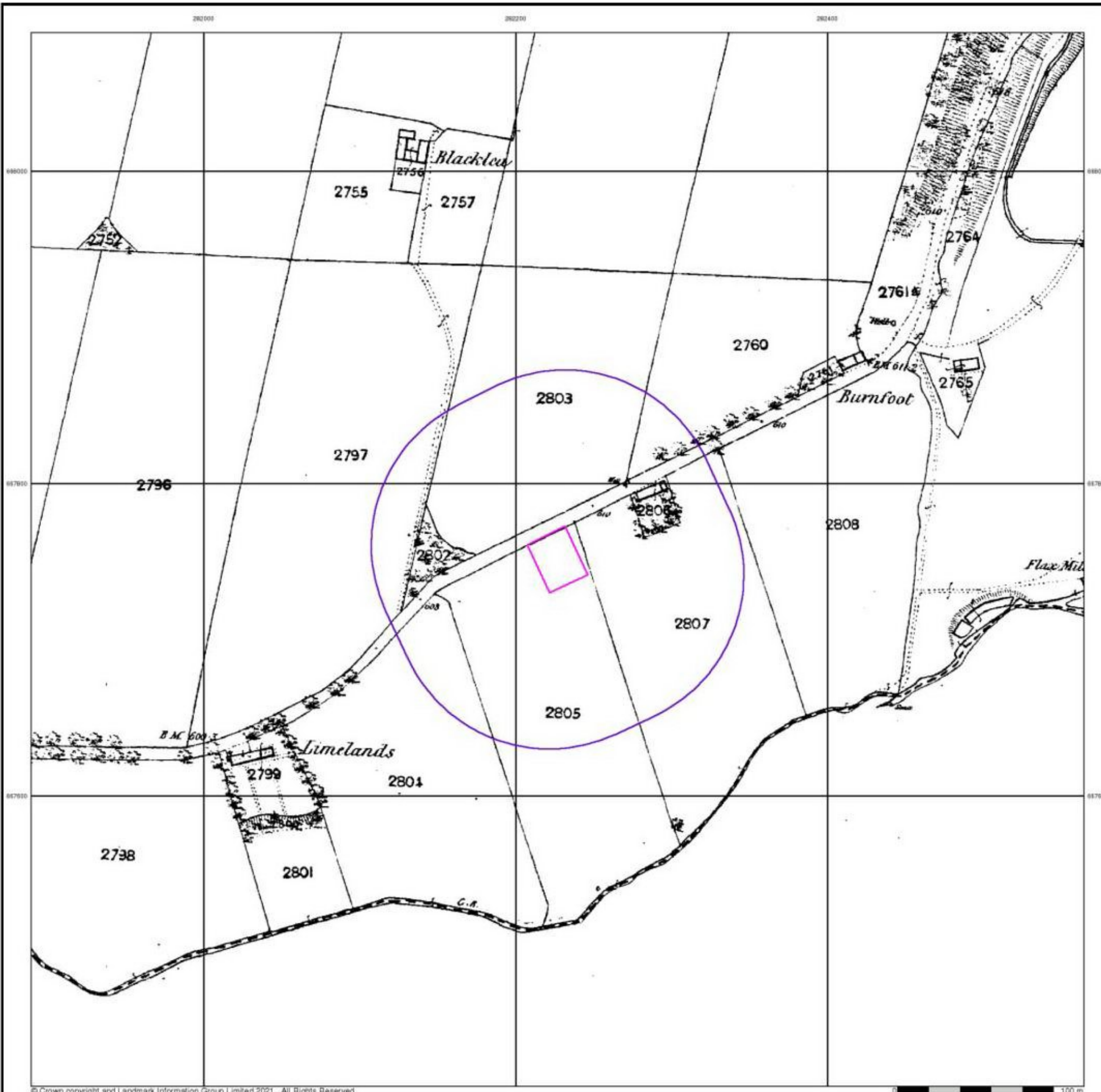


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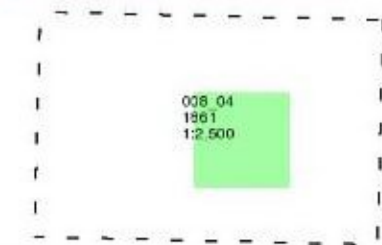
**Site Details**

Main Street, Caldercruix, ML6 7RA

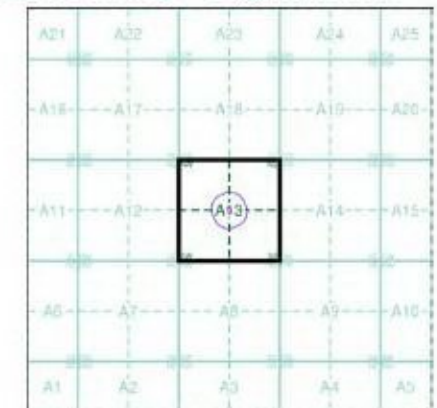


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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

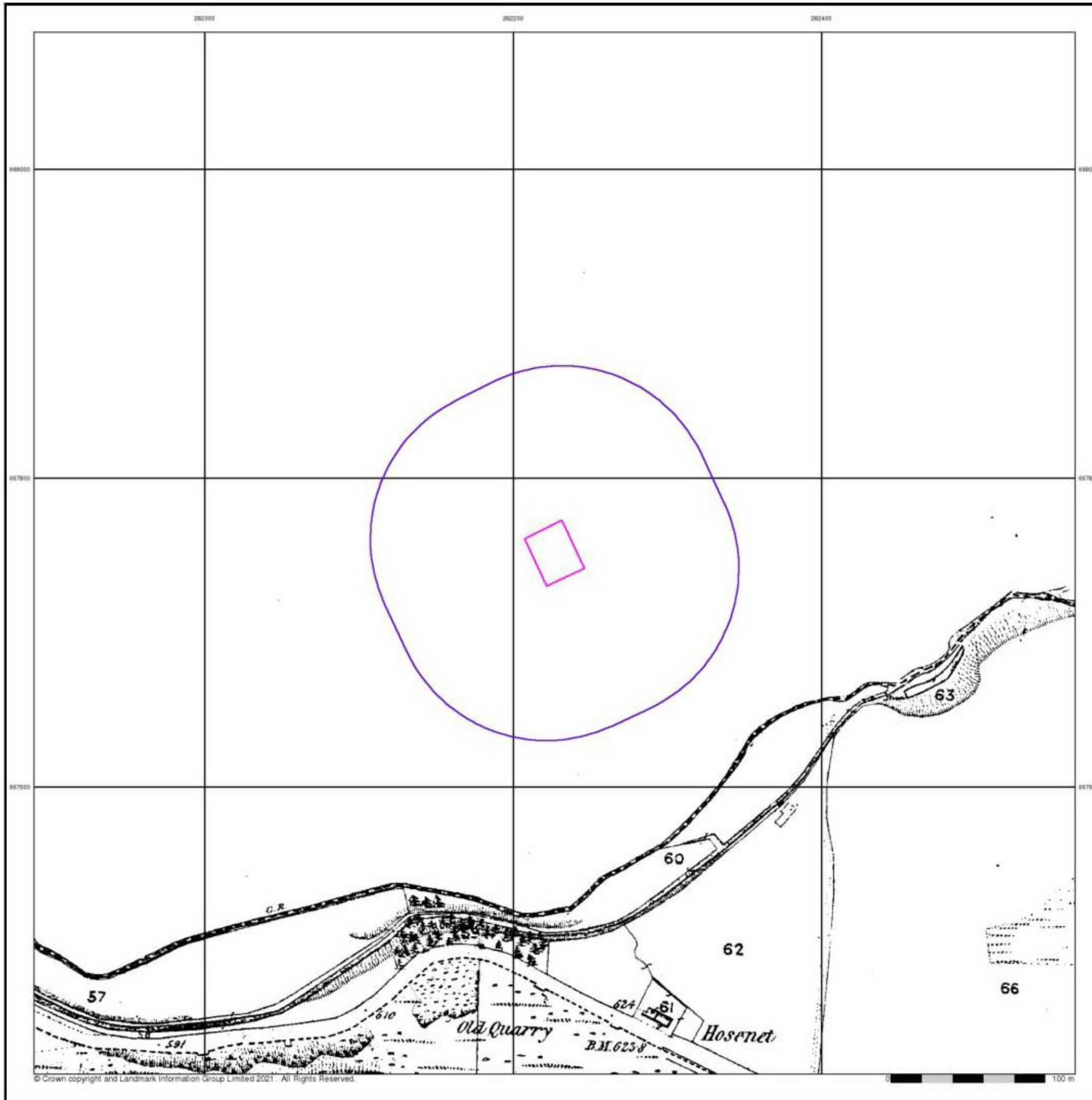


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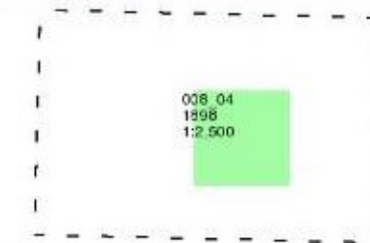
Main Street, Caldercruix, ML6 7RA



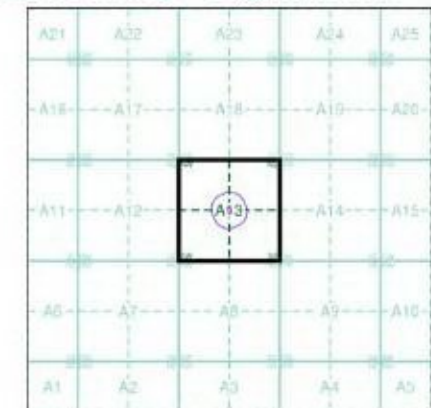


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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

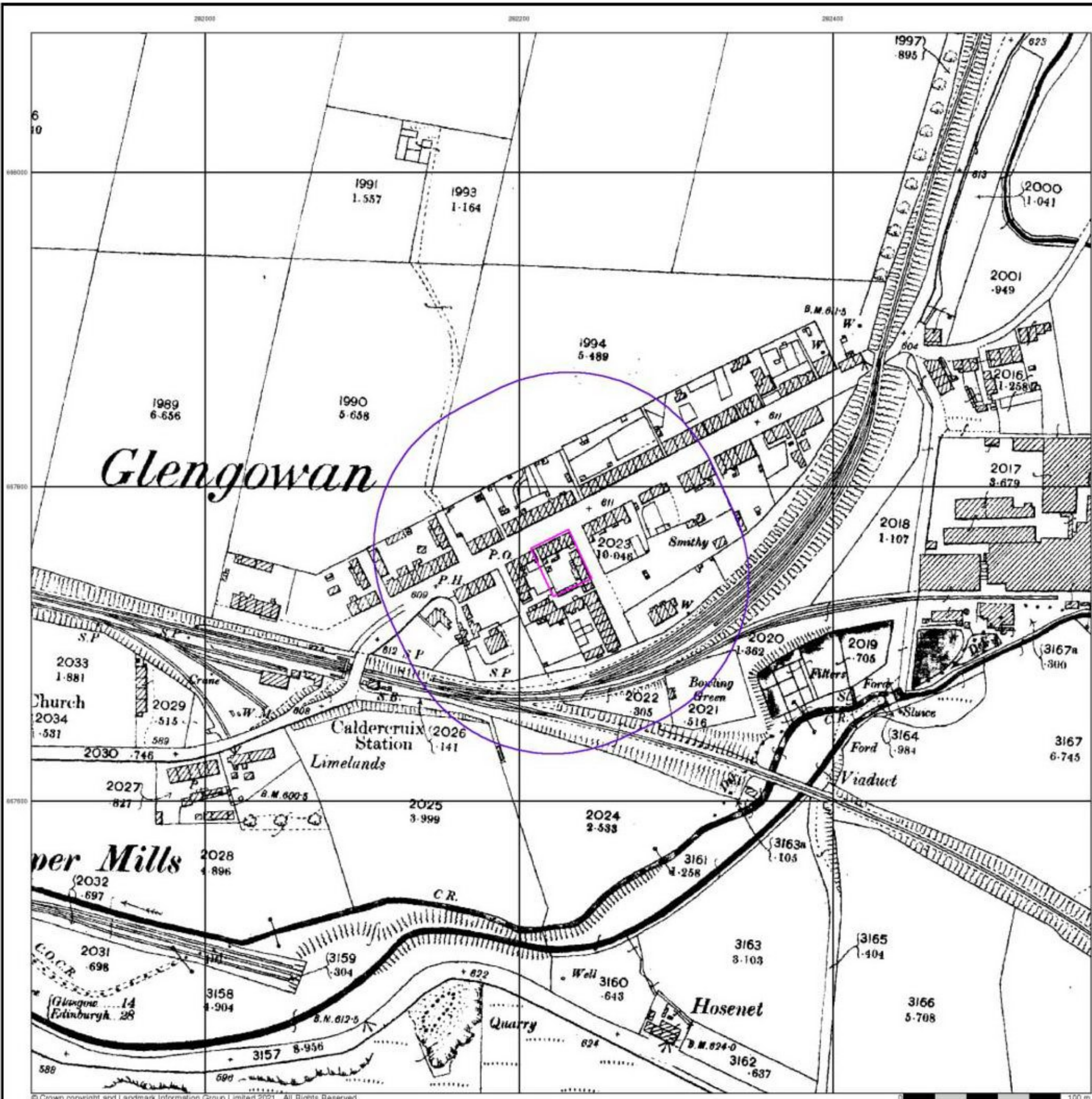


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Site Details

Main Street, Caldercruix, ML6 7RA



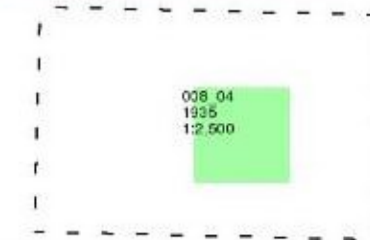




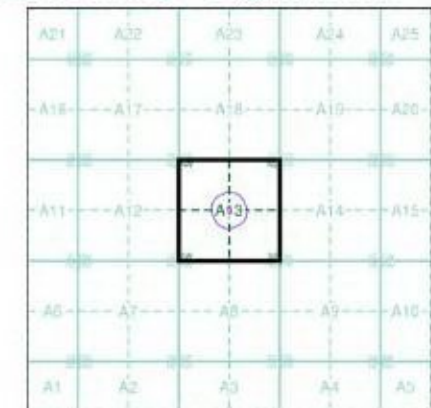


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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

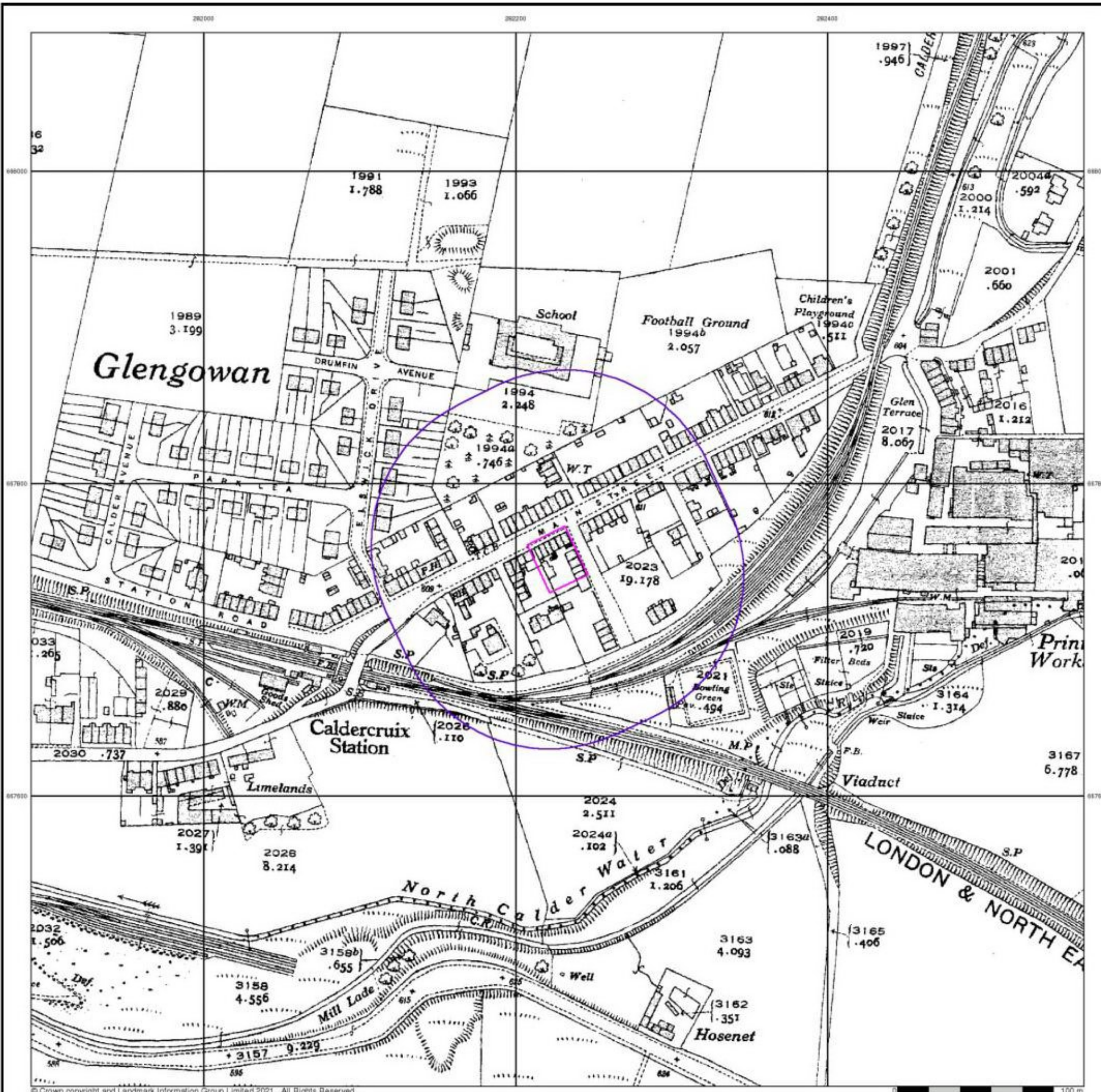


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Site Details

Main Street, Caldercruix, ML6 7RA



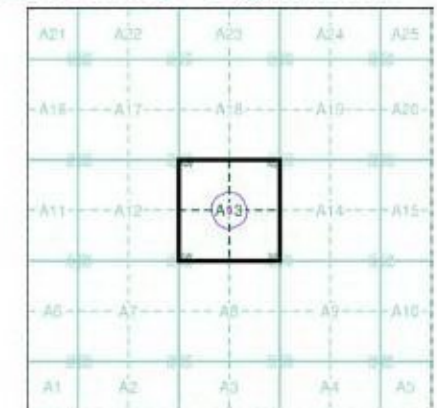


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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)**

NS8168 1962 1:2,500	NS8268 1962 1:2,500
NS8167 1962 1:2,500	<b>NS8267 1962 1:2,500</b>

**Historical Map - Segment A13**

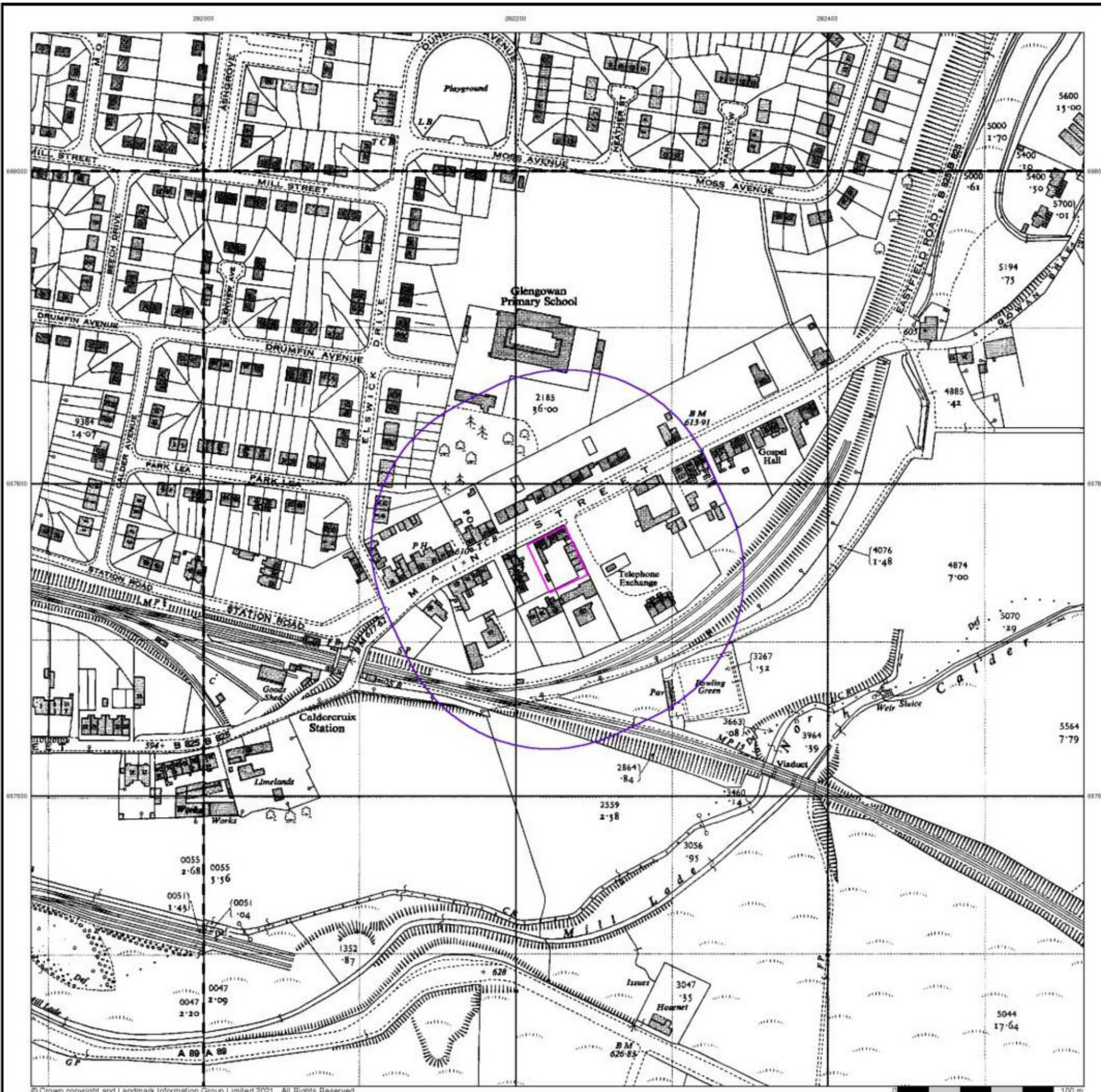


**Order Details**

Order Number: 287435860\_1\_1  
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**Site Details**

Main Street, Caldercruix, ML6 7RA



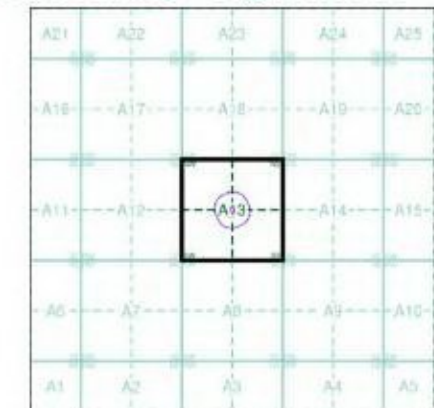


The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps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

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

NS8168 1978 1:2,500	NS8268 1978 1:2,500
NS8167 1962 1:2,500	NS8267 1984 1:2,500

**Historical Map - Segment A13**

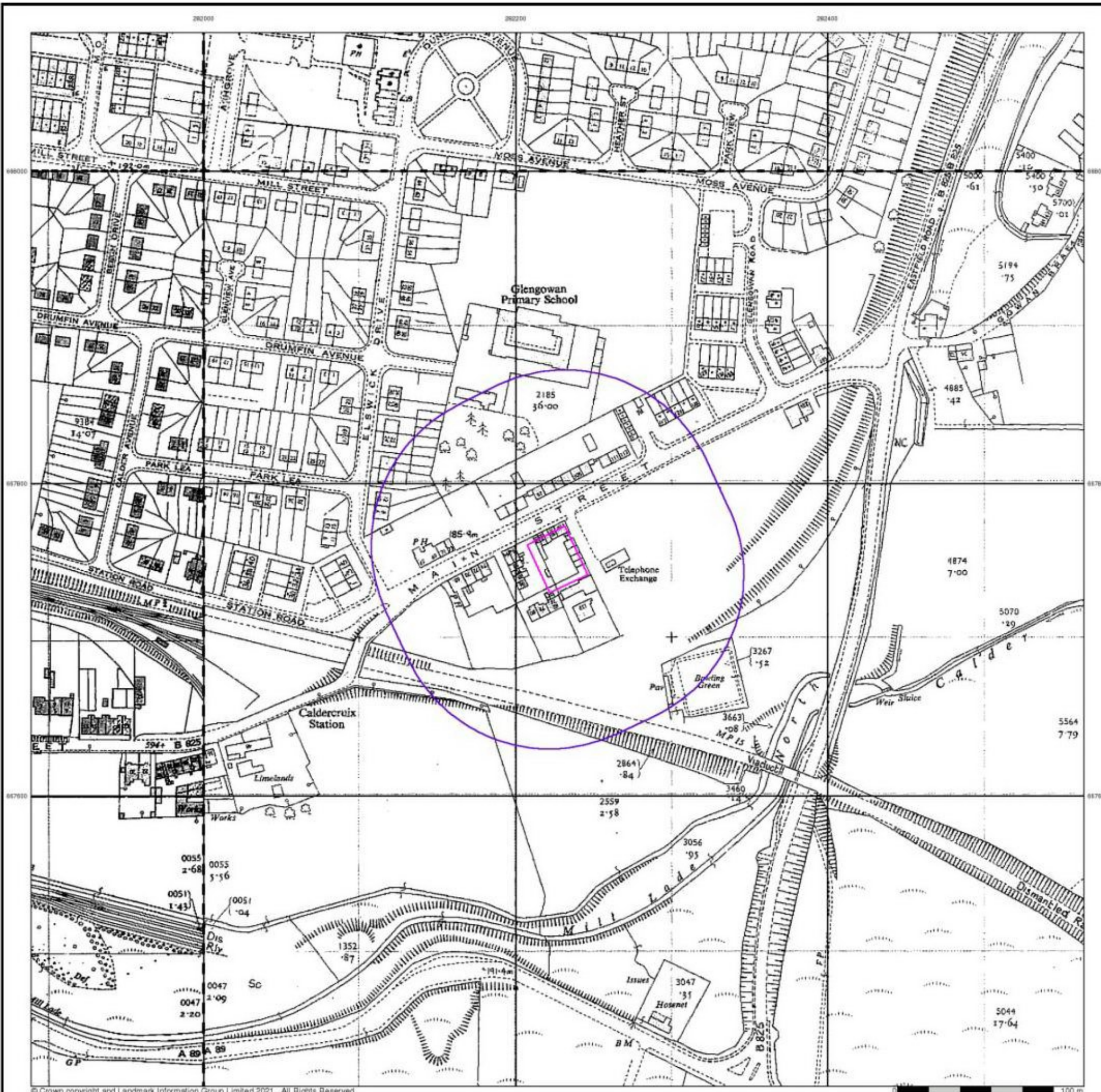


**Order Details**

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 Slice: A  
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 Search Buffer (m): 100

**Site Details**

Main Street, Caldercruix, ML6 7RA





## Supply of Unpublished Survey Information

Published 1976

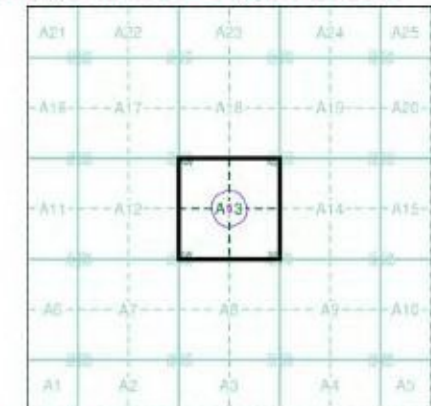
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

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

NS8168	1975	1:2,500
NS8267	1976	1:2,500

### Historical Map - Segment A13

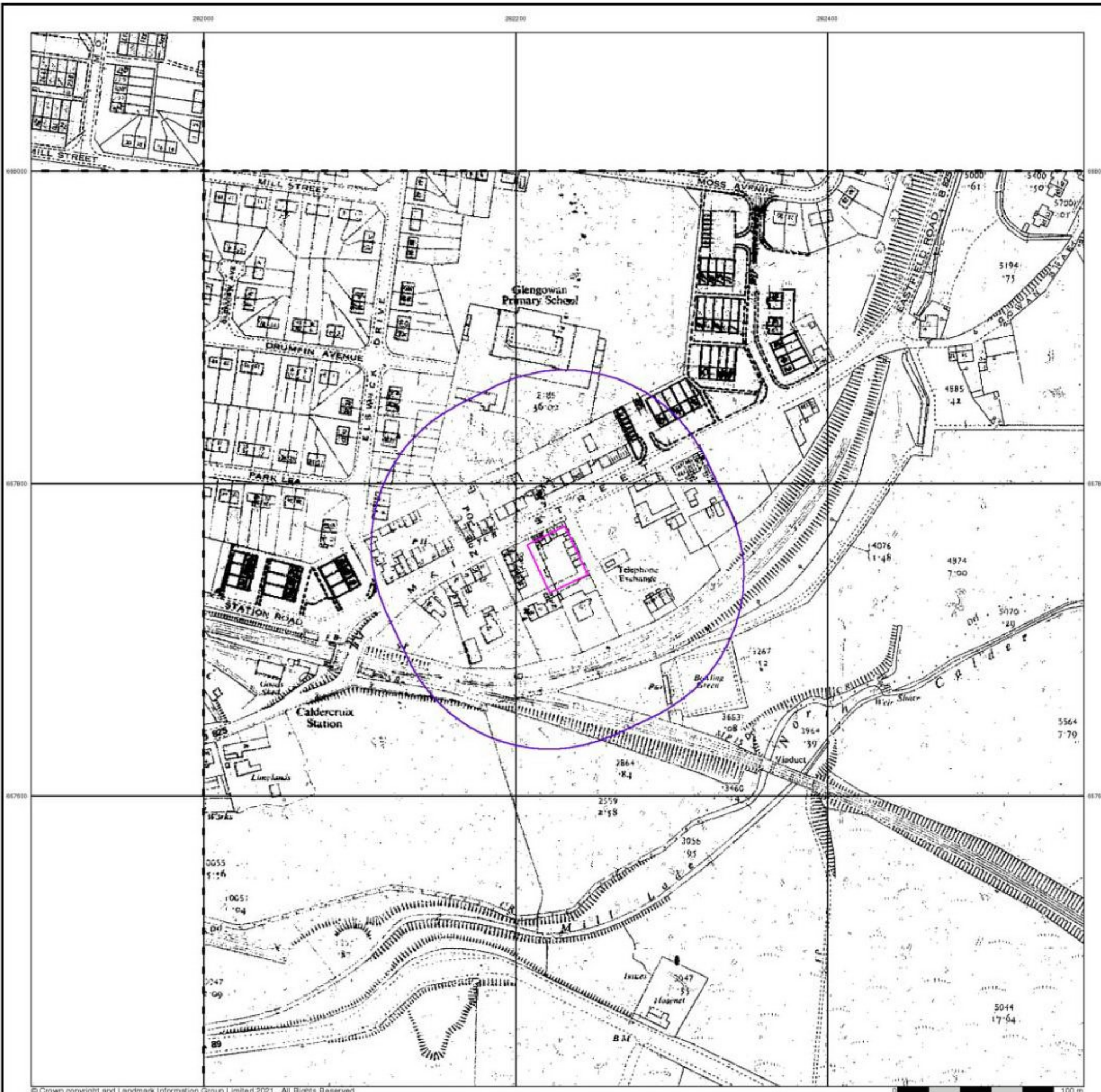


### Order Details

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### Site Details

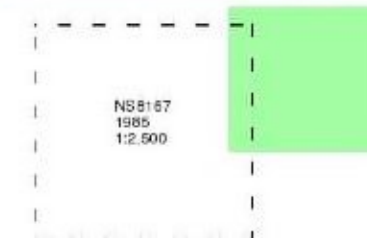
Main Street, Caldercruix, ML6 7RA



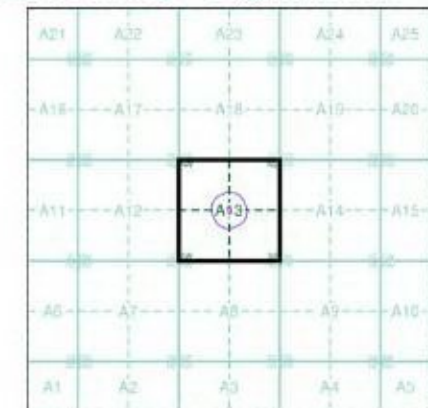


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. 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**

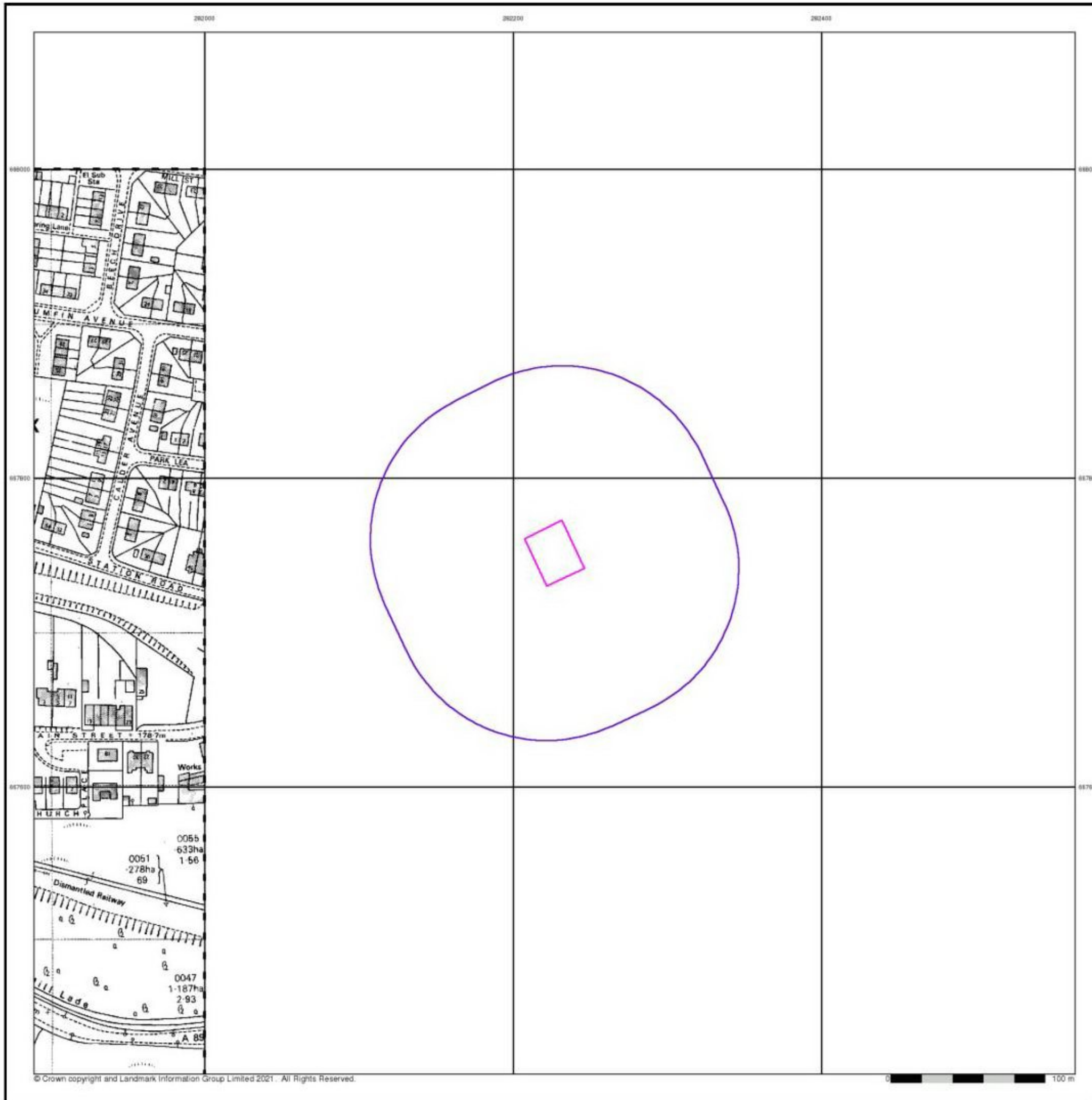


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**Site Details**

Main Street, Caldercruix, ML6 7RA



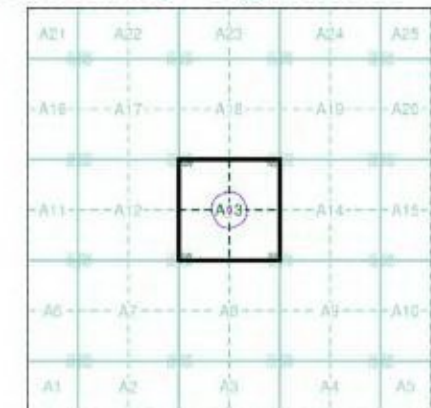


The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps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

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

NSB168	1987	1:2,500
NSB167	1985	1:2,500
NSB267	1986	1:2,500

**Historical Map - Segment A13**

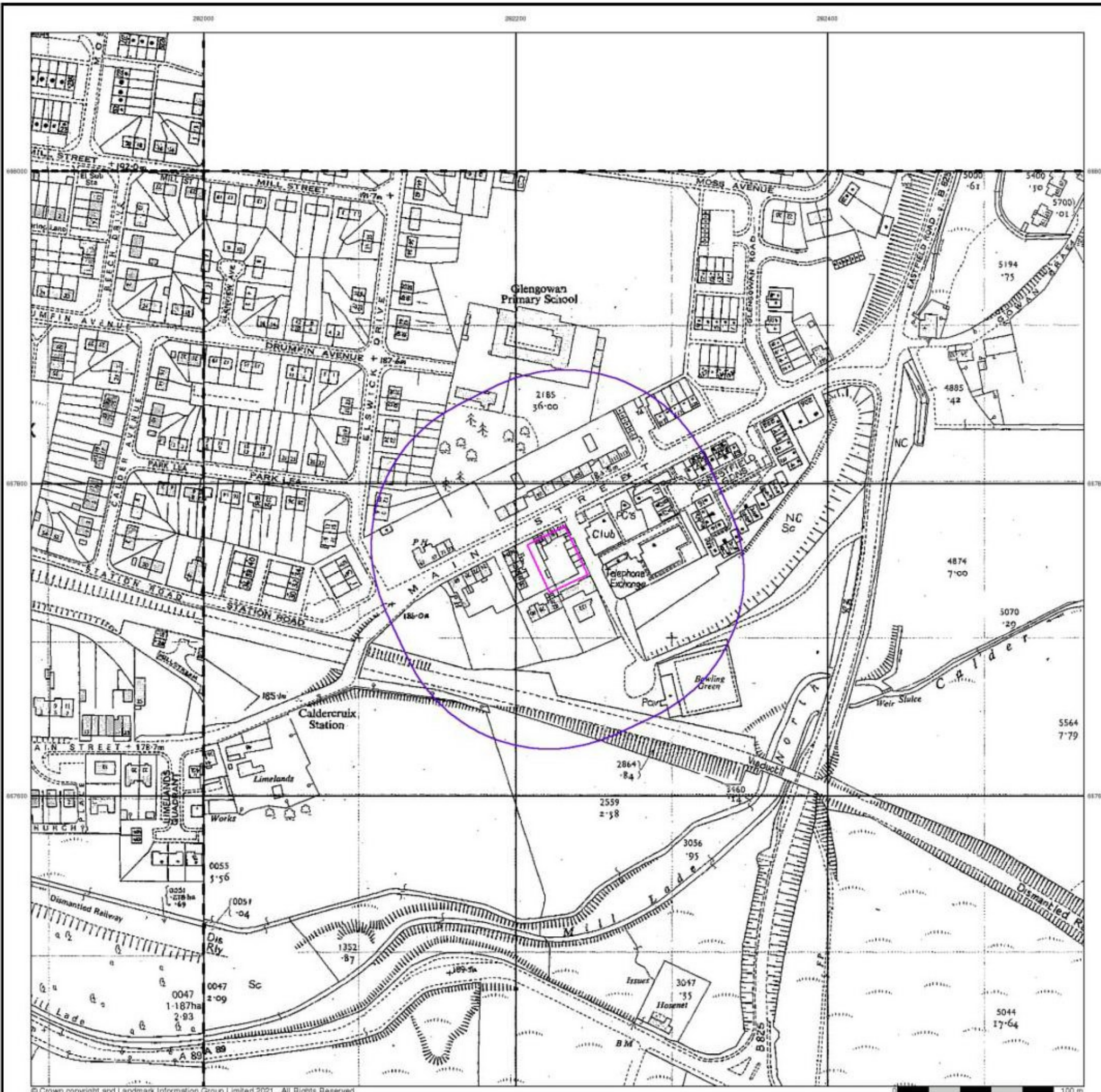


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**Site Details**

Main Street, Caldercruix, ML6 7RA



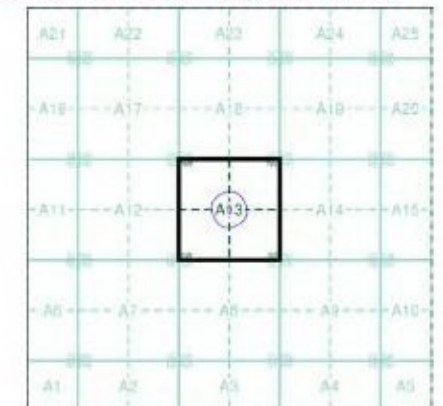


'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic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

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

NS8168 1993 1:2,500	NS8208 1993 1:2,500
NS8167 1993 1:2,500	NS8207 1993 1:2,500

**Historical Map - Segment A13**



**Order Details**

Order Number: 287435860\_1\_1  
 Customer Ref: VG269  
 National Grid Reference: 282230, 667750  
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**Site Details**

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282000 282200 282400



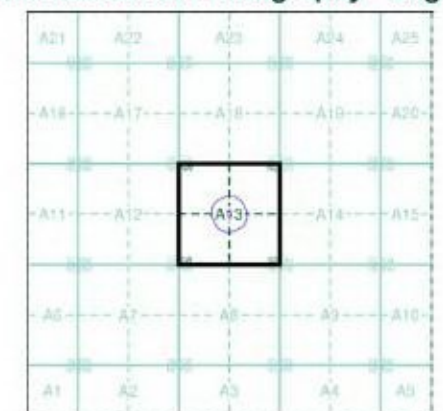
GEO-ENVIRONMENTAL & MINERALS

### Historical Aerial Photography

Published 2005

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

### Historical Aerial Photography - Segment A13



### Order Details

Order Number: 287435860\_1\_1  
Customer Ref: VG269  
National Grid Reference: 282230, 667750  
Slice: A  
Site Area (Ha): 0.1  
Search Buffer (m): 100

### Site Details

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## Geology 1:50,000 Maps Legends






### Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	WMGR	Infilled Ground	Artificial Deposit	Not Supplied - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Not Supplied - Quaternary

### Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	SUPNM	Superficial Theme Not Mapped [For Digital Map Use Only]	Unknown/Unclassified Entry	Not Supplied - Not Supplied
	SUPNM	Superficial Theme Not Mapped [For Digital Map Use Only]	Water, Type Unspecified	Not Supplied - Not Supplied
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	PEAT	Peat	Peat	Not Supplied - Quaternary
	SUPD	Superficial Deposits	Sediment	Not Supplied - Quaternary
	ALF	Alluvial Fan Deposits	Gravel, Sand, Silt and Clay	Not Supplied - Quaternary

### Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	MCMS	Scottish Middle Coal Measures Formation	Sedimentary Rock Cycles, Coal Measure Type	Not Supplied - Westphalian
	LCMS	Scottish Lower Coal Measures Formation	Sedimentary Rock Cycles, Coal Measure Type	Not Supplied - Westphalian
	MVSC	Midland Valley Sil-Complex	Quartz-Microgabbro	Not Supplied - LATE MISSISSIPPIAN
		Rock Segments		
		Faults		



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### Geology 1:50,000 Maps

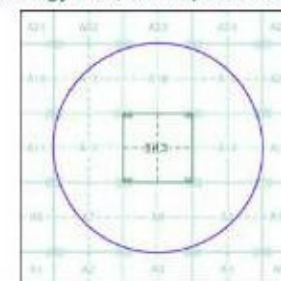
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

### Geology 1:50,000 Maps Coverage

Map ID:	1
Map Sheet No:	0318
Map Name:	Fulbich
Map Date:	1987
Bedrock Geology:	Available
Superficial Geology:	Available
Artificial Geology:	Available
Faults:	Not Supplied
Landslip:	Available
Rock Segments:	Not Supplied

### Geology 1:50,000 Maps - Slice A



### Order Details:

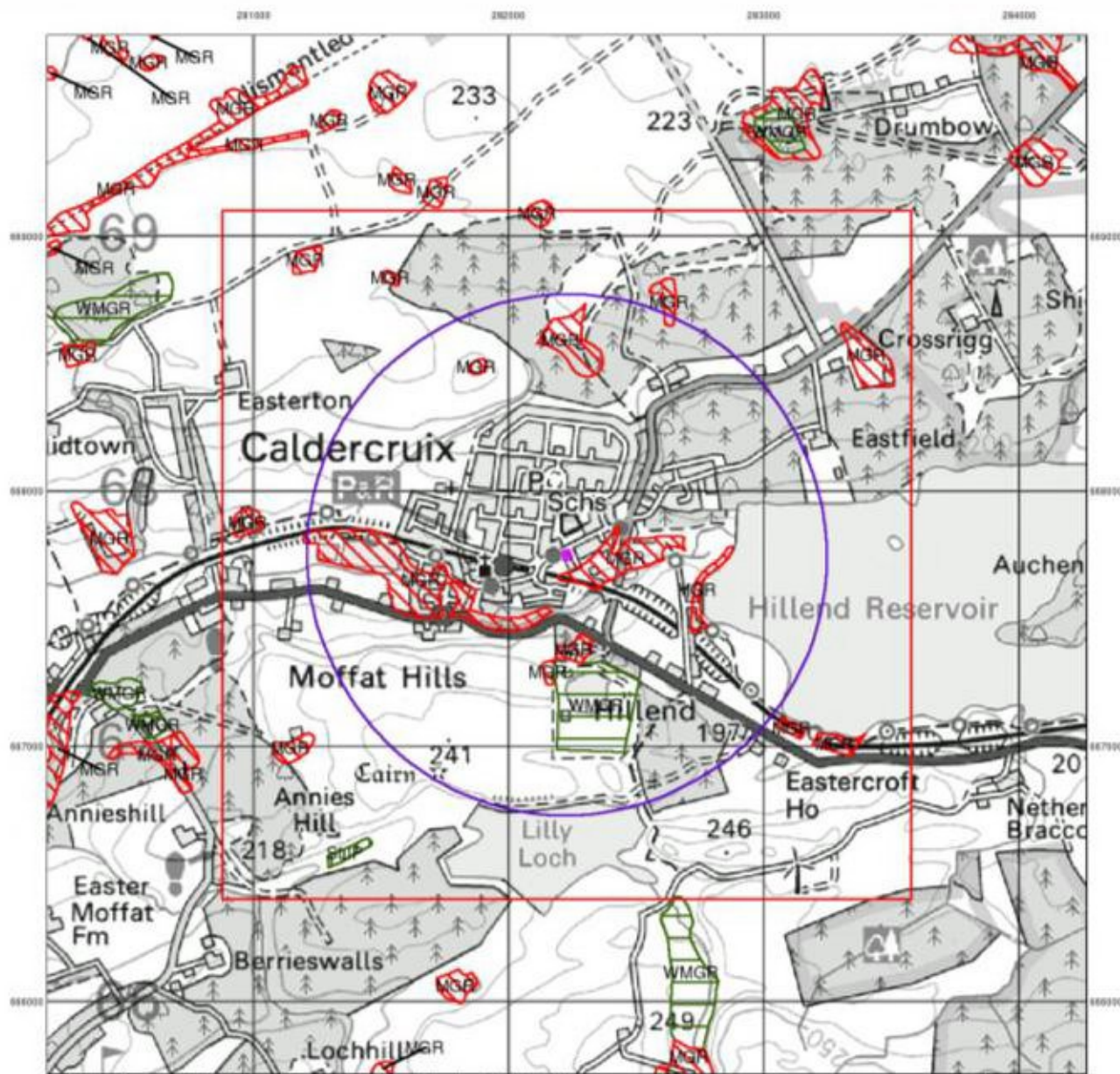
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Site:	A
Site Area (Ha):	0.1
Search Buffer (m):	1000

### Site Details:

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**Landmark**  
INFORMATION GROUP

Tel: 0844 944 0052  
Fax: 0844 944 0051  
Web: www.landmark.co.uk



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GEO-ENVIRONMENTAL & MINERALS

### Artificial Ground and Landslip

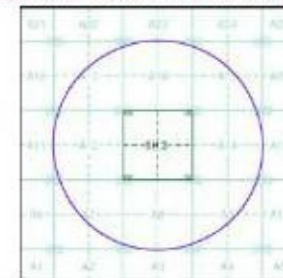
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

### Artificial Ground and Landslip Map - Slice A



### Order Details:

Order Number: 267435860\_1\_1  
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 National Grid Reference: 282230, 667750  
 Slice: A  
 Site Area (Ha): 0.1  
 Search Buffer (m): 1000

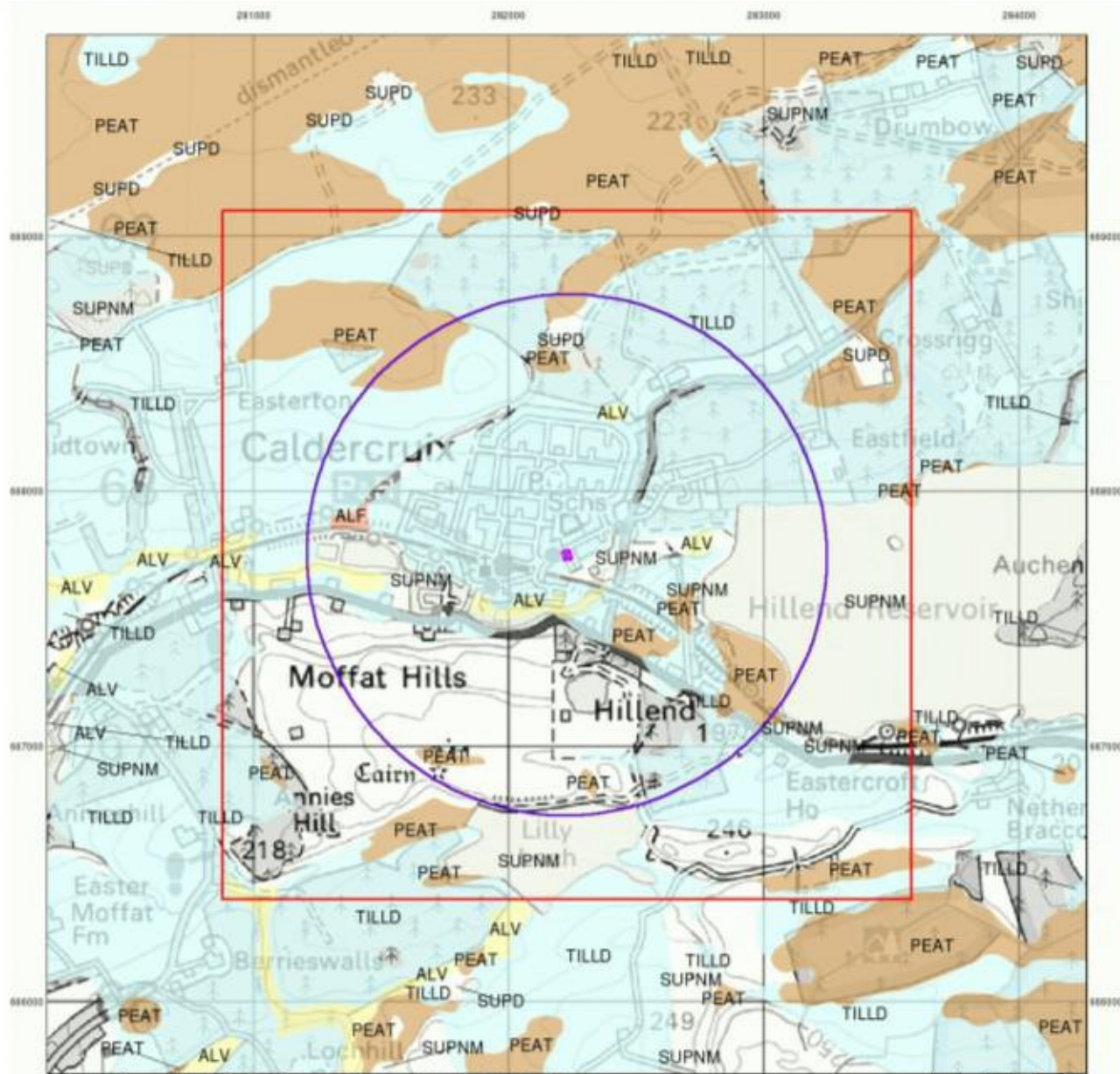
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 Fax: 0844 944 0001  
 Web: www.envirocheck.co.uk





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GEO-ENVIRONMENTAL & MINERALS

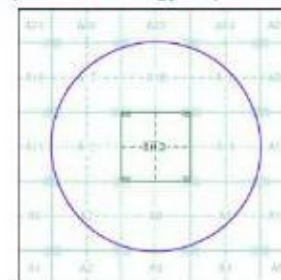
### Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

### Superficial Geology Map - Slice A



### Order Details:

Order Number:	267435860_1_1
Customer Reference:	VG269
National Grid Reference:	282230, 667750
Slice:	A
Site Area (Ha):	0.1
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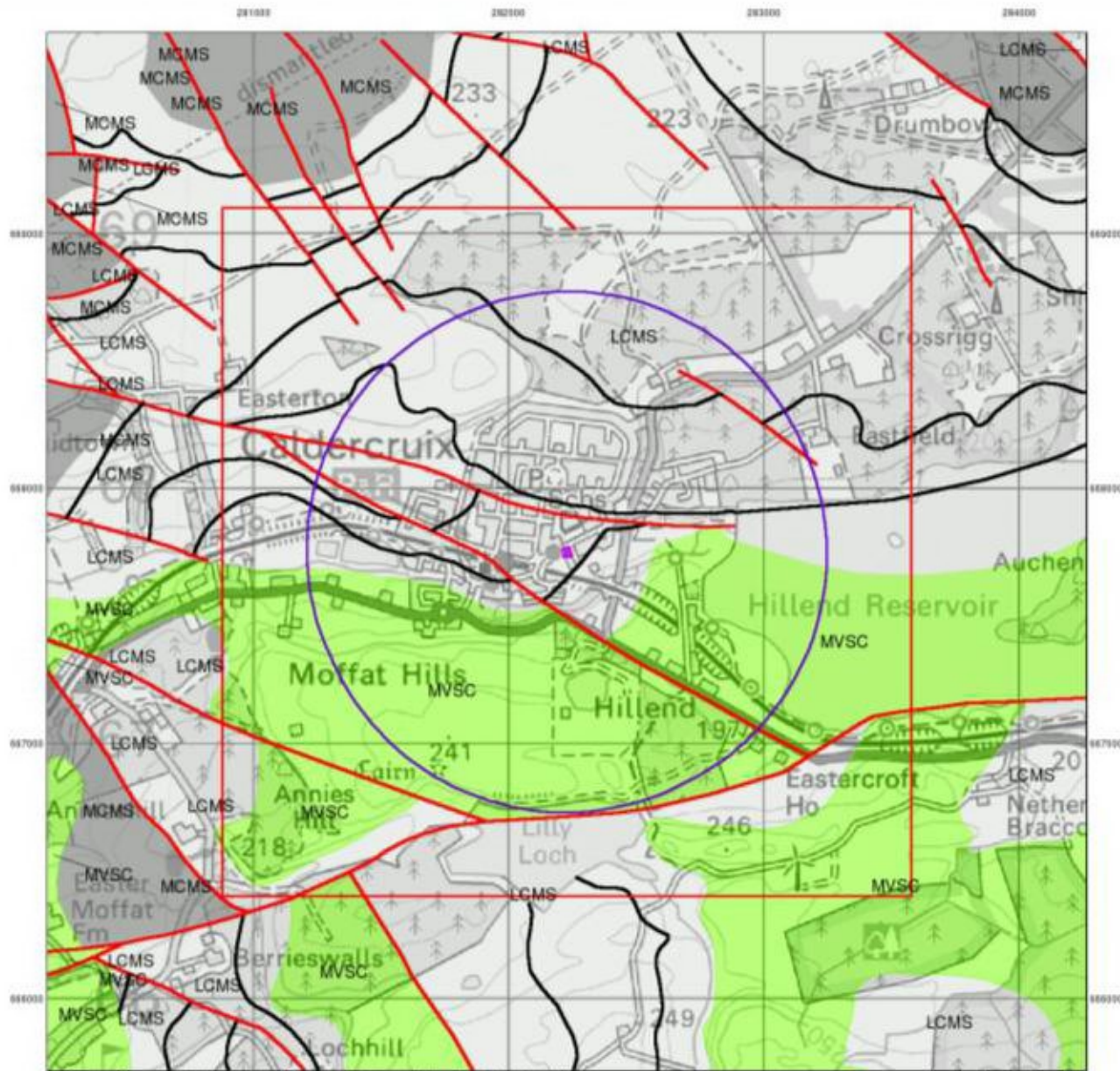
### Site Details:

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GEO-ENVIRONMENTAL & MINERALS

### Bedrock and Faults

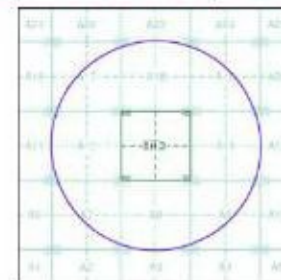
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

### Bedrock and Faults Map - Slice A



### Order Details:

Order Number:	287435860_1_1
Customer Reference:	VG269
National Grid Reference:	282230, 667750
Site:	A
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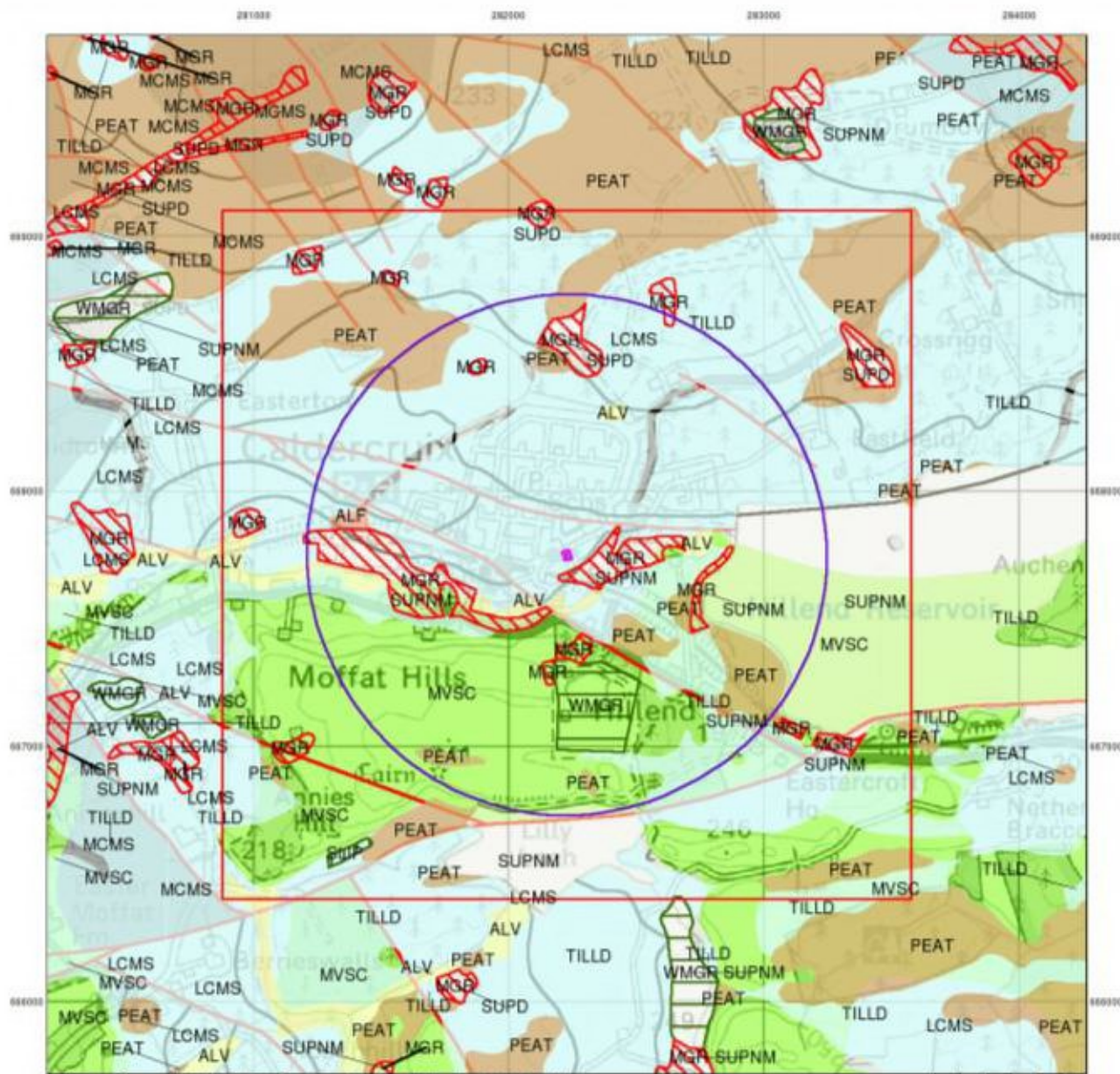
### Site Details:

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 Fax: 0844 944 0051  
 Web: www.univrock.co.uk





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GEO-ENVIRONMENTAL & MINERALS

### Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

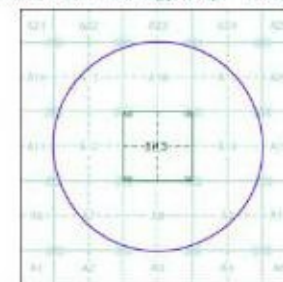
### Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

### Contact

British Geological Survey  
 Kingsley Durham Centre  
 Keyworth  
 Nottingham  
 NG12 5GG  
 Telephone: 0115 936 3143  
 Fax: 0115 936 3276  
 email: [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)  
 website: [www.bgs.ac.uk](http://www.bgs.ac.uk)

### Combined Geology Map - Slice A



### Order Details:

Order Number:	267435860_1_1
Customer Reference:	VG269
National Grid Reference:	282230, 667750
Slice:	A
Site Area (Ha):	0.1
Search Buffer (m):	1000

### Site Details:

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 Fax: 0844 944 0051  
 Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



**Appendix 4**  
**Drawings**





LAND REGISTER  
OF SCOTLAND

Officer's ID / Date

9995  
26/8/2009

TITLE NUMBER

**LAN15983**



ORDNANCE SURVEY  
NATIONAL GRID REFERENCE

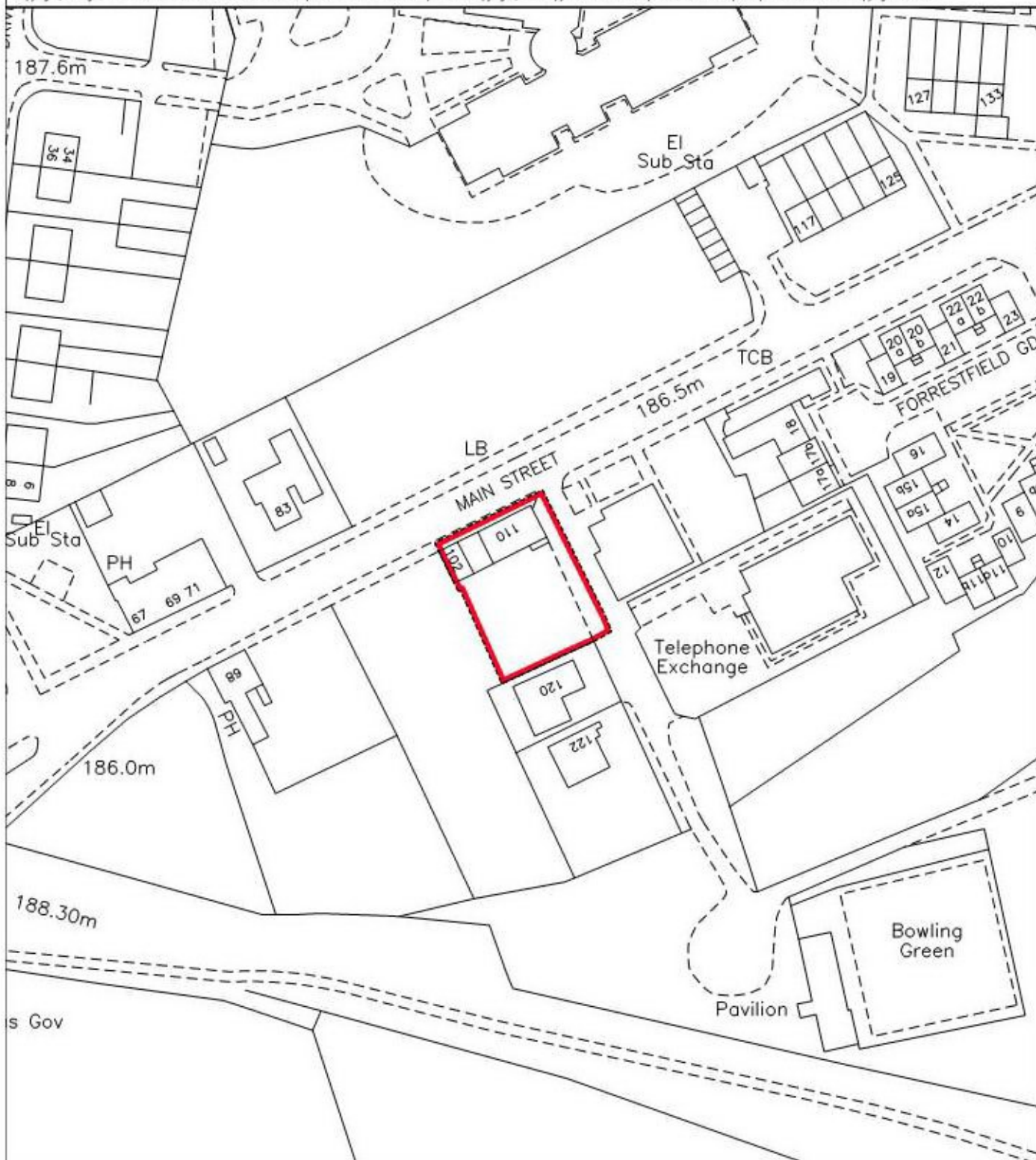
70m

NS8267 NS86NW

Survey Scale

1/2500

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