PHASE 1 ENVIRONMENTAL SITE ASSESSMENT REPORT

Gamford House,

Rossett,

Wrexham,

Wales,

LL12 0EW

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EnviroSolution Ltd
Document Verification

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Executive Summary

The preliminary environmental site assessment for the Gamford House site indicates that the site can be classified as Moderate/High risk in terms of contamination and the potential risks to potential future receptors (e.g. human health, controlled waters, buildings) following redevelopment is considered to be Moderate/High.

This classification is due to the site having a number of previous potentially contaminating land uses. These include farming, manufacture, distribution, haulage and vehicle repair. There is also the potential for Made Ground to be present in the shallow soils. Potential contaminants could include heavy metals, polyaromatic hydrocarbons, hydrocarbons, solvents, lubricants, asbestos and volatile vapours.

It is recommended a Phase 2 intrusive ground investigation is undertaken prior to any future site redevelopment to obtain additional information on the ground conditions and the contamination status. The investigation should be carried out by qualified and competent persons. The scope of works for the investigation will need to be submitted and approved by the local authority prior to the commencement of the Phase 2 intrusive works.

Disclaimer

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1 Introduction

1.1 Background

EnviroSolution Ltd was commissioned to undertake a Phase 1 Environmental Site Assessment at landlocated at Gamford House in North Wales. This report was commissioned to provide an assessment on the likely 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. A site walkover survey.
3. 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 1872 to 2020. 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) and Magic website (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 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 Gamford House, Rossett, Wrexham, Wales, LL12 0EW. The British National Grid Reference for the approximate site centre is GR: 337791 357439.

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

2.2 Site Description

The site description is aided by the completion of a site walkover survey conducted by EnviroSolution on the 4th December 2020. The site photographs are included in **Appendix B**.

The site is rectangular in shape and covers an approximate area of 13,300 square meters.

The site comprises the former agricultural farm compound of Gamford House and a parcel of undeveloped land to the southeast which includes a small pond

The site is currently derelict and has fallen to disrepair with evidence of vandalism, fly-tipping and arson. The site contains approximately 15 buildings including a fire damaged cottage, several barns/warehouses, pig pens, loading warehouses, office and vehicle maintenance garage. The warehouses are generally steel frame and breeze block built. The majority are vacant.

A sunken vehicle inspection pit is present in the vehicle maintenance warehouse. A hydrocarbon odour was noted upon entering the building. Oil was observed within the pit.

From the infrastructure on site, it is clear that the site has had several previous land uses including pig farming, manufacture and distribution of animal products, vehicle storage and maintenance and general storage.

A weighbridge is located near the site entrance along Gamford Lane to the southeast. A central roadway runs through the site. The hardstanding is in poor condition and is cracked and fragmented.

Several mounds of demolition rubble are present in the central area of the site and along the northern boundary. These include metal, bricks, concrete and pipes and household appliances.

Evidence of whey storage tanks and buried tanks of an unknown nature were noted. A heating oil tank is present to the rear of the cottage.

The site is bounded by Gamford lane to the southwest and open agricultural fields on all other sides.

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.**

2.3 Development Proposals

No formal development plans have been provided to EnviroSolution at the time of writing this report. Based on historic planning applications, it is assumed that future development may include residential housing. This land use will be assumed for the risk assessment in the following sections of this report.

2.4 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
1872	1:2,500	The site is undeveloped and lies within an open agricultural field. Small pond located in south-eastern corner.	Surrounding land largely undeveloped open fields. Small pond 50m south, 140m east, 210m northwest and 210m north of the site.
1899	1:2,500	Gamford House built on site.	Well 190m southeast of the site.
1911	1:2,500	No significant change.	No significant change.
1938	1:10,560	No significant change.	No significant change.
1964	1:2,500	Significant expansion to Gamford House including stalls and barns to be used as a pig farm. Pond no longer marked on map.	No significant change.
1980	1:2,500	No significant change.	No significant change.
1984	1:2,500	Weigh bridge noted at site entrance possibly indicating change of use to haulage.	No significant change.
1996	1:2,500	No significant change.	No significant change.
2020	1:10,000	Pond appears on site again.	No significant change.

2.5 Anecdotal Evidence

Information gained from the former site owner provides the following information relating to the site history:

The site at Gamford House has historically been used as a pig farm for rearing pigs and transporting them to and from the farm continuously. During this time, a fleet of 11 lorries were operational at the site under the business name 'Gamford Transport Services'. Repair and maintenance of the lorries was carried out on site in numerous barns. Sunken vehicle inspection pits and buried tanks are noted to be present on site.

In addition to this, the site was also used for the manufacture of swill for pig feed and the pasteurisation of whey products to be transported off-site and sold. This manufacturing works is reported to have continued from around 1990 to 2000.

During the decline in pig farming at the site, the site and numerous barns were used as storage for a private vehicle collection until 2016. Repair work, dismantling and storage of parts were noted to have taken place during this time where up to 20 vehicles were stored.

It is noted that parts of the property were later a target of vandalism and arson with the existing dwelling rendered derelict with fire damage. Fly-tipping is also noted in areas of the site.

A copy of documents obtained from the site are included in **Appendix D**.

3 Environmental Setting

3.1 Geology

Geological maps of the area indicate the site is directly underlain by superficial diamicton deposits of the which are of Quaternary age. The diamicton deposits generally consist of over-consolidated, unsorted clays, silts, sands and gravels.

The underlying bedrock geology consists of the Salop Formation which is of Permian age. The Salop Formation generally consists of red and brown mudstone and sandstone and conglomerate containing limestone and chert clasts.

A BGS borehole log (Ref: SJ35NE37) has been obtained from BGS online records along the eastern boundary of the site. The borehole shows 0.20m of topsoil overlying reddish brown slightly sandy clay with rare quartzite cobbles which extend to a minimum depth of 18m bgl.

The nearest geological fault is located 930m northwest of the site.

A copy of the geological maps is included in **Appendix E.** A copy of the BGS borehole logs are included in **Appendix F**.

3.2 Radon

The site lies within an elevated band of radon potential where it is estimated that between 10-30% of the properties are above the action level (high probability). Full radon protective measures would be required for any future development.

Further guidance can be found in BR 211 (2015) 'Radon: Guidance on protective measures for new buildings'.

3.3 Coal Mining Activity

The site does not lie within a coal mining 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 superficial deposits are designated as a Secondary Undifferentiated Aquifer. This is defined as cases where it has not been possible to assign either A or B to a soil type due to variability in lithology.

The underlying Salop Formation is designated as a Secondary A Aquifer, defined as; permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The site is located within a Zone III Total Catchment Zone.

There are no records of sites that hold groundwater abstraction licences held within a 1km radius of the site.

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

3.5 Hydrology

The River Alyn is located 610m southwest of the site and is the only significant surface water feature (lakes, rivers, reservoirs) located within a 1km radius of the site.

Small ponds are located within the site boundary and 50m south of the site.

3.6 Flood Risk

The site lies within a Flood Zone 1, 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.

3.7 Waste Management Facilities

There are no records of historic or currently authorised landfill sites located within a 1km radius of the site.

There are no sites located within a 1km radius of the site operating under an environmental permit for waste operations.

3.8 Environmental Permits, Incidents and Registers

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

There are no records of any pollution events having occurred 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 3 and shown on plans included in **Appendix H**.

Table 2 – Environmental Designations Summary

Features	Distance	Comments
Nitrate Vulnerable Zone	On Site	The site lies within a Nitrate Vulnerable Zone.

Features	Distance	Comments
Greenbelt	980m	The Cheshire West and Chester Greenbelt is located 980m north of the site.

4 Preliminary Conceptual Site Model

4.1 Introduction

In order 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 taking into account 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 was originally developed as a residential farmhouse and pig farm but has since become derelict. On-site processes included rearing of pigs, manufacture and distribution of swill and whey products, distribution of pigs for slaughter and storage of equipment. The site was later used by Gamford Transport Services used for general haulage. A vehicle maintenance shed is present on site which includes a large vehicle inspection pit. The site was more recently used for the storage of a private collection of cars where they were repaired and maintained in various sheds. Fly-tipping of scrap metals and demolition rubble is now evident. The site is largely developed with buildings and hardstanding. It is therefore likely that Made Ground is present across most of the site. The Made Ground could contain heavy metals, polyaromatic hydrocarbons (PAHs) and asbestos.

The previous on-site land uses, and their associated contaminants are summarised in Table 3 below:

Table 3 – Potential contaminants

Land Use	Potential Contaminants
Pig Farm and Processing	Heavy metals, solvents, lubricants
Haulage Depot	Heavy metals, hydrocarbon fuels
Vehicle Repair Workshop	Heavy metals, PAHs, solvents, paints

Land Use	Potential Contaminants
Fly-Tipping	Heavy metals, PAHs, asbestos
Heating Oil Tank	Hydrocarbon fuels
Pumping Equipment	Lubricants, Hydrocarbons

The use of the site as a pig farm could have introduced pathogenic contaminants to the surrounding area if not contained. However, it is considered that the risk of pathogenic contamination is low due to the pig farm having been abandoned approximately 20 years ago.

A number of small ponds have been located on site and in the surrounding area. These ponds are still present and are therefore unlikely to have been backfilled and generate ground gases.

4.3 Receptors

The potential receptors considered to be at risk from soil and groundwater contamination associated with the site are summarised in Table 4 below:

Table 4 - Receptor Description

Receptor	Details
Human (On Site)	- Construction workers - Future site users - Site visitors
Human (Off Site)	- Adjacent site users
Controlled Waters	- Secondary Undifferentiated Aquifer - Secondary A Aquifer - Ponds - River Alyn
Building/ construction materials	- Foundations and buried services
Environmental Receptors	- Nitrate Vulnerable Zone - Greenbelt

4.4 Pathways

The potential exposure pathways linking contamination with the receptors identified above are summarised in Table 5 below:

Table 5 - Exposure Pathways Summary

Receptor	Details of Exposure Pathway
Human (on-site)	- Direct ingestion of contaminated soil/groundwater - Dermal contact with soil/groundwater - Inhalation of gases and vapours
Human (off-site)	- Inhalation of fibres and particulates

Receptor	Details of Exposure Pathway
	- Inhalation of migrating gases and vapours
Controlled waters	- Vertical and lateral migration of dissolved phase contaminants via preferential pathways to groundwater aquifers - Direct surface water run-off to surface water features
Building/construction	- Buried materials/services - Contact with contaminated soil and/or groundwater

4.5 Potential Pollution Linkages

4.5.1 Human Health

No formal development plans have been submitted for the site. It is likely the case that any future development will include residential housing of some kind. This is considered to be a sensitive end use.

The presence of any proposed 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 proposed areas of soft landscaping (i.e. gardens), 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 any future buildings at the site 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 future 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 thick (>18m) superficial diamicton deposits which are of low permeability and do not form a significant groundwater aquifer. It is considered that the diamicton will act as an impermeable barrier, preventing any migration of potential contaminants to the underlying groundwater aquifers.

The River Alyn is located 610m from the site. It is not considered likely that any potential contaminants will migrate to the surface water features via direct surface water run-off due to the distance.

The site is located within a Zone III Source Protection Zone but there are no groundwater abstraction licences held within a 1km radius of the site. The risk to controlled waters is deemed to be 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, 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 any future properties which could present a risk of explosion.

4.6 Preliminary Hazard Assessment

A preliminary hazard assessment is presented in Table 6. 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 6 – 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	4	3	High	On-site source potential identified.
Contaminated soil groundwater	Direct contact	Buildings/ services	4	3	High	On-site source potential identified. Made Ground in direct contact with potential future building foundations.
Contaminated groundwater	Downward or lateral migration Surface water run-off	Secondary Aquifers River Alyn Ponds	1	3	Low	On-site contamination source identified. Impermeable diamicton will act as a barrier.
Ground gas / vapours Radon	Inhalation, ingress into buildings	Buildings / services Future site users Adjacent site users Construction workers	2	4	Moderate	No significant ground gas source identified. Risk of volatile vapours identified from on-site sources. Site located within a low probability area for radon.

Using Risk Matrix (Table 7) Degree of Risk (R) = Likelihood (L) x Effect (E)

Table 7 - 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

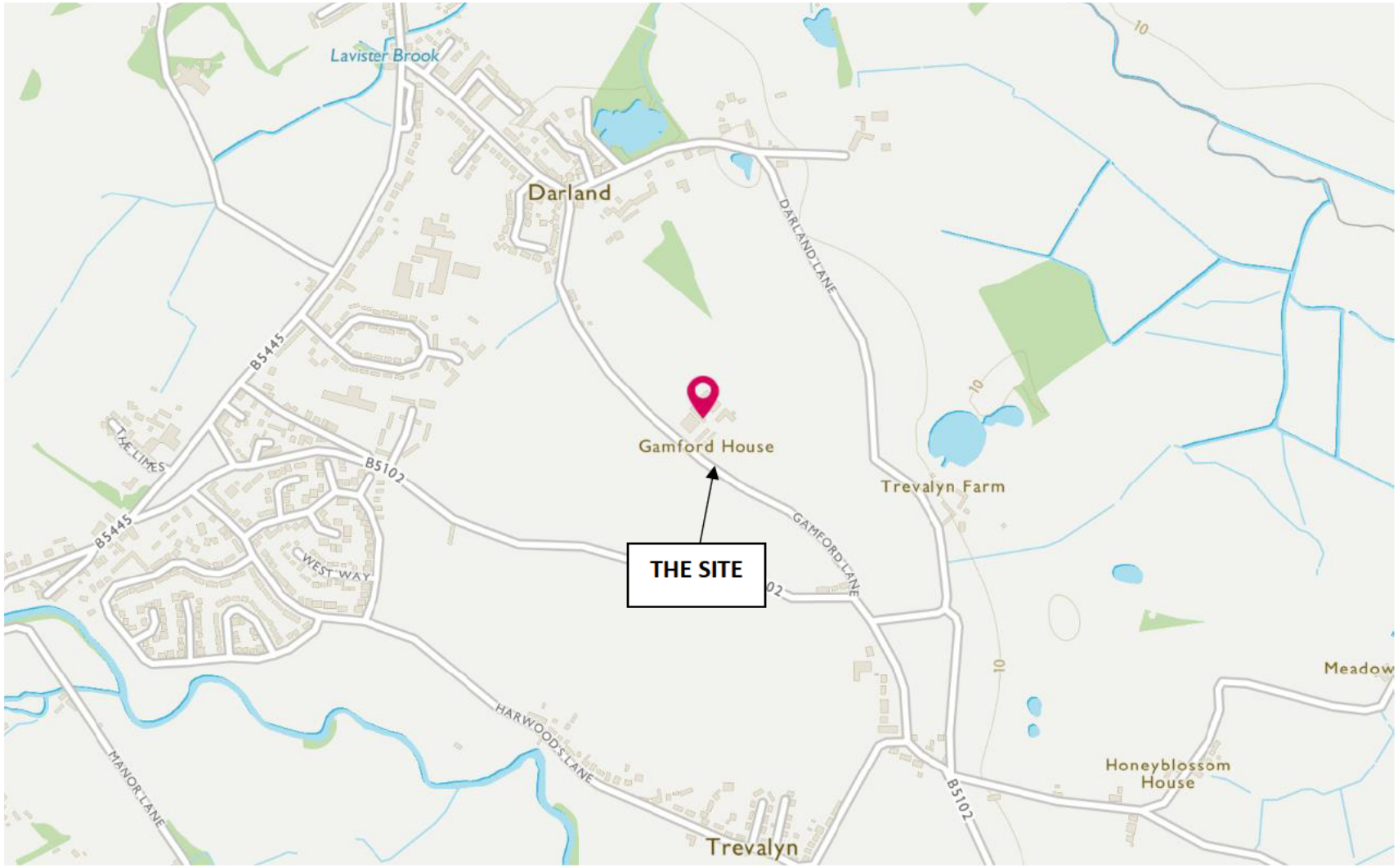
The preliminary environmental site assessment for the Gamford House site indicates that the site can be classified as Moderate/High risk in terms of contamination and the potential risks to potential future receptors (e.g. human health, controlled waters, buildings) following redevelopment is considered to be Moderate/High.

This classification is due to the site having a number of previous potentially contaminating land uses. These include farming, manufacture, distribution, haulage and vehicle repair. There is also the potential for Made Ground to be present in the shallow soils. Potential contaminants could include heavy metals, polyaromatic hydrocarbons, hydrocarbons, solvents, lubricants, asbestos and volatile vapours.

It is recommended a Phase 2 intrusive ground investigation is undertaken prior to any future site redevelopment to obtain additional information on the ground conditions and the contamination status. The investigation should be carried out by qualified and competent persons. The scope of works for the investigation will need to be submitted and approved by the local authority prior to the commencement of the Phase 2 intrusive works

APPENDICES

Appendix A – Site Location and Site Plan



enviro | solution	**Site Location Map**

Figure 1



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Existing Site Plan

Figure 2

Appendix B – Site Photographs



enviro | solution	**Site entrance along Gamford Lane**



enviro | solution	**Site waste located central to the site**



enviro | solution	**Weigh bridge located at site entrance**



enviro | solution	**Barn used for contractors storage**



enviro | solution	**Storage tank/ bath located centrally**



enviro | solution	**Vacant barn along north-western boundary**



enviro | solution	**Brick and rubble waste located along north-eastern boundary**



enviro | solution	**Former loading bay located along northern boundary**



enviro | solution	**Area of former silo**



enviro | solution	**Vacant area of land in southeast corner of the site with pond**



enviro | solution	**Vacant barns along northern boundary**



enviro | solution	**Fire damaged cottage along southern boundary**



enviro | solution	**Fragmented hardstanding along central roadway on the site**



enviro | solution	**Vehicle maintenance barn with inspection pit**



enviro | solution	**Vehicle workshop in northern part of the site**



enviro | solution	**Relic buried tanks in northern part of the site**



enviro | solution	**Potential heating oil tank to the rear of the cottage**



enviro | solution	**Rubble mound in central area of the site**

Appendix C - Historical Maps

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
285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
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
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. 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
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
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
Mud
Sand
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)
BM 123.45 m 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

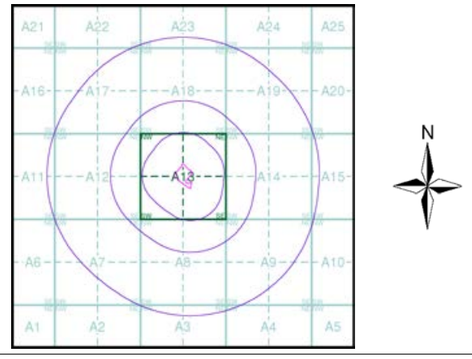
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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Denbighshire	1:10,560	1878	2
Cheshire	1:10,560	1881	3
Cheshire	1:10,560	1899 - 1900	4
Flintshire	1:10,560	1900	5
Cheshire	1:10,560	1913 - 1914	6
Denbighshire	1:10,560	1914	7
Denbighshire	1:10,560	1938	8
Denbighshire	1:10,560	1954	9
Ordnance Survey Plan	1:10,000	1954	10
Ordnance Survey Plan	1:10,000	1968	11
Ordnance Survey Plan	1:10,000	1988	12
10K Raster Mapping	1:10,000	1999	13
Street View	Variable		14

Historical Map - Slice A



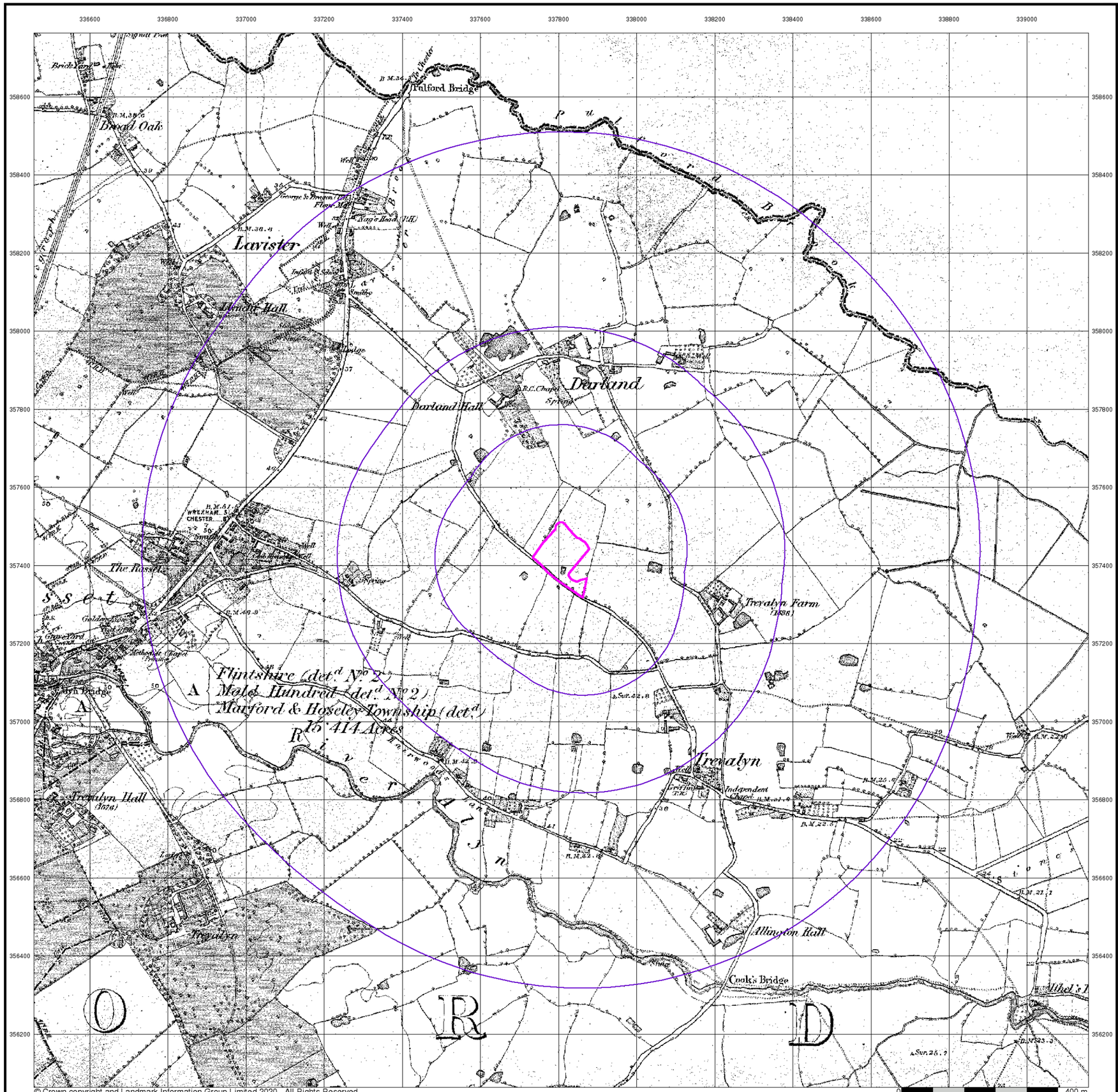
Order Details

Order Number: 269991236_1_1
Customer Ref: ES031220
National Grid Reference: 337820, 357410
Slice: A
Site Area (Ha): 1.36
Search Buffer (m): 1000

Site Details

Gamford House, Gamford Lane, Rossett, WREXHAM, LL12 0EW

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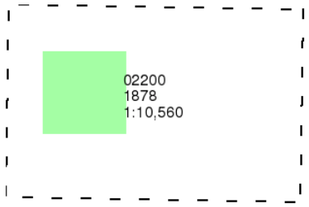
Denbighshire

Published 1878

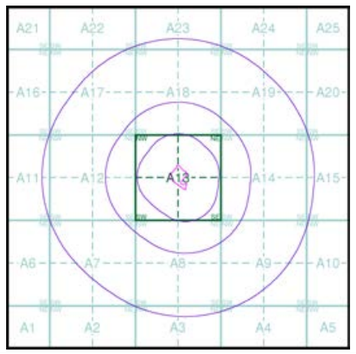
Source map scale - 1:10,560

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

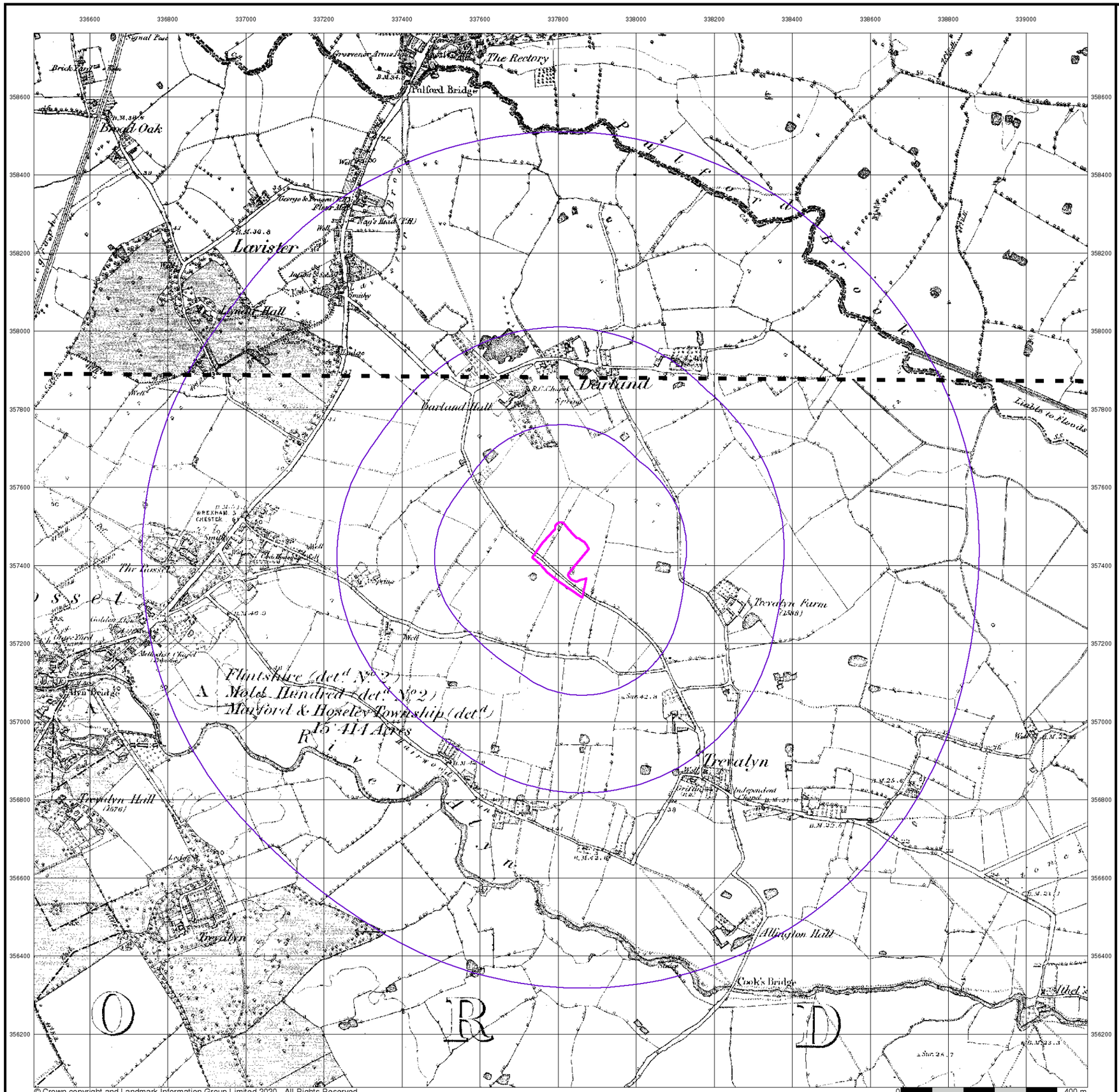
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Search Buffer (m):	1000

Site Details

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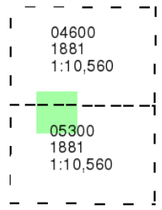
Cheshire

Published 1881

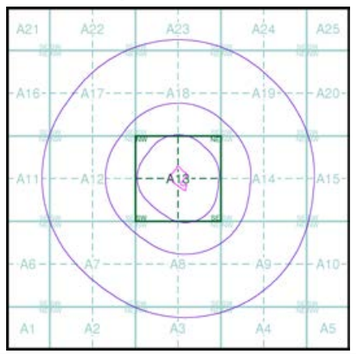
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Map Name(s) and Date(s)



Historical Map - Slice A



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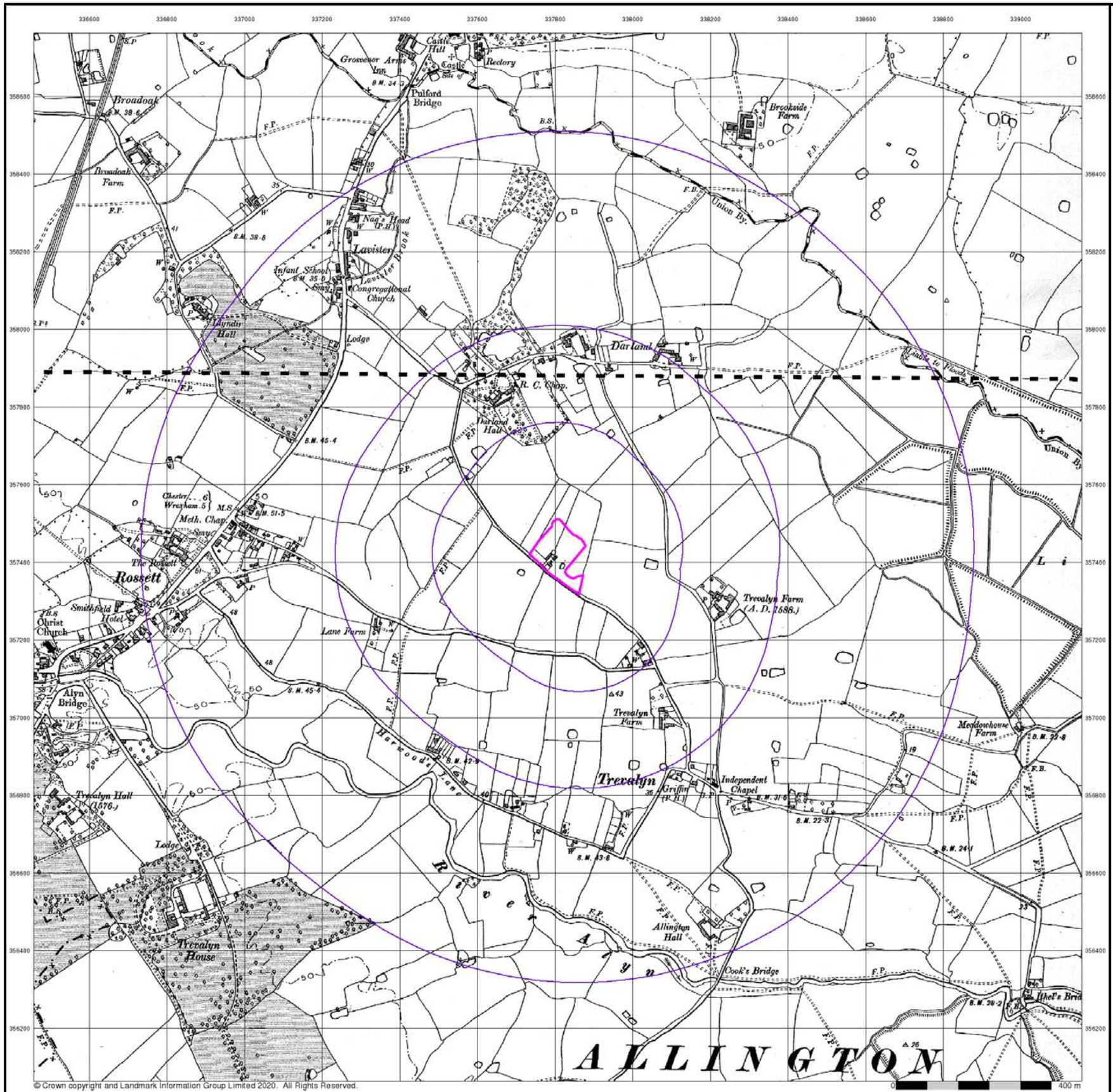
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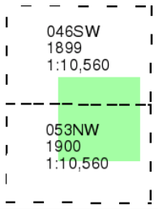
Cheshire

Published 1899 - 1900

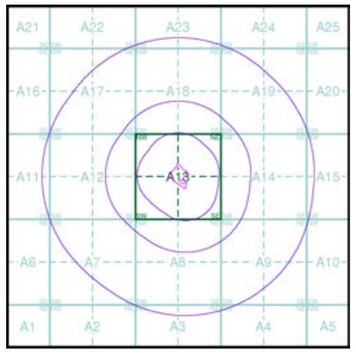
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

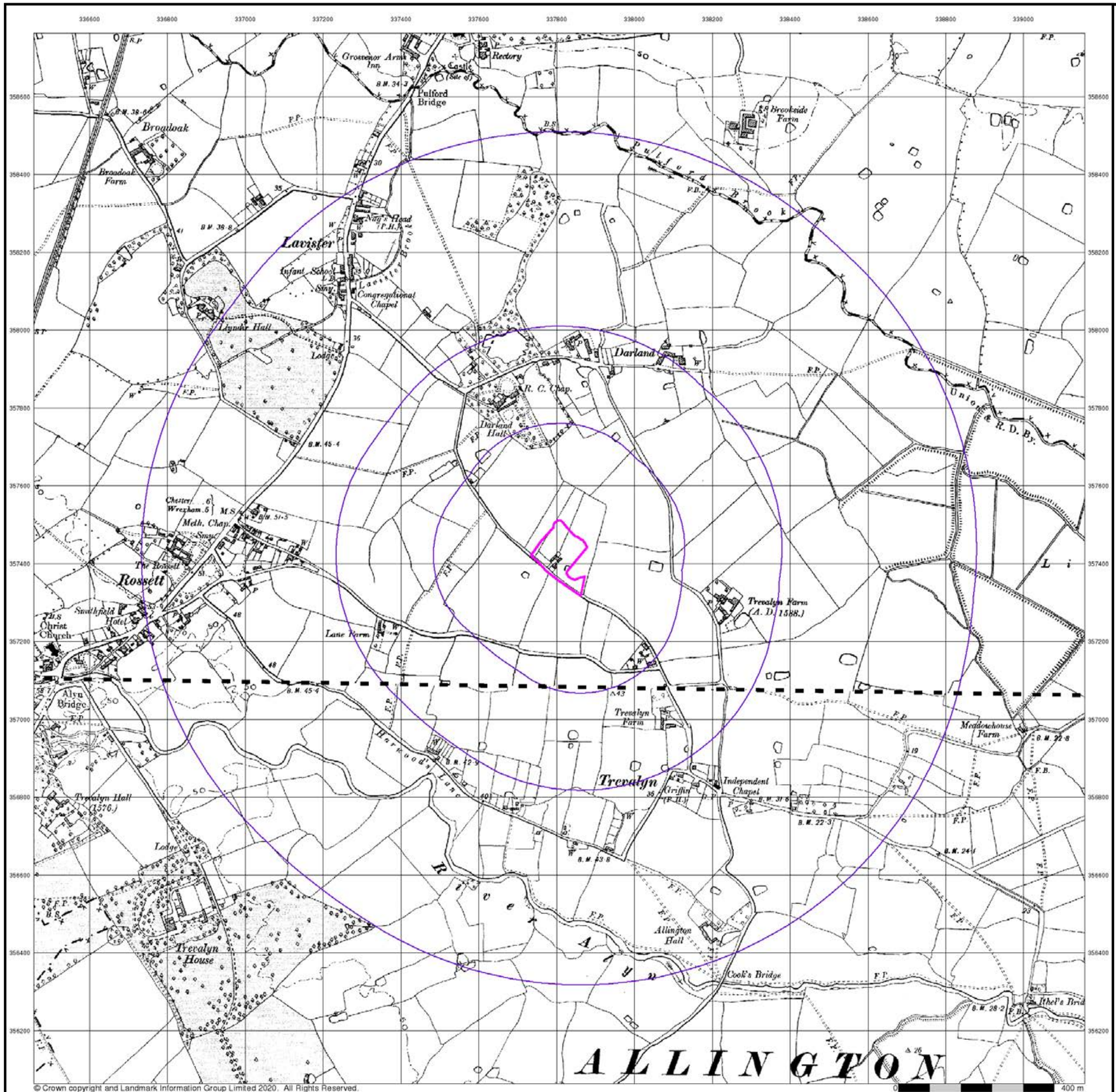
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Flintshire

Published 1900

Source map scale - 1:10,560

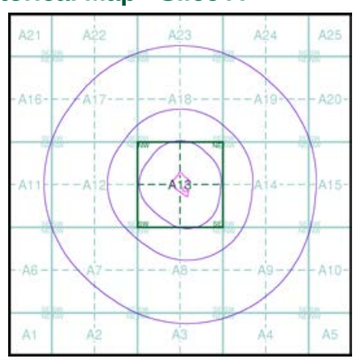
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Map Name(s) and Date(s)

017ANW
1900
1:10,560

017ASW
1900
1:10,560

Historical Map - Slice A



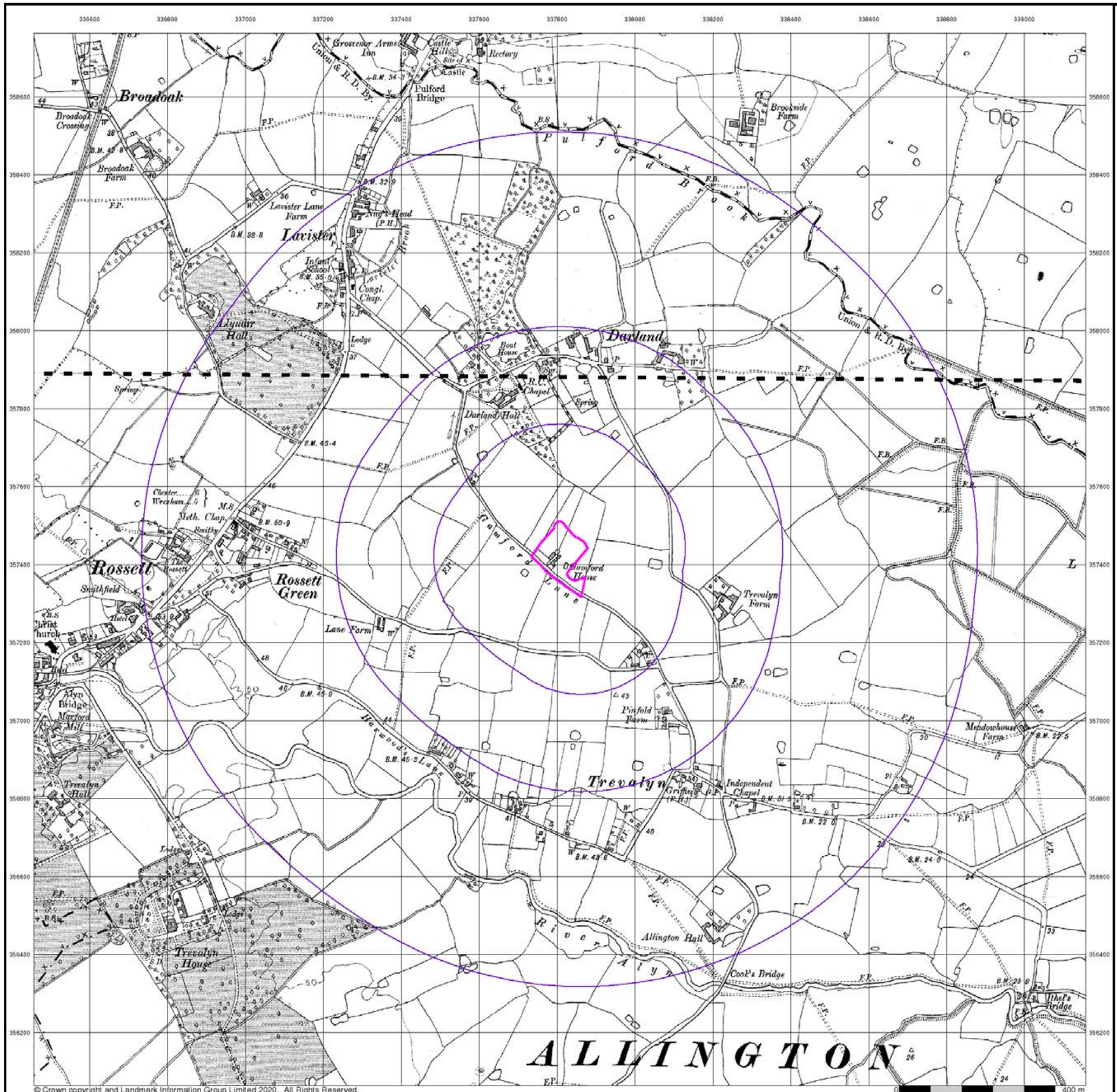
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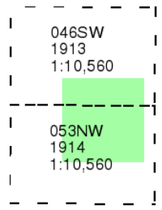
Cheshire

Published 1913 - 1914

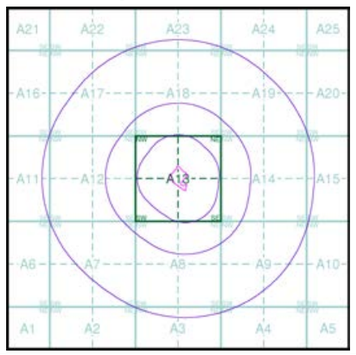
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

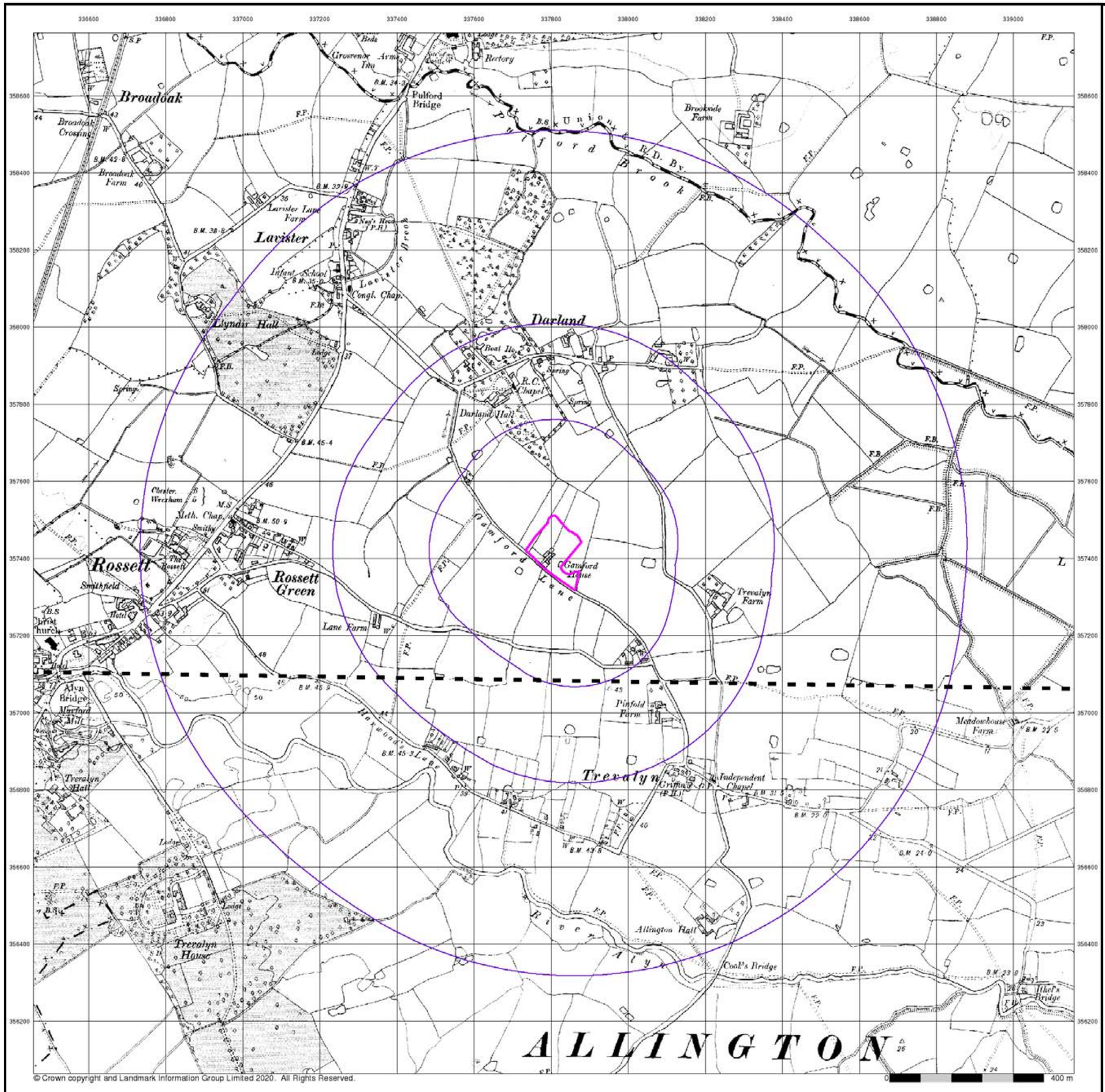
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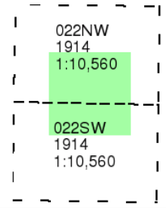
Denbighshire

Published 1914

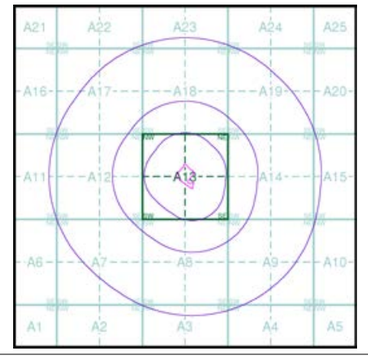
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

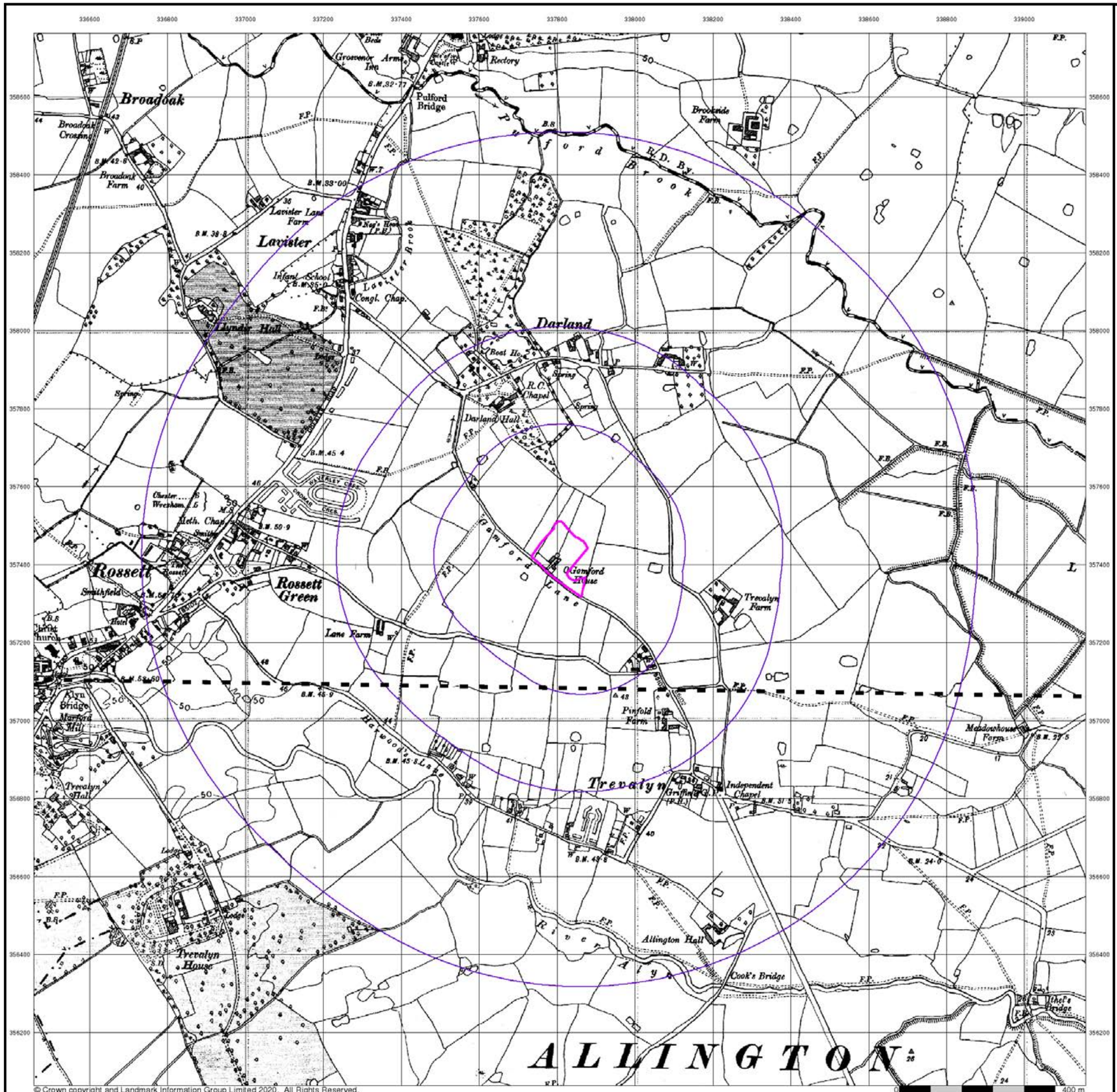
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Denbighshire

Published 1938

Source map scale - 1:10,560

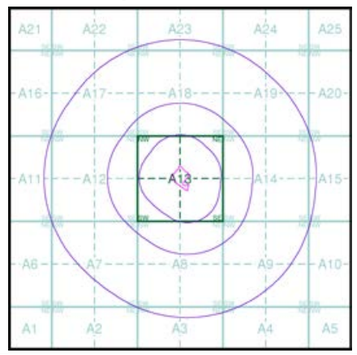
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Map Name(s) and Date(s)

022NW
1938
1:10,560

022SW
1938
1:10,560

Historical Map - Slice A



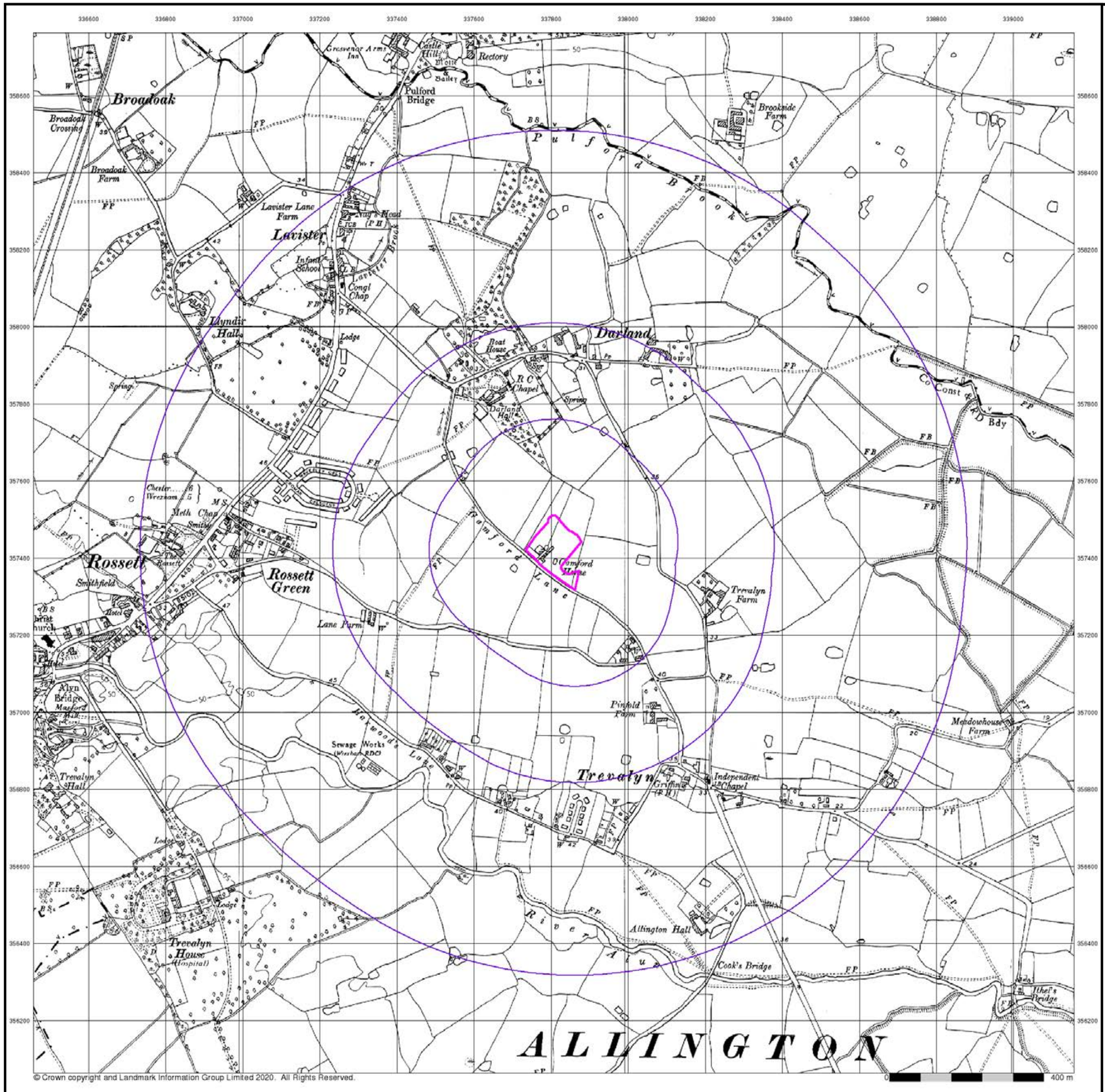
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Ordnance Survey Plan

Published 1954

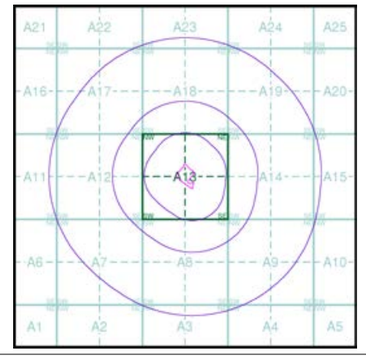
Source map scale - 1:10,000

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Map Name(s) and Date(s)

SJ35NE
1954
1:10,560

Historical Map - Slice A



Order Details

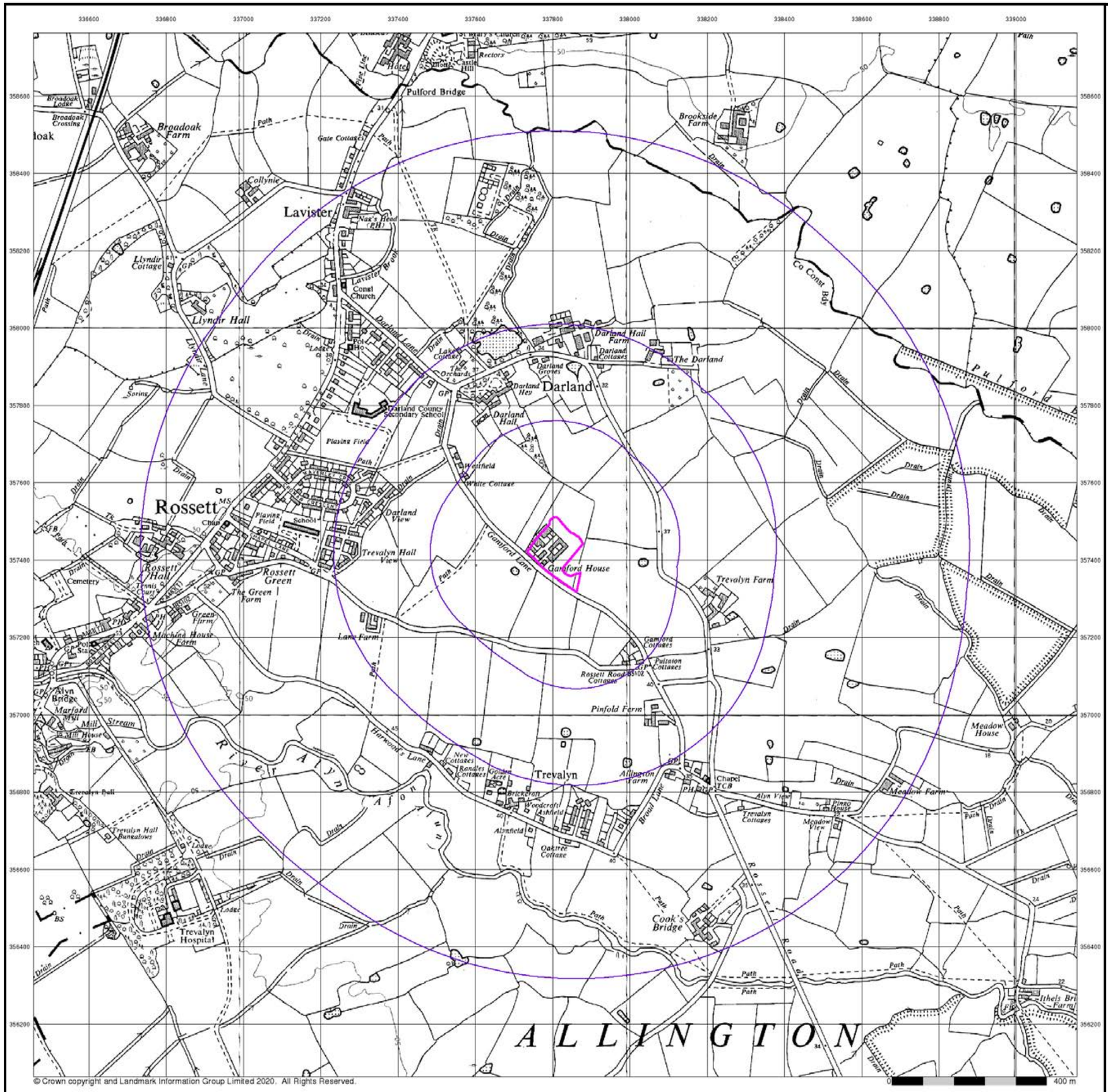
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Ordnance Survey Plan

Published 1968

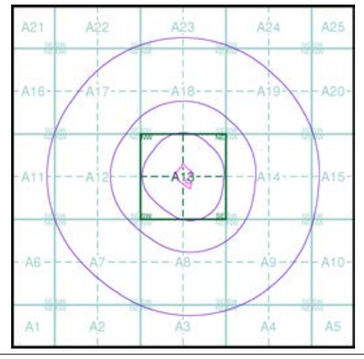
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Map Name(s) and Date(s)

SJ35NE
1968
1:10,560

Historical Map - Slice A



Order Details

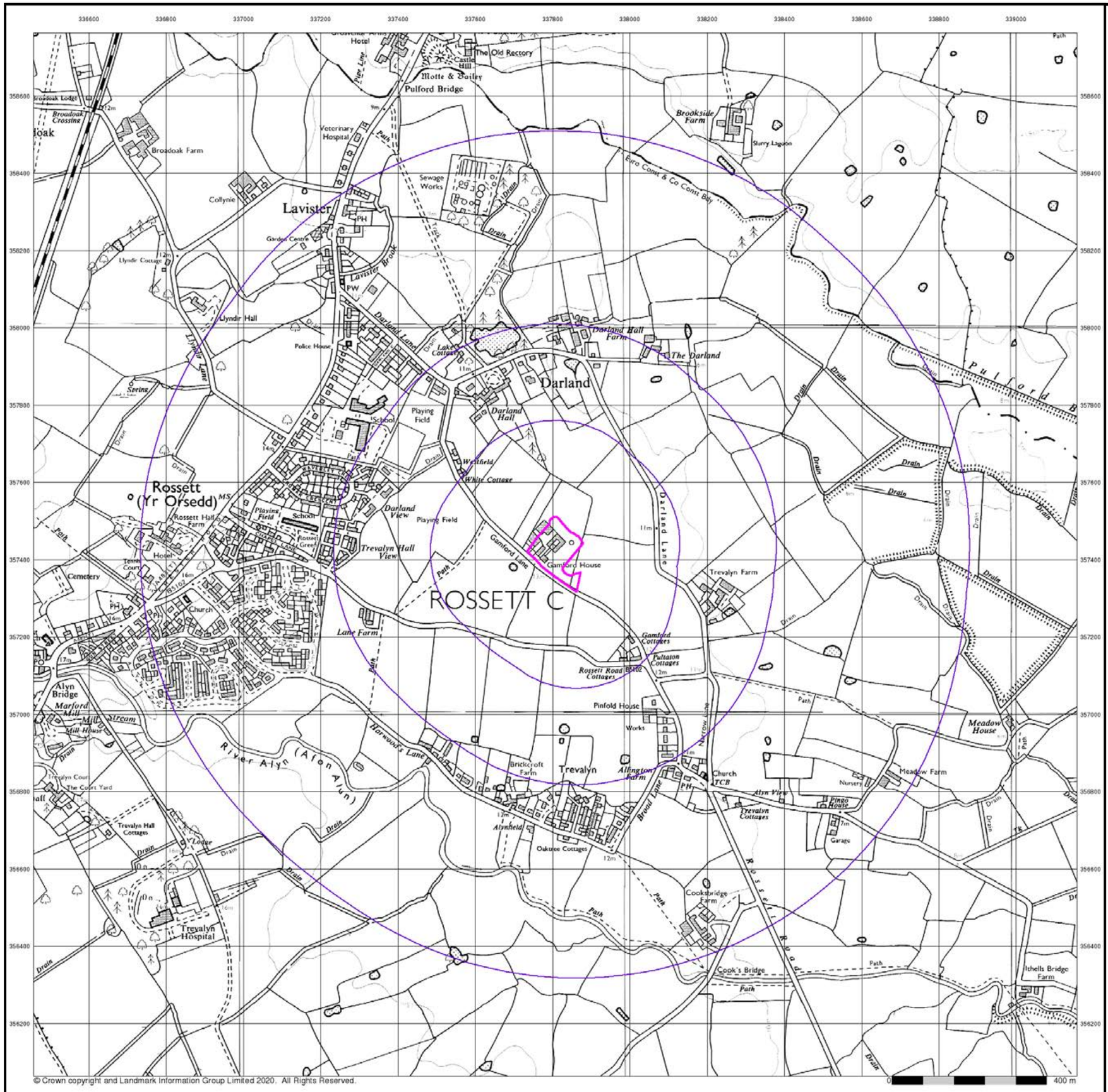
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Ordnance Survey Plan

Published 1988

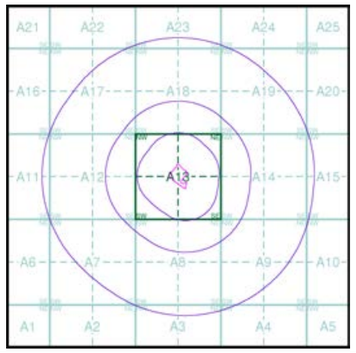
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Map Name(s) and Date(s)

SJ35NE
1988
1:10,000

Historical Map - Slice A



Order Details

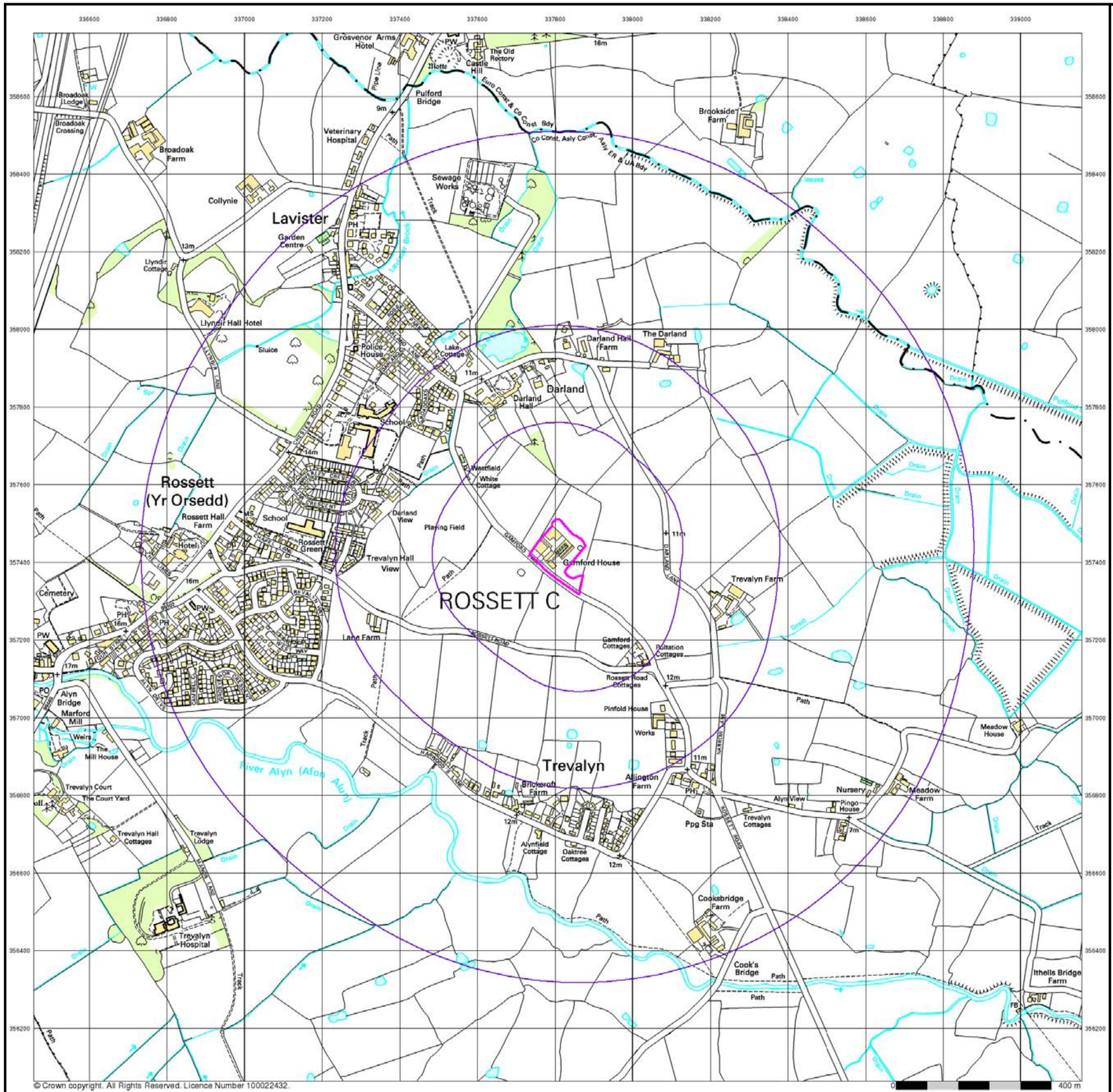
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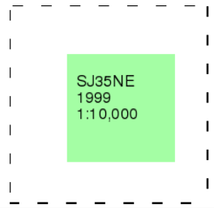
10k Raster Mapping

Published 1999

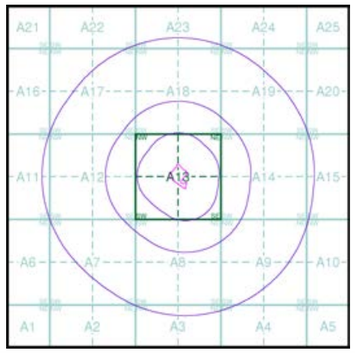
Source map scale - 1:10,000

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)



Historical Map - Slice A



Order Details

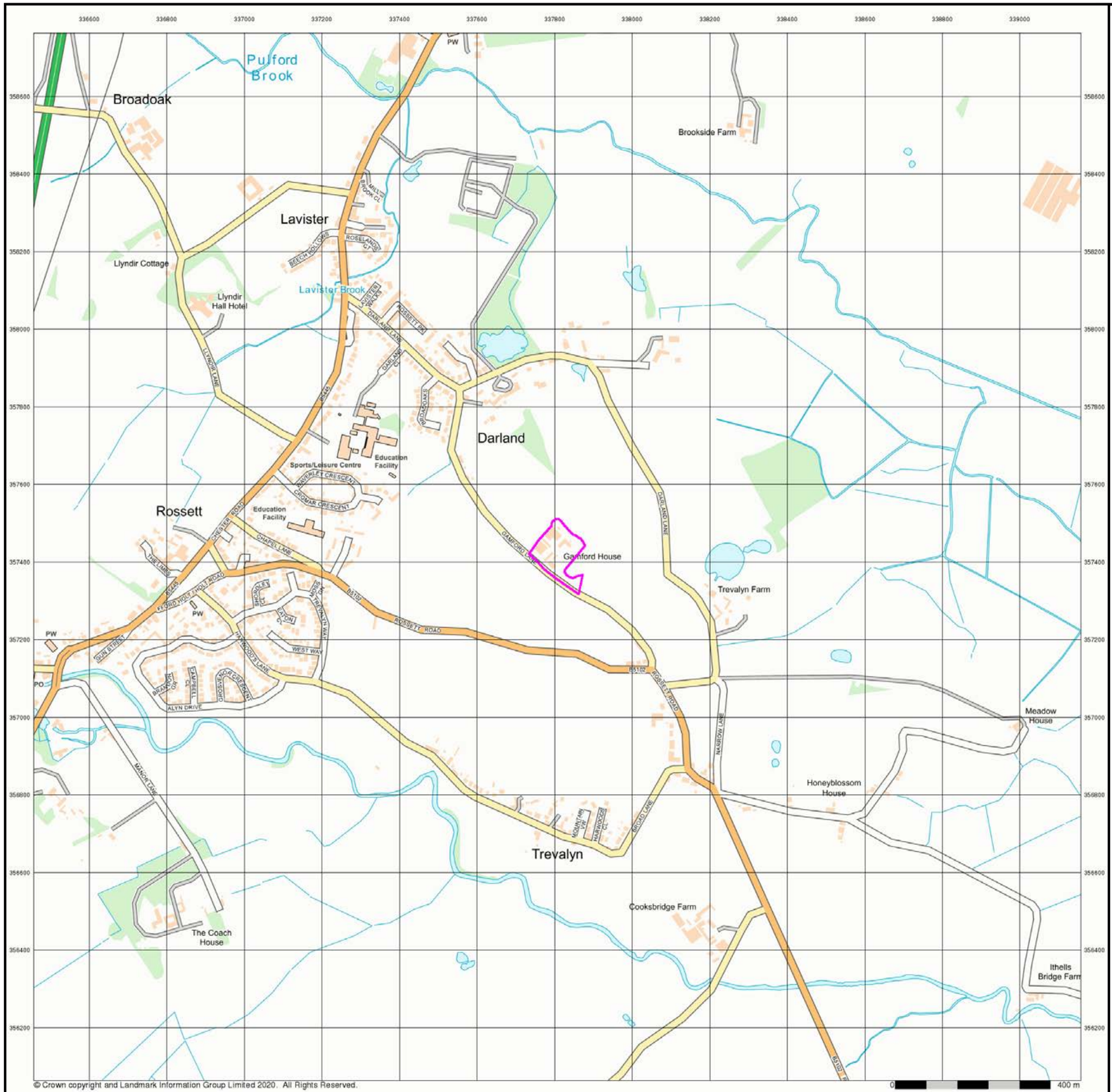
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Street View

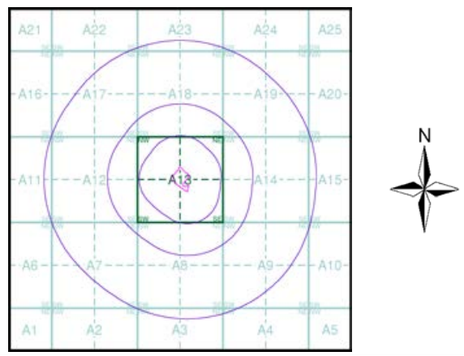
Published 2020

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

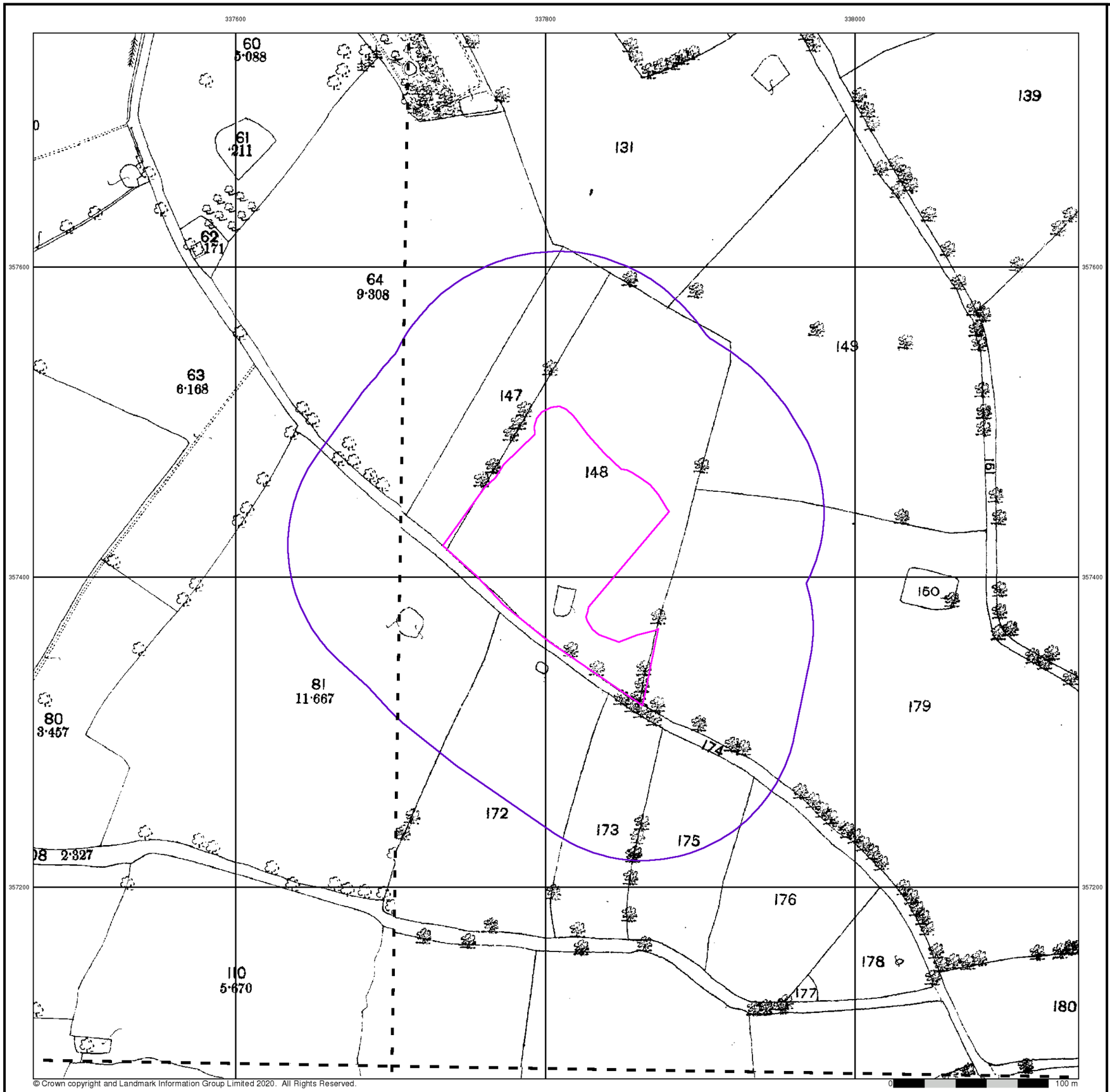
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Customer Ref:	ES031220
National Grid Reference:	337820, 357410
Slice:	A
Site Area (Ha):	1.36
Search Buffer (m):	1000

Site Details

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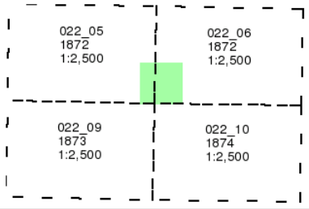
Denbighshire

Published 1872 - 1874

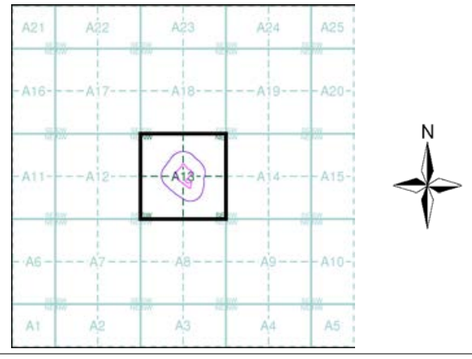
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

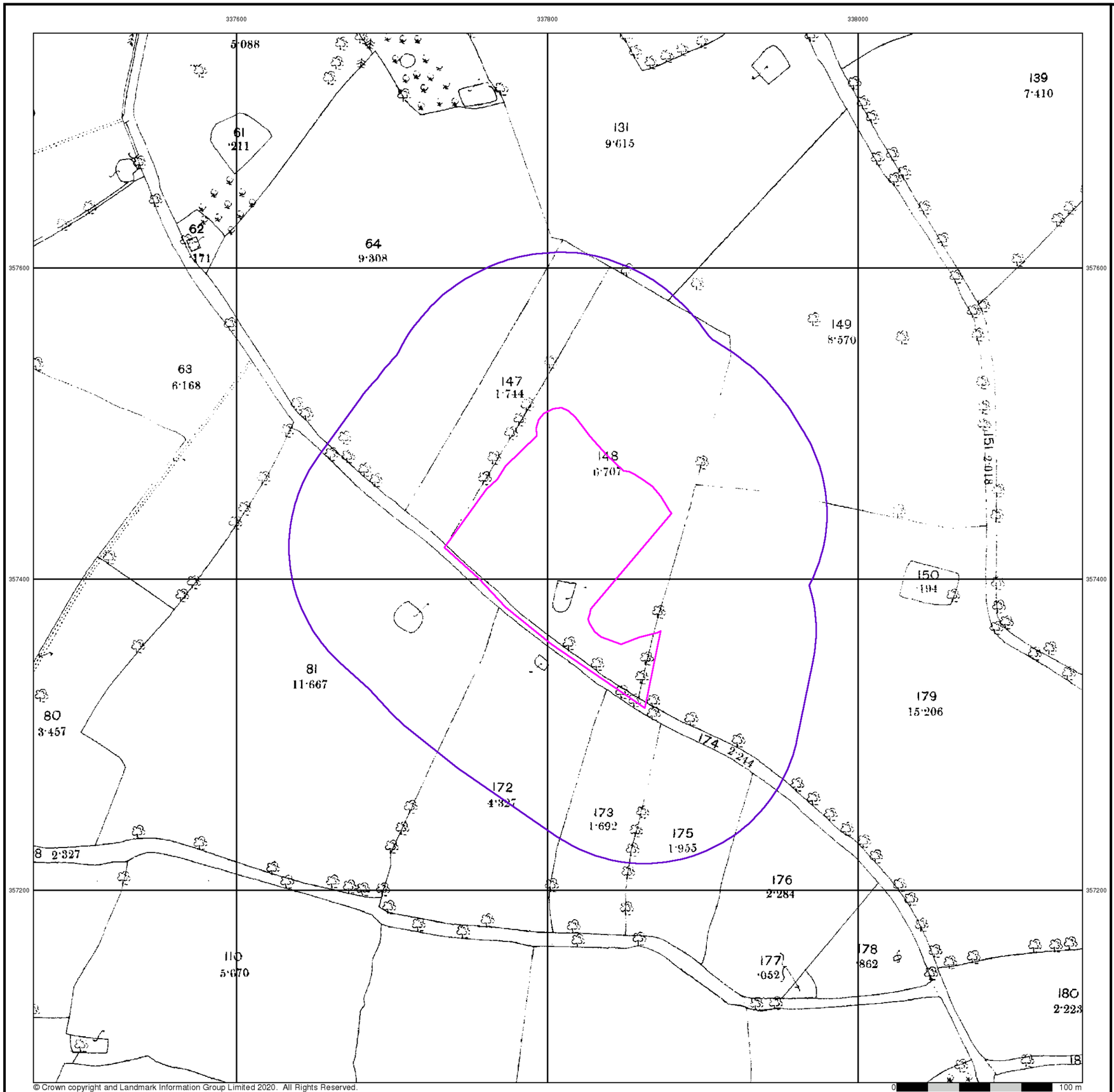
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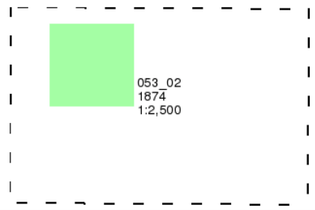
Cheshire

Published 1874

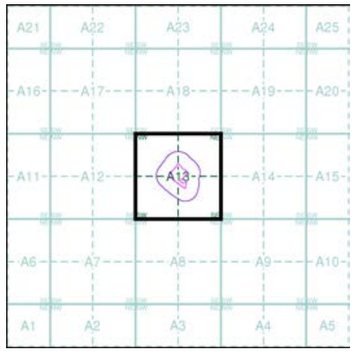
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Map Name(s) and Date(s)



Historical Map - Segment A13



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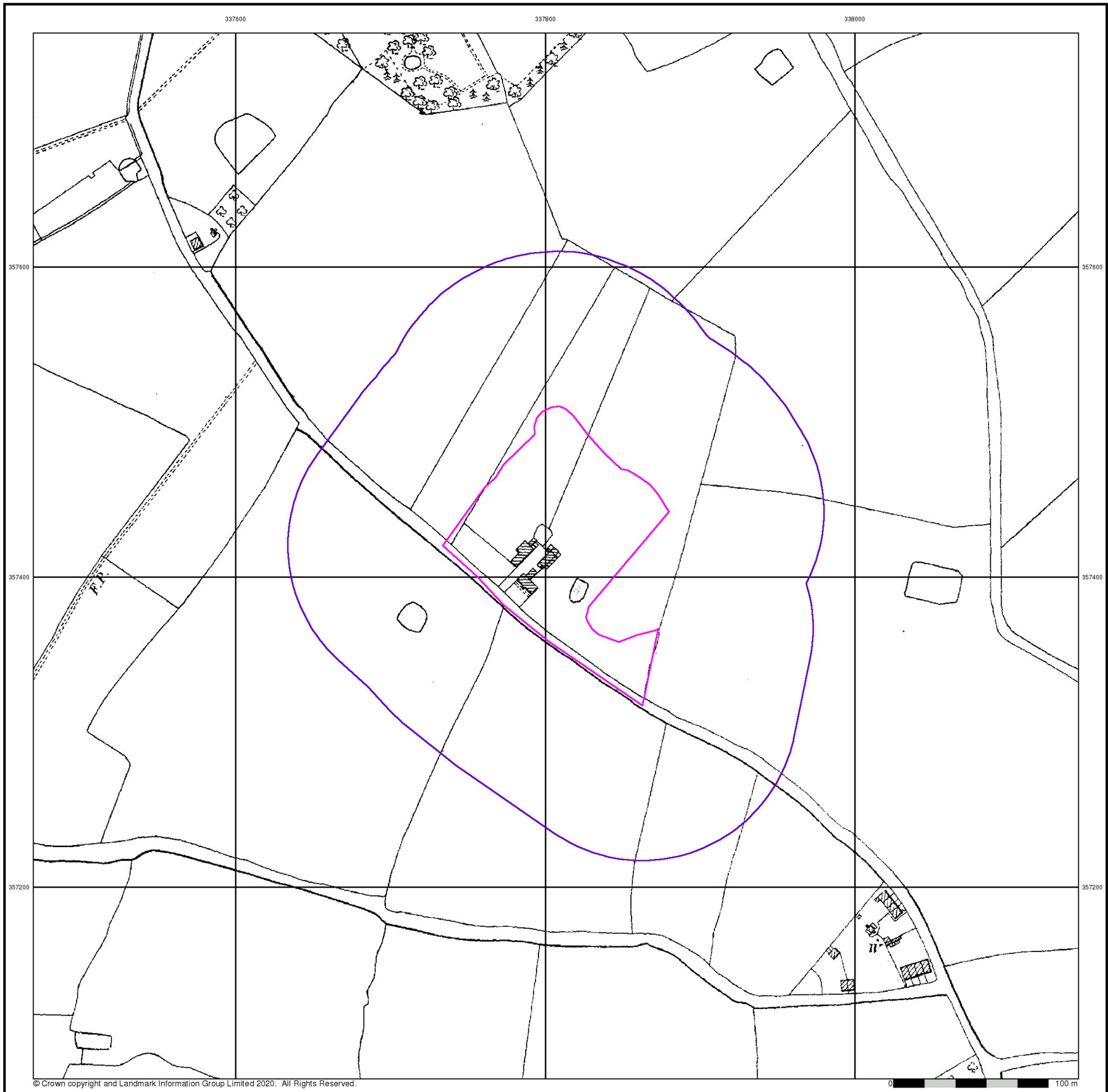
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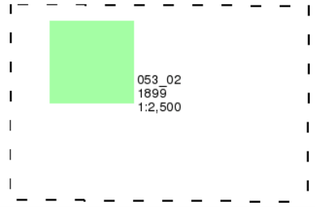
Cheshire

Published 1899

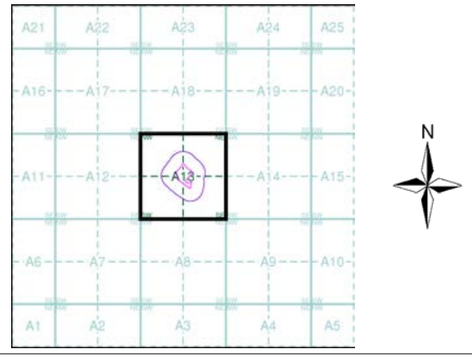
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

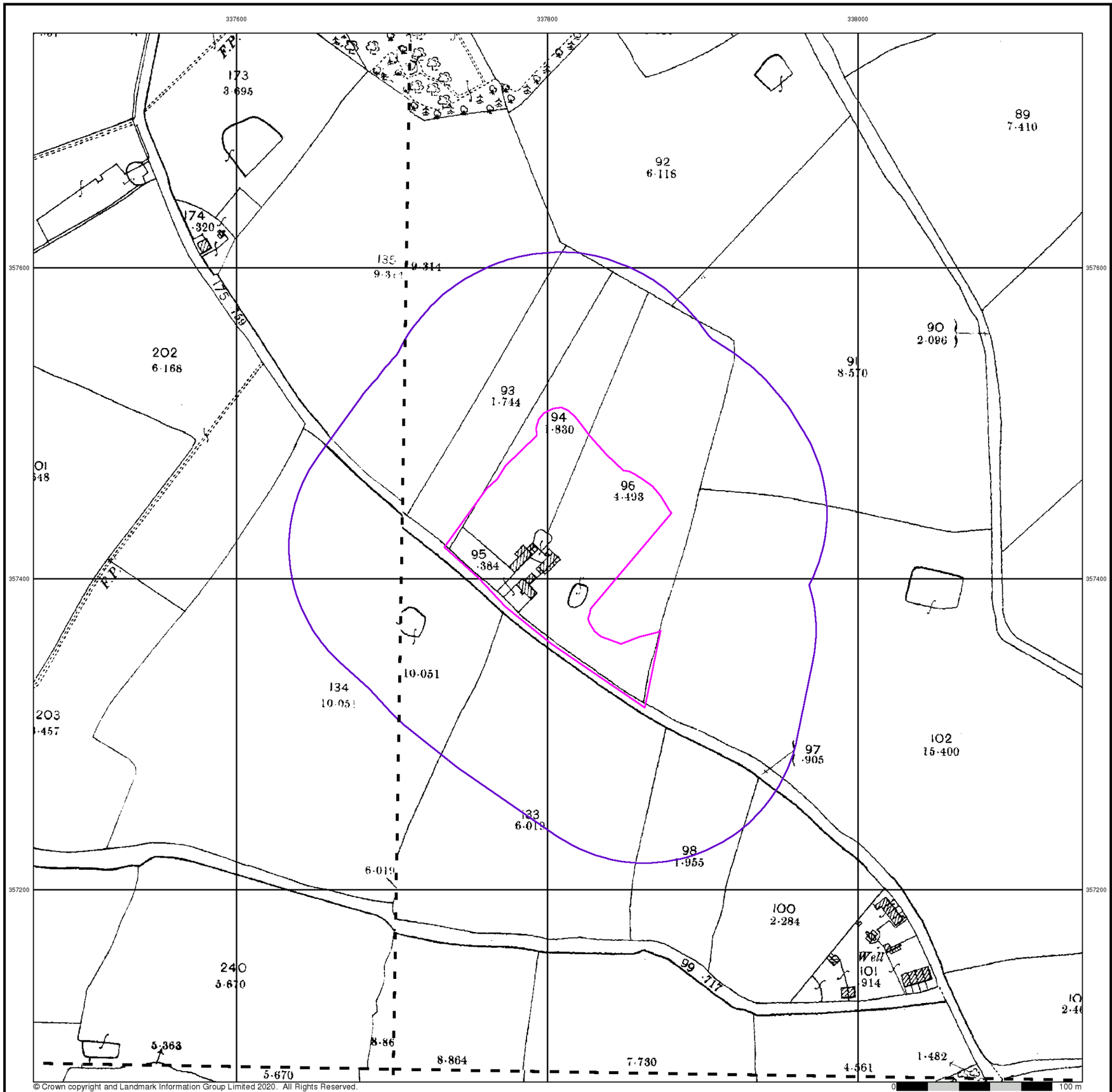
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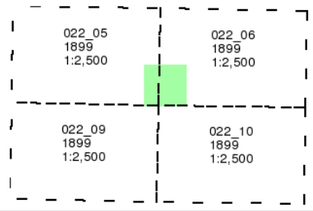
Denbighshire

Published 1899

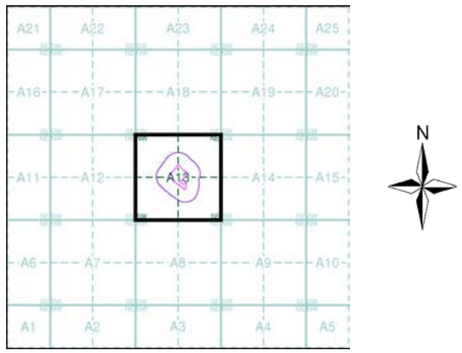
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

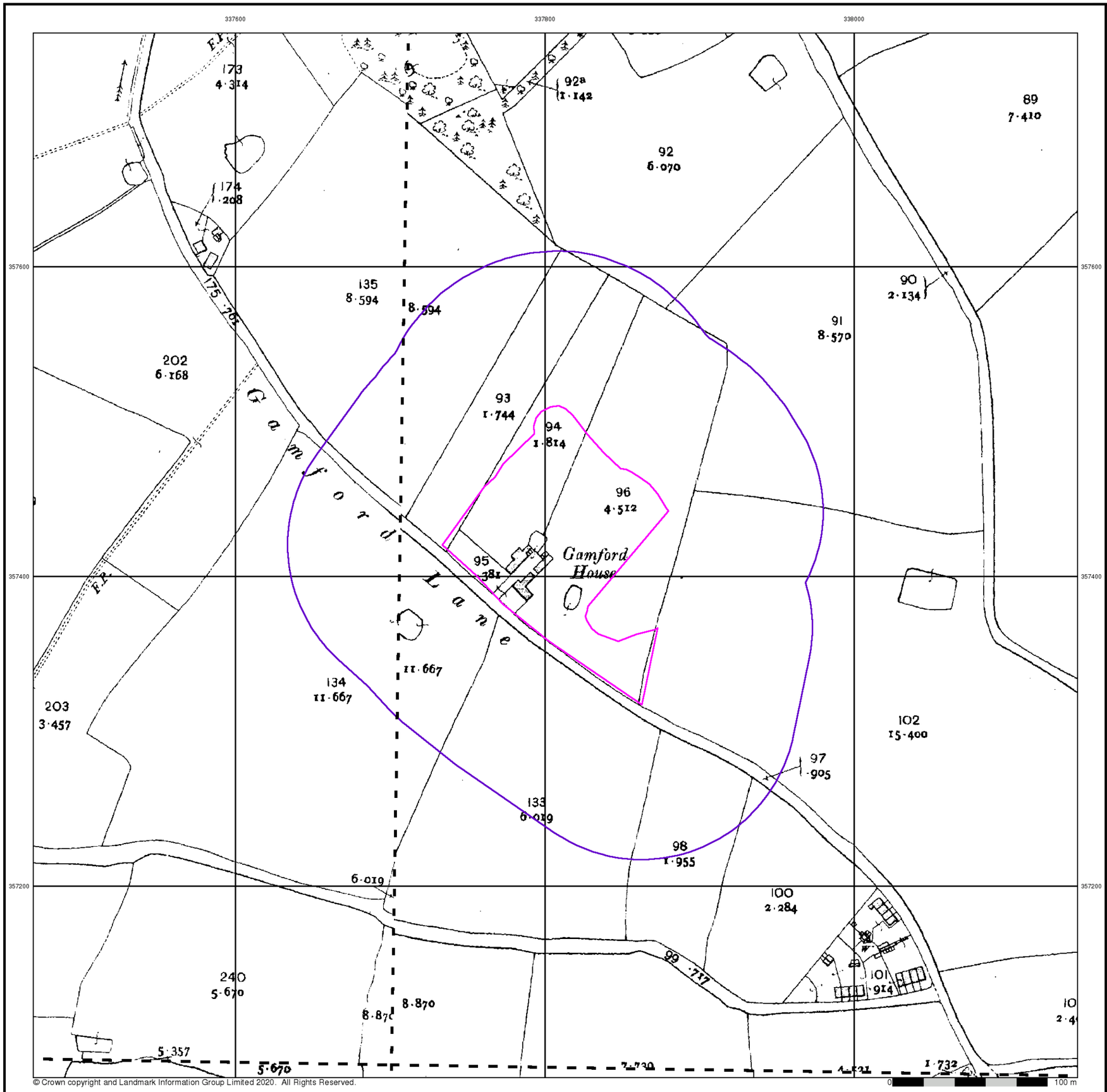
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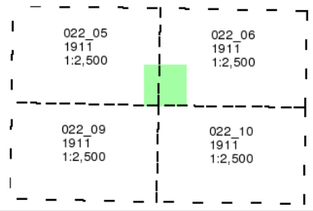
Denbighshire

Published 1911

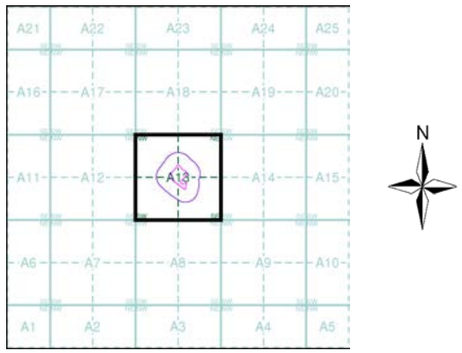
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

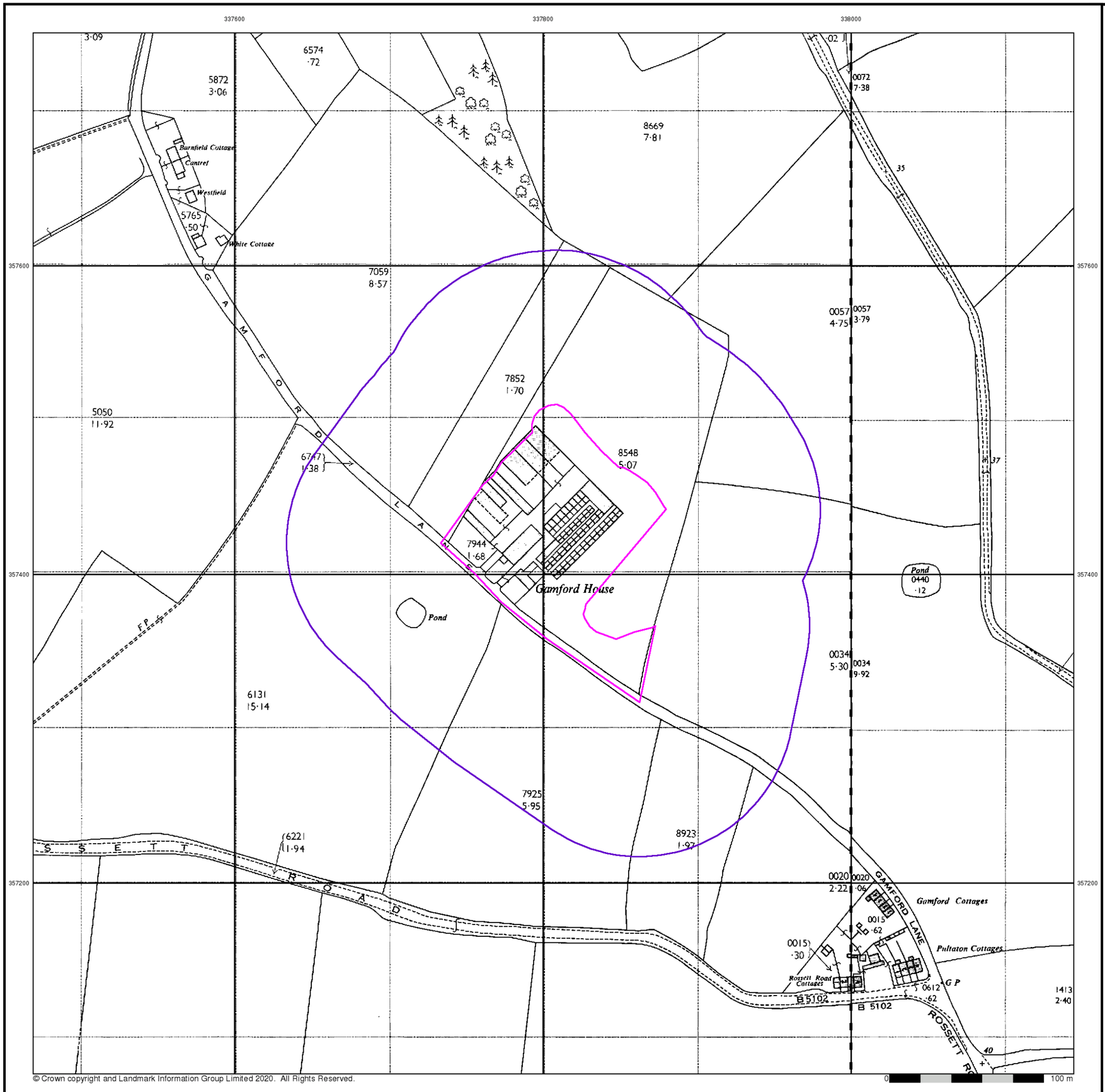
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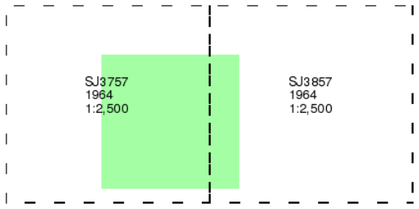
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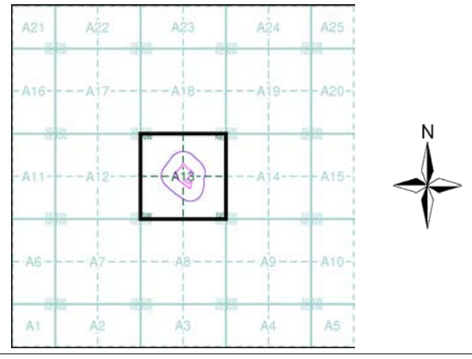
Ordnance Survey Plan
Published 1964
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



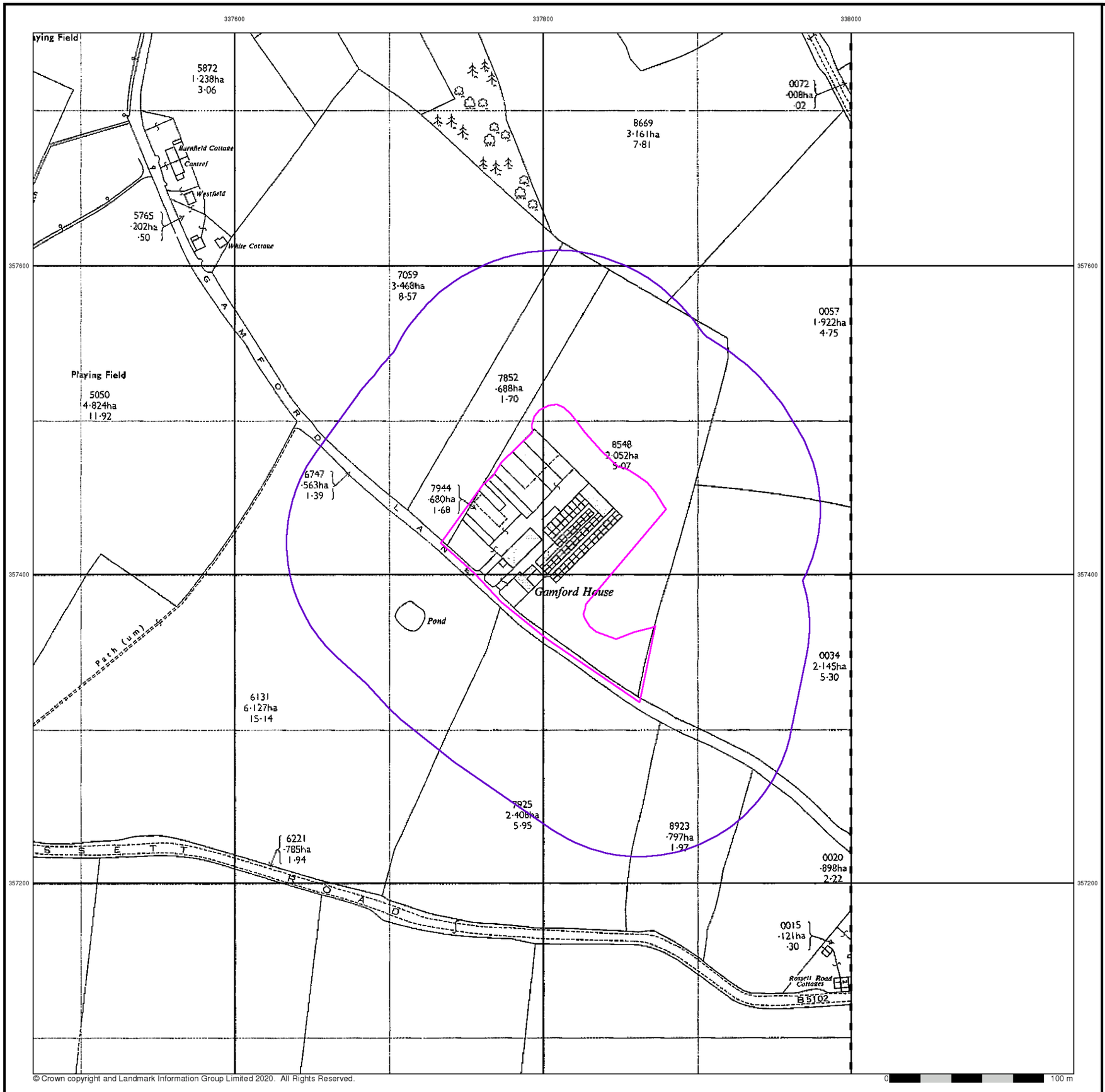
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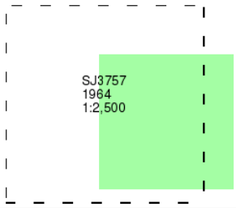
Additional SIMs

Published 1964

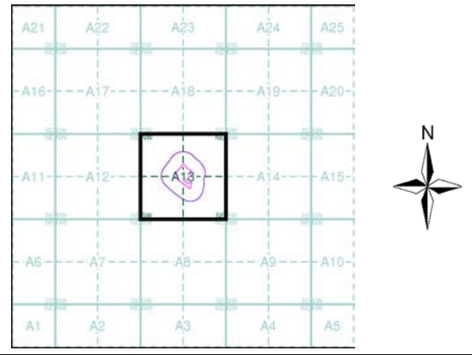
Source map scale - 1:2,500

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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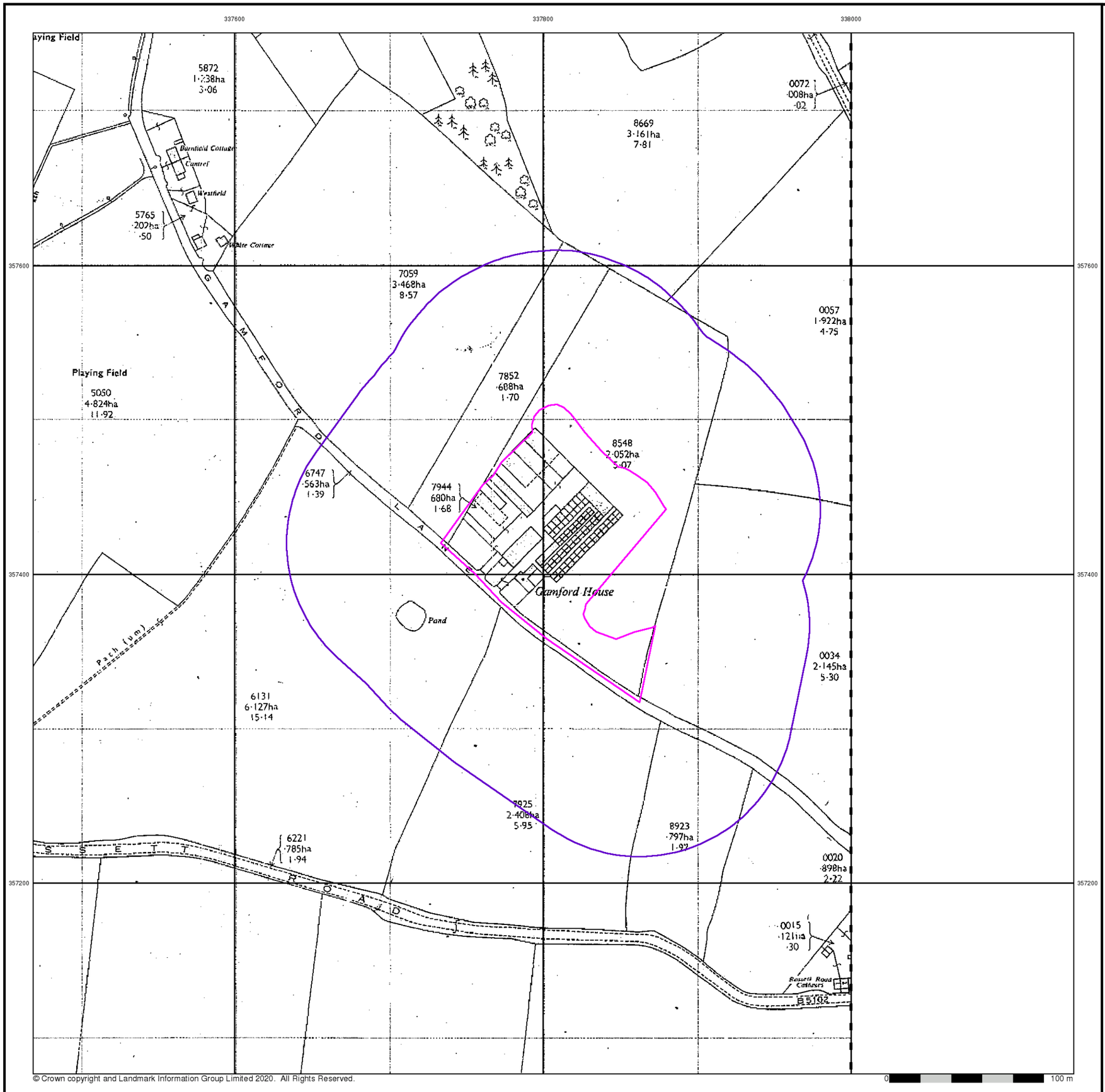
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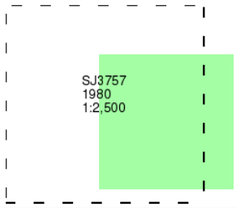
Additional SIMs

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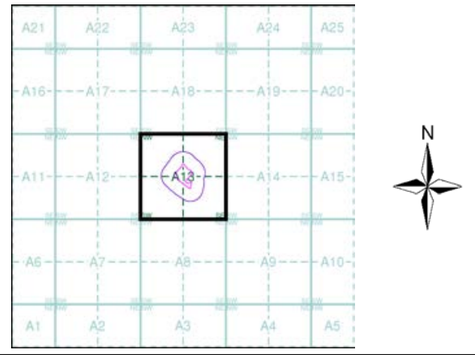
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



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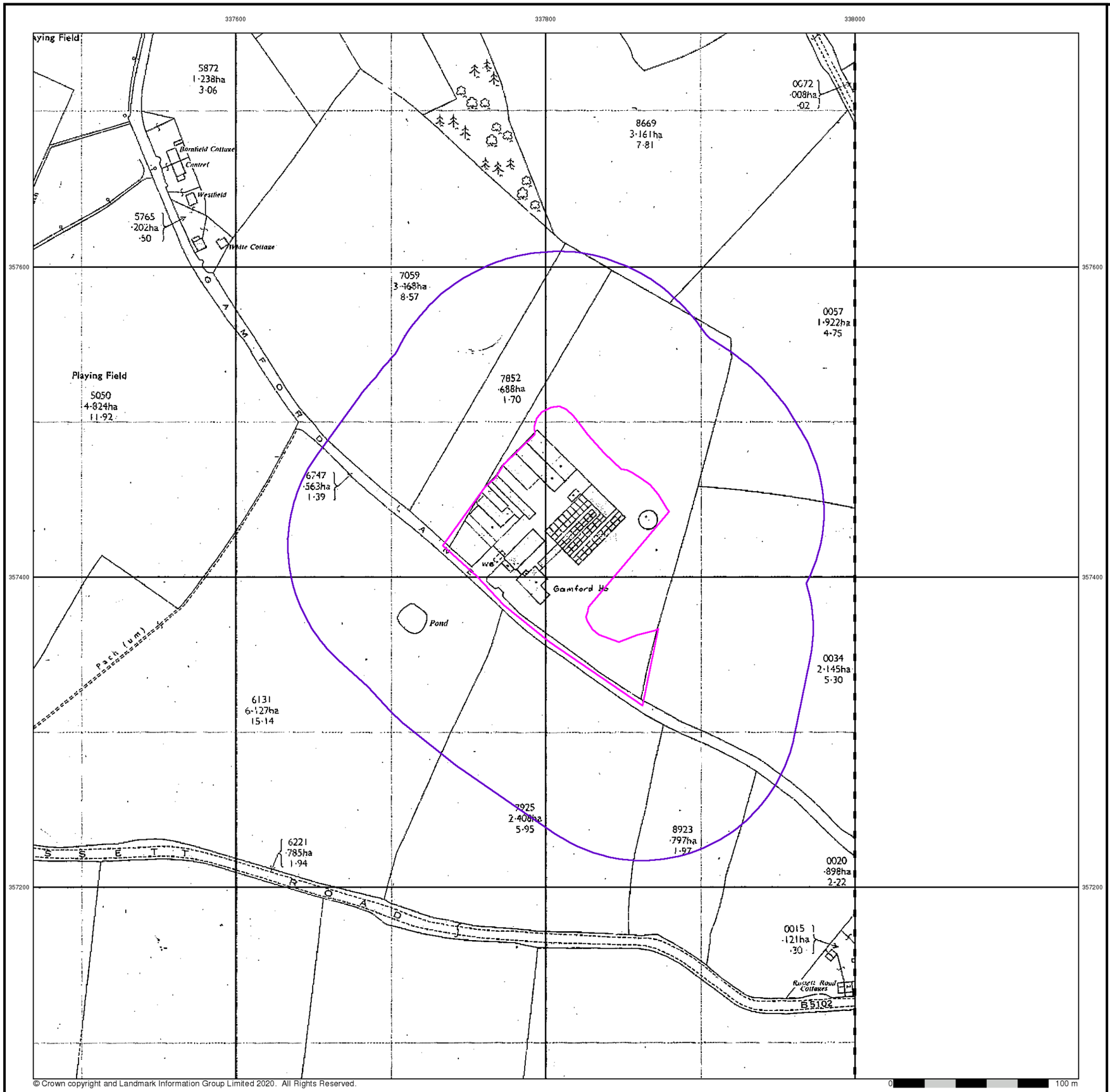
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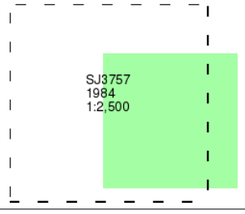
Additional SIMs

Published 1984

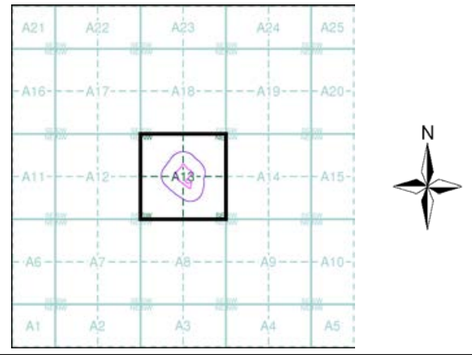
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



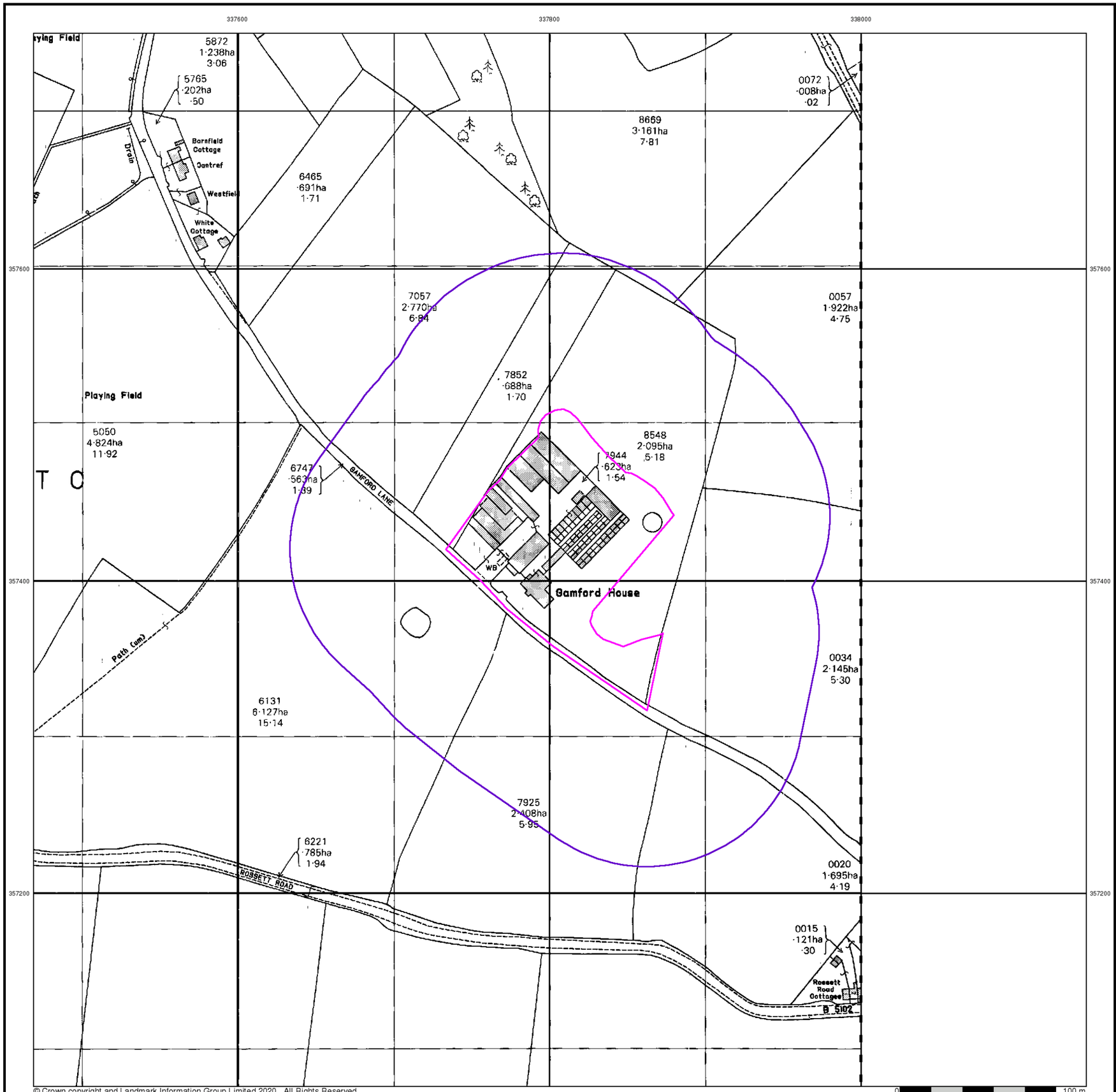
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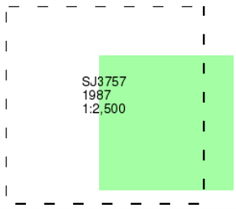
Ordnance Survey Plan

Published 1987

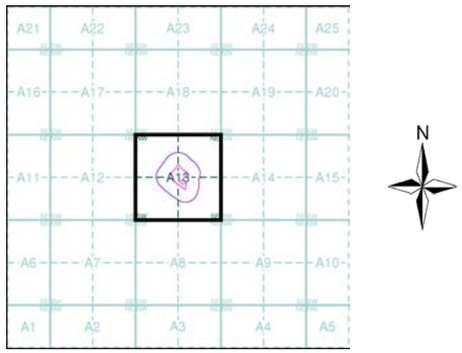
Source map scale - 1:2,500

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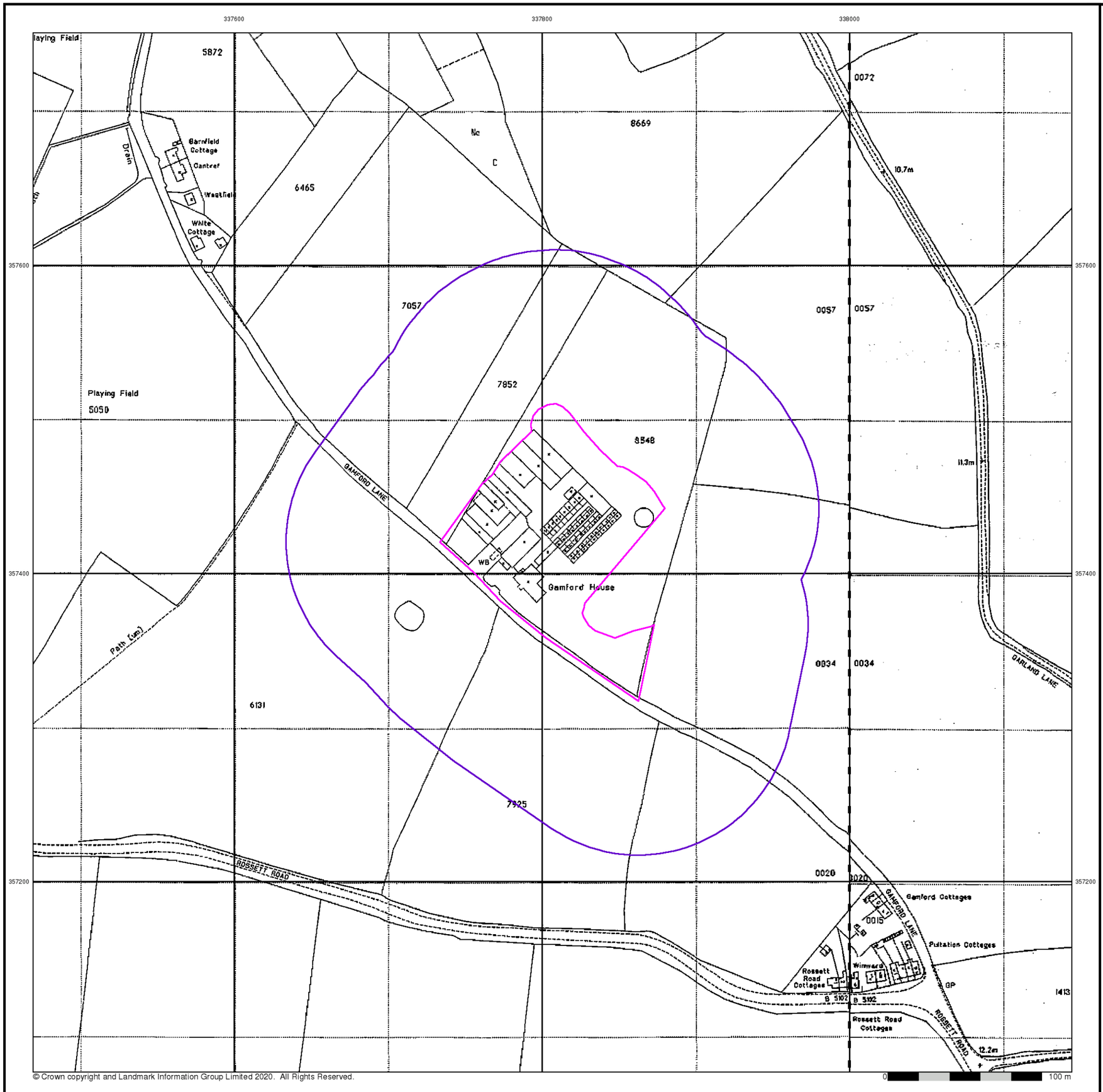
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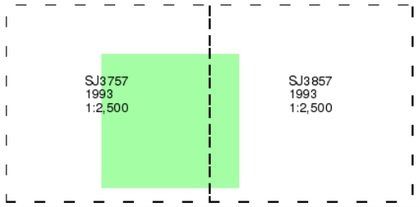
Large-Scale National Grid Data

Published 1993

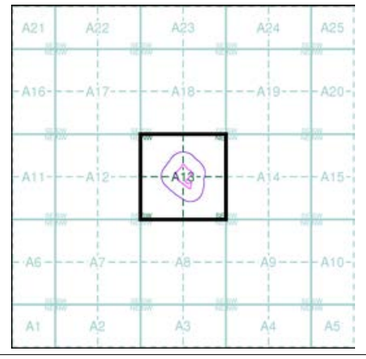
Source map scale - 1:2,500

'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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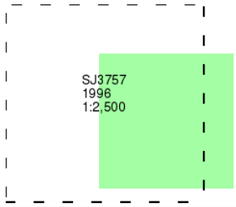
Large-Scale National Grid Data

Published 1996

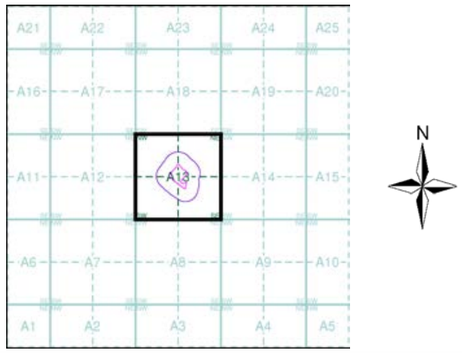
Source map scale - 1:2,500

'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:	269991236_1_1
Customer Ref:	ES031220
National Grid Reference:	337820, 357410
Slice:	A
Site Area (Ha):	1.36
Search Buffer (m):	100

Site Details

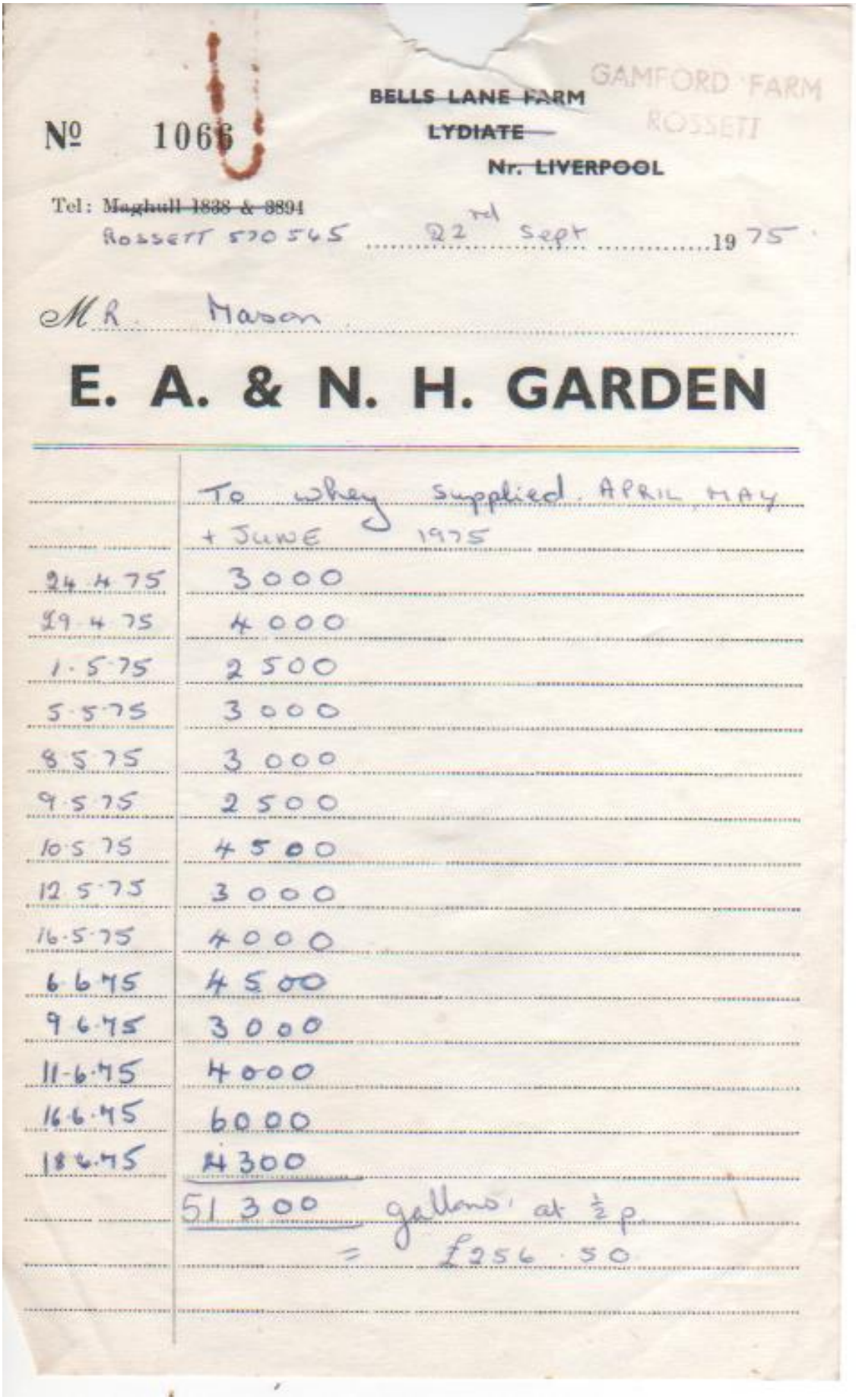
Gamford House, Gamford Lane, Rossett, WREXHAM, LL12 0EW

Landmark INFORMATION GROUP

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

Appendix D – Site Documents

Whey Supply Receipt



GAMFORD FARM
ROSSETT

BELLS LANE FARM
LYDIATE
Nr. LIVERPOOL

№ 1066

Tel: ~~Maghull 1838 & 8894~~
ROSSETT 570545

22nd Sept 1975

MR Mason

E. A. & N. H. GARDEN

	To whey supplied APRIL MAY + JUNE 1975
24.4.75	3000
29.4.75	4000
1.5.75	2500
5.5.75	3000
8.5.75	3000
9.5.75	2500
10.5.75	4500
12.5.75	3000
16.5.75	4000
6.6.75	4500
9.6.75	3000
11.6.75	4000
16.6.75	6000
18.6.75	4300
	51300 gallons at ½p
	= £256.50

Vehicle Paper Work

GAMFORD TRANSPORT SERVICES *N. H. GARDEN & J. E. GARDEN*

Gamford House, Gamford Lane, Rossett, Near Wrexham, Clwyd LL12 0EW.

TELEPHONE (0244) 570545

Department of the Environment

ROAD TRAFFIC ACT 1972 PART II SECTION 45

APPLICATION FOR A FIRST EXAMINATION OF A MOTOR VEHICLE

(see notes 1-5)

Before completing the form please read ALL the notes on pages 4, 5 & 6.

In the case of an articulated vehicle this form should relate to the tractive unit only. A separate form (VTG 2 L) must be completed for the semi-trailer—*see notes 1 & 4*

Failure to complete the form fully and correctly may necessitate returning the form to the applicant thus delaying the test appointment.

Please use BLOCK letters

DETAILS OF MOTOR VEHICLE TO BE EXAMINED

Month and Year of First Registration

Month	Year
3	75

(See Note 6)

Make of vehicle: E R F

Reference to the Vehicle in the Department Standard Lists (where known)

Part	Page	Line

Unladen weight: 5994 · 7 kg.

1. General

(a) Manufacturer's Model and Type — (a) 2 AXLE RIGID BODY FLAT LORRY

(b) Chassis or Serial No. (letters and numbers) — (b)

(c) Year of manufacture — (c)

(d) Number of axles and, if more than two axles, state arrangement and type of drive (e.g., three axled twin steer or three axled double drive) — (d) 2

(e) Is the vehicle a tractive unit of an articulated vehicle? — (e) Answer YES or NO NO

(f) Is the vehicle fitted with a manufacturer's plate referred to in Regulation 39 of the Motor Vehicles (Construction and Use) Regulations 1973? *(see note 8)* — (f) Answer YES or NO. If the answer is "YES" give details of weights listed in the Manufacturer's plate in the table at question 12.

2. Alterations to Vehicle

Give details of any known alterations or conversions made to the chassis, brakes or running gear (i.e. axles, wheels, steering gear or suspension) since first manufacture of the vehicle and state name and address of converter. (Normal replacement of parts should not be included.) If NONE, please write NONE as appropriate *(See Note 9)*

(a) Chassis NONE

(b) Brakes NONE

(c) Running gear NONE

PLEASE ENSURE THAT THE CARBON COPY OF THE DETAILS INSERTED BELOW APPEARS DISTINCTLY AT THE FOOT OF PAGE 5

DETAILS OF FEE ENCLOSED *(See Note 5)*

*Cheque/~~Girocheque~~/~~crossed Postal Order~~

Number..... Amount £.....

CASH MUST NOT BE SENT

* delete as necessary

Number of axles: 2

* Motor vehicle Registration Mark *(See Note 6)*: J F M 3 4 N

Name: MR N H GARDEN

Address: GAMFORD FARM

Please state below where and when you want the vehicle to be tested. Two choices should always be stated. YOU WILL BE ALLOCATED AN APPOINTMENT AS NEAR TO YOUR CHOICE AS POSSIBLE.

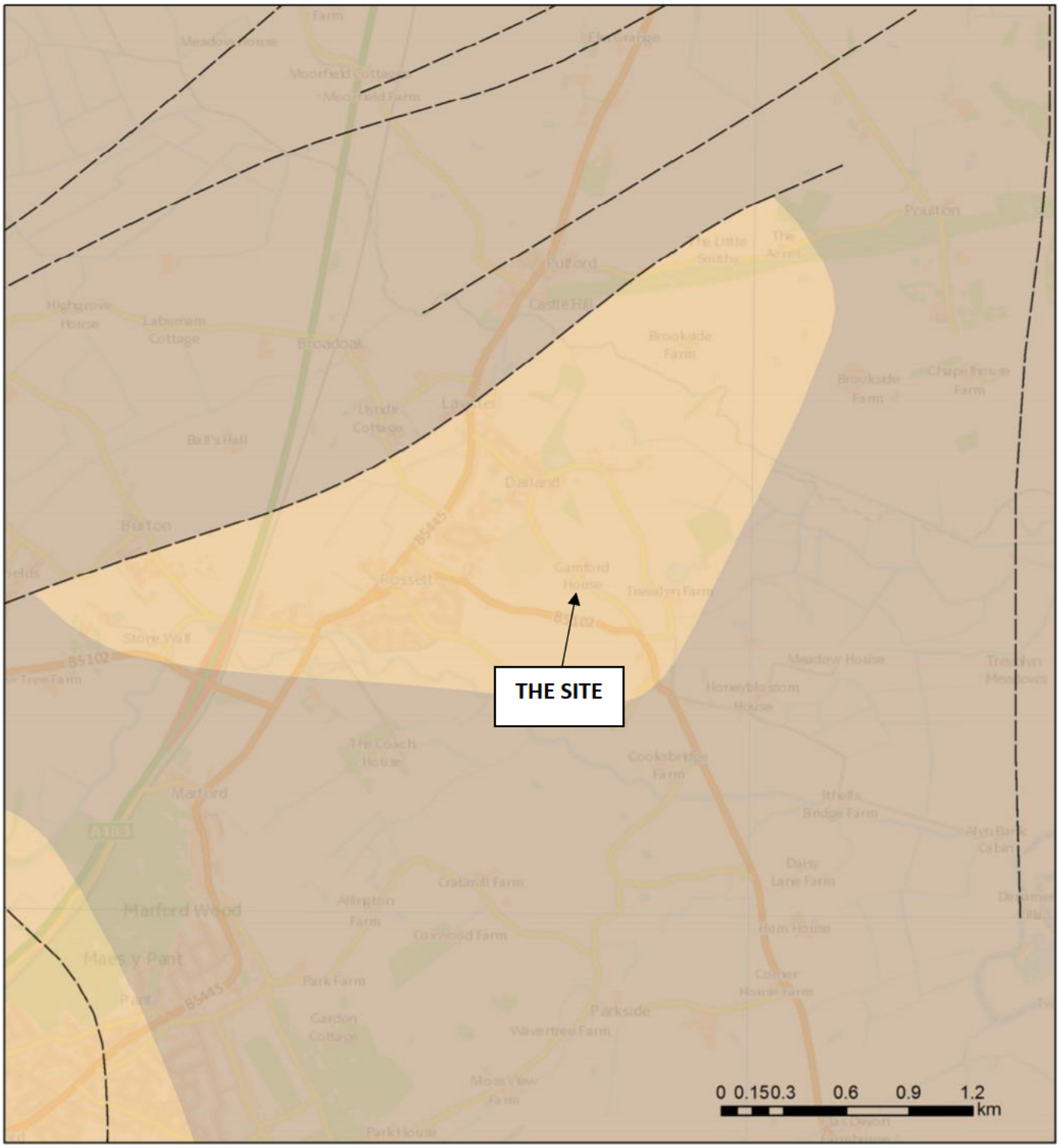
Number and name of testing station *(see note 2)*

CHOICE	No.	NAME
1st	59	WREXHAM
2nd		

Choice	Date(s) or day(s) of week	state whether a.m. or p.m. preferred
1st	W/C 1ST MARCH 1976	AM OR P.M
2nd		

Appendix E – Geological Maps

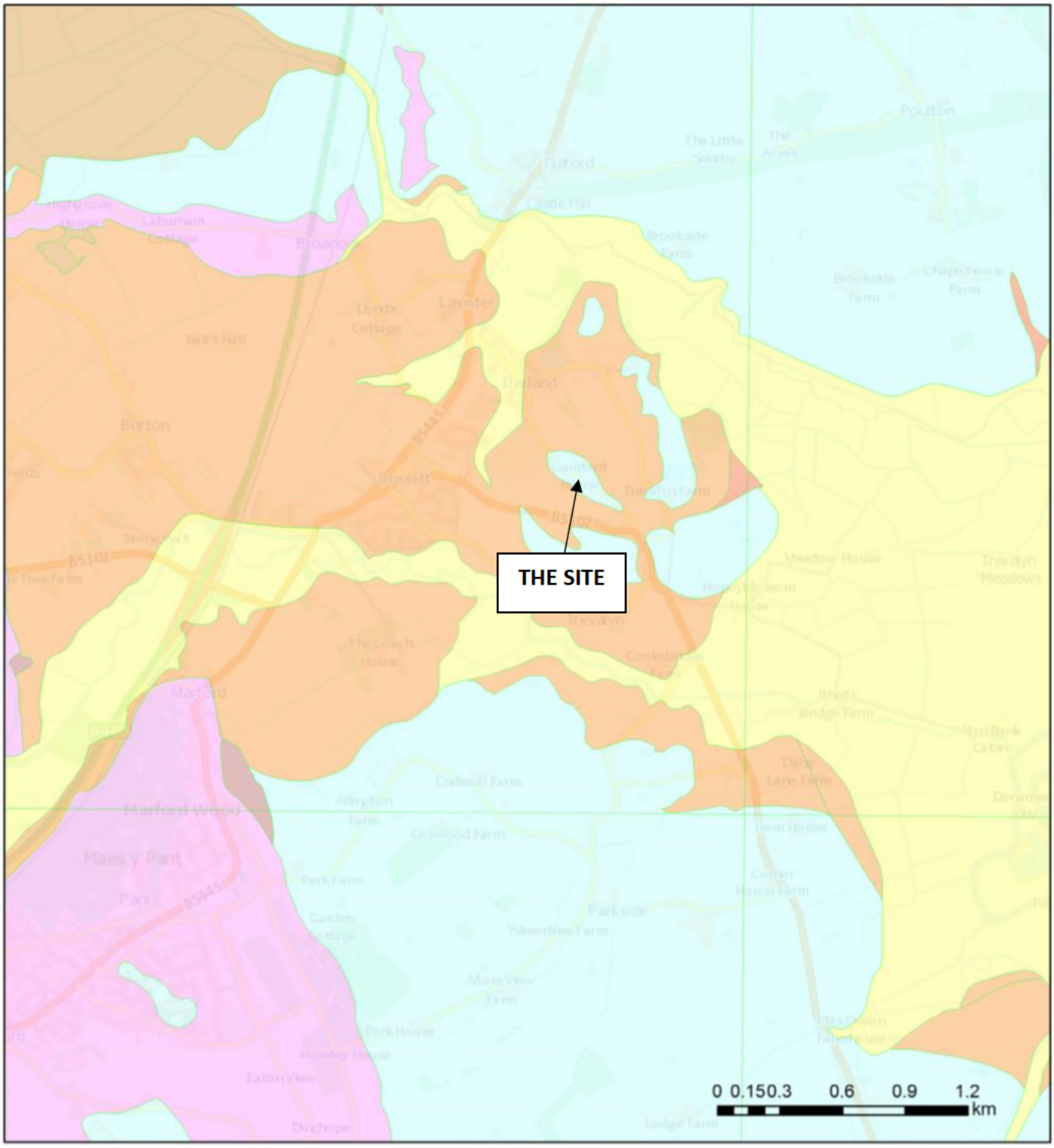
Bedrock Geology



Bedrock geology 1:50,000 scale

- ETRURIA FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE
- HALESOWEN FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE
- GWESPYR SANDSTONE - SANDSTONE AND [SUBEQUAL/SUBORDINATE] ARGILLACEOUS ROCKS, INTERBEDDED
- SALOP FORMATION - MUDSTONE, SANDSTONE AND CONGLOMERATE
- KINNERTON SANDSTONE FORMATION - SANDSTONE
- PENNINE MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE
- BOWLAND SHALE FORMATION - MUDSTONE
- CHESTER FORMATION - SANDSTONE, PEBBLY (GRAVELLY)

Superficial Geology



Superficial deposits 1:50,000 scale

- GLACIOFLUVIAL DEPOSITS, DEVENSIAN - SAND AND GRAVEL
- TILL, DEVENSIAN - DIAMICTON
- GLACIOLACUSTRINE DEPOSITS, DEVENSIAN - CLAY AND SILT
- ALLUVIUM - CLAY, SILT, SAND AND GRAVEL
- HEAD - CLAY, SILT, SAND AND GRAVEL
- RIVER TERRACE DEPOSITS, 1 - SAND AND GRAVEL
- ALLUVIAL FAN DEPOSITS - SAND AND GRAVEL
- LACUSTRINE DEPOSITS - CLAY AND SILT
- PEAT - PEAT

Appendix F - BGS Borehole Logs

SJ35NE37

IGS 1536 (1159) 2000 1/76 — Institute of Geological Sciences — Sheet 1 of 1

Borehole Reg No: SJ35NE 37
Temp borehole No: SJ 35 NE 12
Nat Grid Ref: 3782 5739
Locality: GAMFORD HO. DARLAND
Surface level: m O.D.(ft O.D.)
Drilled by: STRATA SURVEYS LTD
Drill type: SHELL
Hole diameter: 8"
Depth(s) bailed:
Date started:
Date finished:
Recorded by: A.R.CLAYTON.

Classification of ground	Thickness m	Nature
WASTE	18.0	UPPER BOULDER CLAY

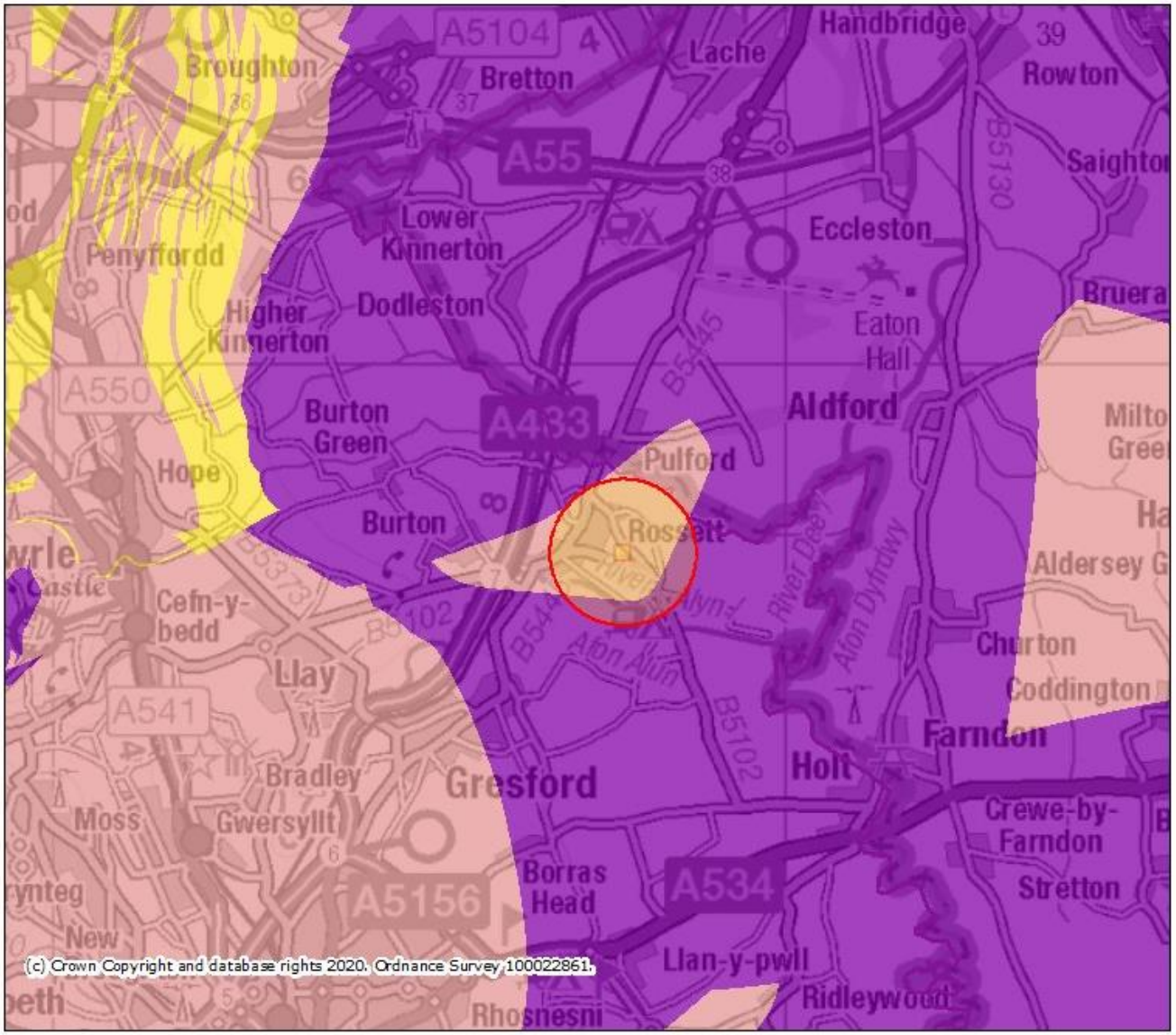
Remarks

Explanation
▽ Groundwater depth first encountered
a▼ Morning water level
p▼ Evening water level
Casing depth
Borehole depth
w Water sample
U, sample; solid ornament shows fraction recovered
Spot disturbed sample
Bulk sample
S.P.T. Standard Penetration Test

Geological Classification	Description of Strata	Depth to Base m	Thickness m	Sampling	Sample Nos	Water level	Drilling and Casing progress
UPPER BOULDER CLAY	SOIL	0.2	0.2	—	—		
	CLAY, REDDISH BROWN, SLIGHTLY SANDY IN UPPER 0.8M. RARE SUBROUNDED QUARTZ, QUARTZITE AND IGNEOUS PEBBLES. NO COAL. STRUCTURELESS THROUGHOUT. NO CHANGE WITH DEPTH.	18.0+	17.8				
	BOREHOLE COMPLETED AT 18m						

MAGiC

Bedrock Aquifer



Legend

Aquifer Designation Map (Bedrock) (England)

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

Projection = OSGB36
xmin = 320000
ymin = 349300
xmax = 354600
ymax = 366600

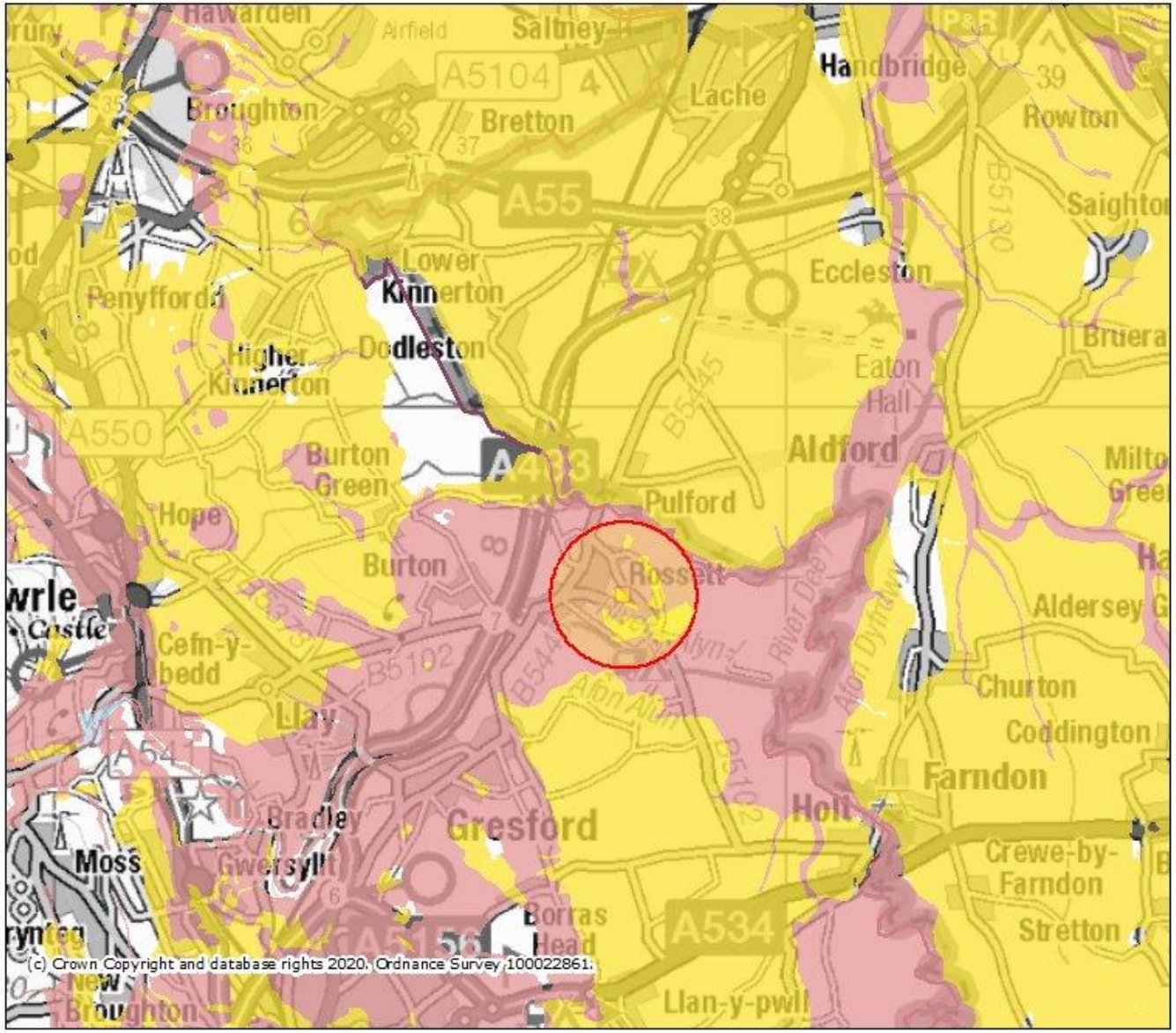
0 1.5 3
km

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MAGiC

Superficial Aquifer



Legend

Aquifer Designation Map (Superficial Drift) (England)

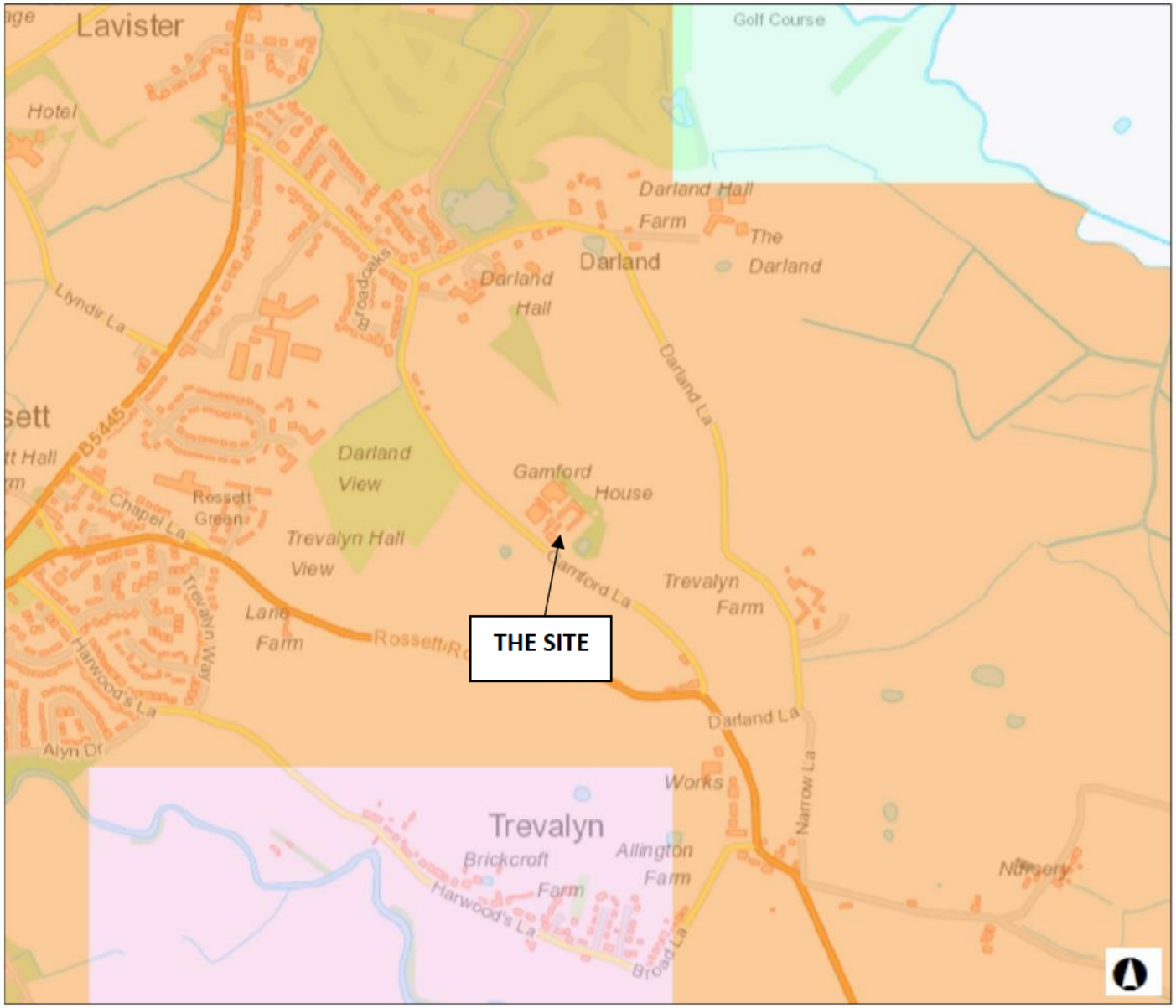
- Principal
- Secondary A
- Secondary B
- Secondary (undifferentiated)
- Unknown (lakes+landslip)
- Unproductive

Projection = OSGB36
xmin = 320000
ymin = 350500
xmax = 354600
ymax = 366600

0 1.5 3
km

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Cyfoeth Naturiol Cymru
Natural Resources Wales

Groundwater Vulnerability

Allwedd / Map Key

Simplified Groundwater vulnerability

- High
- Medium - High
- Medium
- Medium - Low
- Low
- Unproductive

- Dedicated Woodland CRoW Act
- Special Protection Areas
- RAMSAR (Wetlands of International Importance)
- National Nature Reserves
- Local Nature Reserves
- National Parks

Graddfa / Scale 1: 10,000

Dyddiad / Date
03/12/2020

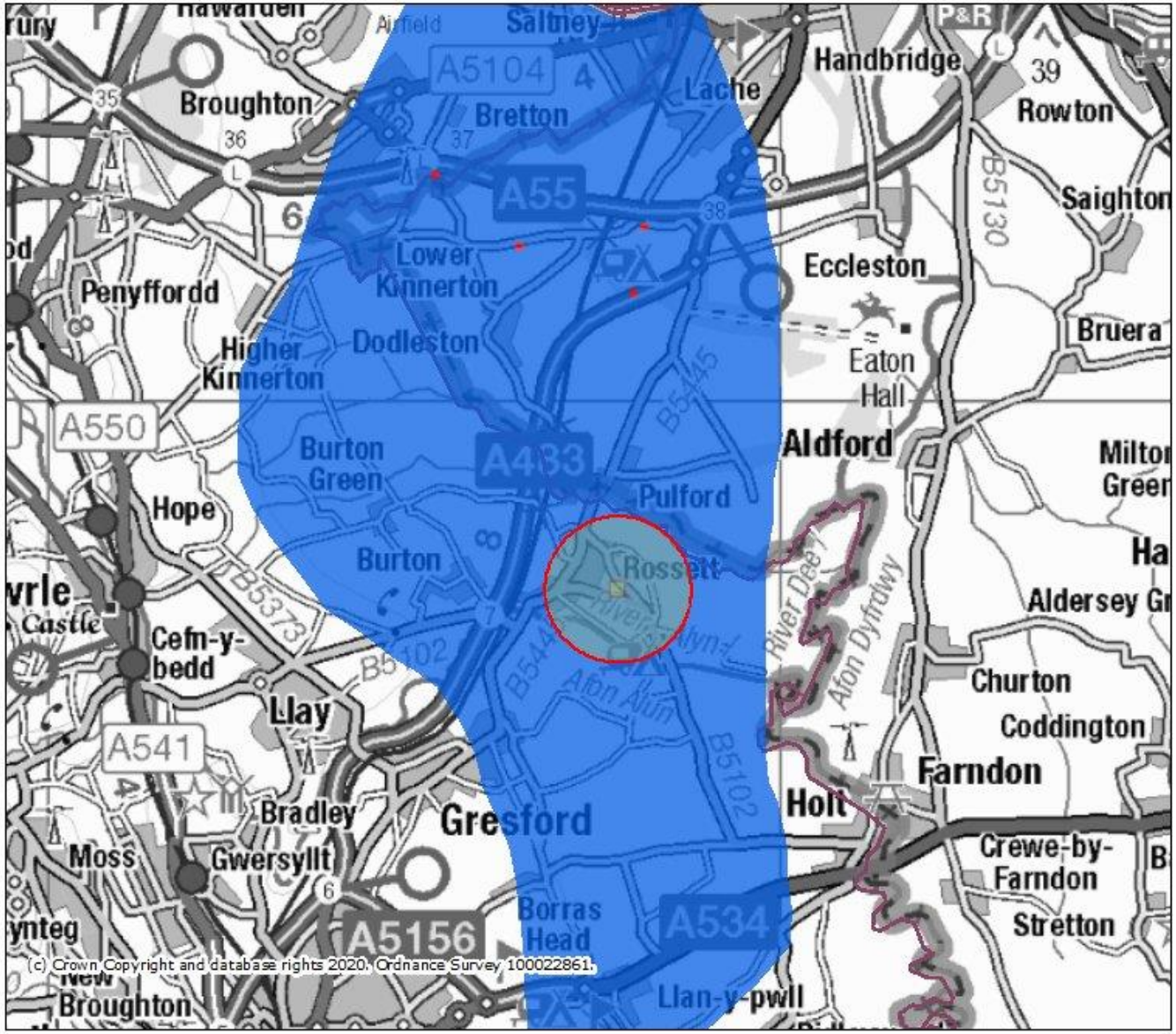
0.5 0 0.25 0.5

British_National_Grid Kilometers

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Source Protection Zone



Legend

Source Protection Zones merged (England)

- Zone I - Inner Protection Zone
- Zone I - Subsurface Activity
- Zone II - Outer Protection Zone
- Zone II - Subsurface Activity
- Zone III - Total Catchment
- Zone III - Subsurface Activity
- Zone of Special Interest

Projection = OSGB36
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ymin = 350400
xmax = 354600
ymax = 366500

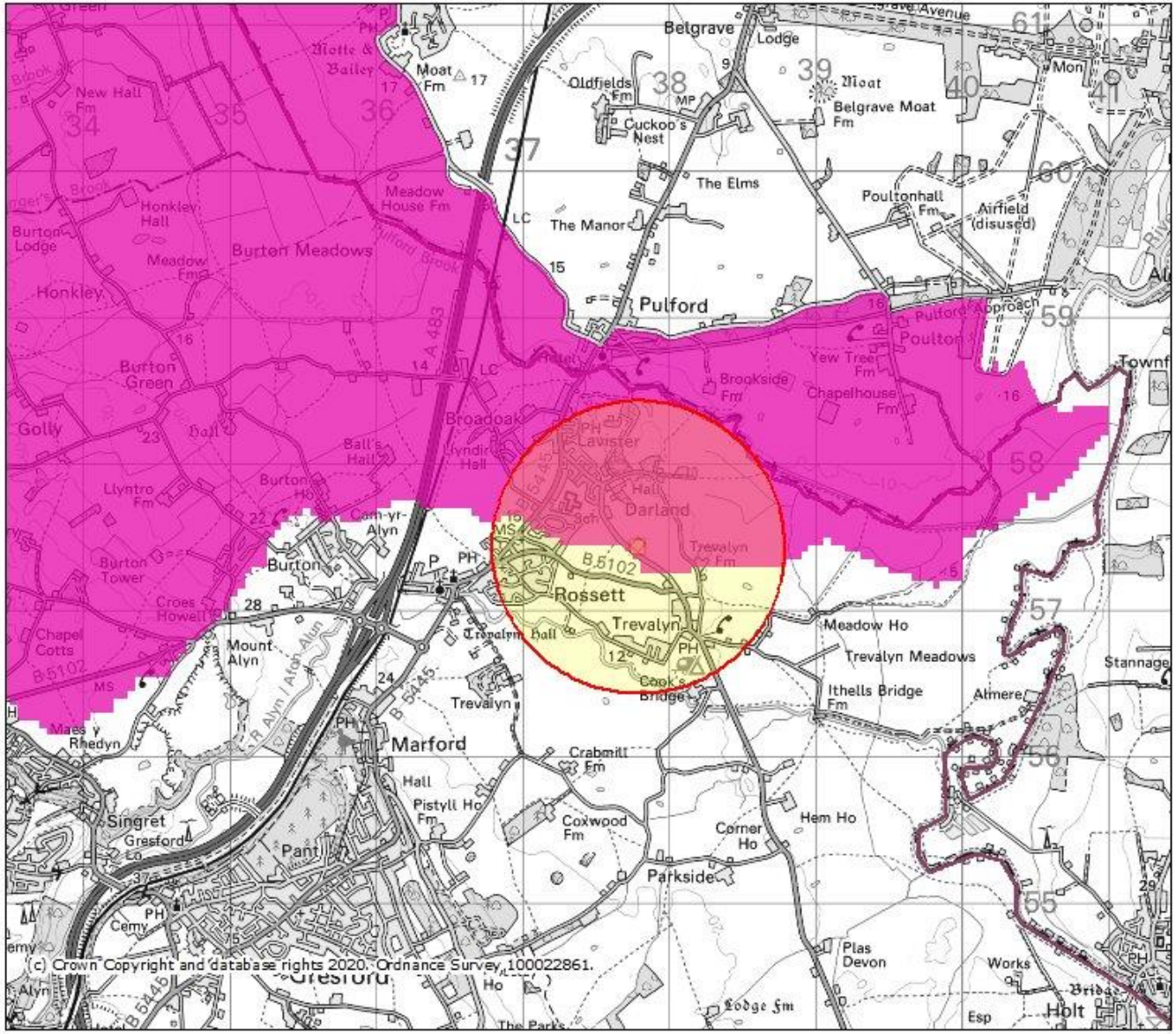
0 1.5 3
km

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Nitrate Vulnerable Zones



Legend

Nitrate Vulnerable Zones
2017 Designations
(England)

Projection = OSGB36
xmin = 328800
ymin = 353600
xmax = 346100
ymax = 361700

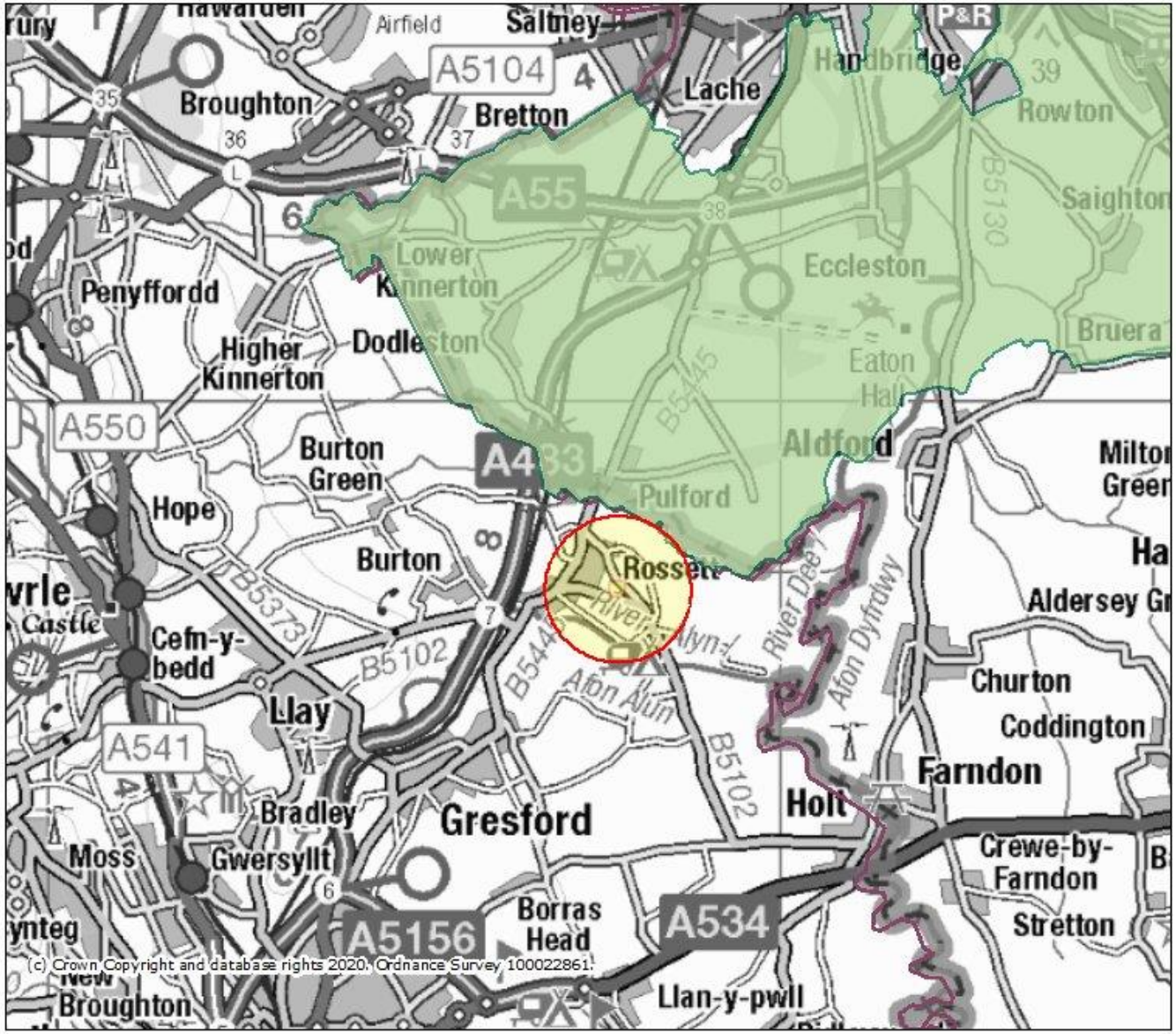
0 0.75 1.5
km

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MAGiC

Greenbelt



Legend

Green Belt (England)

Projection = OSGB36
xmin = 320100
ymin = 350400
xmax = 354600
ymax = 366500

0 1.5 3
km

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