soils LIMITED

Preliminary Investigation Report

at
Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD

for
Toby Chapman

Job Reference: 20022/PIR_R26
February 2022

Control Document

Project
Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD

Document Type
Preliminary Investigation Report

Document Reference
20022/PIR

Document Status
Final

Date
February 2022

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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

Current regulations and good practice were used in the preparation of this report. The recommendations given in this report must be reviewed by an appropriately qualified person at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

AGS Association of Geotechnical & Geoenvironmental Specialists
BGA CORPORATE MEMBER 2021 www.britishgeotech.org.uk
Quality Systems Certifications Ltd OHSAS 18001:2007
Quality Systems Certifications Ltd ISO 9001:2015

Commission

Soils Limited was commissioned by Toby Chapman to undertake a Preliminary Investigation on Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD. The scope of the investigation was outlined in the Soils Limited quotation reference Q25762 dated 18th January 2022.

Caveat

Whilst reasonable skill and care has been taken to determine the site history and the environmental setting within the time constraints applied by the project, it should be appreciated that uncertainties may occur owing to the natural variability of soil material within a defined area or as a result of unknowns that are associated with contaminated land assessment in general. The site conditions may be different from that indicated by this Preliminary Investigation, particularly on a site with a history of past development. No responsibility can be accepted should such conditions alter the recommendations made in this report.

Without a drainage survey it is not possible to establish if the surface water drainage is to the main drainage system or soakaways. If there are soakaways on-site, they could act as a potential source. The geology on-site to an extent may determine if soakaways were likely to have been adopted.

This Preliminary Investigation does not include a detailed UXO risk assessment, it does however contain a basic assessment in accordance with CIRIA C681 and C785. In preparing a Preliminary Investigation reference is made to historical maps and web-based sources to assess the risk of the site potentially having been impacted by bombing during the World Wars. The data readily available is not necessarily definitive. Certain areas were bombed heavily such as centres of industrial manufacture, airfields, shipyards, docklands, railways sidings and junctions. The assessment is based on the likely area risk, bomb patterns (i.e. lines of recorded bomb impacts with gaps where an impact would be anticipated) and the age of structures on and in close proximity to the site.

Legislation and Liability

The primary legislative mechanism for contaminated land management in the UK is Part 2A of the Environmental Protection Act, 2021 (EPA). Part 2A was introduced into the EPA under Section 57 of the Environment Act 1995 to help deal with the substantial legacy of land contamination. The legislation provides powers in relation to the identification, remediation and apportionment of liability for contaminated land. Part 2A applies where there is unacceptable risk, assessed on the basis of the current use and the relevant circumstances of the land. It is not directed to assessing risks in relation to a future use of the land that would require a specific grant of planning permission.

Under Part IIA of the Environment Act 2021, Local Authorities are required to identify contaminated land and serve on every person who is an appropriate person a

remediation notice setting out what is to be done by way of remediation and the period within which it must be done.

If the person who caused, or knowingly permitted, the contaminating substance cannot be found, the owner and/or, occupier for the time being, of the property can be the appropriate person.

Under the legislation, Contaminated Land is defined as: -

"Land which is in such a condition by reason of substances in, on or under the land that significant harm is being caused or that there is a significant possibility of such harm being caused or that pollution of controlled waters is being, or is likely to be caused."

Where the Act defines harm as:

"harm to the health of living organisms or other interference with the ecological systems of which they form a part and, in the case of man, includes harm to his property."

and pollution of controlled waters is defined as: -

"the entry into controlled waters of any poisonous, noxious or polluting matter or any solid waste matter."

In addition, The Radioactive Contaminated Land (Modification of Enactments) (England) Regulations 2006 introduced the supplementary definition of harm to include: lasting exposure to any person resulting from the after-effects of a radiological emergency, past practice or past work activity.

With regard to contaminated waters, the Environment Act 1995 amends the Water Resources Act 1991 and provides the Environment Agency with the power to force clean-up of historical contamination by issuing a Works Notice, with remediation paid for by the responsible parties.

The Groundwater Regulations (1998) stated that entry of List 1 substances into groundwater must be prevented, and List II substances must be controlled.

Limitations and Disclaimers

This Preliminary Investigation Report relates to the site located at Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD and was prepared for the sole benefit of Toby Chapman (The "Client") for the brief described in the Commission of this report.

The contents, recommendations and advice given in the report are subject to the Terms and Conditions given in Quotation Q25762 dated 18/01/2022 accepted by the client in their Purchase Order Q25762, dated 07/02/2022.

Soils Limited disclaims any responsibility to the Client and others in respect of any matters outside the scope of the above.

This report has been prepared by Soils Limited, with all reasonable skill, care and diligence within the terms of the contract with the Client, incorporation of our General Conditions of Contract of Business and taking into account the resources devoted to us by agreement with the Client.

The report is personal and confidential to the Client and Soils Limited accept no responsibility of whatever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report wholly at its own risk.

The Client may not assign the benefit of the report or any part to any third party without the written consent of Soils Limited.

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief. As such these do not necessarily address all aspects of ground behaviour at the site.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

There may be other sources of information not included in those listed that hold data relevant to the Preliminary Investigation Report undertaken at the site that could materially affect the conclusions made in this report.

It should be noted that a detailed survey of the possible presence or absence of invasive species, such as Japanese Knotweed, is outside of the scope of investigation.

Ownership of land brings with it onerous legal liabilities in respect of harm to the environment. “Contaminated Land” is defined in Section 57 of the Environment Act 2021.

Where a contaminative use is identified in the Preliminary Investigation Report this does not determine whether contamination has actually occurred, or if it has the degree to which it may have taken place. An intrusive investigation(s) and analysis is required to establish the nature and degree of any contamination present.

All works are undertaken in the context of, and in compliance with, BS10175+A2 2017 and LCRM (EA 2021) and all other pertinent planning, standards, documentation and guidance appropriate to the site at the time of production which may include, but are not necessarily limited to, documents provided by BS/CEN/ISO, NHBC, AGS, CIEH, CIRIA, SoBRA and CLAIRE.

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Section 1 Introduction

1.1 Objective

The Preliminary Investigation Report was undertaken to advise the client on the risk pertaining to the site, with special reference to historic and current potential contaminative activities and processes. This also included the assessment of their impact on current and future sensitive receptors such as human health, controlled waters, ecological features, building structures and services.

1.2 Site Location

The site was located at Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD and had an O.S Land Ranger Grid Reference of TQ 224 206.

The site location map is presented in Figure 1 and the full Site Walkover is discussed in Section 2.1 of this report.

1.3 Proposed Development

The proposal comprises demolition of the existing buildings and the erection of a 2 storey house with associated garden, access, open space, garage and ancillary building.

In compiling this report reliance was placed on drawings 268_PL_099 prepared by Sandy Rendel Architects. The recommendations provided within this report are made exclusively in relation to the scheme outlined above and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

The proposed development plans have been provided in Appendix A.

Section 2 Site Conditions

2.1 Site Walkover

A site walkover was undertaken in February 2022, by Soils Limited. During the site walkover observations were made in relation to current activities, evidence of historical activities, sources of potential contamination such as fuel storage tanks, oil drums and chemical storage and evidence of contamination. The walkover also looked for evidence of soil contamination in the form of staining odours and stressed or discoloured vegetation. The notes of the site walkover are presented in Table 2.1 and Table 2.2.

Table 2.1 Site Walkover Record (On-site)

Use of Site	Farmland and Farm Storage Buildings (Photograph 1)
Structures	Two barns used for storage and livestock (Photographs 2 and 3) and a Silo (Photograph 4) – Feed – no risk
Site Topography	Relatively flat with slight incline (<3°) to southwest
Site Covering	Grass, concrete and brick
Vegetation	Mature trees and shrubs (Photograph 1)
Potential Contamination Sources	None noted: Covered surfaces appeared clean with no obvious staining (Photograph 2)
Odour	None noted
Drainage	None noted – to ground or possible soakaway?

Table 2.2 Site Walkover Record (Off-site)

Use of Land	Generally surrounded by Farmland (Photographs 5 and 6) West: Road with Farmhouse / Stables opposite (Photographs 7 and 8) directly to the southwest, further housing to south alongside road
Area Topography	West and northwest towards local stream
Vegetation	Agricultural land with occasional Mature Trees and Hedgerows at boundaries and occasional shrubs
Potential Contamination Sources	None Noted

2.2 Site Drainage

No evidence of drainage noted, possible soakaways (unlikely given underlying non-productive strata) but no evidence of such noted during site walkover.

2.3 Site Photographs

The site photographs have been included within Appendix F.

Section 3 Geology, Hydrogeology, Hydrology and Radon

3.1 Anticipated Geology

The 1:50,000 BGS Geology map showed the site to be situated on Weald Clay Formation bedrock, with no overlying superficial deposits noted.

3.1.1 Weald Clay

The Weald Clay Formation consists of shales and mudstones with occasional thin beds of siltstones, sandstone, shelly limestone and clay ironstone. When fresh the beds are normally dark grey weathering to mottled yellow and brown near the surface or at outcrop. Bands of red clay occur within the bed, usually in association with the sandstone. In this case the Geological report and maps indicate a predominance of Limestones in this area.

3.2 Hydrogeology

To assess the vulnerability of groundwater to contamination, consideration must be given to the leaching characteristics of the overlying soils and the characteristics of the strata in the unsaturated zone. Information on the geological strata such as lithological type and permeability characteristics has been combined with the physical properties of the soil to produce varying degrees of vulnerability.

Table 3.1 presents the hydrological data that is relevant to the site.

Table 3.1 Hydrogeological Assessment

Hydrogeological Data		Comment
On-site Aquifers	Superficial	No Superficial Deposits noted
	Bedrock	Wealdon Group – Unproductive Strata[1]
Groundwater Vulnerability		Unproductive Aquifer
Source Protection Zones (SPZ)		None Noted within 2km
Abstraction	Potable	None Noted within 1km
	Non-potable	None Noted within 1km
Sensitive Land Uses		Surface Water Nitrate Vulnerable Zone on site Ancient Woodland 661m South
Surface Water Features		13m Southwest (Pond), nearest inland river (Adur and Teville catchment) 114m South
Flood Risk from Rivers or Seas		None Noted
Flood Risk from Surface Water		None Noted
Flood Risk from Groundwater		None Noted – nearest noted 342m Northwest

Note(s): [1] Unproductive Strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

Any works or development which has the potential to have an impact on surface water, aquifer or groundwater quality must be approved by the Environment Agency prior to implementation.

3.3 Hydrology

The approximate elevation of the site was ~22m Above Ordnance Datum (AOD). The anticipated groundwater flow direction is given in Table 3.2.

Table 3.2 Hydrological Assessment

Type	Direction	Notes
Surface water	NW	Following local topography
Groundwater		None anticipated[1] – Unproductive Strata

Note(s): [1] Very low flow or percolation (<10^{-7}m/s) could be possible and would be anticipated to follow topography locally

3.4 Radon Gas

The Landmark Report indicated that the site was not situated within an area where protection or risk assessment against the ingress of radon was required and of lower probability where less than 1% of homes are estimated to be at or above the Action level. Radon protection measures will therefore not be required within the proposed new development. It is not possible in the course of a survey or inspection to determine whether radon gas is present as the gas is colourless and odourless. Tests can be undertaken to assess the concentration of radon in existing structures.

Section 4 Site History

4.1 Historic Map Study

The object of this study was to report on the evidence of site history and redevelopment of the site and its environs from available County Series and Ordnance Survey Maps dating from the mid to late 19th Century to the present day as downloaded from Landmark Environmental.

The published maps only represent a "snapshot" of the site and its environs at the date of the survey. The detail of the information recorded can vary between epochs, map scale and county areas. It should be noted that changes in land uses, processes or activities may have occurred outside of published epochs and these may not have been recorded on subsequent epochs. Also note that as methods of projection, production and recording have changed over time, this can result in geo-reference errors that may indicate the established site boundary is off-centre from its true location on older historical maps. Where this is potentially significant it will be noted.

Any distances quoted for features remote from the site have been scaled from the maps and are only approximate. Where dates have been noted in brackets, these are the actual dates applicable to the map editions and may not reflect the date of the original survey it is based on. The information reported might not represent all pertinent information that could be obtained. The interpretation of the maps and/or other data commented on in this report is subjective.

As part of the review of the historical plans, only features considered to have or to have had a potential contaminative impact on the site and usually within a notional 250m radius are discussed. The north point and approximate extent of the site are indicated on each figure. The historic maps referred to are appended to this report (Appendix B).

Table 4.1 Historic Development of the Site

Site History	Date Range	
	From	To
The site is part of two agricultural fields adjacent to a road/track passing north to south on the western side.	1875	1993
The site is developed as today but the field boundary is not noted after 1980	1993	2022

Table 4.2 Historic Off-site Development

Off-site Development	Date Range	
	From	To
The site is surrounded by agricultural land and woods to the east roughly 130m to the east. Across the road/track forming the site boundary to the southwest lies Park Farm including a pond 10m from the site. A Well is also noted 90m southwest beyond the farm from 1911. The Aerial Photograph of 1947 indicates no obvious war related damage of significant military use of the site and surrounding area.	1875	1993

Off-site Development	Date Range	
	From	To
Park Farm has been redeveloped around the same time as the barns are established on site including the Stables to the west.	1993	1999
A new residential property has been established 30m south of the site on the eastern side of the road/track named as Little Park Farm on the most recent map. Several horse training rings are established west of the Park Farm Stables and adjacent to the southeast border of the site by 2006.	1999	2006
Several horse training rings are established west of the Park Farm Stables and adjacent to the southeast border of the site.	2006	2022

Table 4.3 Potential Sources of Pollution Indicated from Historic Maps

Source	Direction	Distance (m)	Date Range	
			From	To
Farm	On-site		1993	2022
Farm – redeveloped 1993?	SW	10	1875	2022

4.2 Bomb damage and the potential for Unexploded Ordnance

In accordance with CIRIA C681 and C785 a review has been undertaken of historic maps and aerial photographs which has indicated that the site has not been/or in an area that is likely to have been subject to bombing, shelling or has had a significant military use. ZeticaUXO maps have been accessed online in February 2022 and indicate a low risk with less than 15 bombs per 1000 acres being recorded and no local targets or finds of note within 1km.

Based on the assessment of the historical maps and risk assessment, no further specialist UXO risk assessment is indicated and risk is low.

Section 5 Environmental Records and Consultation

5.1 Dataset Information

The Landmark Envirocheck Report was obtained by Soils Limited and includes site specific information. The extent of the search has initially been limited to a radius of 250m as it is considered that sources of contamination beyond 250m are unlikely to impact on the site. This search radius may, however, be increased if a significant source of contamination or sensitive receptor is identified within 1000m of the site. A copy of the report is appended to this report in Appendix C and summarised in Table 5.1, Table 5.2 and Table 5.3.

Table 5.1 Environmental Significance of Data

Source	Direction	Distance (m)
Contaminated Land Register Entries and Notices	None	None
Discharge Consents -Soakaway	SW	87
Integrated Pollution Prevention and Control	None	None
Local Authority Pollution Prevention and Controls	None	None
Local Authority Pollution Prevention and Control Enforcements	None	None
Nearest Surface Water Feature	None	None
Pollution Incidents to Controlled Waters (Significant Incidents only)	None	None
Prosecutions Relating to Authorized Processes	None	None
Registered Radioactive Substances	None	None
Substantiated Pollution Incident Register	None	None
Nearest Potable Abstraction Point	None	None
Nearest Non-Potable Abstraction Point	None	None
Water Industry Act Referrals	None	None
Source Protection Zones	None	None
Extreme Flooding from Rivers or Sea Without Defences	None	None
Flooding from Rivers or Sea Without Defences	None	None
Areas Benefiting from Flood Defences	None	None
Flood Water Storage Areas	None	None
Flood Defences	None	None
BGS Recorded Landfill Sites	None	None
Historical Landfill Sites	None	None
Licensed Waste Management Facilities	None	None
Local Authority Recorded Landfill Sites	None	None
Potentially Infilled Land (Non-Water)	None	None
Potentially Infilled Lane (Water)	None	None
Registered Landfill Sites	None	None
Registered Waste Transfer Sites	None	None
Registered Waste Treatment or Disposal Sites	None	None
Control of Major Accident Hazards Sites (COMAH)	None	None
Notification of Installations Handling Hazardous Substances	None	None
Planning Hazardous Substance Consents	None	None

The contemporary trades listed in Table 5.2 are only those considered to be viable potential sources of contamination that could impact the site.

Table 5.2 Contemporary Trade Directory

Contemporary Trade Directory within 250m	Direction	Distance (m)	Status
None noted within 750m			

Table 5.3 Geological Hazards

Source	Nearest Distance from Site/Type
Coal Mining Affected Areas	Highly Unlikely
Mining Instability[1]	None Noted
Natural and Mining Cavities	None Noted
Potential for Collapsible Ground Stability Hazards	Very Low
Potential for Compressible Ground Stability Hazards	None
Potential for Ground Dissolution Stability Hazards	None
Potential for Landslide Ground Stability Hazards	Very Low
Potential for Running Sand Ground Stability Hazards	None
Potential for Shrinking or Swelling Ground Stability Hazards	Low

Note(s): [1]Ironstone was historically abstracted 500m northwest using opencast methods

5.2 Site Sensitivity Maps

No other significant potential sources of contamination were shown on the Landmark Envirocheck Site Sensitivity Maps, which have not been listed in Table 5.1, Table 5.2 and Table 5.3, and copies of which are appended to this report (Appendix C).

5.3 Regulatory Enquires

Due to time limitations for this project, the Local Authority was not on this occasion contacted to provide any information they may hold that is not a) already within the Landmark report or b) available on the planning portal (q.v.), regarding additional potential risks pertaining to the site and surrounding area. As no risks have been identified in this report, it is unlikely to be considered a priority site within the local authority Land Contamination Strategy.

The West Sussex Planning Portal accessed in February 2022 indicates no returns for this postcode. Horsham District Council Planning Portal note application DC/21/0699 for the conversion of two barns and 36 other applications (mainly for extensions, tennis courts and Stable related activities) but nothing of significance involving licenced or authorised activities and dating back to 1994. The establishment of the Stables and Barns in the 1980's or 1990's as shown on the historical maps probably predate the current online records.

As this is a change of use from farming to residential this would automatically generate a requirement for contaminated land conditions under current guidance. As such it does not indicate that the regulator necessarily considers the land to be potentially contaminated. However, they may request under planning that additional enquiries be made with them prior to removal of the extant condition.

5.4 Soil Geochemistry

The BGS soil chemistry for environmental assessments dataset coverage, has been developed from BGS G-BASE and Imperial College Wolfson Atlas data. It contains estimated ambient As, Cd, Cr, Ni and Pb background concentrations for rural topsoils across Great Britain. It also contains the locations and measured concentrations (mg kg-1) of As, Cd, Cr, Cu, Ni, Pb, Sn and Zn in urban topsoil samples, collected from geochemical surveys in 23 major urban centres.

The results of this survey are contoured on the Landmark Environmental check report (Appendix C). The results of the local soil chemistry are presented in Table 5.4.

Table 5.4 Soil Geochemistry

Determinant	Estimated Soil Geochemistry (mg kg^{-1})
Arsenic	25-35
Cadmium	<1.8
Chromium	60-90
Lead	100-200
Nickel	15-30

Note(s): Unlikely to be in excess of residential guidance values

Section 6 Data Collection Summary

6.1 General

The findings of the data collection are summarised below:

Table 6.1 summarises the site Environs, which include geology, hydrogeology, the risk from radon and potential risk from flooding.

Table 6.1 Site Environs

Environs	Summary
Geology	Weald Clay (limestone dominant), no superficial deposits
Hydrogeology	Unproductive Strata
Source Protection Zone (SPZ)	None noted within 2km
Surface Water Flow	Anticipated to follow local topography to the northwest
Groundwater Flow	Not Anticipated – Unproductive Strata
Radon	No radon risk identified.
Flooding	No risks identified
Geological Hazard	Potential for Collapsible Ground Stability Hazards Very Low Potential for Compressible Ground Stability Hazards None Potential for Ground Dissolution Stability Hazards None Potential for Landslide Ground Stability Hazards Very Low Potential for Running Sand Ground Stability Hazards None Potential for Shrinking or Swelling Ground Stability Hazards Low
Local Authority Response	None sought as no risks identified Planning portals do not indicate any significant activities in the area
Soil Chemistry	Unlikely to be in excess of residential guidance values
Ecological	No significant local receptors identified but the site lies on a surface water NVZ

Table 6.2 provides a summary of potential on-site and off-site contamination sources identified during the study of the historic maps, the Landmark Envirocheck Dataset Report and the Site Walkover

Table 6.2 Summary of Potential Contamination Sources

Contaminative Source	Direction	Distance (m)	Date Range		Data Source
			From	To	
On-Site					
Farming Activities – Barns and Storage			1993	2022	SW/HM
Off-Site					
Farming and Stables	SW	10	1875	2022	SW/HM

Note(s): SW – Site walkover, HM – Historic Maps

Section 7 Preliminary Conceptual Site Model

7.1 General

Environment Agency guidance provided in CLR11 indicates that the Conceptual Site Model should identify those contaminants, pathways and receptors which are 'likely' to represent an 'unacceptable' risk either to human health or the surrounding environment. The following sections present potential contaminants, pathways and receptors based on the information collected during the desktop study. Pathways have been established based on scientific knowledge of the behaviour of the contaminants in the ground.

7.2 Sources and Pathways of Contamination

The Landmark Site Specific Envirocheck Report and Site Walkover have been used to identify potential contaminative sources. These sources have been presented in Table 6.2. An assessment of the likely pathways and the likelihood of each contaminative source that was considered a risk has been presented in Sections 7.2.1 to 7.2.3.

7.2.1 Potential Pathways

A review of the potential pathways on and off the site has been undertaken based on the site, ground conditions, hydrology and scientific knowledge of the behaviour of the contaminants in the ground. The pathways applicable to the site and the proposed development have been marked in Table 7.1.

Table 7.1 Applicable Pathways

Pathway	Present	Comment
Inhalation of dust	✓	
Inhalation of vapour/gases	✓	
Ingestion and absorption via direct contact	✓	
Migration via surface runoff	✓	
Migration in solution via groundwater		Unproductive Strata
Migration of gases via permeable soils		Unlikely given underlying unproductive strata
Direct contact with construction material	✓	
Services and utilities	✓	

7.2.2 Potential Sources of On-site Contamination.

A study of Landmark Envirocheck Report and Site Walkover has identified the following potential on-site sources of contamination which may present a risk to future uses of the proposed development.

The sources are presented in Table 7.2.

Table 7.2 On-site Potential Contamination Sources

Source	Likely	Reasoning
Farming Activities – Barns and Storage		No evidence of contamination or significant storage of oils, fuels etc. noted during walkover and silo used for feed storage. Livestock farming / stables so significant (or elevated) levels of pesticides or herbicides highly unlikely.

7.2.3 Potential Off-site Sources of Contamination

A study of Landmark Envirocheck Report and Site Walkover has identified the following potential off-site sources of contamination which may present a risk to future uses of the proposed development.

These sources have been presented in given in Table 7.3.

Table 7.3 Off-site Potential Contamination Sources

Source	Direction	Distance (m)	Likely	Reasoning
Farming and Stables	SW	10		Topographically surface water will flow away from site to the northwest and/or be captured for the soakaway - 90m southwest of the site draining northwest away from site. No specific sources or storage noted, no historical evidence of gas risks (infilled ponds etc.) Also see above on-site.

7.3 Potential Contaminants

To ascertain the chemicals associated with identified potential onsite and offsite sources, the Department of the Environment Industry Profiles have been reviewed. In cases where the DOE profiles have no, or limited information other sources have been reviewed detailing the processes involved in the activity carried out on-site.

Table 7.4 presents the range of possible contaminants associated with the onsite and off-site activities and sources identified following a review of historical maps and datasets.

Table 7.4 Potential Contaminants

Potential Contaminative Sources	Contaminants / Chemical Properties
None Identified	

7.4 Potential Exposure Receptors

The receptors to any potential contamination have been evaluated from our understanding of the current and planned land use of the site, an assessment of surrounding land uses and currently available information pertaining to the site.

The assessment for potential receptors is presented in Table 7.5.

Table 7.5 Potential Receptors

Potential Receptor		Present
Human Health	Future users of the site (End Users)	✓
	Construction workers on-site (Site Workers)	✓
	Service and maintenance workers (Site Maintenance)	✓
	Site neighbours and wider public (Off-site Users)	✓
Groundwater/Controlled Waters	Surface Water	✓
	Shallow Aquifer	Unproductive
	Deep Aquifer	Unproductive
Buildings & Materials	Buildings and Confined Spaces	✓
	Buried Structures	✓
	Buried Services	✓
Ecosystems	Flora and fauna	None Noted

7.5 Preliminary Conceptual Site Model and Risk Assessment

A preliminary risk assessment has been undertaken based on the proposed development. The assessment has been based on the likelihood of the presence of a pollutant linkage.

A pollutant linkage is the relationship between a contaminant source, a pathway and a receptor. Unless all three elements of a pollutant linkage are present, a risk is not considered to exist. Each of the three elements has been considered within Table 7.1 to Table 7.5. The preliminary conceptual site model and risk assessment is presented in Table 7.6. The classification tables on which the level of risk has been determined have been modified from 'Contaminated land risk assessment: A guide to good practice, 2001, CIRIA C552' and are presented in Appendix G.

Table 7.6 Preliminary Conceptual Site Model and Risk Assessment Methodology

Source (Table 7.2 & Table 7.3)	Potential Contaminant (Table 7.4)	Exposure Pathway (Table 7.1)	Receptor (Table 7.5)	Initial Assessment from Preliminary Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
None Identified		Inhalation of dust	Site Workers/Site Maintenance					
			End Users					
			Off-site Users					
		Inhalation of vapour/gases (including Radon)	Site Workers/Site Maintenance					
			End Users					
			Off-site Users					
		Ingestion and absorption via direct contact	Site Workers/Site Maintenance					
			End Users					
		Migration via surface runoff	Surface Water					
		~~Migration in solution via groundwater~~	~~Shallow Aquifer~~					
			~~Deep Aquifer~~					
		Direct contact with construction material	Buried Structures					
			Buried Services					
		Migration of gases via permeable soils	Site Workers/Site Maintenance					
			End Users					
			Off-site Users					
			Building and Confined Spaces					

Section 8 Recommendations

8.1 General

Based on the information obtained during the compilation of this Preliminary Investigation and the preliminary conceptual site model, no potentially significant sources have been identified and therefore risk defaults (with no linkages) to a low to negligible risk of contamination. Further intrusive investigation is therefore not indicated as no significant unknowns or risks remain within the initial Conceptual Site Model. Subsequent intrusive investigation may reveal additional on-site sources of contamination that were not identified in the Preliminary Investigation and Site Walkover.

Any such additional sources of contamination or unexpected ground conditions that may promote the migration of contamination will be included and assessed in terms of significance within an updated Conceptual Site Model. As such, if other activities are planned, such as geotechnical investigation, it would be prudent to undertake some precautionary sampling to confirm the initial site model and provide data to advise on possible re-use or disposal of site won materials.

In conclusion, as no risks have been identified in the initial Conceptual Site Model, the proposed change of use should not lead to any increase in potential exposure risk.

8.2 UXO

Based on the assessment of the historical maps and risk assessment, no further specialist UXO risk assessment is indicated and risk is low.

8.3 Proposed Further Site Works

Intrusive investigation is not considered necessary as no potential risks and remaining uncertainties have been identified within the preliminary CSM.

However, most planning conditions include a requirement for the emplacement and reporting of a Discovery Strategy as outlined below.

8.4 Discovery Strategy

There may be areas of contamination not identified during the course of the investigation. Such occurrences may also be discovered during the demolition and construction phases for the redevelopment of the site.

Care should be taken during excavation works especially to investigate any soils which appear by eye (e.g. such as fibrous materials, large amounts of ash and unusual discolouration), odour (e.g. fuel, oil and chemical type odours or unusual odours such as sweet odours or fishy odours) or wellbeing (e.g. light headedness and/or nausea, burning of nasal passages and blistering or reddening of skin due to contact with soil) to be contaminated or of unusual and/or different character to standard soils or those

analysed.

In the event of any discovery of potentially contaminated soils or materials, this discovery should be quarantined and reported to the most senior member of site staff or the designated responsible person at the site for action. The location, type and quantity must be recorded, and the Local Authority and a competent and appropriate third-party Engineer/Environmental consultant notified immediately. An approval from the Local Authority must be sought prior to implementing any proposed mitigation action.

The discovery strategy must remain on-site at all times and must demonstrate a clear allocation of responsibility for reporting and dealing with contamination. A copy of the strategy must be placed on the health and safety notice board and /or displayed in a prominent area where all site staff are able to take note of and consult the document at any time. Any member of the workforce entering the site to undertake any excavation must be made aware of the potential to discover contamination and the discovery strategy.



Figure 1 – Site Location Map

N

Job Number 20022	**Project** Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex RH13 8BD
Client Toby Chapman	**Date** February 2022

Appendix A Proposed Development Plans



1 Site Plan
Scale: 1:500

NOTES

All dimensions are from structure to structure unless indicated otherwise.

Elements of structure and services are indicated for coordination purposes. For full structural and services layouts refer to Structural and Services Engineers' drawings

Do not scale directly from drawing. All dimension to checked on site prior to construction or fabrication of any elements.

Any discrepancies between figured dimensions to be reported to architect for clarification prior to commencing work.

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Rev	Date	Comments

SandyRendelArchitects

Sandy Rendel Architects Ltd
Unit 20a, Iliffe Yard, London SE17 3QA
T: +44(0)20 3602 1260 E: info@sandyrendel.com

Job No:	268
Project:	Moatfield Farm Barns
Drawing title:	Site Plan
Scale:	1:250 @ A1 / 1:500 @ A3
Origination Date:	January 2022
Status:	Planning
Drawing No:	268/PL/099
Rev	-



1 Proposed Site Plan
Scale: 1:500

N

NOTES

All dimensions are from structure to structure unless indicated otherwise.

Elements of structure and services are indicated for coordination purposes. For full structural and services layouts refer to Structural and Services Engineers' drawings

Do not scale directly from drawing. All dimension to checked on site prior to construction or fabrication of any elements.

Any discrepancies between figured dimensions to be reported to architect for clarification prior to commencing work.

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Rev	Date	Comments

SandyRendelArchitects

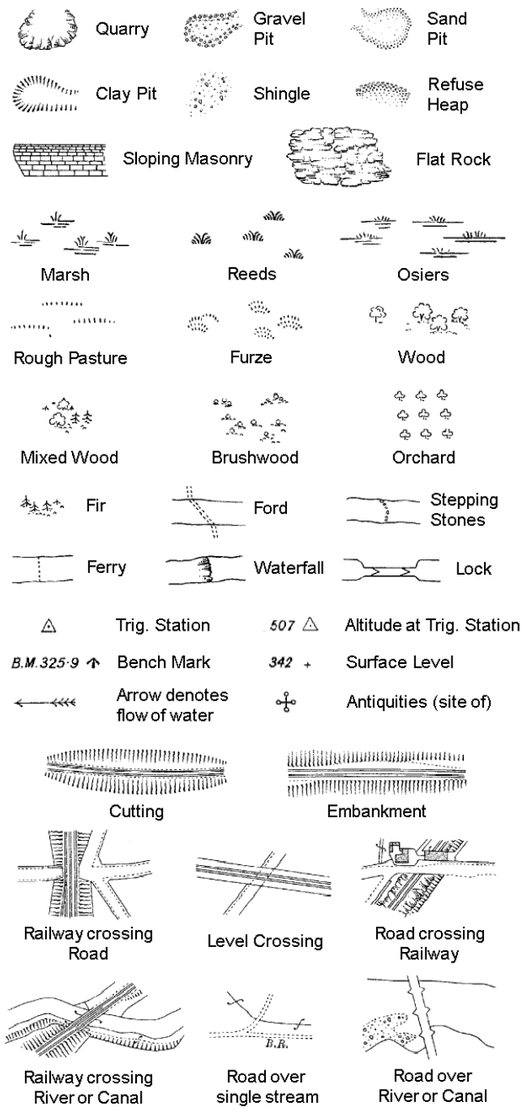
Sandy Rendel Architects Ltd
Unit 20a, Iliffe Yard, London SE17 3QA
T: +44(0)20 3602 1260 E: info@sandyrendel.com

Job No:	268
Project:	Moatfield Farm Barns
Drawing title:	Site Plan
Scale:	1:250 @ A1 / 1:500 @ A3
Origination Date:	January 2022
Status:	Planning
Drawing No:	268/PL/099
Rev	-

Appendix B Country Series and Ordnance Survey Maps

Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

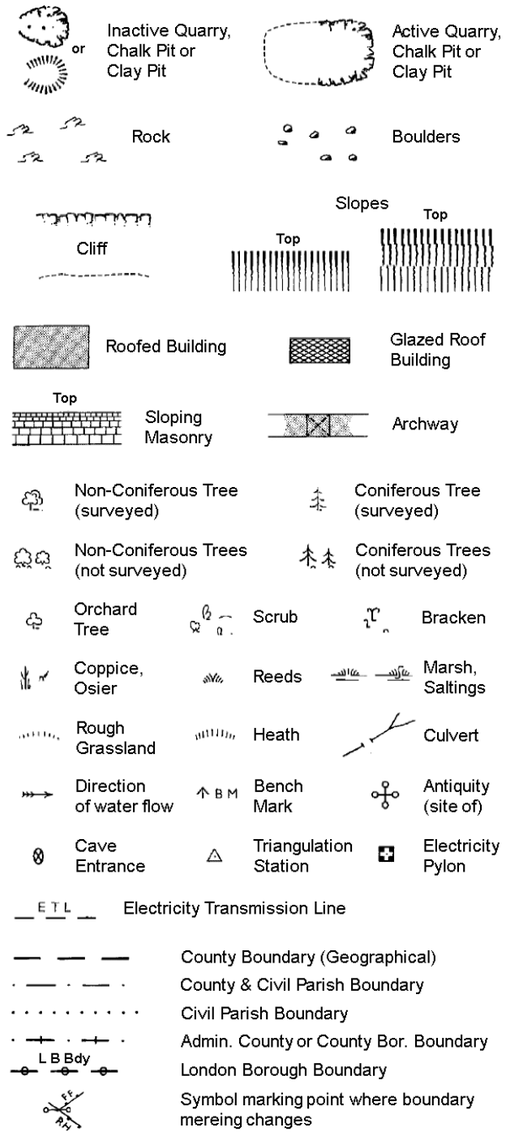
Administrative County & Civil Parish Boundary

Co. Boro. Bdy. County Borough Boundary (England)

Co. Burgh Bdy. County Burgh Boundary (Scotland)

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	St.	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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

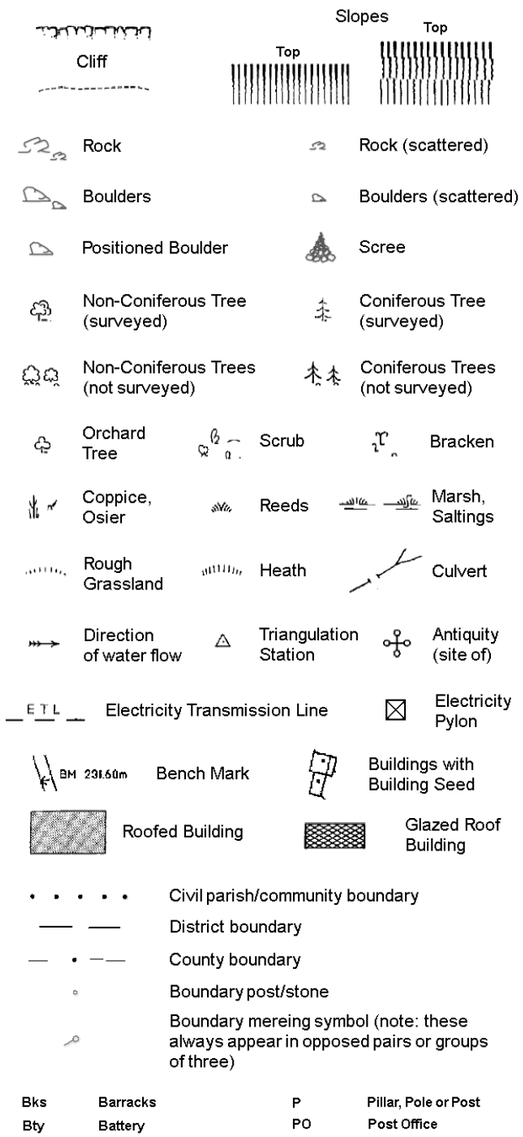
Admin. County or County Bor. Boundary

L B Bdy 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
El 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



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)

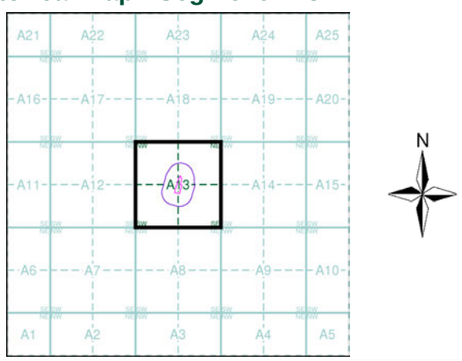
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El 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 Governer	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

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Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Sussex	1:2,500	1875	2
Sussex	1:2,500	1897	3
Sussex	1:2,500	1911	4
Ordnance Survey Plan	1:2,500	1957	5
Additional SIMs	1:2,500	1957	6
Ordnance Survey Plan	1:2,500	1977	7
Large-Scale National Grid Data	1:2,500	1993	8
Historical Aerial Photography	1:2,500	1999	9

Historical Map - Segment A13



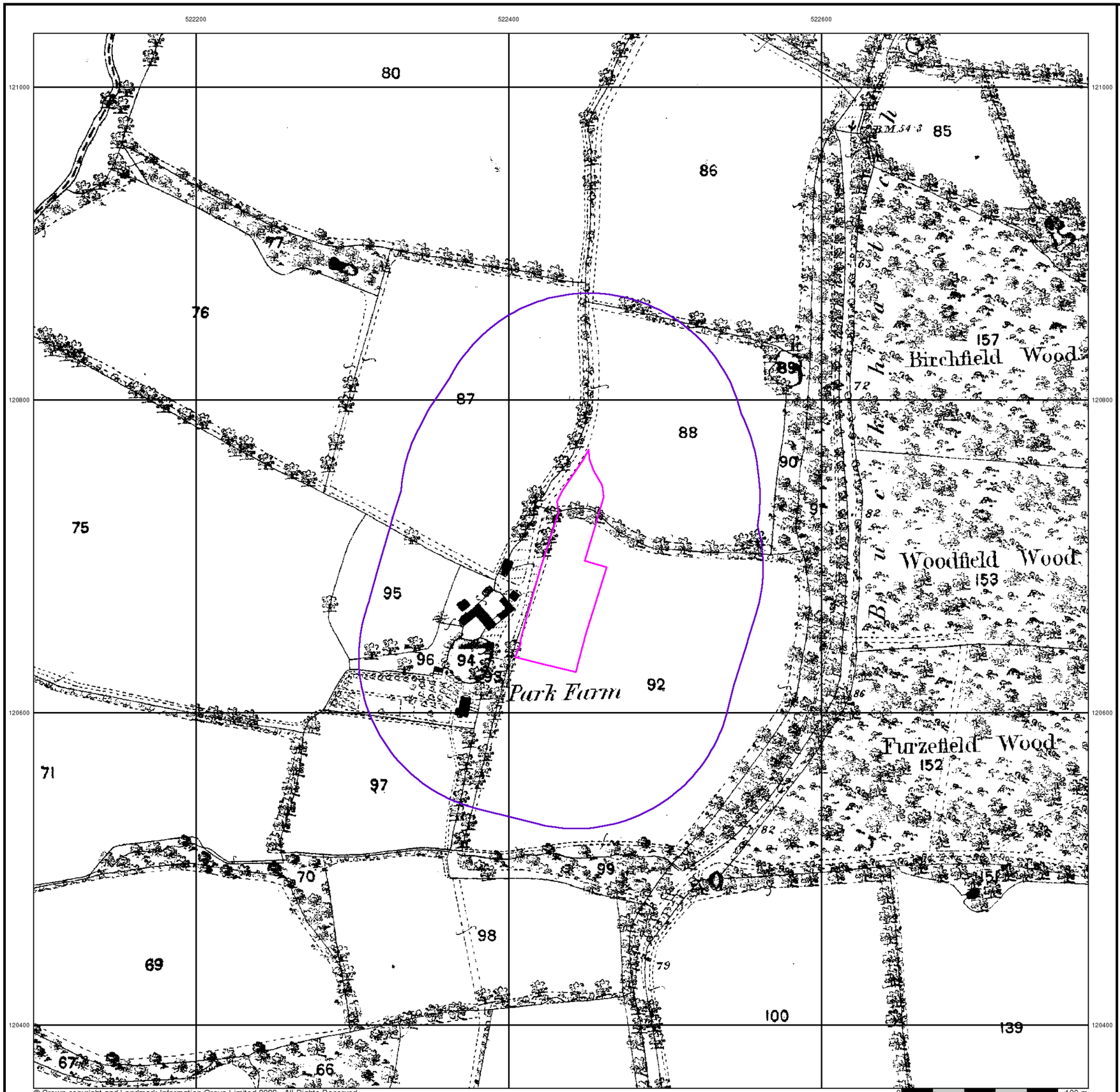
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Slice: A
Site Area (Ha): 0.43
Search Buffer (m): 100

Site Details

Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex, RH13 8BD

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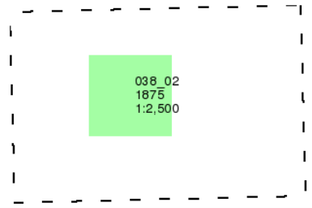
Sussex

Published 1875

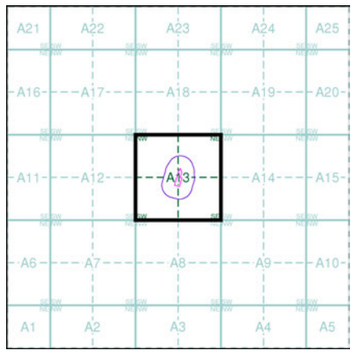
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Map Name(s) and Date(s)



Historical Map - Segment A13



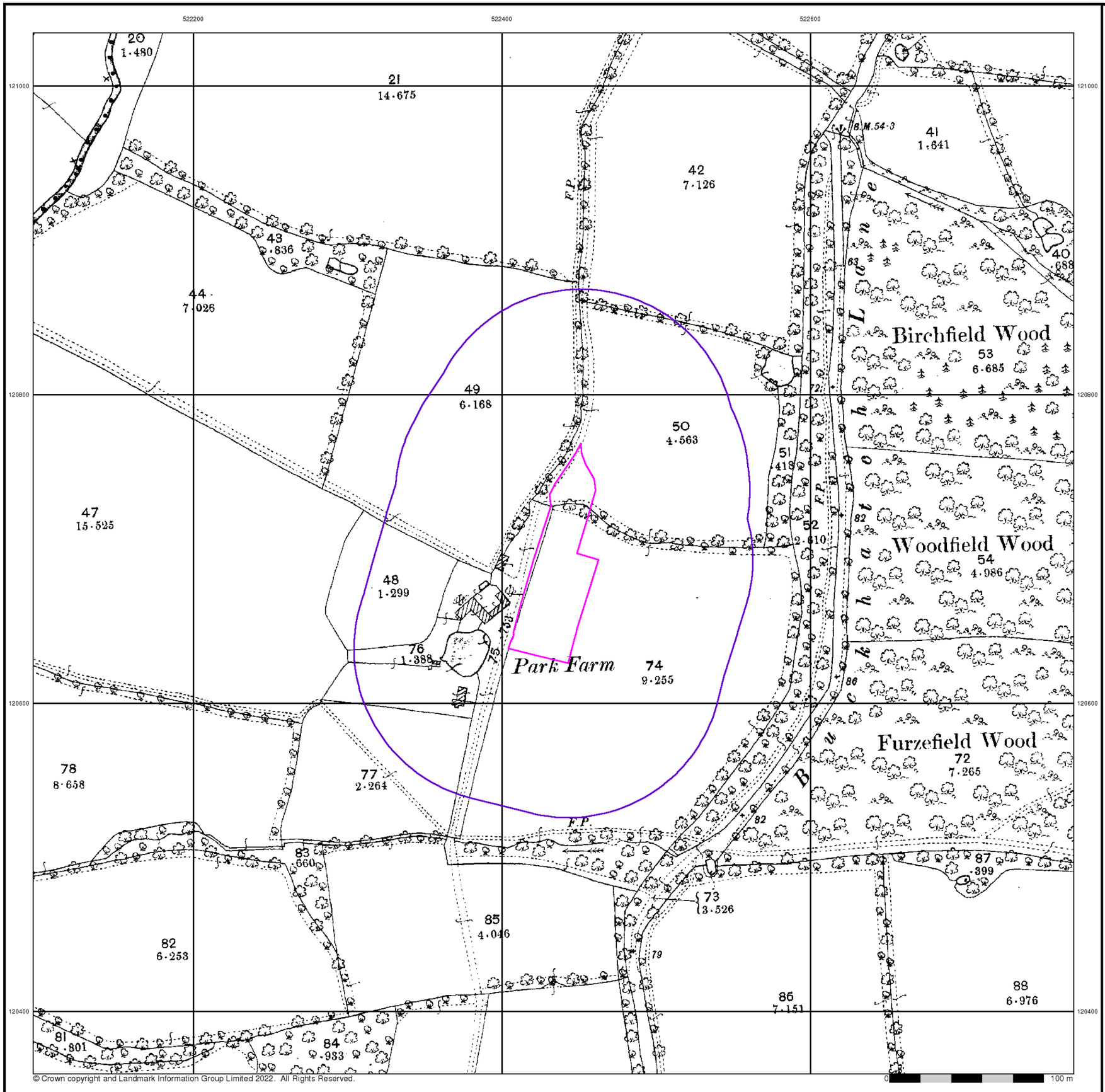
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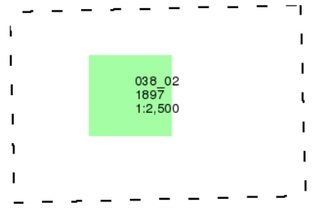
Sussex

Published 1897

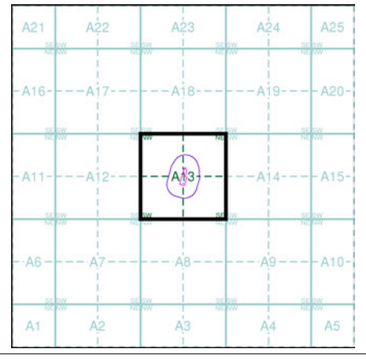
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Map Name(s) and Date(s)



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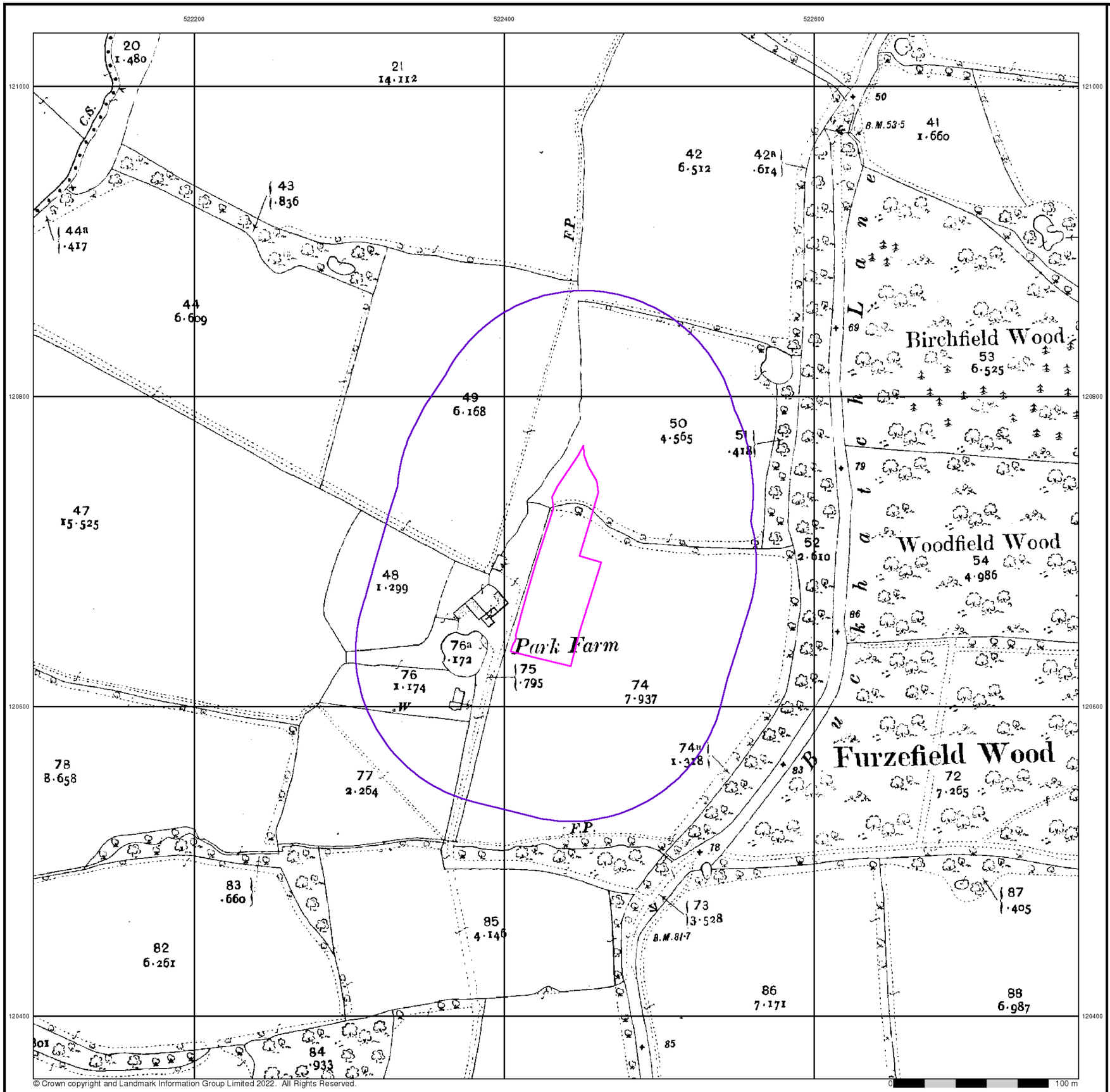
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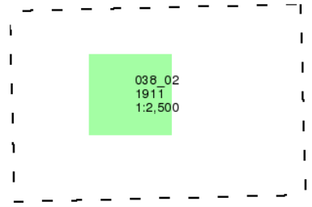
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Published 1911

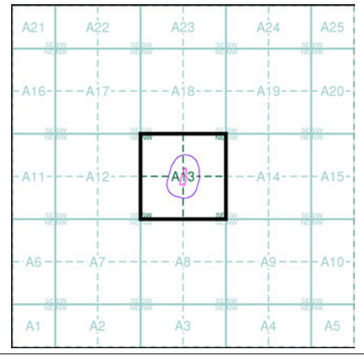
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Map Name(s) and Date(s)



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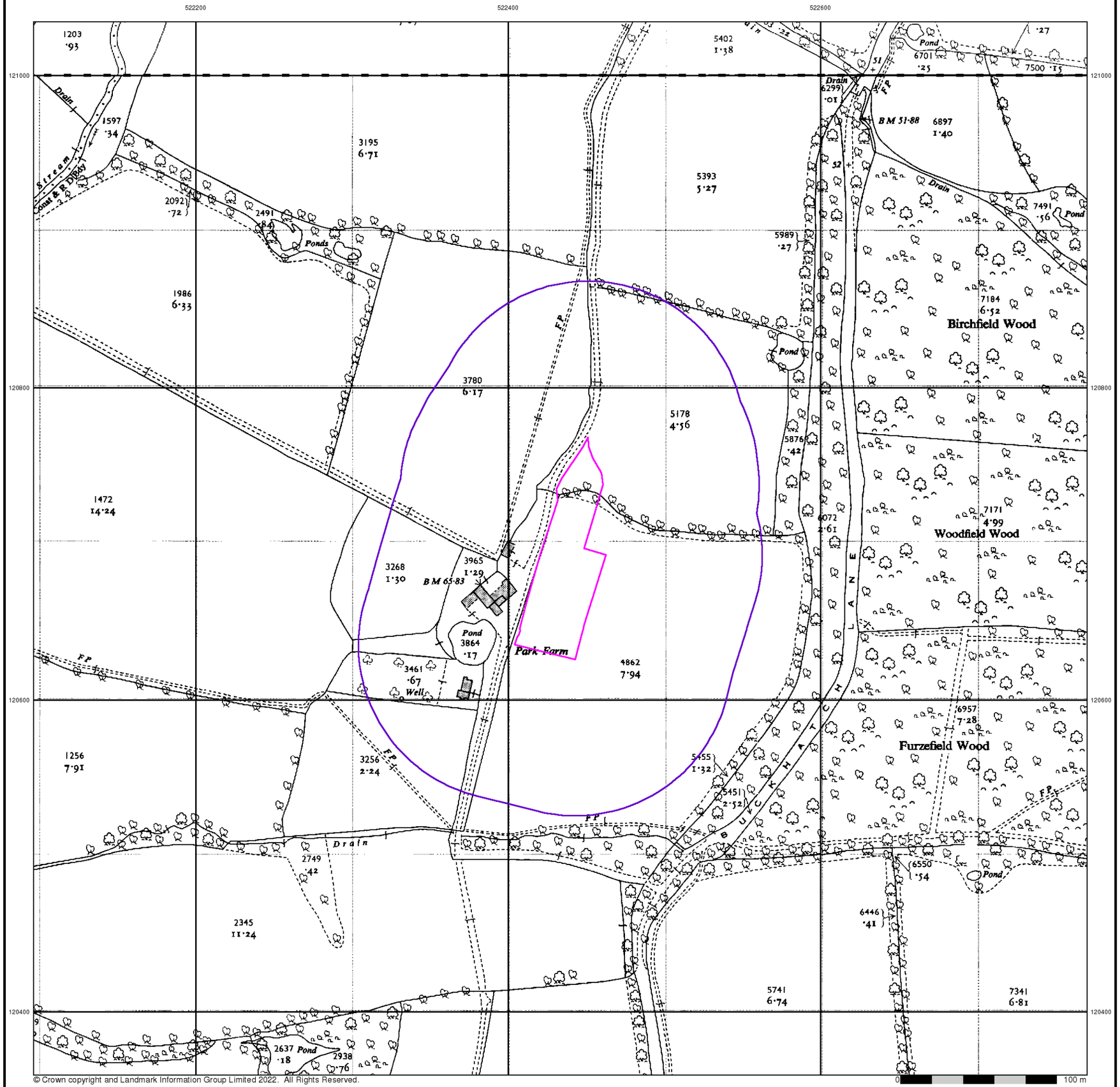
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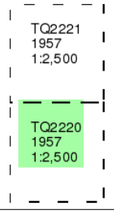
Ordnance Survey Plan

Published 1957

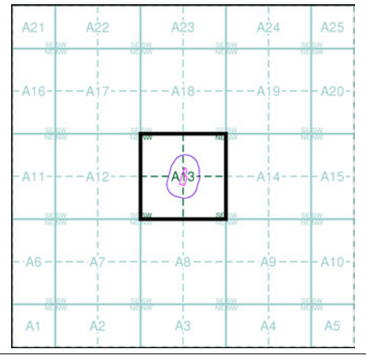
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Map Name(s) and Date(s)



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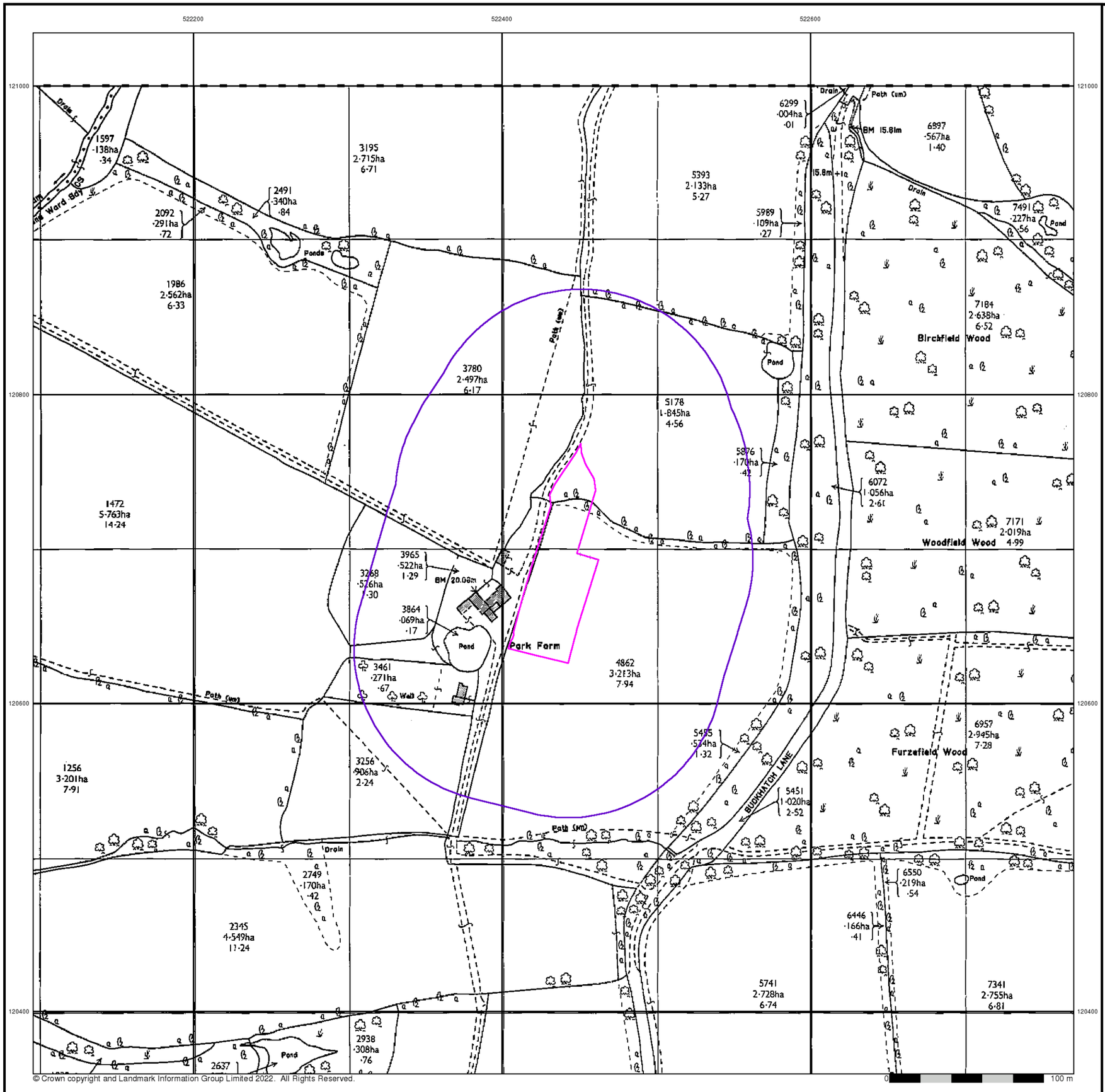
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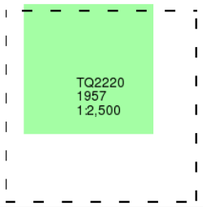
Additional SIMs

Published 1957

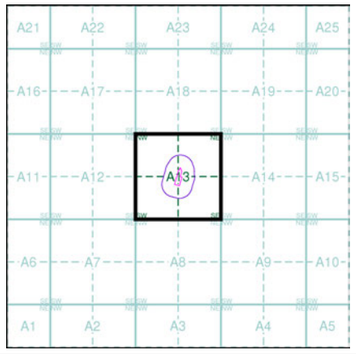
Source map scale - 1:2,500

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



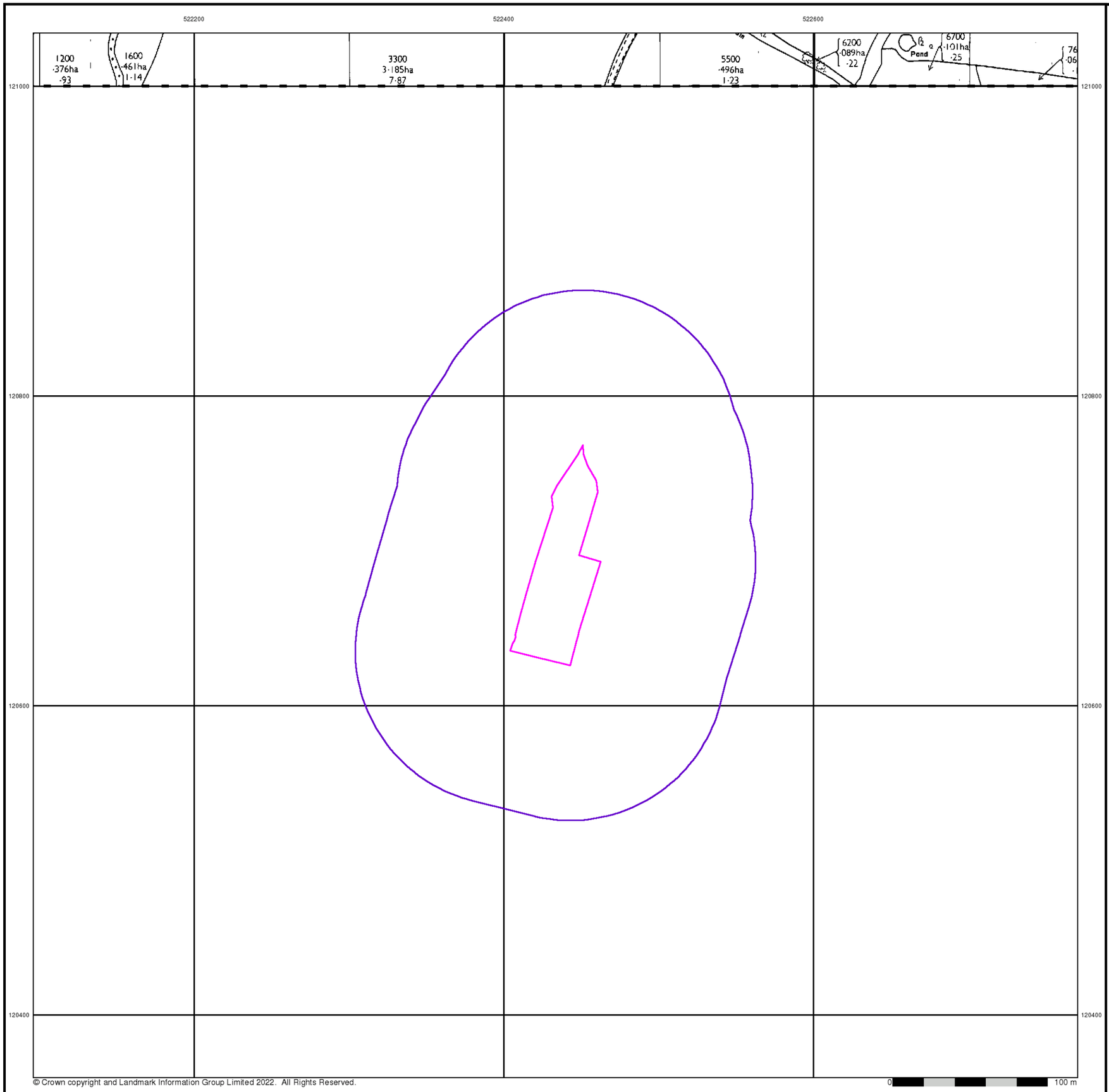
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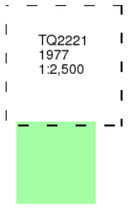
Ordnance Survey Plan

Published 1977

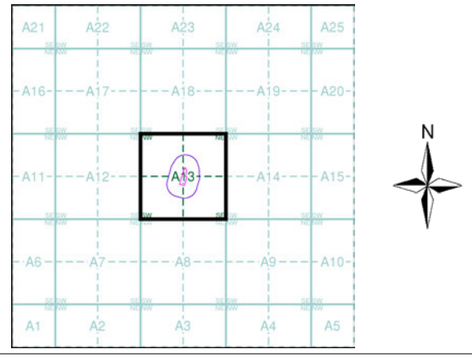
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Map Name(s) and Date(s)



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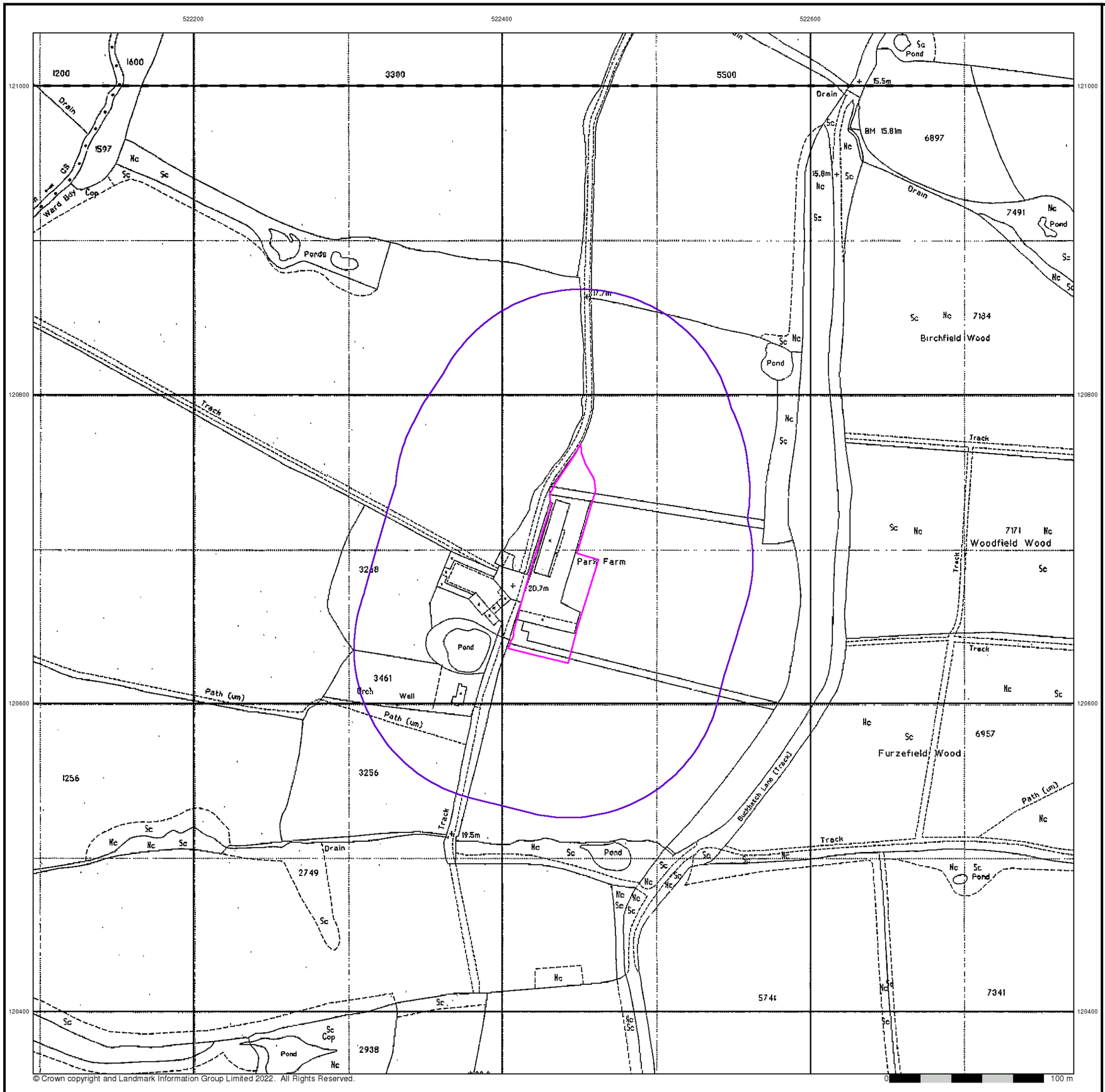
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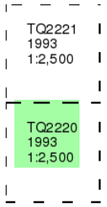
Large-Scale National Grid Data

Published 1993

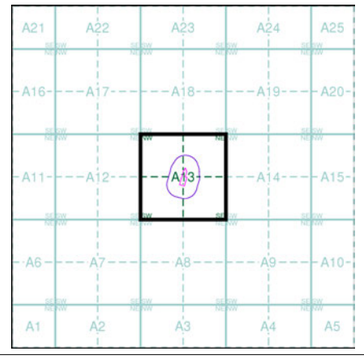
Source map scale - 1:2,500

'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



Order Details

Order Number:	290861411_1_1
Customer Ref:	20022
National Grid Reference:	522440, 120690
Slice:	A
Site Area (Ha):	0.43
Search Buffer (m):	100

Site Details

Moatfield Farm Barns, Kings Lane, Cowfold, Horsham, West Sussex, RH13 8BD



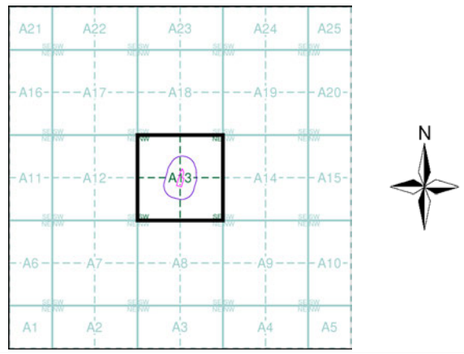
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Historical Aerial Photography

Published 1999

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



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Web: www.envirocheck.co.uk

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

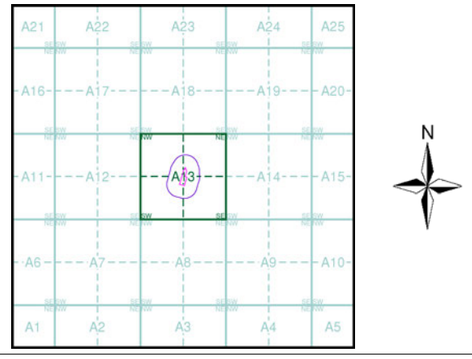
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community 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
Sussex	1:10,560	1879	2
Sussex	1:10,560	1899	3
Sussex	1:10,560	1912	4
Historical Aerial Photography	1:10,560	1947	5
Sussex	1:10,560	1952	6
Ordnance Survey Plan	1:10,000	1962 - 1963	7
Ordnance Survey Plan	1:10,000	1974	8
Ordnance Survey Plan	1:10,000	1980	9
10K Raster Mapping	1:10,000	2000	10
10K Raster Mapping	1:10,000	2006	11
VectorMap Local	1:10,000	2021	12

Historical Map - Slice A



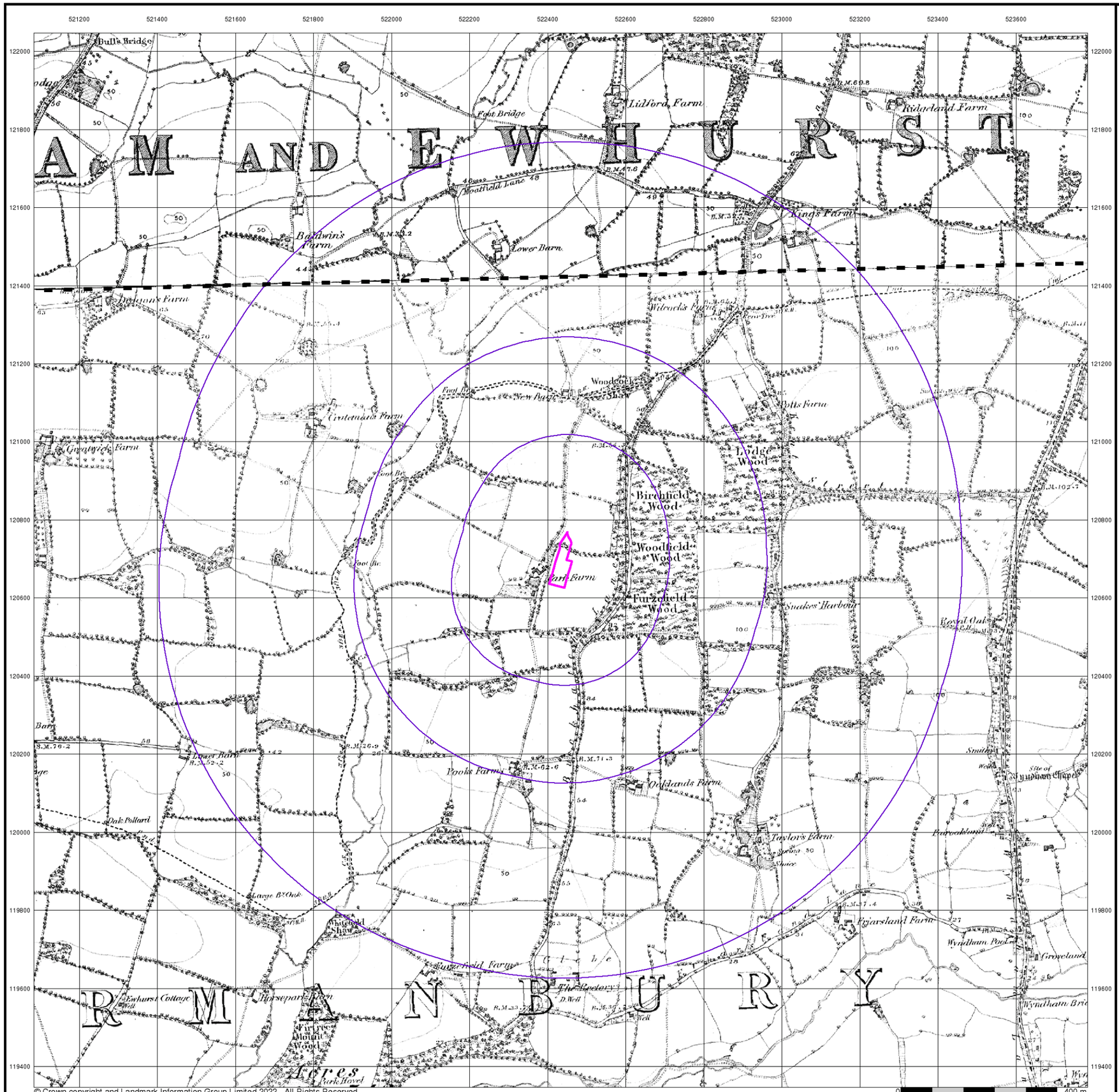
Order Details

Order Number: 290861411_1_1
Customer Ref: 20022
National Grid Reference: 522440, 120690
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Site Area (Ha): 0.43
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Sussex

Published 1879

Source map scale - 1:10,560

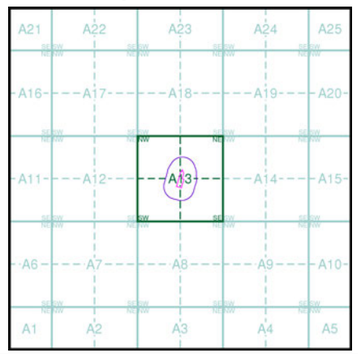
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

02500
1879
1:10,560

03800
1879
1:10,560

Historical Map - Slice A



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