



Preliminary Investigation Report

at

Day Nursery, 208 London Road, Waterlooville, Hampshire PO7 7AN

for

Woodberry Day Nursery

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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.

Commission

Soils Limited was commissioned by Woodberry Day Nursery to undertake a Preliminary Investigation on Day Nursery, 208 London Road, Waterlooville, Hampshire PO7 7AN. The scope of the investigation was outlined in the Soils Limited quotation reference Q20171, dated 21st July 2018.

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.

This Preliminary Investigation does not include a detailed UXO risk assessment, it does however contain a basic assessment in accordance with CIRIA C681. 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.

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Section I Introduction

1.1 Objective

A 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 Day Nursery, 208 London Road, Waterlooville, Hampshire PO7 7AN and had an O.S Land Ranger Grid Reference of SU 679 089.

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 proposed development comprised demolition of existing dwelling and subsequent erection of a single storey building to accommodate a children's nursery. The proposed development included areas soft landscaping to include an outside play area and areas of hard landscaping to include alterations to existing pedestrian and vehicle access routes and formation of a new carpark.

In compiling this report reliance was placed on drawings 208LR/PP/04-B, dated July 2017, prepared by The Planning Group Limited. Any change or deviation from the scheme outlined in the drawing could invalidate the recommendations presented within this report. Soils Limited must be notified about any such changes.

The proposed development plans have been provided in Appendix A.

1.4 Legislation and Liability

The primary legislative mechanism for contaminated land management in the UK is Part 2A of the Environmental Protection Act, 1990 (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 1995, 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.

1.5 Limitations and Disclaimers

This Preliminary Investigation Report relates to the site located at Day Nursery, 208 London Road, Waterlooville, Hampshire PO7 7AN and was prepared for the sole benefit of Woodberry Day Nursery (The “Client”) for the brief described in the Commission of this report.

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.

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 1995.

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.

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Section 2 Site Conditions

2.1 Site Walkover

A site walkover was undertaken in July 2018 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 site 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)

On-site	Use of site	Vacant
	Structures	Two storey dilapidated residential dwelling with separate single storey garage and shed.
	Site topography	Relatively flat with slight dip down to the north.
	Site covering	Predominantly grass with areas of concrete and pavements associated with driveway
	Vegetation	Scattered mature trees and vegetation in garden area
	Potential Contamination Sources	None observed
	Odour	None observed
	Drainage	None observed

Table 2.2 Site Walkover Record (Off-site)

Off-site	Use of Land	N	Residential
		E	Residential
		S	Residential
		W	Pastureland
	Area topography	Undulating dipping down to the north	
	Vegetation	Scattered mature trees in neighbouring properties	
	Potential Contamination Sources	Shell petrol filling station c.160m northeast of site. Timber yard c.400m south of site.	

2.2 Site Drainage

Via surface drainage, anticipated to be connected to the mains system.

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 bedrock of the London Clay Formation, with no recorded superficial deposits overlying.

3.1.1 London Clay Formation

The London Clay Formation in the Hampshire region comprises silty and sandy clay, clayey and sandy silt, silty sand; sporadic claystones and thin beds of flint pebbles. The formation includes the Bognor Sand, Whitecliff Sand, Durley Sand, Portsmouth Sand and Nursling Sand Members. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The lowest part of the London Clay Formation rests on the Reading Formation (Lambeth Group).

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	Superficial	No recorded superficial deposits
Aquifers	Bedrock	Unproductive strata ¹
Groundwater Vulnerability		Non-aquifer
Source Protection Zones (SPZ)		SPZ 1c – subsurface activity only ²
Abstraction	Potable	None
	Non-potable	None
Sensitive land uses		Nitrate Vulnerable Zone
Surface Water Features		Inland River – 16m/NW
Flood Risk from Rivers or Seas		None
Flood Risk from Surface Water		Medium to high risk of surface water flooding at eastern half of the site
Flood Risk from Groundwater		None

Notes: ¹ Unproductive strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow. ² Inner protection zone: travel time of 50 days or less to groundwater source. Applies to underlying chalk group only.

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 ~50m Above Ordnance Datum (AOD). The anticipated groundwater flow direction is given in Table 3.2.

Table 3.2 Hydrogeological Assessment

Type	Direction	Notes
Surface water	North	In-line with local topography
Groundwater (shallow)	North	In-line with wider topography
Groundwater (deep)	South	Towards associated SPZ abstraction point

3.4 Radon Gas

The site **was not situated** within an area where protection or risk assessment against the ingress of radon was required. Radon protection measures **will 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 “snap shot” 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
Site shown to comprise both school and farm buildings, forming part of Waitland End Farm. A Main road abutted the west boundary in position of existing A3 London Road. Farm and pastureland abutted the north, east and south boundaries. A small pond is shown adjacent to the south boundary.	1879 ¹	1897
Site no longer listed as school on the historical maps. Site shown to comprise farm buildings pertaining to Waitland End Farm.	1897	1965
Site no longer shown to comprise farm buildings. Site considered to be residential.	1965	1973
Build at southeast corner of site shown to have been demolished.	1973	2018

Notes: ¹ Earliest available maps

Table 4.2 Historic Off-site Development

Off-site Development	Date Range	
	From	To
Site is shown to be bound by agricultural and pasture land with scattered areas of woodland. A smithy was noted 150m northeast of site boundary.	1870 ¹	1897
Scattered residential developments constructed northeast of site boundary. A Saw Mill is shown c. 300m southwest of site.	1897	1909
Portsmouth and Horndean Light Railway show to occupy main road running adjacent to west site boundary.	1909	1932
Residential housing constructed north and south of the site, along main road. Light railway decommissioned.	1932	1953
Residential housing north of the site extended. Broadlands Nursery shown to extend to 90m from east site boundary. A Telephone Exchange and Depo shown c. 50 northeast of the site.	1953	1980
Extensive residential development shown east of the site.	1980	2018

Notes: ¹ Earliest available maps

Table 4.3 Potential Sources of Pollution Indicated from Historic Maps

Source	Direction	Distance (m)	Date Range	
			From	To
School	Onsite	0	1879	1897
Agricultural farm buildings	Onsite	0	1879	1965
Pond	S	1	1897	1977
Light Railway	W	5	1903	1935
Works/Depot	S	20	1980	2000
Sub station	NE	25	1955	2018
Depot	NE	50	1953	1955
Telephone Exchange	NE	50	1953	2000
Nursery	E	90	1953	1980

4.2 Bomb damage and the potential for Unexploded Ordnance

There is low-moderate UXO risk associated with west Waterlooville. However, a review of historical maps did not show any evidence that the site was likely to been subject to bombing, shelling, or has had a military use. The site was developed prior to 1879 and no material change was shown onsite on map issues spanning the period of WW2.

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 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	"	"
Integrated Pollution Prevention and Control	"	"
Local Authority Pollution Prevention and Controls	NE	163
Local Authority Pollution Prevention and Control Enforcements	None	None
Nearest Surface Water Feature	NW	16
Pollution Incidents to Controlled Waters (Significant Incidents only)	None	None
Prosecutions Relating to Authorized Processes	"	"
Registered Radioactive Substances	"	"
Substantiated Pollution Incident Register	"	"
Nearest Potable Abstraction Point	"	"
Nearest Non-Potable Abstraction Point	"	"
Water Industry Act Referrals	"	"
Source Protection Zones	S	Onsite ¹
Extreme Flooding from Rivers or Sea Without Defences	None	None
Flooding from Rivers or Sea Without Defences	"	"
Areas Benefiting from Flood Defences	"	"
Flood Water Storage Areas	"	"
Flood Defences	"	"
BGS Recorded Landfill Sites	"	"
Historical Landfill Sites	"	"
Licensed Waste Management Facilities	"	"
Local Authority Recorded Landfill Sites	"	"
Potentially Infilled Land (Non-Water)	"	"
Potentially Infilled Land (Water)	S	I
Registered Landfill Sites	None	None
Registered Waste Transfer Sites	"	"
Registered Waste Treatment or Disposal Sites	"	"
Control of Major Accident Hazards Sites (COMAH)	"	"
Notification of Installations Handling Hazardous Substances	"	"
Planning Hazardous Substance Consents	"	"

Notes: ¹ Deep groundwater regime only.

Table 5.2 Contemporary Trade Directory

Contemporary Trade Directory within 250m	Direction	Distance (m)	Status
Waterlooville Cleaning Services – Commercial Cleaning Services	N	89	Inactive
Laundry Fairy – Domestic Cleaning Services	N	115	Inactive
Stop and Steer – Garage Services	NE	163	Inactive
Shell Service Station – Petrol Filling Station	NE	163	Active

Table 5.3 Geological Hazards

Source	Nearest Distance from Site/Type
Coal Mining Affected Areas	None
Mining Instability	None
Natural and Mining Cavities	None
Potential for Collapsible Ground Stability Hazards	Onsite/very low
Potential for Compressible Ground Stability Hazards	None
Potential for Ground Dissolution Stability Hazards	None
Potential for Landslide Ground Stability Hazards	Onsite/very low
Potential for Running Sand Ground Stability Hazards	218m/very low
Potential for Shrinking or Swelling Ground Stability Hazards	Onsite/low

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 to Table 5.3, and copies of which are appended to this report (Appendix C).

5.3 Regulatory Enquires

As part of the Preliminary Investigation Report the local authority was contacted and asked to provide any information on potential risks pertaining the site. The information provided by the local authority has been presented in Appendix E. A summary of pertinent information is outlined below:

- Existing residential properties onsite shown to have been constructed between 1911 and 1931 on agricultural greenfield land formerly associated with Wheatland End Farm. Made Ground remains a risk and asbestos was common in household materials for a significant period of time;
- Wheatland End Farm included substantial complex of working structures of which extended onsite. Farm complexes commonly associated with contamination (particularly fuels);
- Several off-site sources of potential contamination exist within 150m of the subject site, notably:
 - Land comprising the plot at the former 204 London Road (14m from the boundary of the subject site) is marked as a "Depot" in 1976 (Fuels / Oils / Metals), and appears likely to have been in use for this or similar purpose for around 50 years, between 1932 & 1982 approx.);

- Waitland End Farm Complex, located 35m North East of the subject site (Fuels / Oils / Metals, pesticides), and;
- A Telephone Exchange is marked from 1953 115m NE (PCB's and other cable oils), alongside an adjacent depot (150m).
- There are no formal waste management facilities within 250m of the site;
- The Shell garage at 222 London Road is the closest petroleum licence and closest EPR permit;
- Low to moderate UXO risk in the west of Waterloooville but given that the site was developed before 1879 and there is no material change in site configuration between map issues (1932 – 1953), the risk for this specific site is considered very low.

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	Indicated Soil Geochemistry (mg kg⁻¹)
Arsenic	<15
Cadmium	<1.8
Chromium	60 – 90
Lead	<100
Nickel	15 - 30

Section 6 Data Collection Summary

6.1 General

The findings of the data collection are summarised below:

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

Table 6.1 Site Environs

Environs	Summary
Geology	London Clay Formation with no recorded overlying superficial deposits.
Hydrogeology	London Clay Formation bedrock classes as unproductive strata and acts as aquiclude to deep groundwater regime.
Surface water Flow	Anticipated to flow down to the north in-line with local topography.
Groundwater Flow	Shallower groundwater within London Clay Formation is anticipated to flow down to the north in line with wider topography. Deep groundwater within chalk group is anticipated to flow south towards associated SPZ abstraction point.
Radon	The site was in a lower probability radon area (less than 1% of homes are estimated to be at or above action level. Therefore, it was considered there was no radon risk.
Flooding	There was a medium to high risk of surface water flooding at the eastern half of the site. There was no risk of flooding from groundwater, rivers or seas.
Geological Hazard	The Envirocheck data did not show any significant geological hazards.
Local Authority Response	The response from the Local Authority identified a number of contaminative activities on and surrounding the site. The response form the Local Authority is presented in Section 5.3.
Soil Chemistry	BGS Estimated Soil Chemistry did not identify any potential hazards.

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 Sources/Environmental Impact	Direction	Distance (m)	Date Range		Data Source
			From	To	
On-Site					
School buildings	Onsite	0	1879	1897	HM
Agricultural farm buildings			1879	1965	HM/LA
Off-Site					
Pond (infilled)	S	1	1897	1977	HM
Light Railway	W	5	1903	1935	HM
Works/Depot	S	20	1980	2000	HM
Sub station	NE	25	1955	2018	HM
Depot	NE	50	1953	1955	HM/LA
Telephone Exchange	NE	50	1953	2000	HM/LA

Contaminative Sources/Environmental Impact	Direction	Distance (m)	Date Range		Data Source
			From	To	
Waterlooville Cleaning Services – Commercial Cleaning Services	N	89	-	-	DS
Nursery	E	90	1953	1980	HM
Laundry Fairy – Domestic Cleaning Services	N	115	-	-	DS
Stop and Steer – Garage Services	NE	163	-	-	DS
Shell Service Station – Petrol Filling Station	NE	163	-	-	DS/LA

Notes: SW – Site walkover, HM – Historic Maps, DS – Datasheet, GC – Geochemistry, LA – Local Authority, GE Google Earth

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 below.

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	✓	Possible both during and post redevelopment.
Inhalation of vapour/gases	✓	
Ingestion and absorption via direct contact	✓	
Migration via surface runoff	✓	
Migration in solution via groundwater		
Migration of gases via permeable soils		
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 have been presented in Table 7.2

Table 7.2 On-site Potential Contamination Sources

Source	Likely	Reasoning
School buildings	✓	Residential properties onsite constructed between 1911 and 1931. Potential risk of asbestos in Made Ground.
Residential buildings	✓	
Agricultural farm buildings	✓	

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 Table 7.3.

Table 7.3 Off-site Potential Contamination Sources

Source	Direction	Distance (m)	Likely	Reasoning
Pond (infilled)	S	1	✓	Pond infilled with unknown material c. 1970s. Minor extent of feature and time passed since infilling shows it is unlikely to be a credible source of soil gas generation
Light Railway	W	5	✓	Potential source of asbestos in local soils from train brakes.
Works/Depot	S	20		Buildings currently in commercial use.
Sub station	NE	25		Distance from source
Depot	NE	50		Source not in hydraulic continuity with site
Telephone Exchange	NE	50		
Waterlooville Cleaning Services – Commercial Cleaning Services	N	89		
Nursery	E	90		
Laundry Fairy – Domestic Cleaning Services	N	115		
Stop and Steer – Garage Services	NE	163		
Shell Service Station – Petrol Filling Station	NE	163		

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/Activities/Processes	Contaminants/Chemical Properties
Onsite structures	Metals, semi-metals and non-metals, asbestos.
Pond (infilled)	Metals, semi-metals and non-metals, asbestos, PAH, TPHs, pH, soil gas.
Light railway	Metals, semi-metals and non-metals, asbestos.

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
	Construction workers on-site
	Service and maintenance workers
	Site neighbours and wider public
Groundwater/Controlled Waters	Surface Water
	Groundwater/Future Potable Water Supply
Buildings & Materials	Buildings and confined spaces
	Construction materials
	Services and Utilities (e.g drinking water pipes)
Ecosystems	Flora and fauna

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 (See Table 7.2 and Table 7.3)	Potential Contaminant (See Table 7.4)	Exposure Pathway (See Table 7.1)	Receptor (See Table 7.5)	Initial Assessment from Preliminary Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
Historical site activities and redevelopment On-site historic and current site usage.	Metals, Semi-metals and non-metals, PAHs, Asbestos	Inhalation of dust	Site Workers/Site Maintenance End Users	Mild	Low	Low	Site located on bedrock of the London Clay Formation, which was classified as unproductive strata and would act as an aquiclude to the groundwater receptors.	Phase II ground investigation to confirm the ground conditions present and chemical testing prior to undertaking a generic quantitative risk assessment.
	PAHs, TPHs	Inhalation of Vapour/gases (including Radon)	Site Workers/Site Maintenance End Users Off-site Users	Minor	Unlikely	Very low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, Asbestos, pH	Ingestion and absorption via direct contact	Site Workers/Site Maintenance End Users	Minor Minor	Low Unlikely	Very low Very low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, pH	Migration via surface runoff	Surface Water	Minor	Unlikely	Very low		
		Direct contact with construction material	Buried structures Buried Services	Minor	Unlikely	Very low		
	PAHs, TPHs	Migration of gases via permeable soils	Site Workers/Site Maintenance End Users	Minor	Unlikely	Very low		
			Off-site Users	Minor	Unlikely	Very low		
			Building and confined spaces					
			Site Workers/Site Maintenance End Users Off-site Users	Minor	Unlikely	Very low		
			Off-site Users	Minor	Unlikely	Very low		
Infilled Pond and Historical Light Railway Off-site sources from which potential contamination would have migrated onto the site.	Metals, Semi-metals and non-metals, PAHs, Asbestos	Inhalation of dust	Site Workers/Site Maintenance End Users	Minor	Unlikely	Very low	Infilled pond directly on site boundary may pose possible risk of soil gas generation.	Phase II ground investigation to confirm the ground conditions present and chemical testing prior to undertaking a generic quantitative risk assessment. Regime of soil gas monitoring and development of Soil Gas Risk Assessment to quantify potential soil gas risk onsite.
	PAHs, TPHs	Inhalation of Vapour/gases (including Radon)	Site Workers/Site Maintenance End Users Off-site Users	Minor	Unlikely	Very low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, Asbestos, pH	Ingestion and absorption via direct contact	Site Workers/Site Maintenance End Users	Minor	Unlikely	Very low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, pH	Migration via surface runoff	Surface Water	Minor	Unlikely	Very low		
		Direct contact with construction material	Buried structures Buried Services	Minor	Unlikely	Very low		
	PAHs, TPHs	Migration of gases via permeable soils	Site Workers/Site Maintenance End Users	Mild	Low	Low		
			Off-site Users					
			Building and confined spaces					
			Site Workers/Site Maintenance End Users Off-site Users					
			Off-site Users					

Section 8 Recommendations

8.1 General

Based on the information obtained during the compilation of this Preliminary Investigation and the preliminary conceptual site model, a potential for a low risk of contamination has been identified and an intrusive investigation is necessary to further quantify the risks identified. Any subsequent intrusive investigation may reveal additional on-site sources of contamination that were not identified in the Preliminary Investigation and Site Walkover. Any 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.

8.2 UXO

The response from the Local Authority states that there is a low to moderate UXO risk in the west of WaterlooVille but given that the site was developed before 1879 and there is no material change in site configuration between map issues 1932 – 1953, the risk for this specific site is considered very low.

A review of historical maps suggests the area was unlikely to have been subjected to bombing or shelling during the period of WWII.

8.3 Proposed Further Site Works

An intrusive investigation is considered necessary to quantify the potential risks and remaining uncertainties that have been identified within the preliminary CSM. The preliminary CSM identifies the test parameters relevant to the sources that have a pathway to a receptor. Dependant on the findings of an intrusive investigation the test parameters may be modified. The intrusive investigation will be designed to investigate and assess the pollutant linkages identified in the preliminary Conceptual Site Model.

The general requirements for further environmental investigation are presented in Table 8.1.

Table 8.1 Proposed Further Environmental Investigation

Proposed Works	General Purpose	Required
Investigatory Holes	To collect sufficient samples for a robust assessment	✓
Laboratory Testing	To quantify the risks identified in the Conceptual Site Model	✓
Risk Assessment	Assess pollutant linkages based on current contaminated land guidance and screening criteria's	✓
Borehole well installation	To allow for continued groundwater and/or gas monitoring	✓
Remediation	If the site-specific risk assessment reveals that the site was contaminated	✓
Validation & Verification	To validate and verify the remedial objectives based on the site-specific risk assessment	✓

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

Job Number
17077

Client
Woodberry Day Nursery

Project
Day Nursery, 208 London Road, Waterlooville,
Hampshire PO7 7AN

Date
August 2018

Appendix A Proposed Development Plans



Landscaping:

- Deciduous trees and shrubs.
- Conifers and evergreens.
- Herbaceous plants (including marginals).
- Wildflower plugs.
- Aquatic plants.
- Grass seed.

Hibernacula:

Nest boxes are widely used in the ecology profession to provide additional habitat or mitigate for habitat losses due to development work. Wildcare provide sturdy bat and bird boxes tailored to specific species, times of year and situations, from brands such as Schwegler, Wildlife World and The Nest Box Company.

3 No tree mounted Softwood Bat boxes to be provided.

Existing tree protection:

Galv Mesh 'stock fence' 80:80:15 high tensile galv mesh, stapled to treated turned softwood posts at average 3m centres.

Boundary Treatments:

- 2 metre high acoustic fencing around perimeter of Play Area.
- 0.9 metre high brick wall with 0.9 metre railings above



- B 14.05.18 Bin Store & Bike Store relocated.
- A 22.02.18 Frontage boundary amended; Play Area acoustic fencing added; landscaping added.

Unit D1, Pimley Bams
Pimley Manor
Sundome Road
Shrewsbury
SY4 4SD

**THE
PLANNING
GROUP
LIMITED**
info@planning-group.co.uk

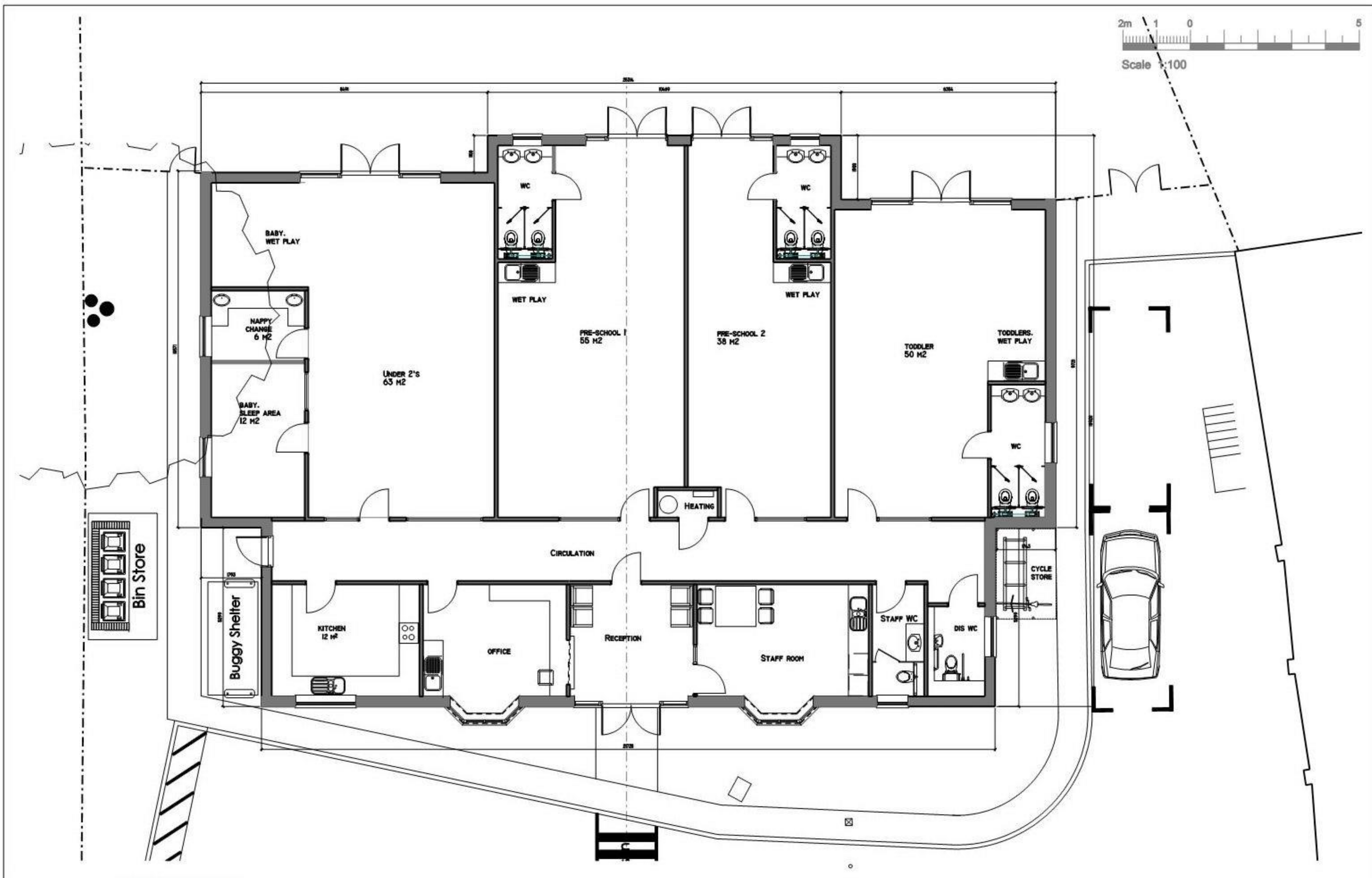
Project

Proposed Day Nursery at:
208 London Road, WATERLOOVILLE,
PO7 7AN

Drawing

Proposed Site Plan

scale	paper size	drawing no.	date
1:200	A3	208LR/PP/04 B	July 17



Unit D1, Pinley Barns
Pinley Manor
Sundome Road
Shrewsbury
SY4 4SD
Tel: 01743 361211



Project
Proposed Day Nursery at:
208 London Road, WATERLOOVILLE,
PO7 7AN

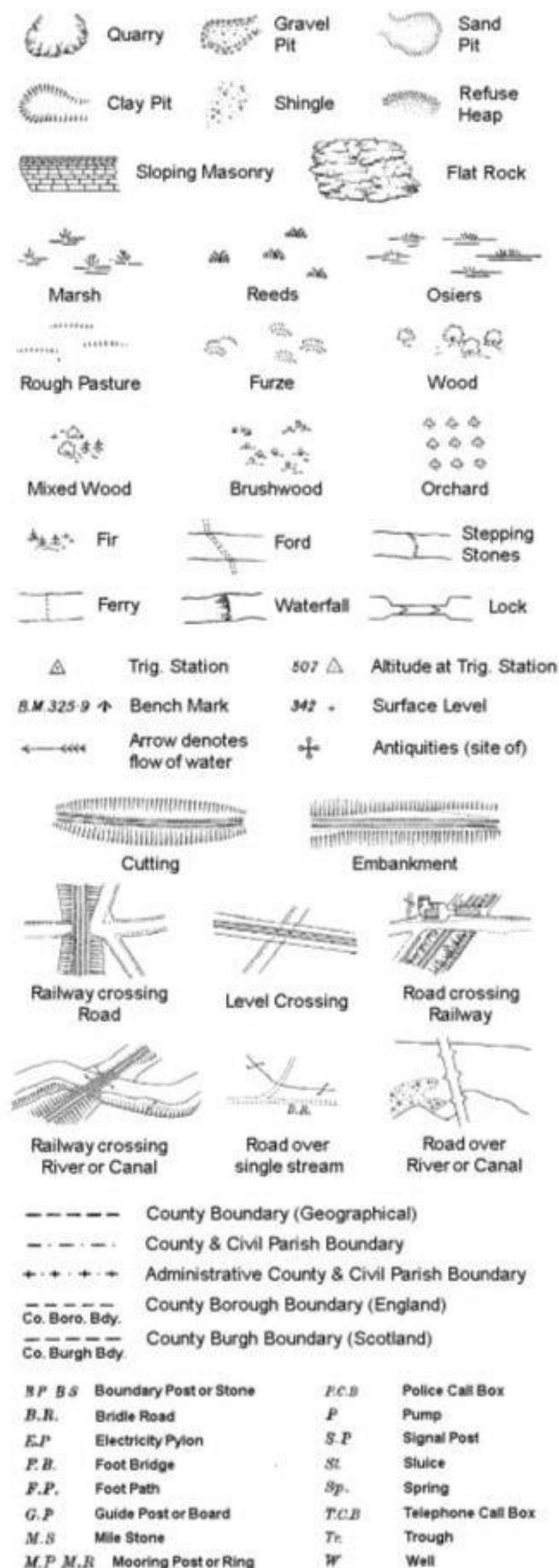
Drawing
Proposed Floor Plan

scale	paper size	drawing no.	date
1:100	A3	208LR/PP/11	July 17

Appendix B Country Series and Ordnance Survey Maps

Historical Mapping Legends

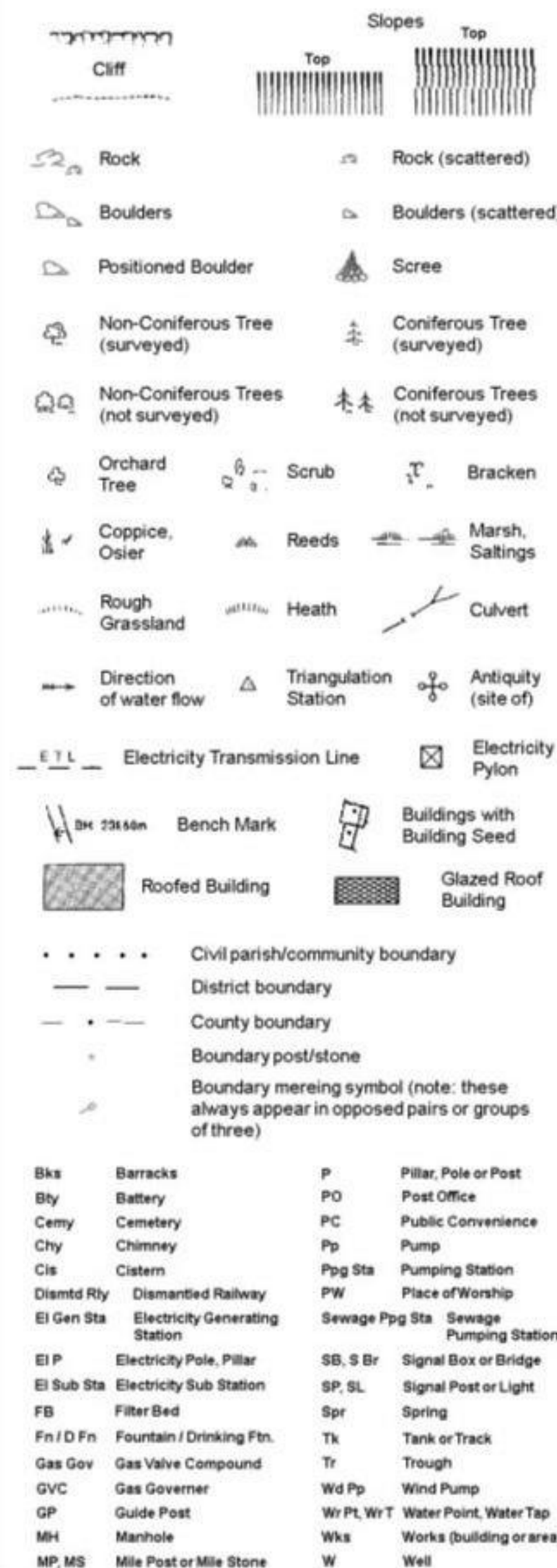
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



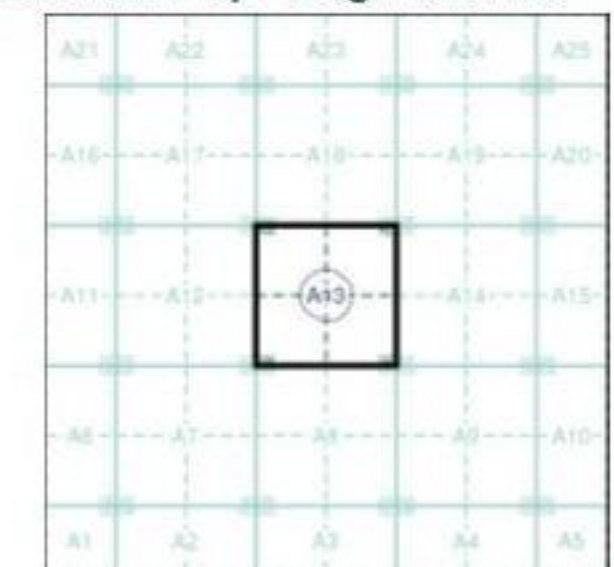
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Hampshire & Isle Of Wight	1:2,500	1879	2
Hampshire & Isle Of Wight	1:2,500	1897	3
Hampshire & Isle Of Wight	1:2,500	1909	4
Hampshire & Isle Of Wight	1:2,500	1932	5
Ordnance Survey Plan	1:2,500	1953 - 1965	6
Ordnance Survey Plan	1:2,500	1955 - 1977	7
Ordnance Survey Plan	1:2,500	1962 - 1966	8
Ordnance Survey Plan	1:2,500	1966	9
Additional SIMs	1:2,500	1972 - 1989	10
Ordnance Survey Plan	1:1,250	1973 - 1974	11
Additional SIMs	1:1,250	1980 - 1989	12
Additional SIMs	1:1,250	1989 - 1990	13
Additional SIMs	1:2,500	1990	14
Large-Scale National Grid Data	1:1,250	1993	15
Historical Aerial Photography	1:2,500	1999	16

Historical Map - Segment A13



Order Details

Order Number: 174762163_1_1
 Customer Ref: 17077
 National Grid Reference: 467900, 108970
 Slice: A
 Site Area (Ha): 0.15
 Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN

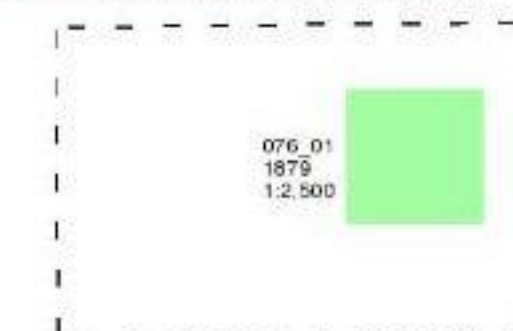
Hampshire & Isle Of Wight

Published 1879

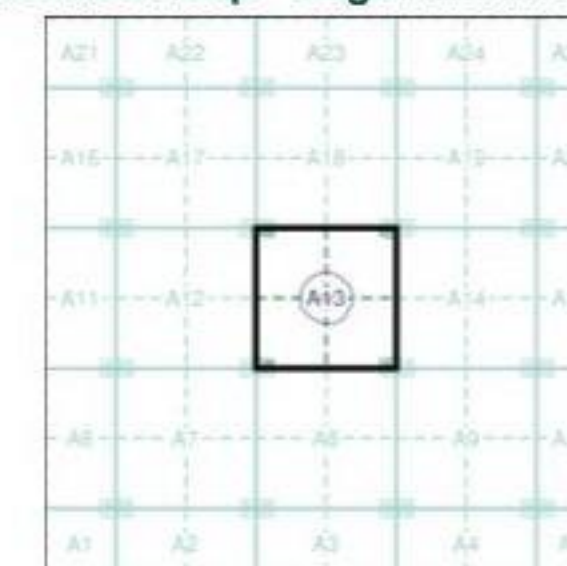
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13

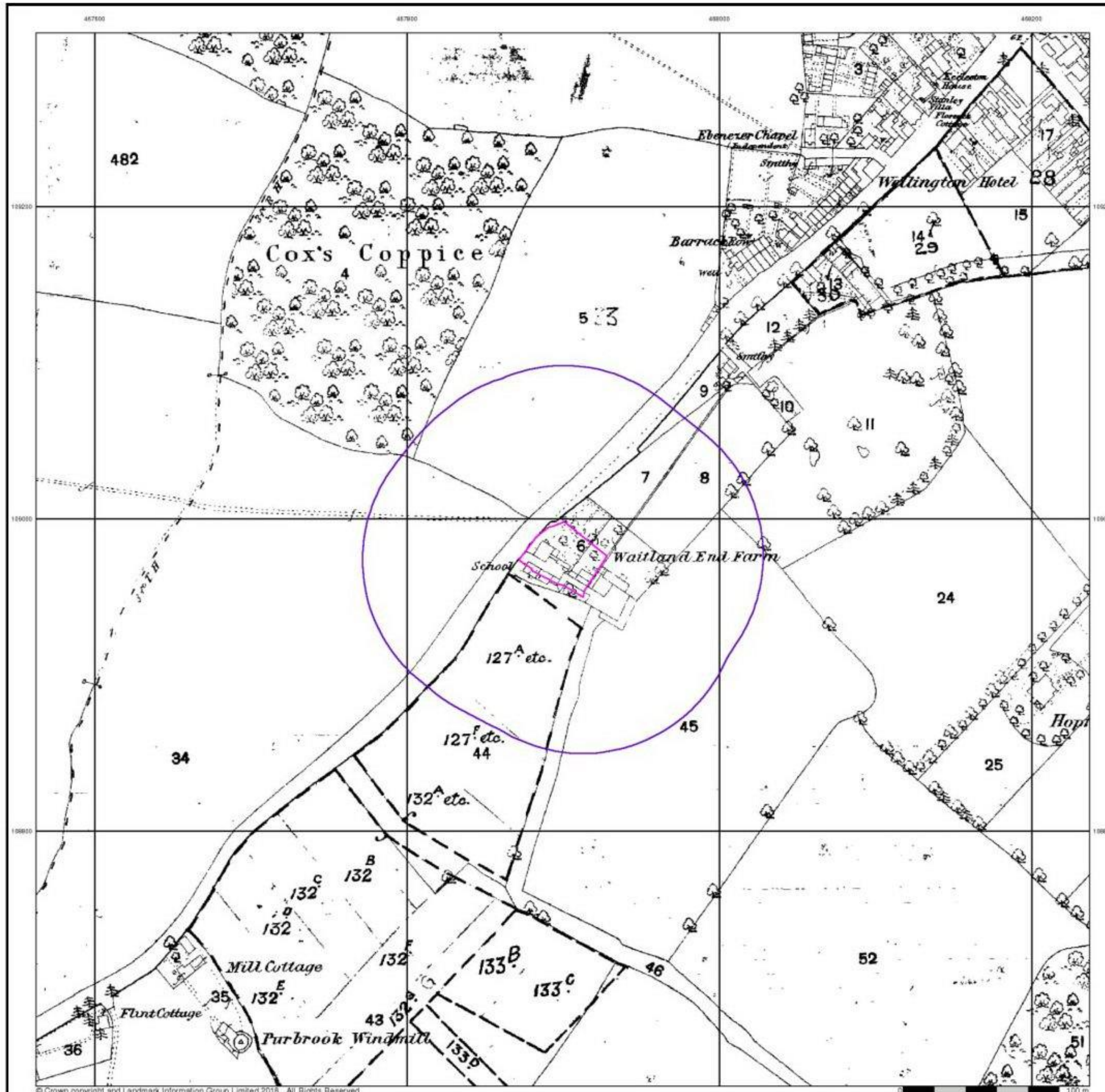


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Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



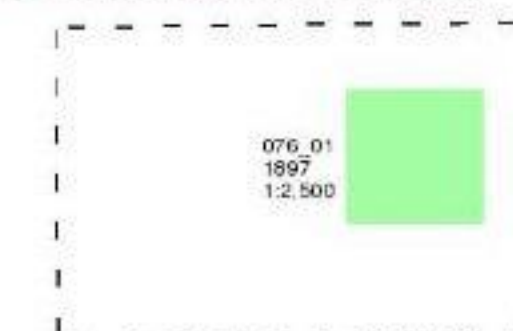
Hampshire & Isle Of Wight

Published 1897

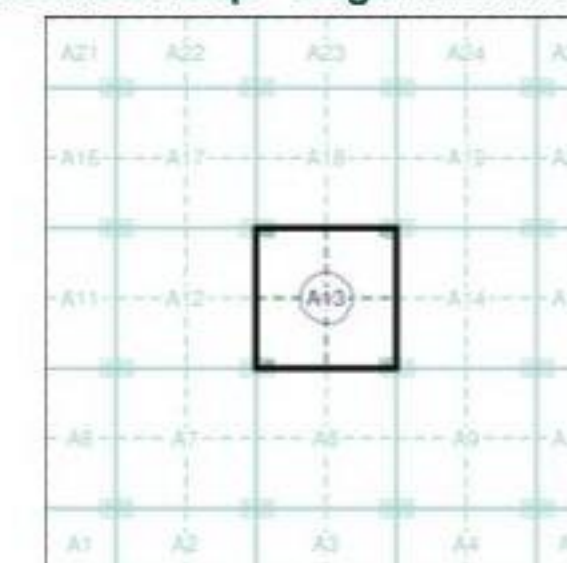
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Map Name(s) and Date(s)



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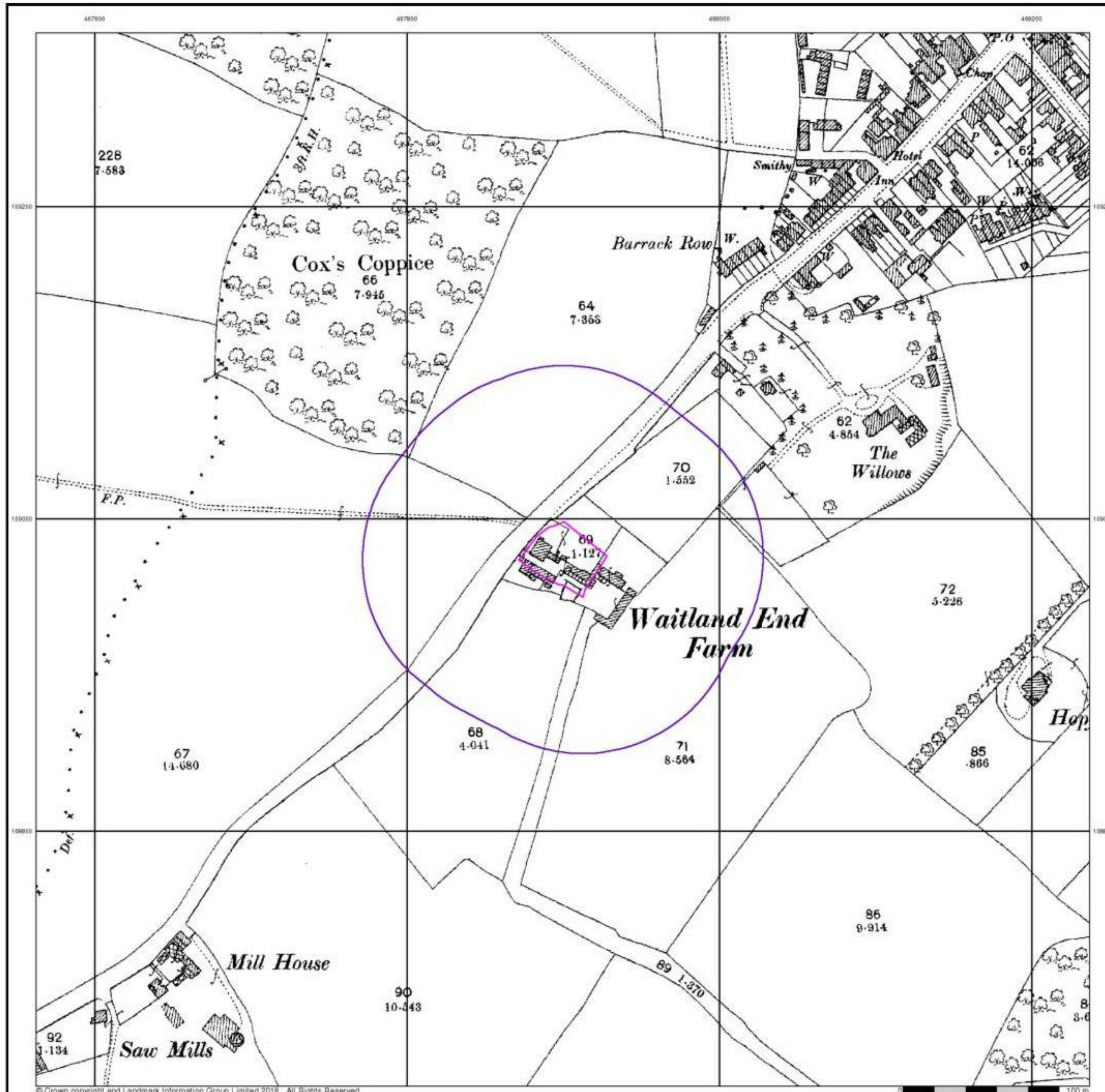


Order Details

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Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



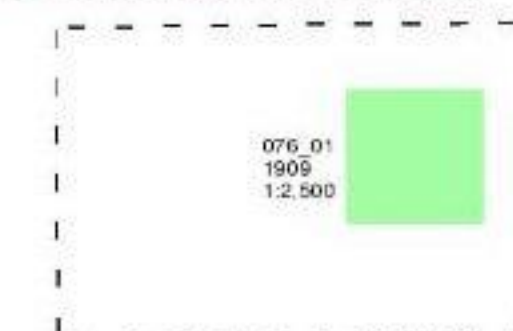
Hampshire & Isle Of Wight

Published 1909

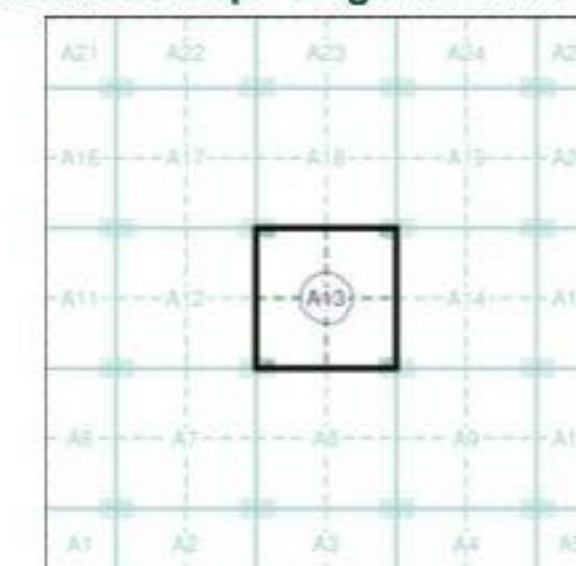
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered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

Map Name(s) and Date(s)



Historical Map - Segment A13

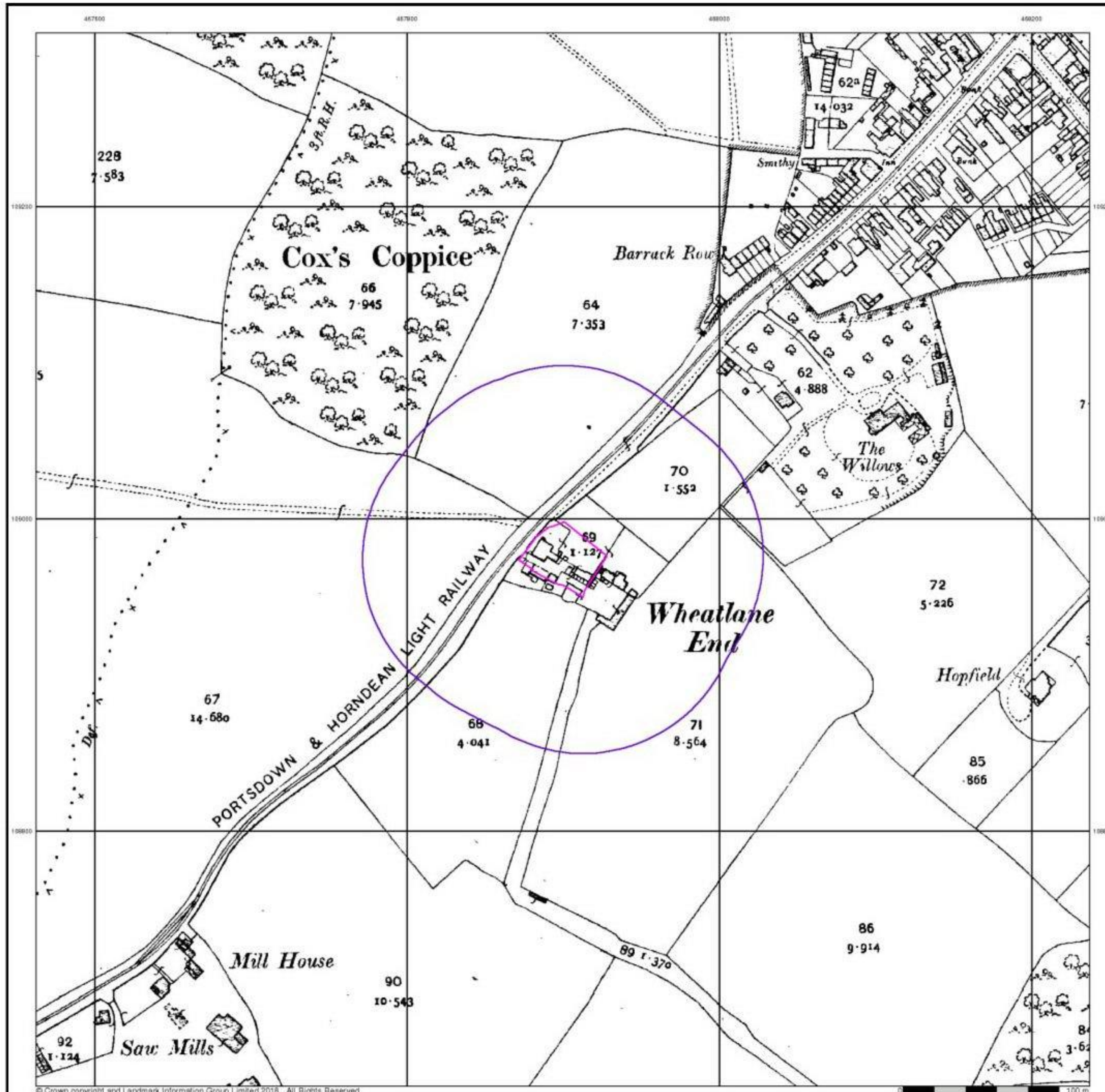


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Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



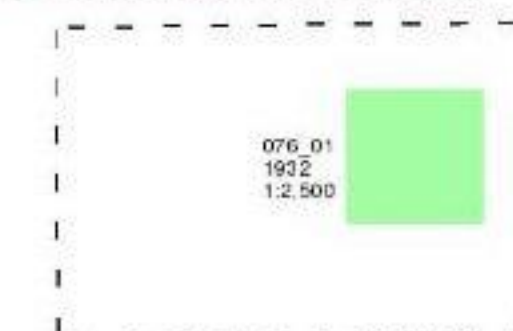
Hampshire & Isle Of Wight

Published 1932

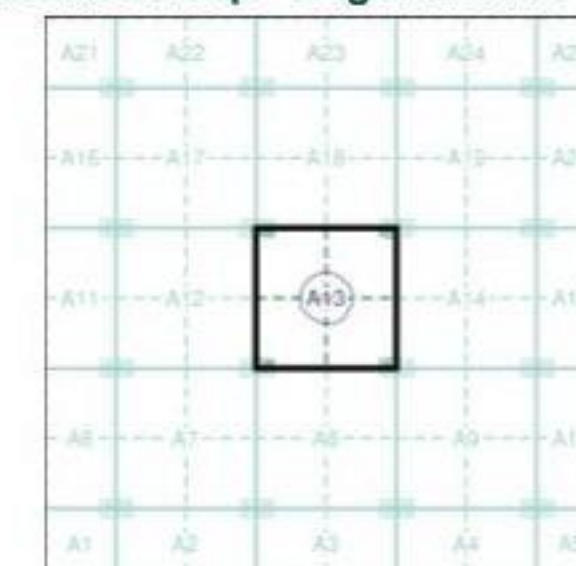
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Map Name(s) and Date(s)



Historical Map - Segment A13

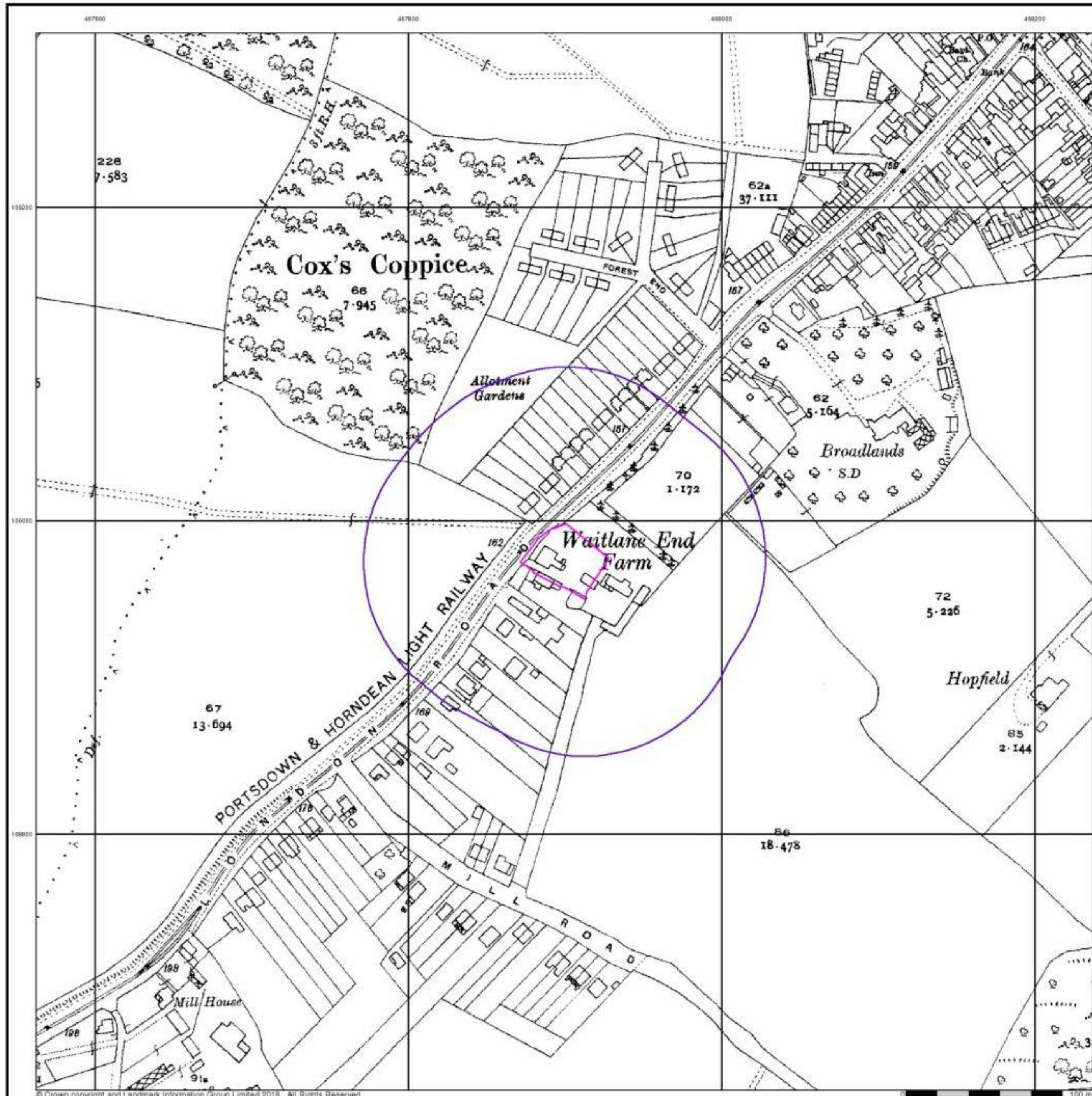


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Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Ordnance Survey Plan

Published 1953 - 1965

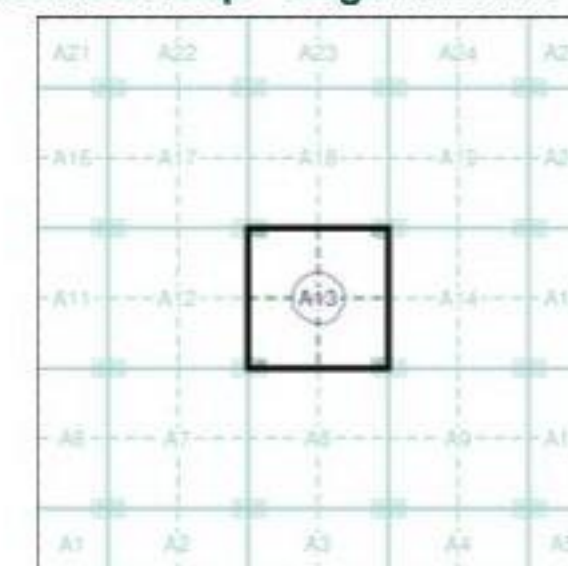
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Map Name(s) and Date(s)

SU6709 1965 1:2,500	SU6809 1963 1:2,500
SU6708 1953 1:2,500	SU6808 1953 1:2,500

Historical Map - Segment A13

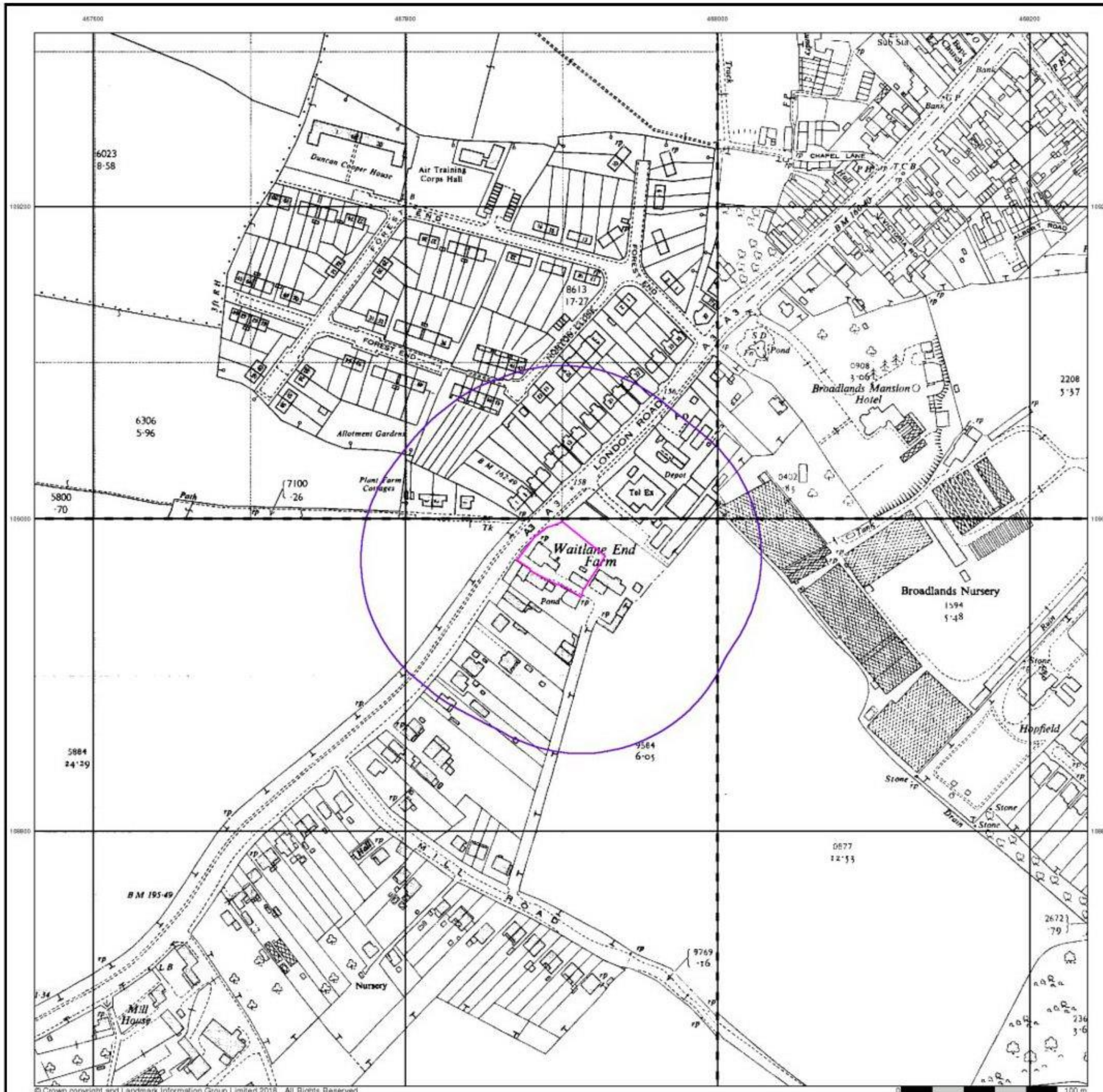


Order Details

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Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Ordnance Survey Plan

Published 1955 - 1977

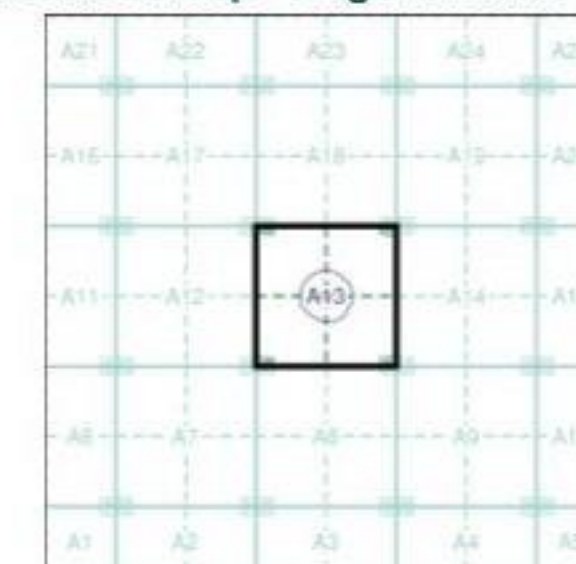
Source map scale - 1:2,500

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Map Name(s) and Date(s)

SU6709	SU6809
1977	1961
1:2,500	1:2,500
SU6708	SU6808
1965	1955
1:2,500	1:2,500

Historical Map - Segment A13



Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
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Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN





Ordnance Survey Plan

Published 1962 - 1966

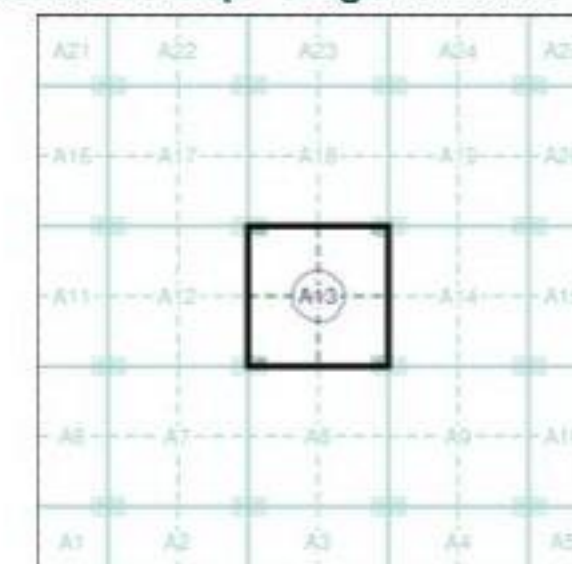
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

SU6809	1966	1:2,500
SU6808	1962	1:2,500

Historical Map - Segment A13



Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN

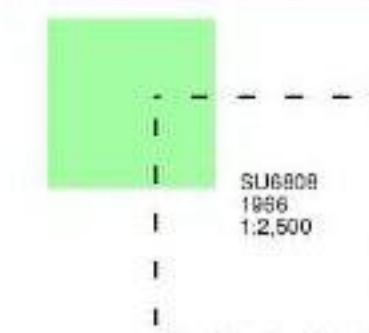
Ordnance Survey Plan

Published 1966

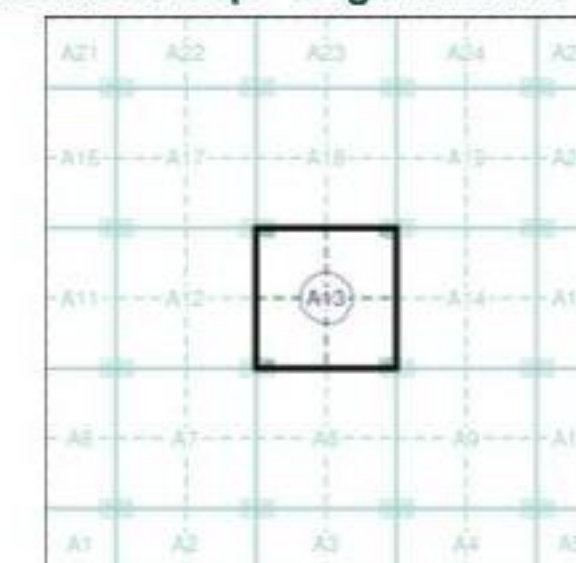
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13

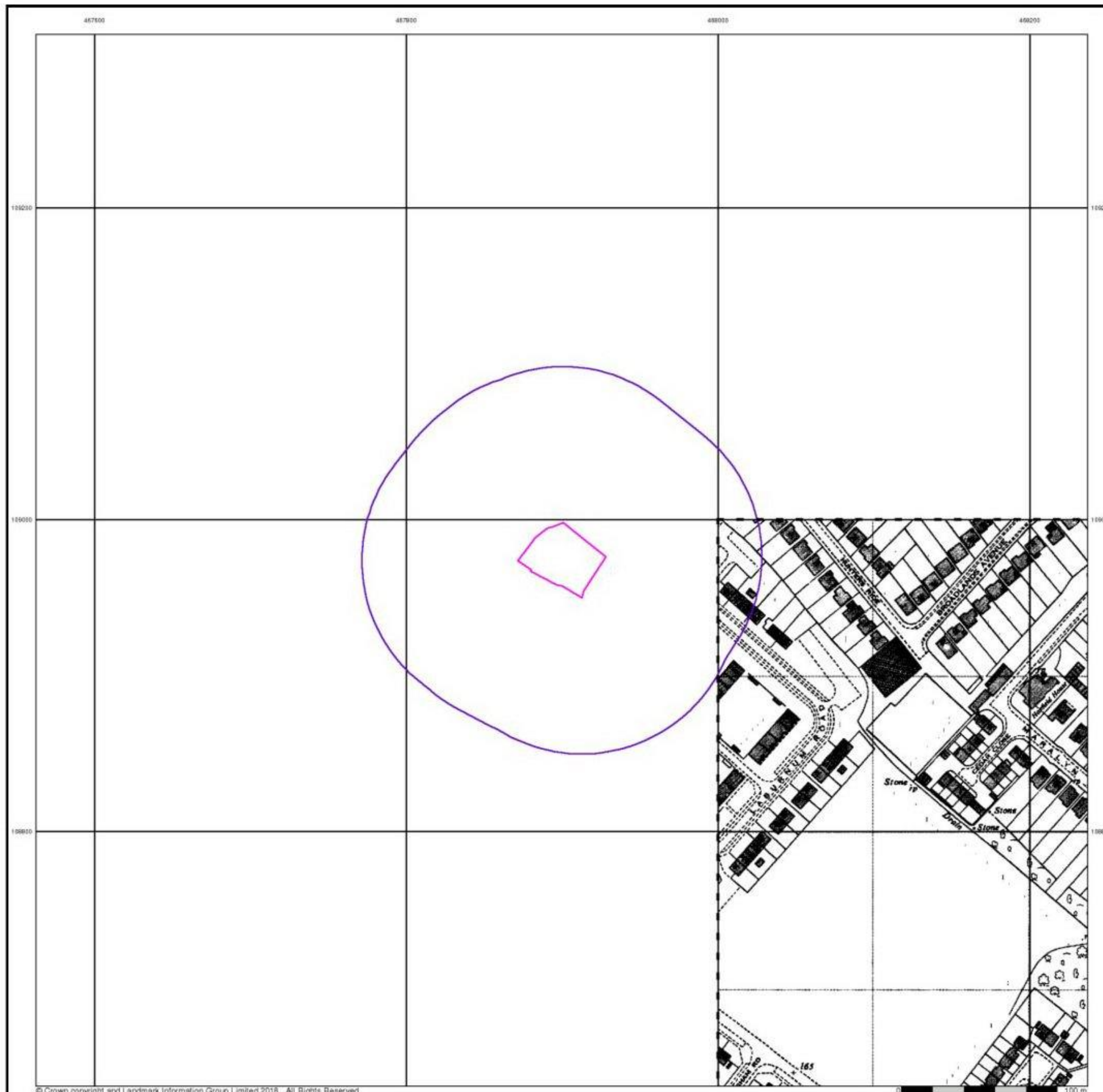


Order Details

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Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Ordnance Survey Plan

Published 1973 - 1974

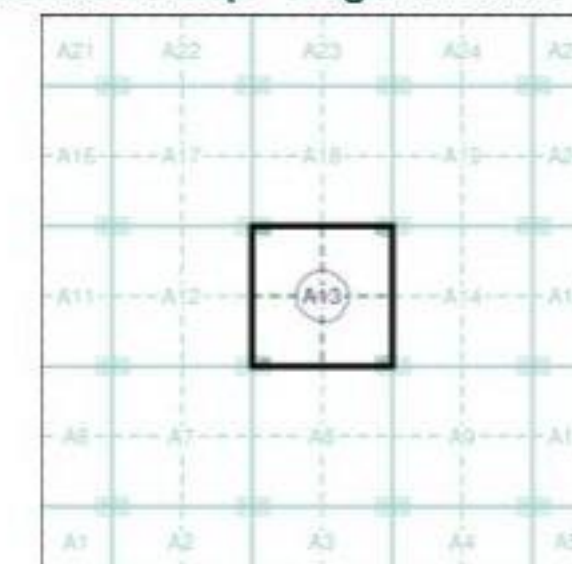
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

SU6709SE 1973 1:1,250	SU6809SW 1974 1:1,250
SU6708NE 1973 1:1,250	SU6808NW 1973 1:1,250

Historical Map - Segment A13

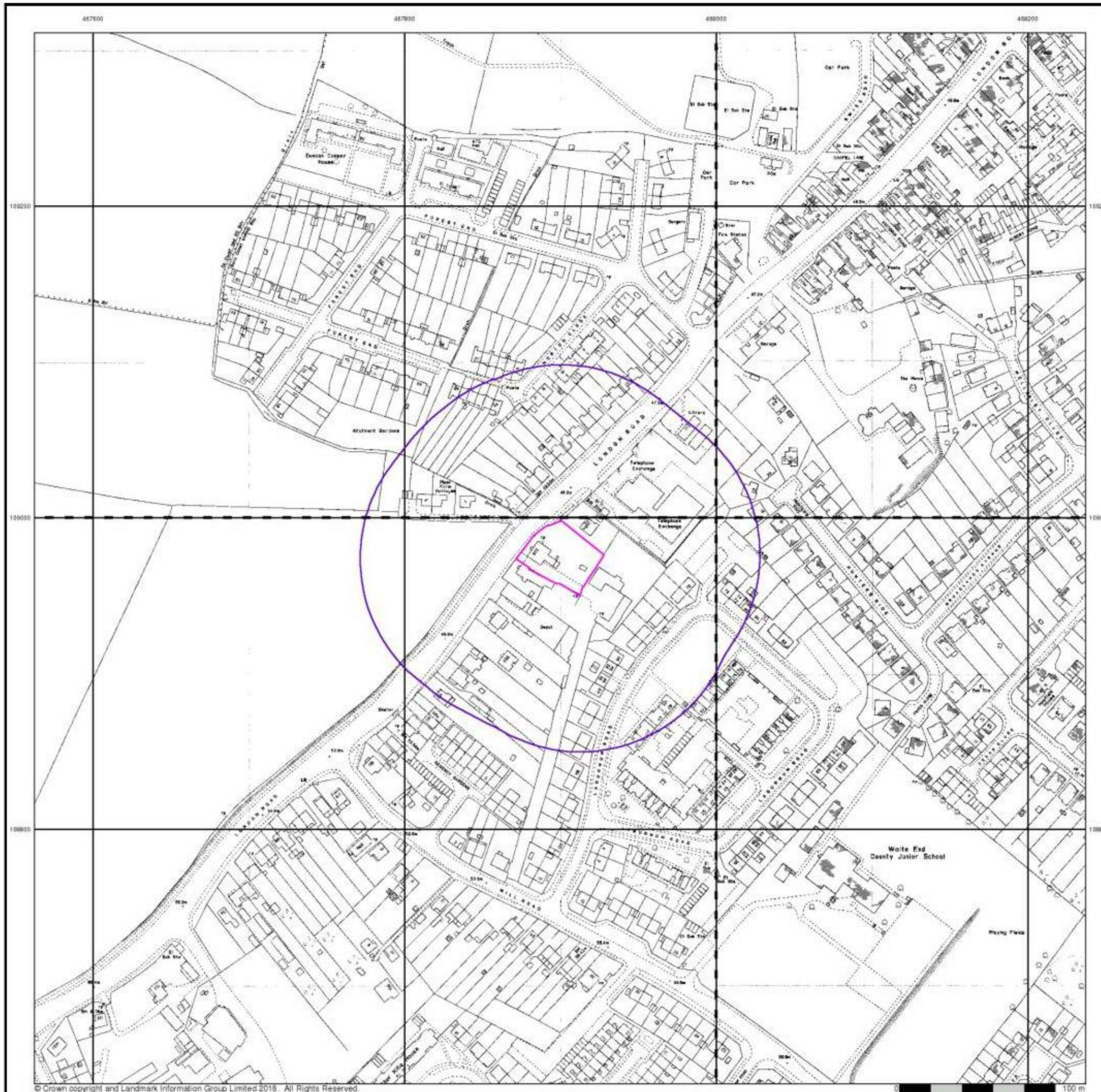


Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Additional SIMs

Published 1980 - 1989

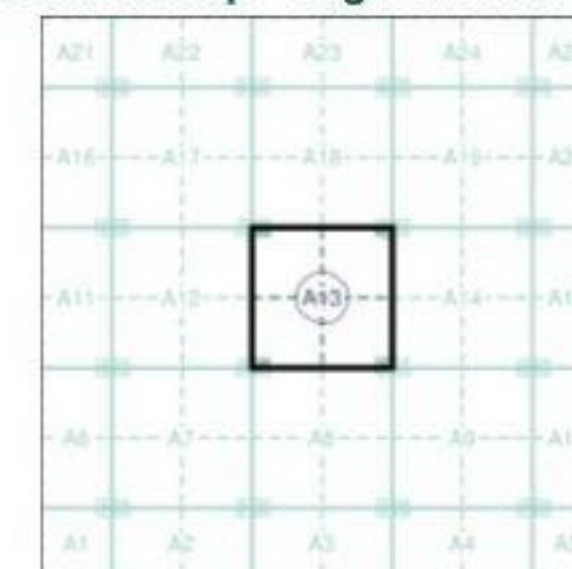
Source map scale - 1:1,250

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)

SU6709SE 1989 1:1,250	SU6809SW 1984 1:1,250
SU6708NE 1980 1:1,250	SU6808NW 1987 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Additional SIMs

Published 1989 - 1990

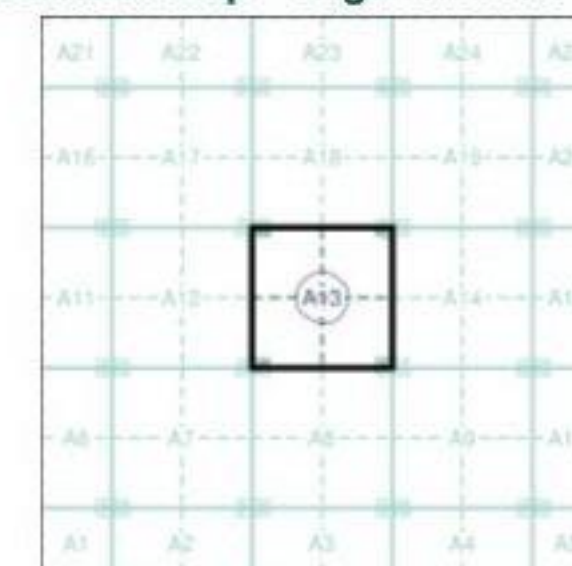
Source map scale - 1:1,250

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)

SU6709SE	SU6809SW
1990	1989
1:1,250	1:1,250
	SU6808NW
	1990
	1:1,250

Historical Map - Segment A13

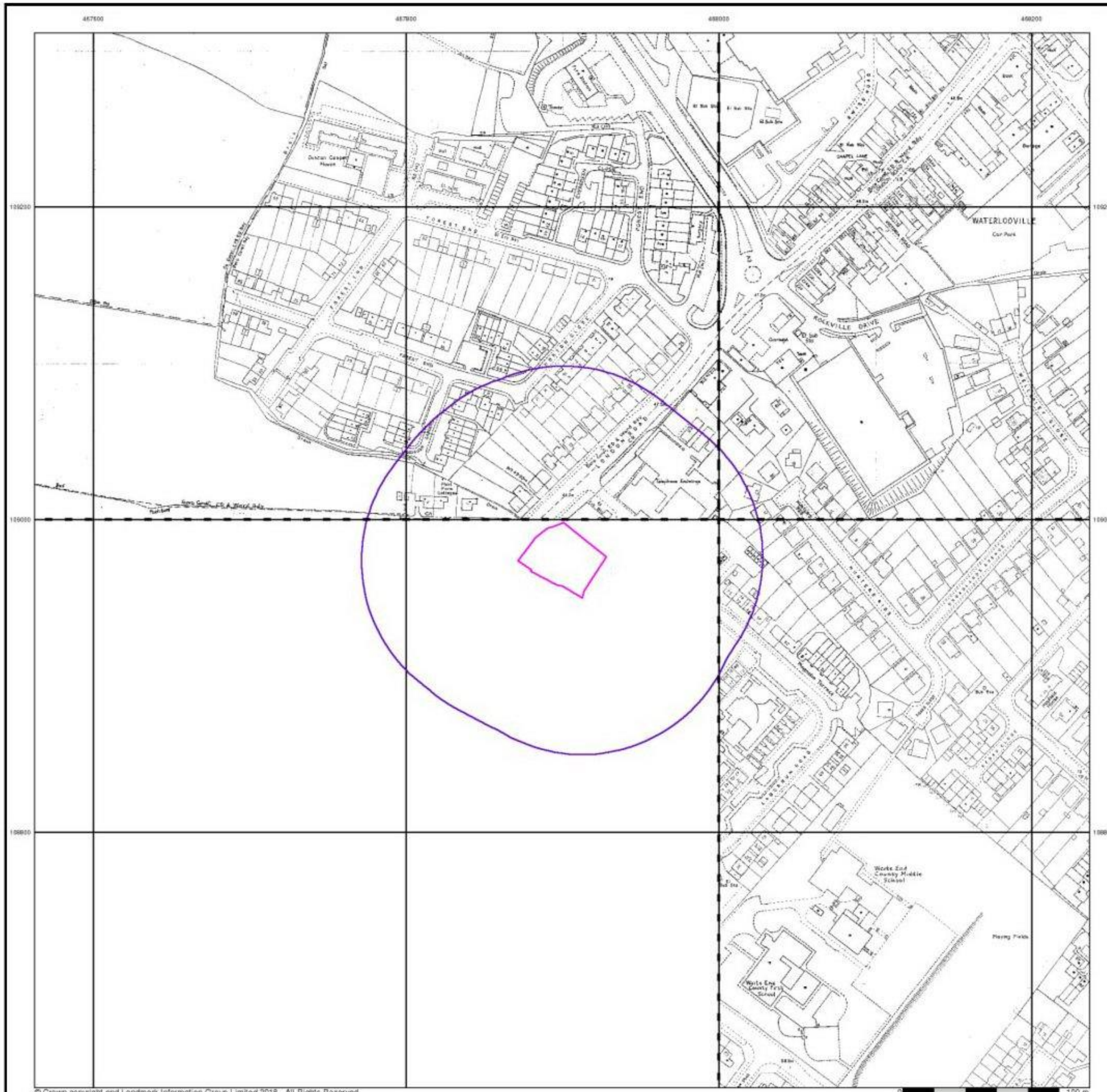


Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



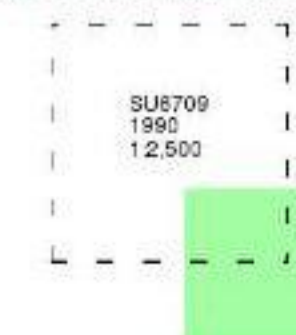
Additional SIMs

Published 1990

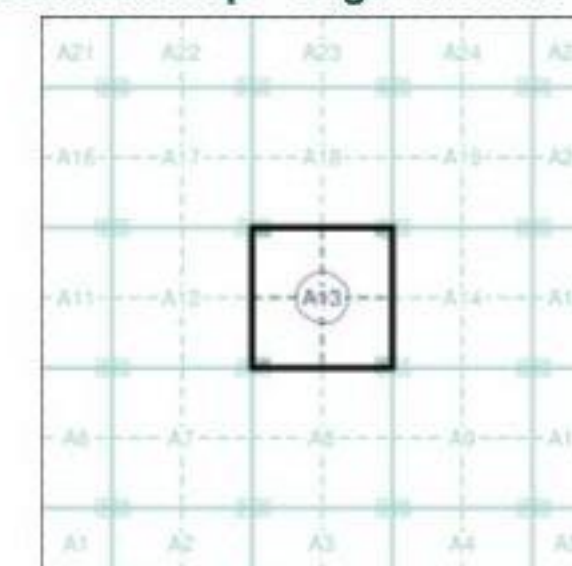
Source map scale - 1:2,500

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

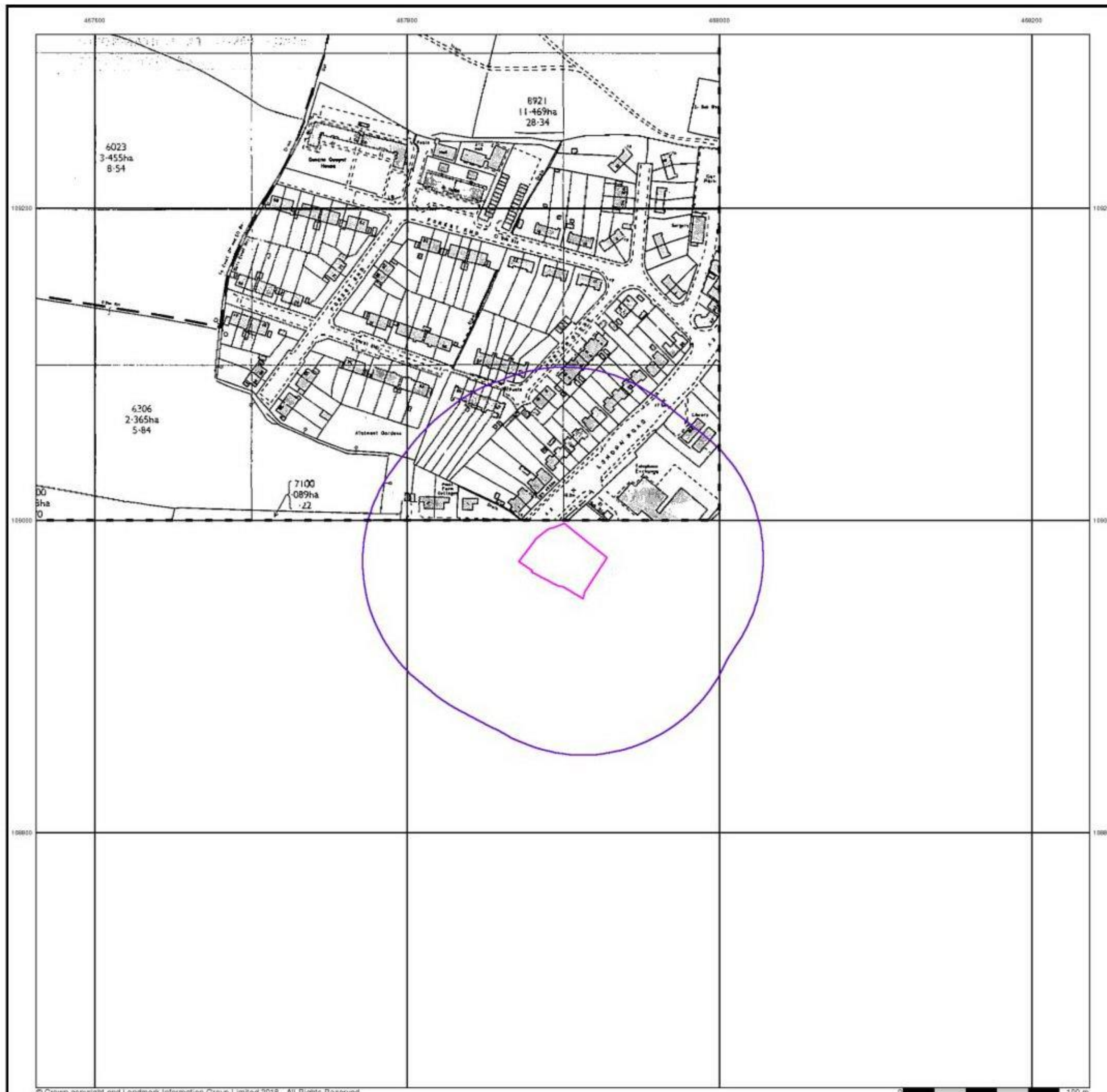


Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN



Large-Scale National Grid Data

Published 1993

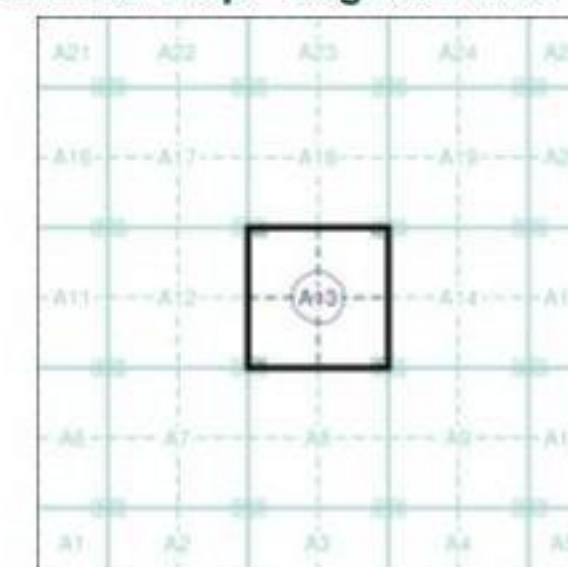
Source map scale - 1:1,250

'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)

SU8709SE 1993 1:1,250	SU8809SW 1993 1:1,250
SU8708NE 1993 1:1,250	SU8808NW 1993 1:1,250

Historical Map - Segment A13



Order Details

Order Number: 174762163_1_1
Customer Ref: 17077
National Grid Reference: 467900, 108970
Slice: A
Site Area (Ha): 0.15
Search Buffer (m): 100

Site Details

208, London Road, WATERLOOVILLE, PO7 7AN

