



Report
Title:

Phase 1 Geo- Environmental Desk Study

Project
Name:

Forest Farm, Chippenham



Report
Reference:

BRD2483-OR1-B

Date:

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REPORT CONTROL SHEET

REPORT TITLE	PHASE 1 GEO-ENVIRONMENTAL DESK STUDY
PROJECT	FOREST FARM, CHIPPENHAM
CLIENT	GLEESON LAND

REPORT REFERENCE	ISSUE DETAIL	DATE	PREPARED BY	CHECKED BY
BRD2483-OR1-A	First Issue	07/07/2015	J McDermott	J Brockwell
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BRD Environmental Limited

Geotechnical and Environmental Services

- Ground Investigation
- Japanese Knotweed Removal
- Soil, Water and Gas Testing
- Contamination Assessment
- Geotechnical Advice
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REPORT LAYOUT

This report is divided into the following four sections: Summary Report, Technical Report, Supporting Information and Appendices.

SUMMARY REPORT

This expanded executive summary provides the main findings of the work undertaken in brief non-technical language. This section provides an overview of the key outcomes for the benefit of non-specialists and concludes with the main recommendations. This section should only be relied upon in the context of the whole report and the Technical Report should be referred to with respect to any design decisions.

TECHNICAL REPORT

The main report section is intended to provide the technical detail of the investigation and is intended to provide the level of information required by current guidance documents and practice. The Technical Report is written in a language that, in part, assumes knowledge of subject matter so that it can be written in as concise a form as possible. Its intended audience is peers, regulators and other professionals in related disciplines.

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SUPPORTING INFORMATION		
This section of the report provides background details of a generic nature together with specific technical approaches adopted by BRD and details of the guidance documents that are commonly referenced in the report. The section also includes explanations of technical terms to assist non-specialist readers in understanding the Technical Report. It should be noted that not all the information within this section is necessarily applicable to this specific report.		
APPENDICES		
The final section of the report presents the factual data collected and employed as part of the investigation.		
APPENDIX 1	SITE PLANS & PHOTOGRAPHS	
	Site Location Plan	Ref. BRD2483-OP1-B
	Proposed Development Layout	'Illustrative Masterplan (DRAFT) – Land at Forest Farm, Chippenham' Richards Urban Design, 1319.03, dated 16.02.22
	Walkover Photographs	Ref. BRD2483-OP2-B
	Site Layout Plan	Ref. BRD2483-OP3-B
	Initial Conceptual Site Model	Ref. BRD2483-OP4-B
APPENDIX 2	HISTORICAL PLANS	
	Order No. 322197480_1_1	97 x A3 pages
APPENDIX 3	ENVIROCHECK REPORT	
	Order No. 322197480_1_1	198 x A4 pages & 56 x A3 pages

APPENDIX 4 SUPPORTING INFORMATION

Zetica Preliminary UXO Assessment

1 x A4 page



SUMMARY REPORT

SUBJECT	COMMENTS
CURRENT SITE CONDITION	The site currently comprises agricultural fields used for cattle grazing and the production of hay or silage. Forest Farm and the immediate surrounding farmyard and grounds is located centrally in the southern half of the site but is excluded from the site boundary.
PROPOSED DEVELOPMENT	It is proposed that the site will be redeveloped as a residential housing estate with areas of public open space / amenity land. A new main road is proposed to the south of the farmyard and cuts through the site from a roundabout off the A4 to the east of the site. The land to the south of the new road is proposed to be retained as natural green space.
HISTORICAL SUMMARY	The site has generally remained undeveloped and in use for agricultural purposes throughout its history. The former Wilts & Berks Canal historically passed through the southern area of the site. The canal was abandoned in 1914 and infilled by the landowner in 1971.
PUBLISHED GEOLOGY	The site is shown to be devoid of superficial deposits. The majority of the site is indicated to be underlain by the Kellaways Formation and Oxford Clay Formation (undifferentiated). The southern area of the site is indicated to be underlain by the Kellaways Formation. Both formations are likely to be present as clay soils.
RADON GAS	Radon gas protection measures are not required.
HYDROGEOLOGY	The underlying bedrock geology is designated Unproductive Strata. The site is not located within a groundwater Source Protection Zone.
HYDROLOGY	The closest water feature to the site is a ditch which flows through the southern half of the site in an east to south west direction. The site is not in an area indicated to be at risk of flooding.
PRELIMINARY CONTAMINATION RISK ASSESSMENT	
The majority of the site is unlikely to be contaminated given its agricultural use, but localised contamination risks have been identified from both on site and off site sources including the on site section of infilled canal, infilled ponds, the redundant fuel pipelines and the off site former brickworks and farmyard. These areas may present potential risks to future residents of the site, building materials and services and the surface water ditch which passes through the site. Some further Phase 2 contamination assessment would be needed to confirm the significance of these potential sources.	

PRELIMINARY GEOTECHNICAL ASSESSMENT

In general, the anticipated ground conditions are typically suitable for conventional shallow spread foundations, allowing for deepening associated with existing and proposed trees. Any development proposed in close proximity to, or straddling the infilled canal, may requiring a deeper foundation solution, such as piling.

On the basis of the anticipated geological strata, it is considered that soakaways are unlikely to work anywhere across the site.

RECOMMENDATIONS

PHASE 2 CONTAMINATION ASSESSMENT

GEOTECHNICAL GROUND INVESTIGATION

A Geo-Environmental Site Investigation incorporating both a contamination and geotechnical assessment of the site is currently being undertaken by BRD and will be reported separately.

1. INTRODUCTION TO TECHNICAL REPORT

1.1. CONTRACT DETAILS

CLIENT	Gleeson Land Ltd trading as Gleeson Land.
SITE	Land situated at Forest Farm in the town of Chippenham, Wiltshire.
CLIENT'S ADVISORS	BRD Environmental Limited (BRD) has been commissioned directly by the Client.
REPORT CONTEXT	It is understood that the Client intends to market the site for a residential redevelopment.
REPORT TYPE	Factual and interpretative geo-environmental desk study.
REPORT OBJECTIVES	The purpose of the report is to undertake a Phase 1 contamination assessment to provide supporting information to any future planning application.

1.2. SCOPE OF WORKS

The agreed scope of works was:

- Desk based research through the purchase of an Envirocheck report, including:
 - o Environmental database search.
 - o Environment Agency data.
 - o BGS radon maps.
 - o Mining and natural cavities database search.
 - o Available historical Ordnance Survey plans.
- Interpretation of the geological, hydrogeological and hydrology setting of the site from published sources.
- Undertake a preliminary UXO risk assessment in line with CIRIA 681 "Unexploded ordnance (UXO) A guide for the construction industry".
- A site walkover will be undertaken to identify any potential sources of contamination or indication of other ground related hazards at the site and its surroundings. At the same time BRD will meet with the Exolum pipeline representative to mark out the live fuel pipeline and agree safe methods of working for the subsequent intrusive ground investigation.
- Prepare a Phase 1 desk study report including copies of the purchased information, interpretation of the collected data to identify and assess contamination hazards together with any other environmental/geotechnical issues.

1.3. REPORT LIMITATIONS

Any site boundary lines depicted on plans included within this report are approximate only and do not imply legal ownership of land. Any observations of tree species, asbestos containing materials within structures or invasive weeds, does not constitute a formal survey of such features. The identification of such features is therefore tentative only. In the case of Japanese Knotweed, BRD can undertake separate surveys for this plant undertaken by a Property Care Association qualified surveyor.

The report does not consider whether sensitive ecology or archaeology is present as these require consideration by professionals specialising in these matters. It should be recognised that the collection of desk study information may not be exhaustive and that other information pertinent to the site may be available.

It is emphasised that a desk study and walkover can only indicate the potential for contamination on the site. This study aims to highlight potential pollutant linkages in line with current guidance. The plausibility of these linkages can only be proved by an intrusive ground investigation.

It should be noted that a desk study and walkover can only reveal the potential for certain types of ground conditions and geotechnical hazards. For any form development an intrusive ground investigation is recommended. The scope of this investigation excludes a formal slope stability study and any observations made regarding slopes are for information only.

2. SITE CHARACTERISTICS

2.1. SITE SETTING

SITE ADDRESS AND POST CODE	Land at Forest Farm, Pewsham, Chippenham, SN15 3RP.
NATIONAL GRID REFERENCE	The site is approximately centred on 393950E, 171630N.

2.2. SITE DESCRIPTION

INSPECTION DATE	12 th October 2023
CURRENT USE	The site currently consists of agricultural fields used for cattle grazing and the production of hay or silage. Within the site, Forest Farm farmyard and grounds are located centrally in the southern half, however, this area is excluded from the proposed application boundary. Forest Farm is a small dairy farm with associated barns, storage areas and slurry pit, as well as the main farmhouse and a separate bungalow named 'Trevan'.
AREA	Approximately 39 hectares.
SHAPE	The site is irregularly shaped.
ACCESS	Vehicular access to the site is from the access track down to Forest Farm off the London Road (A4), which is located along the northern boundary of the site. Pedestrian access is also possible from the western and southern boundaries along the route of a public footpath.
BOUNDARIES	The boundaries of the site are predominantly defined by dilapidated wooden post and rail or post and wire fencing that is generally contained within mixed hedgerows including mature trees.
TOPOGRAPHY	The topography of the site generally slopes from north west to south east up to the ditch that runs east to south west in the southern half of the site. The overall drop in levels across the site is from 66mAOD in the north corner to 52mAOD in the south western corner. To the south east of the ditch levels start to gently rise towards the south eastern corner with levels rising to between approximately 53mAOD and 57mAOD, creating a shallow valley feature present either side of the ditch.
SURFACING	The access track is surfaced with poor quality tarmac and scaplings that have been patch repaired in numerous places. The remainder of the site comprises grass covered fields.
BUILDINGS	No buildings are present on site.

VEGETATION	The boundaries of the site and the field boundaries are mixed hedgerows containing predominantly hawthorn. Numerous mature trees including oak and sycamore were identified along the boundaries. Willows and a leylandii were also noted in the south western corner of the site adjacent to the ditch. A single mature oak tree is present in the middle of the field in the north western area of the site.
NOTABLE FEATURES AND OBSERVATIONS	A number of overhead electricity transmission lines are present on the site. Crossing north to south through the western half of the site are high voltage cables on large metal pylons. Crossing from east to west through the northern centre of the site are more electricity cables located on tall wooden poles. In addition, some of the poles were noted to have above ground transformers, implying some underground cable feeds are also likely to be present. A live underground fuel pipeline is known to run across the north eastern section of the site. Marker posts are evident in the boundary hedgerows, confirming the pipe's location. A live foul rising sewer runs approximately parallel to the north eastern boundary of the site, but its exact location is unknown. A modern plastic double bundled above ground oil tank was observed adjacent to the off-site bungalow, 'Trevan', within the farmyard area. A modern bundled fuel tank was also observed within the farmyard area. To the south east of the farm yard is a slurry pond and associated infrastructure. Discussions with the farmer confirmed that a network of underground pipes is present in the south eastern field which enables water from the slurry pond to be pumped on to this area.

SURROUNDING LAND USE	The site is set on the eastern fringes of the district of Pewsham in Chippenham within a mixed residential and agricultural area. The site surrounds Forest Farm which is located centrally in the southern half of the site.
TO THE NORTH	London Road (A4) is present abutting the majority of the north eastern boundary. To the northernmost tip of the site are some residential dwellings and another farmhouse. Residential development is also present further to the north west.
TO THE EAST	Predominantly agricultural fields, with some limited residential development, small commercial or light industrial areas and farms. Approximately 100m to the east of the site is a Hyundai vehicle garage.
TO THE SOUTH	Predominantly agricultural fields, with farmyards and associated buildings. To the immediate south west is an area of woodland, which is known to be a former brickworks. The area is at a lower elevation to the site but can be accessed via steep sided banks covered by mature trees. These open excavations are present at depths ranging from approximately 2m to 4m bgl below the adjacent site levels. The ponding of water the was observed at the base.

TO THE WEST	Pewsham Way is present to the west, with residential development beyond.
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2.3. SITE HISTORY

MAPPED HISTORY		
DATE RANGE	SITE	SURROUNDING AREA
1886 - 1938	The site comprises predominantly agricultural fields, assumed to all be associated with Forest Farm. There are numerous public footpaths crossing through the site. The “Wilts & Berks Canal” is present in the southernmost area of the site, crossing from the east corner to south west. The Chippenham Branch of the canal is also present on the site, entering the site on the western boundary and joining with the main canal. ‘Junction Bridge’ is present over the confluence between the canal and the branch, and a ‘Draw Bridge’ is present over the canal on the southern boundary of the site. In the north and north east there are potential ponds located on the field boundaries. The field boundaries on the mapping also appear different to the existing boundaries.	The site is located in an area that comprises predominantly agricultural fields associated with various farms in the local vicinity. The main town of Chippenham is present over 1km to the north west. Forest Farm is shown and is situated in its current location. A well is indicated to be present within the farmyard. The Wilts & Berks Canal runs from north east to south west through the site, with the Chippenham Branch of the canal extending to the west. To the immediate south west of the site is the “Forest Brick Works” with numerous clay extraction pits, kilns and ancillary buildings shown adjacent to the site. Some 20m north east of the site is another brickworks (un-named at this time) with two clay extraction pits and ancillary buildings. To the east of the second brick works are “Brickworks Cottages”. By 1924, the entire canal was identified as being disused. In addition, both of the neighbouring brickworks were also identified as being disused.
1950 - 1976	The site appears relatively unchanged on the aerial photograph and the line of the canal is still present (albeit could well still be disused). By 1968, an overhead electricity transmission line with pylons is present crossing through the western area of the site.	The aerial photograph shows residential development to be occurring to the east of Chippenham extending to within 500m of the western site boundary. Otherwise, the surrounding area is largely unchanged.

MAPPED HISTORY		
DATE RANGE	SITE	SURROUNDING AREA
1981 - 2023	The canal is no longer marked on the maps and is assumed to have been infilled. The map edition from 1985 no longer shows the ponds in the northern fields and the field boundaries have also changed with the removal of several hedgerows. There appear to be no further significant changes to the site on subsequent map editions.	The map edition from 1981 shows Forest Farm has increased in size, in terms of both number of buildings and the size of them, including the construction of an additional bungalow. The well is no longer identified. The route of the former canal either side of the site boundaries is identified as “track of Old Canal” and is indicated to remain as a channel/cutting. Some of the clay pits to the north east of the site appear to have been infilled and this former brick works is now shown as a single large residential property labelled as “Spires View”. Adjacent to the south east boundary of these brick works, “Brick cottages” have been redeveloped as “Wedmore Farm”. By 1985, widespread residential development has encroached to within some 50m west and north west of the site. The map edition from 1993 shows a garage and a pump house approximately 100m to the east of the site on the opposite side of the A4 road. The pump house would appear to be associated with the foul rising sewer main crossing the site. No further significant alterations to the immediate surrounding area were observed on subsequent map editions.

AERIAL IMAGERY	Google Earth imagery from 1945 shows the site to exist as it does currently, comprising agricultural fields surrounding Forest Farm although the configurations of the fields are slightly different. A number of the images appear to show the outline of the disused canal. Bing aerial imagery from 2023 shows an extensive array of presumed archaeological trenches to be present across the site, suggesting that the site has been subject to a widespread archaeological investigation.
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INTERNET SEARCH	Internet research revealed that the Wilts & Berks Canal, which formerly crossed through the site, was opened in September 1810 to link the Kennet & Avon Canal and the town of Melksham to the south with the River Thames at Abingdon to the north. County boundary changes over the years means that the sections of the canal formerly within Berkshire are now technically in Oxfordshire, although the canal's name has remained unchanged. The Wilts & Berks Canal was completely abandoned in 1914 just prior to WWI. Numerous structures (bridges, wharfs and locks etc) were purposely destroyed by army demolition training exercises. Sections of the canal have been backfilled and in places built over or built close to. No further information was obtained.
ANECDOTAL	Discussions with the landowner revealed that the on-site sections of the canal were infilled by the farmer during 1971. The canal was reportedly in a bad state and the brick built 'Junction Bridge' that formerly crossed the confluence between the main canal and the Chippenham Branch, had collapsed into the bed of the canal. The raised embankments of the canal were reportedly used as infill material with no other waste materials incorporated other than those on the banks or within the canal already.
PRELIMINARY UXO RISK ASSESSMENT	BRD has instructed Zetica Ltd to undertake a Preliminary UXO Risk Assessment for the site. The preliminary assessment did not identify any significant source of military activity or increased potential UXO on the site or in the local area. Zetica recommended that whilst always prudent a detailed desk study is not considered essential for the site. The Zetica Preliminary UXO Risk Assessment is included in Appendix 4.

2.4. GEOLOGY

GEOLOGICAL CONTEXT	The site is located in an area defined by Jurassic bedrock which was formed between 156 million and 165 million years ago when the local environment was defined by shallow seas. These conditions gave rise to sequences comprising sands and sandstones, silty clays and mudstones. Superficial deposits are not widespread across the area. They are typically located to the north and west of the site and are associated with the River Avon. The deposits are indicated to comprise silts, sands, gravels and clays of alluvial deposits and river terrace deposits. To the immediate south east of the site, Alluvial Fan Deposits are indicated to be present, which comprise silts and clays. A series of faults known as the Atworth – Lacock Fault Bed are shown approximately 800m to the south west with the downthrow side of the faults to the south west. The Chippenham Fault is shown approximately 1.1km to the west of the site with downthrows to the south west.
SUPERFICIAL DEPOSITS	No superficial deposits indicated to be present.

BEDROCK GEOLOGY	The majority of the site is indicated to be underlain by the Kellaways Formation and Oxford Clay Formation (undifferentiated). The southern area of the site is indicated to be underlain by the Kellaways Formation. The Oxford Clay Formation is typically described as 'Silicate-mudstone, grey, generally smooth to slightly silty, with sporadic beds of argillaceous limestone nodule'. The Kellaways Formation is typically described as 'Mudstone, grey, commonly silici-silty or silici-sandy, with (predominantly in the upper part) beds of generally calcareous siltstone and sandstone'. With reference to the older paper 1965 geology map covering the area, the Kellaways Formation is shown as being much more widespread across the site, but the geological boundaries were subsequently updated by the map edition from 2011 with the Oxford Clay Formation shown to be present.
BGS BOREHOLE RECORDS	On the BGS website, there are 3No. trial pit logs located on the Pewsham Way ring road to the north west and west of the site, the details of which are provided below. <u>ST97SW90</u> • Topsoil to 0.2m bgl • Firm to stiff grey mottled brown fissured CLAY with patches of very clayey SAND to 1.5m bgl. <u>ST97SW89</u> • Made Ground Topsoil to 0.2m bgl • Made Ground consisting of Firm to stiff sandy clay with kerb stones and concrete to 0.9m bgl. • Stiff dark brown/grey mottled light brown in places fissured sandy silty CLAY with much organic content to 1.2m bgl. • Stiff grey mottled brown fissured silty CLAY to 1.7m bgl. <u>ST97SW91</u> • Topsoil to 0.2m bgl • Stiff brown mottled grey mottled light fissured sandy CLAY, very sandy in places with much organic content to 0.6m bgl. • Firm dark grey / blue very sandy CLAY becoming slightly cemented clayey SAND with depth to 1.8m bgl. These descriptions are more typical of the Kellaways Formation and may suggest that the older geological maps are more accurate.

BGS RECORDED MINERAL SITES	There are two BGS recorded mineral sites within 250m of the site. The first is located to the immediate south west of the site. The was the Forest Brick Works and used opencast methods to extract common clay and shale. Operations have since ceased and the area is now an area of woodland. The extraction pits have not been backfilled and are now partially filled with water. This area is recorded as worked ground on the BGS mapping. The second is located some 150m north east of the site. It was for the Green Lane Farm Brick Works and also used opencast methods to extract clay and shale. Operations have since ceased and the area is now shown as a large residential property. The large extraction pit within the rear gardens of this property is full of water rather than being backfilled with soil/arising. Within this location, there is the potential that the clay extraction pits at the front of the site were infilled during the construction of the existing residential property and the adjacent farm. Access to this property was not possible during the walkover and the view from the roadside was obscured by dense vegetation.
POTENTIAL INFILLED LAND	Both of these former brick works are also identified in the Envirocheck report as potential infilled land. In addition to this, a former small pond located in the northern area of the site, as well as small off site pond to the north west are also shown as potential infilled land.
GROUND STABILITY	The clay soils on site are recorded as having a moderate potential for shrinking or swelling.
SOIL GEOCHEMISTRY	The site is not situated in an area where the natural background concentrations of metals are elevated.

2.5. RADON

The site is not situated within an area where radon gas protection measures are required in new buildings.

2.6. HYDROGEOLOGY

SUPERFICIAL AQUIFER	No superficial deposits present.
BEDROCK AQUIFER	Unproductive Strata.
AQUIFER PROPERTIES	The site is located within an area where the underlying bedrock is part of the Kellaways Formation and Oxford Clay Formation (undifferentiated) which is classified as 'Rocks with essentially no groundwater-Largely clays confining underlying aquifers. Kellaways Sand near base yields small quantities, often brackish'.
LICENSED GROUNDWATER ABSTRACTIONS	None within 250m from the site.

GROUNDWATER SOURCE PROTECTION ZONE (SPZ)	Not located within a SPZ.
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2.7. HYDROLOGY

SITE DRAINAGE CHARACTERISTICS	Surface water on the site will infiltrate directly into the underlying soils, or will run off and in to the ditch crossing through the southern area of the site. During the recent walkover, areas of soft ground were observed in the eastern, south eastern and south western corners of the site.
SURFACE WATER FEATURES	The closest surface water feature to the site is a drainage ditch (or small stream) that flows south west from the eastern corner. It appears to join the River Avon some 1.7km west of the site. The River Avon flows in a southerly direction towards the town of Melksham.
SURFACE WATER ABSTRACTIONS	None within 250m from the site.
DISCHARGE CONSENTS	None relevant to consideration of the site.
FLOODING	Zone 1 area and is highly unlikely to be affected by flooding. As the site is greater than one hectare in area, a Flood Risk Assessment will still have to be undertaken for the site.

2.8. ENVIRONMENTAL ASPECTS

LANDFILL	There are no recorded landfill sites within 250m of the site.
CONTEMPORARY TRADE DIRECTORY ENTRIES	The garage approximately 150m to the east of the site is the Platinum Hyundai car dealership and is currently open and occupied. No other nearby contemporary trade entries have been identified that are of relevance to assessment of the site.
REGISTERED HAZARDOUS SITES	None within 250m of the site.
POLLUTION INCIDENTS TO CONTROLLED WATERS	None identified within 250m.
ECOLOGICALLY SENSITIVE LAND USE	None identified within 250m.

2.9. PREVIOUS GROUND INVESTIGATIONS

2.9.1. Ground Investigation

During the course of the walkover, three raised borehole monitoring installations were identified in the southern area of the site, indicating that some ground investigations works had been completed by others.

Following discussions with the farmer it is understood that these boreholes were drilled as part of the investigation for the construction of a new road in this area of the site. Two of the boreholes were positioned to target the infilled canal. The associated investigation report has not been provided to BRD.

2.9.2. Archaeological Investigation

Aerial images indicate that a detailed archaeological investigation has been completed incorporating a network of trenches across the southern half of the site. The associated report has also not been provided to BRD.

2.10. FUEL PIPELINES

Three underground fuel pipelines are known to present in the northern half of the site, with one active and two redundant. The live pipeline is managed by Exolum and the redundant pipelines by Defence Infrastructure Organisation (DIO). All the pipelines are located along a similar corridor on site, whereby the pipelines cross between the eastern boundary and the north western boundary. The location of the active pipeline is identified by yellow aerial pipeline marker posts which are present in the hedgerows.

As part of the walkover, BRD met with a representative from Exolum on site and confirmed the location of the pipelines crossing the site. The active pipeline is present at depths of approximately 0.8m to 1.0m bgl. One redundant pipeline is located along a similar line to the active pipeline and one is approximately 5m to the north. Both of the redundant pipelines are present at depths ranging from approximately 0.6m to 0.8m bgl.

During the meeting, a 30m offset was agreed with Exolum for any future ground investigation works. Limitations were also placed on plant / machinery crossing the pipeline and it was agreed that all crossings would take place on the existing access track. This negated the use of temporary ground protection mats at all crossing points.

3. PRELIMINARY CONTAMINATION RISK ASSESSMENT

3.1. HAZARD IDENTIFICATION

INVALID CONTAMINATION SOURCES		
HISTORIC LAND USE	DISCUSSION AS TO WHY THE HISTORICAL USE IS NOT CONSIDERED TO PRESENT A PLAUSIBLE HAZARD	
Off-site clay pits and brickworks to the south west.	To the immediate south west are former brickworks with associated clay extraction pits. During the walkover it was noted that the brick pits remain as an open excavation with some water ponding at the base. As the pits have not been infilled, there is no source of potential contamination or organic matter that could give rise to the production of soil gasses or contaminated leachate from the infilled materials. These brickworks are therefore not considered further within this assessment.	
Garage to the east of the site.	An existing car sales garage is located approximately 150m to the east of the site. Information within the Envirocheck indicates that the garage has only ever been used for car sales, albeit fuel could still have been historically stored at the site. Given its distance from site and the anticipated clay soils it is considered that this does not offer a plausible contamination hazard and will therefore not be considered further in this assessment.	
On site use as agricultural fields.	Due to the historical use of the site as being open fields for hay and grazing, it is unlikely that there is any on site contamination generated from this activity.	

POTENTIAL ON SITE SOURCES		
HISTORIC LAND USE	DESCRIPTION OF POTENTIAL CONTAMINATION HAZARD	POTENTIAL CONTAMINANTS OF CONCERN
Infilled canal in the southern area of the site.	Although waste materials are not reported to have been used as infill material, some construction materials may have been incorporated that contained contaminants. The banks of the canal (used as backfill) may have been organic rich and/or contain vegetation. Likewise the sludge at the base of the canal could also be organic rich. All these infilled deposits could degrade to form hazardous gases under anaerobic conditions.	Metals. Hydrocarbons. Asbestos containing materials. Landfill gases (mainly carbon dioxide and methane).

POTENTIAL ON SITE SOURCES		
HISTORIC LAND USE	DESCRIPTION OF POTENTIAL CONTAMINATION HAZARD	POTENTIAL CONTAMINANTS OF CONCERN
Fuel pipelines	Fuel pipelines cross the northern part of the site. The live pipeline will be constantly monitored and discussions with the pipeline representative indicated that there have been no recorded leaks. There is, however, the potential that minor fuel leaks may have occurred from the redundant pipelines as these are no longer monitored. Such leaks would be localised.	Fuel Hydrocarbons.
Infilled Ponds	The historical mapping indicates some small ponds have been infilled in the northern area of the site. It is unknown what the ponds have been backfilled with, but contaminated material from the farmyard could have been used. Likewise, the materials could also be organic which could degrade to form hazardous gases under anaerobic conditions.	Metals Hydrocarbons. Asbestos Landfill gases (mainly carbon dioxide and methane).

POTENTIAL OFF SITE SOURCES		
HISTORIC LAND USE	DESCRIPTION OF POTENTIAL CONTAMINATION HAZARD	POTENTIAL CONTAMINANTS OF CONCERN
Existing Farmyard.	Areas of the farmyard have been used for the storage of plant machinery in support of the agricultural operations. Fuel has been stored in the yard for the plant and therefore could potentially have been spilled. The small scale storage of potentially contaminative chemicals and lubricants is also common practice in farm operations and therefore can also be identified as a potential hazard. There is the potential that the identified contamination may have migrated to the site via surface run off resulting in contamination of the soils in the vicinity of the farmyard. A slurry pit is present in the farmyard which is emptied by pumping onto the surrounding fields to the south. Contaminated slurry could potentially have contaminated the surface soils in this area.	Petroleum hydrocarbons (diesel, lubricating oils, greases, heating oil and/or petrol). Pesticides.

POTENTIAL OFF SITE SOURCES		
HISTORIC LAND USE	DESCRIPTION OF POTENTIAL CONTAMINATION HAZARD	POTENTIAL CONTAMINANTS OF CONCERN
Former clay pits and brickworks to the north.	The historical mapping suggests that the some of the former clay pits to the north of the site may have been backfilled when these former brickworks were redeveloped. Historically it was common to backfill old mineral workings with waste materials. The waste materials may contain hazardous chemicals. Organic rich wastes degrade to form hazardous gases under anaerobic conditions. Water seeping through the waste can be become polluted.	Landfill gases (mainly carbon dioxide and methane). Landfill leachate (polluted groundwater).

3.2. RECEPTOR ASSESSMENT

CONTEXT	
ASSESSMENT LAND USE CATEGORY	Residential.
DESCRIPTION OF PROPOSED LAND USE	The proposed end use of the site is for the development of a residential housing estate with large areas of public open space / amenity land. A new main road is proposed to the south of the existing farmyard and cuts through the site from a roundabout off the A4 to the east of the site. The land to the south of this new road is proposed to be retained as natural green space.

RECEPTORS	
RECEPTOR	DISCUSSION
HUMAN HEALTH	Residents with zero to 6 year old child most sensitive receptor.
CONTROLLED WATERS GROUNDWATER	Not considered to be a significant receptor as site underlain by unproductive strata.
CONTROLLED WATERS SURFACE WATER	The ditch crossing through the site joins to a tributary of the River Avon.
BUILDING MATERIALS AND SERVICES	Water service pipes. Buried concrete.

3.3. INITIAL CONCEPTUAL MODEL

POLLUTANT LINKAGES	The pollutant linkages are best presented in a diagrammatic form and therefore the initial conceptual site model plan is presented in Appendix 1. The individual pollutant linkages as numbered on the plan are described further in Section 3.4.
INVALID POLLUTANT LINKAGES	The pollutant linkages to the surface water (as a receptor) from the off-site sources are not considered to be valid in the context of this risk assessment. Any contamination of the surface water as a consequence of off-site sources will be a liability issue to that particular off-site landowner / polluter.
LIMITATIONS AND UNCERTAINTIES	The preliminary conceptual model has been developed based solely on desk based research and assessment. The only way to conclusively determine the presence or absence of contamination is with intrusive site investigation.

3.4. PRELIMINARY ASSESSMENT OF CONTAMINATION RISKS

The following table identifies the potential risks that exist to the receptors through each of the identified pollutant linkages in the conceptual site model. It should be noted that the numbers referred to for each of the pathways refers to the numbered pollutant linkages from the Initial Conceptual Site Model Plan, as presented in Appendix 1.

POTENTIAL SOURCES AND CONTAMINANTS	PATHWAYS (REFERENCE FROM MODEL)	RECEPTORS	HAZARD SEVERITY	PROBABILITY OF OCCURRENCE	POTENTIAL RISK
Infilled Canal -Metals. -Hydrocarbons. -Asbestos containing materials. -Landfill gases (mainly carbon dioxide and methane).	Ingestion	Residents	Human health effects [Medium]	Material used to backfill the canal is unknown, although is thought to comprise soils from the former banks of the canal but other constituents may also have been incorporated. [Low likelihood]	Moderate to low risk
	Inhalation of dusts (1)				
	Inhalation of landfill gases (2)	Surface water	Ditch joins with tributary of River Avon [Medium]		Moderate to low risk
	Horizontal & vertical migration (3)				
	Direct contact (4)	Building materials and services	Hydrocarbons can permeate and denature plastic service pipes and sub-surface concrete [Medium]		Moderate to low risk
Underground Fuel Pipelines -Minor leaks from redundant fuel pipelines.	Ingestion	Residents	Human health effects [Medium]	Minor leaks from the redundant pipelines may have occurred resulting in the contamination of the surrounding soils. Any contamination	Low risk
	Inhalation of dusts (5)				
	Inhalation of vapours (6)				

POTENTIAL SOURCES AND CONTAMINANTS	PATHWAYS (REFERENCE FROM MODEL)	RECEPTORS	HAZARD SEVERITY	PROBABILITY OF OCCURRENCE	POTENTIAL RISK
	Horizontal & vertical migration (7)	Surface water	Ditch joins with tributary of River Avon [Medium]	will likely be present in close proximity to the pipeline as it will be confined by the surrounding clay soils. [Unlikely]	
	Direct contact (8)	Building materials and services	Hydrocarbons can permeate and denature plastic service pipes and sub-surface concrete [Medium]		
Infilled Ponds -Metals. -Hydrocarbons -Asbestos containing materials. -Landfill gases (mainly carbon dioxide and methane).	Ingestion	Residents	Human health effects [Mild]	Material used to backfill the ponds is unknown but any contamination will be very localised. [Low likelihood]	Low risk
	Inhalation of dusts (9)				
	Inhalation of landfill gases (10)				
	Direct contact (11)	Building materials and services	Hydrocarbons can permeate and denature plastic service pipes and sub-surface concrete [Medium]		Moderate to low risk
<u>Off Site</u> Migration of contaminants from the Farmyard -Hydrocarbons (diesel and heating oil) -Pesticides	Ingestion	Residents	Human health effects [Mild]	Although tanks are present on the site, there was no evidence of any leaks or spillages on the surrounding concrete surface. There is the potential albeit low that the surrounding soils could have become contaminated from surface run off or pumping from the slurry pond. [Low likelihood]	Low risk
	Inhalation of dusts (12)				
	Inhalation of vapours (13)				
	Direct contact (14)	Building materials and services	Hydrocarbons can permeate and denature plastic service pipes and sub-surface concrete [Medium]		Moderate to low risk
<u>Off Site</u> Former brick works to the north of the site -Migration of soil gases and contaminated leachate from historic backfilling of clay pits.	Ingestion	Residents	Human health effects [Medium]	Material used to backfill the off-site clay pits is unknown, if it has occurred at all. The potential for migration to site is limited by underlying clay soils. [Unlikely]	Low risk
	Inhalation of dusts (15)				
	Inhalation of landfill gases (16)				
	Direct contact (17)	Building materials and services	Contaminants could denature plastic service pipes and sub-surface concrete [Medium]		

3.5. RECOMMENDATIONS

The majority of the site is unlikely to be contaminated given its agricultural use, but localised contamination risks have been identified from both on site and off site sources which include, the on site section of infilled canal, infilled ponds, the redundant fuel pipelines and the off site former brickworks and farmyard. These areas may present potential risks to future residents of the site, building materials and services and the surface water ditch which passes through the site.

An intrusive ground investigation incorporating a Phase 2 Contamination Assessment to address these potential contamination risks is being undertaken by BRD and shall be reported separately.

4. IMPLICATIONS FOR CONSTRUCTION

4.1. GEOTECHNICAL CONSIDERATIONS

The following is a checklist summary of geotechnical hazards and their likelihood to have an impact on the proposed development of the site.

GEOTECHNICAL HAZARD	LIKELY TO AFFECT SITE?	COMMENT
Removal of existing sub-structures affecting new foundations.	✗	
Deep Made Ground.	✓	The infilled canal in the southern area of the site could complicate or deepen foundations. However, only a limited area in the south west of the site coincident with the infilled canal is currently proposed to be developed.
Historic wells.	✗	
Soft or compressible natural deposits such as Alluvium or Peat.	✗	
Changes in ground conditions within short distances.	✗	
Fine soils that have a volume change capacity.	✓	The Oxford Clay Formation / Kellaways Formation is expected from near surface with predominantly clay soils expected. These clays are likely to have a medium volume change potential and this will likely impact on foundation design and depths. Existing and proposed trees will further complicate foundations
Dissolution features or 'swallow holes'.	✗	
Cambering of valley sides with possibility of 'gulls'.	✗	
Risk of slope instability.	✗	
Shallow groundwater.	✗	
Underground mining.	✗	
Geological faults.	✗	Although some fault zones are shown approximately 800m to the south west, no faulting is shown on the site.

GEOTECHNICAL HAZARD	LIKELY TO AFFECT SITE?	COMMENT
Aggressive chemical environment for concrete e.g. expansive slag or high sulphate soils.	✓	The Oxford Clay can typically have high sulphate levels which may affect the design and construction of sub-surface structures.

4.2. PRELIMINARY GEOTECHNICAL ASSESSMENT

In general, the anticipated ground conditions are typically suitable for conventional shallow spread foundations, allowing for deepening associated with existing and proposed trees. Any development proposed in close proximity to, or straddling the infilled canal, may require a deeper foundation solution, such as piling.

The proposed development layout incorporates a 'no build' easement to allow for the live fuel pipeline. It is anticipated that the redundant pipelines will also largely sit within this offset zone. However, should they extend beyond the offset zone, then the resultant sections of the redundant pipelines should be appropriately decommissioned and removed to accommodate the proposed development. Given the depth of these pipelines, it is not considered that their removal would have any significant bearing on the future foundations through the affected area.

On the basis of the anticipated geological strata, it is considered that soakaways are unlikely to work anywhere across the site.

For any form of development, BRD recommend that an intrusive ground investigation is undertaken in order to confirm ground conditions and allow design of the new structures. An intrusive ground investigation incorporating a geotechnical assessment is being undertaken by BRD and shall be reported separately.

4.3. CONSTRUCTION CONSIDERATIONS

As with any construction site, if any anomalous material is encountered during the redevelopment then expert environmental advice should be sought.

All future works will need to consider the management of operations in the location of fuel pipelines. Regarding the live pipeline, all necessary guidance provided by the pipeline operator Exolum will need to be adhered to.

REPORT SPECIFIC REFERENCES

- British Geological Survey sheet 265 “Bath” Solid and Drift edition (1:50,000) published 2011.

SUPPORTING INFORMATION

SITE CHARACTERISTICS

The site characteristics are collated from various information sources, including but not limited to Ordnance Survey, British Geological Survey (BGS), Environment Agency (EA) and local authorities.

BRD generally commission the Landmark Information Group to produce an Envirocheck Report for study sites and where employed this is included in the Appendices. It should be noted that some of the data provided in the Envirocheck report is not considered within BRD's interpretation for the site characteristics as it is not relevant. Examples of this are:

- Nitrate Sensitive Zones and Nitrate Vulnerable Zones are ignored as these are only applicable to agricultural activities relating to the application of manure and fertilisers to land.*
- River Quality is ignored as at this preliminary stage of risk assessment as all surface water bodies are considered equally sensitive to contamination risks.*

In assessing site characteristics, BRD also consider the area within a surrounding 250m buffer zone extending from the site boundary.

HISTORY

Mapped History

The site history summarises the changes in use or layout of the site over time and is largely developed from a study of available Ordnance Survey maps. It should be noted that changes to the site may have occurred between the editions of the maps employed to assess the history of the site. Historical information of relevance within the 250m surrounding the site is also discussed in a separate section. The historical plans referred to in the text are generally included in an Appendix.

Aerial photography

As a minimum, current and historical aerial images of the site and surrounding areas are studied from the Google Earth program. Where additional historic aerial photographs have been purchased then these are referenced within the technical report.

Internet Searches

A simple search of the internet for relevant material relating to the use or history of the site is made. Information obtained from internet searches has been accepted as fact without validation by BRD except for ensuring the source is reputable. It should be recognised that due to programme and budgetary constraints the search conducted may not have revealed all the information available.

GEOLOGY

The geology of the site is assessed by reference to the relevant British Geological Survey (BGS) 1:50,000 scale sheet in Bedrock and Superficial (historically Solid and Drift) edition. Many of these geological maps are relatively old with superseded terminology and descriptions. BRD therefore employ the BGS Open Geoscience website to determine current nomenclature of strata and to assist in determining geological boundaries against current topographic features. BRD also employ BGS Regional Geology Guides to assist in understanding the geological context of the site.



Ground Stability Hazards

Ground stability hazards caused by mining, ground dissolution, landslide potential, collapsible ground and natural cavities are identified by the Envirocheck database search of records held by The Coal Authority, British Geological Survey and studies completed by Ove Arup and Peter Brett Associates.

The Envirocheck database ground stability hazard entries for compressible ground, running sands and shrinking or swelling clays are not discussed directly. This is because these hazards are very common and are considered within the preliminary geotechnical assessment where necessary.

Radon

Radon is a naturally occurring colourless and odourless gas that is radioactive. It is formed by the radioactive decay of radium which in turn is derived from the radioactive decay of uranium, both of which are minerals that can be found in many soil types. Whilst it is recognised that the air inside every house contains radon, some houses built in certain defined areas of the country might have unacceptably high concentrations and require special precautions to be taken during construction to reduce this risk.

Radon can move through cracks and fissures in the soil into the atmosphere or into buildings via basements and/or underfloor voids. If radon enters the living space of buildings its concentration can potentially increase and provide a risk to human health as the inhalation of the radioactive decay products of radon gas can increase the risk of developing lung cancer.

The maps contained within 'Radon: Guidance on protective measures for new buildings' (2015) identify areas where no radon protection measures are necessary or where higher concentrations are present that either basic or full radon protection measures are required to be fitted to all new buildings together with supplementary advice concerning extensions, conversions and refurbishments. However, some local authorities have local bylaws, that BRD may not be aware of, that insist on radon protection to all new dwellings within their area regardless of the recommendations of the 'Radon: Guidance on protective measures for new buildings' (2015) report.

Basic radon protection measures comprise incorporation of a continuous gas resistant membrane sealed at joints and around service entries into the floor construction and extended across the cavity tray.

Full radon protection measures comprise incorporating a continuous gas resistant membrane into the floor construction together with a ventilated sub-floor void through either the use of suspended floor construction or a 'radon sump'. The membrane is sealed at joints and around service entries into the floor and extended across the cavity tray.

'Radon: Guidance on protective measures for new buildings' (2015) should be referred to for detail on the construction of the protective measures.

HYDROGEOLOGY

Aquifer Designations

The Environment Agency's Groundwater Protection Policy uses designations that reflect the importance of aquifers in terms of groundwater as a drinking water resource, but also their role in supporting surface water flows and wetland ecosystems.

In defining groundwater vulnerability, both the superficial (drift) deposits and bedrock (solid) geology are considered separately with the following aquifer designations:

- *Principal Aquifers: These are layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale.*
- *Secondary Aquifers: These include a wide range of rock layers or drift deposits with an equally wide range of water permeability and storage. Secondary aquifers are subdivided into two types:*
 - o *Secondary A - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.*
 - o *Secondary B - predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.*
- *Secondary Undifferentiated - has been assigned in cases where it has not been possible to attribute either category A or B to a rock type.*
- *Unproductive Strata: These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.*

Source Protection Zones

The Environment Agency (EA) has defined Source Protection Zones for groundwater sources, such as boreholes and springs, that are used for public water supply. The EA uses the zones to target pollution prevention measures and monitor the activities of potential polluters within the affected area. There are three types Source Protection Zone:

- *Zone 1 (Inner Protection Zone) is the most sensitive area within which pollution could reach the borehole within 50 days. Alternatively it is defined by a minimum 50m radius around the borehole.*
- *Zone 2 (Outer Protection Zone) are defined by the area within which pollution could reach the borehole within 400 days or 25% of the total catchment area.*
- *Zone 3 (Total Catchment) are defined by the total area required to support the removal of water from the borehole.*

HYDROLOGY

Flooding

The Environment Agency has zoned England and Wales in respect of the risk from flooding from 'highly unlikely' in Zone 1 to 'likely' in Zone 3. The zones ignore the presence of flood defences or certain other manmade structures and channel improvements.

National Planning Policy Framework, Department for Communities and Local Government, dated March 2012 states "A site-specific flood risk assessment is required for proposals of 1 hectare or greater in Flood Zone 1; all proposals for new development (including minor development and change of use) in Flood Zones 2 and 3, or in an area within Flood Zone 1 which has critical drainage problems (as notified to the local planning authority by the Environment Agency); and where proposed development or a change of use to a more vulnerable class may be subject to other sources of flooding".

ENVIRONMENTAL ASPECTS

Landfill

The database of the Environment Agency of active and historic landfills is searched for all sites. Sometimes additional historic landfill data is available from the British Geological Society and local authorities to identify nearby landfill sites. It should be noted that landfill sites that closed prior to 1974 and unlicensed disposal activities will not necessarily be revealed by this search.

Pollution Incidents

The Environment Agency ceased recording 'Pollution Incidents to Controlled Waters' in 2000, when they commenced the replacement 'Substantiated Pollution Incident Register'. BRD do not consider any 'Category 3 - Minor Incident' on the 'Pollution Incidents to Controlled Waters' database as relevant to assessing the site due to the time elapsed and the low level of impact that occurred. Again due to the time elapsed and the fact that remedial measures would have been undertaken at the time, 'Category 1 - Major Incident' and 'Category 2 - Significant Incident' are only considered relevant if the impacted controlled water was on or immediately adjacent to the site.

On the 'Substantiated Pollution Incident Register', BRD approach to this information in the following manner:

- Pollution incidents impacting 'air' only are not considered relevant.
- Pollution incidents to 'water' are only considered where the surface water impacted is either on, flows through or is immediately adjacent to the site.
- Pollution incidents to 'land' are only considered where these are on or immediately adjacent to the site unless there are grounds to consider that the incident had the potential to impact groundwater that may have migrated beneath the site.
- Category 4 potential pollutant incidents are recorded, but upon investigation were found to have had no impact and accordingly are not considered relevant.

Ecologically Sensitive Land Use

The land uses that are identified as ecologically sensitive are those identified as Sites of Special Scientific Interest (SSSI), Special Areas of Conservation, Special Protection Areas, Ramsar sites, Natural Parks, Natural Nature Reserves, Marine Nature Reserves, Local Nature Reserves, Green Belt, Forest Parks, Environmentally Sensitive Areas, or Areas of Outstanding Natural Beauty.



CONTAMINATION ASSESSMENT METHODOLOGY

UK Policy

The UK Government's policy in relation to land affected by historic contamination is based on a 'suitable for use' approach. The approach recognises that the risks presented by any given level of contamination will vary greatly according to the use of the land and a wide range of other factors, such as the underlying geology of the site. Contamination risks therefore need to be assessed on a site-by-site basis. The 'suitable for use' approach limits requirements for remediation to the work necessary to prevent unacceptable risks to human health or the environment in relation to either the current use or future use of the land.

The three main drivers for contamination assessment and remediation are:

- Voluntary action.*
- Development as part of the planning regime.*
- Regulatory action to mitigate unacceptable risks e.g. Part 2A of the Environmental Protection Act 1990.*

Pollutant Linkages

For a contamination risk to exist there must be a 'pollutant linkage' from the contaminant (source) via a pathway (the route from contaminant to receptor) to a receptor (the entity that could be harmed). The absence of a contaminant, pathway or receptor breaks the pollutant linkage and therefore no contamination risk exists.

Contamination is typically present at a site (in the ground and/or in the underlying groundwater) as a result of a historic or current industrial use, usually as a result of leaks, spills or disposal of residues, wastes and excess raw materials from the industrial processes. Contamination may also be present due to:

- The deliberate application of chemicals e.g. the spraying of herbicide/pesticide.*
- Migration of pollutants from adjacent land.*
- Naturally occurring processes e.g. elevated concentrations of particular heavy metals associated with specific geological strata.*

Conceptual Site Model

The conceptual site model can be defined as a textual or graphical representation of the identified pollutant linkages for a given site. The model forms the basis for designing the investigation as the aim will be to target all of the potential pollutant linkages to determine, through the subsequent phases of risk assessment, whether or not they pose an actual risk.

It is important that the conceptual site model is updated with new information as the various investigation, risk assessment and remediation works are completed.

Technical Guidance

The technical and legal framework for contamination assessment is complex. The process adopted through this report for assessing contamination risks is in general accordance with the following guidance, as listed below:

- 'Investigation of Potentially Contaminated Sites - Code of Practice - BS 10175:2011+A2:2017', The British Standards Institution 2017.
- Land Contamination Risk Management, Environment Agency, 2021.
- 'Guidance for the safe development of housing on land affected by contamination - R&D66: 2008', NHBC/Environment Agency, 2008.

Risk Assessment Methodology

In line with the technical guidance, the contamination risk assessment follows a series of phased stages for each particular site:

PHASE	DESCRIPTION	RISK ASSESSMENT STAGE
PHASE 1	Generally limited to desk based research and a site walkover survey to develop an initial conceptual site model and identify what risks, if any, are likely to be presented by the site.	Hazard Identification and Assessment A preliminary stage of risk assessment concerned with identifying and characterising the hazards that may be associated with a particular site and identifying potential pollutant linkages.
PHASE 2	This phase is concerned with establishing whether contamination is present, usually through intrusive ground investigation, and then evaluating the degree and magnitude of the associated risks.	Risk Estimation A stage concerned with estimating the likelihood that receptors will suffer adverse effects if they come into contact with, or are otherwise affected by, a hazardous substance or agent under defined conditions. Risk Evaluation A stage of risk assessment concerned with evaluating the acceptability of estimated risks, taking into account the nature and scale of the risk estimates, any uncertainties associated with the assessment and the broad costs and benefits of taking action to mitigate risks.
PHASE 3	The appraisal and selection of remediation techniques, their implementation and verification.	Risk Management The process whereby decisions are made to accept a known or assessed risk and/or the implementation of action to reduce the consequences or probabilities of occurrence.

Risk Classification

The objective of risk assessment is to identify the nature and magnitude of the potential risks and should be based on a consideration of both:

- The likelihood/probability of an event [taking into account both the presence of the hazard and receptor and the integrity of the pathway].
- The severity of the potential consequence [taking into account both the potential severity of the hazard and the sensitivity of the receptor].

There is a need for a logical, transparent and repeatable system in defining the categories of severity of consequence and likelihood as well as for the risk itself and therefore the following risk rating matrix is employed:

		SEVERITY OF CONSEQUENCE			
		SEVERE	MEDIUM	MILD	MINOR
PROBABILITY	HIGH LIKELIHOOD	Very High Risk	High Risk	Moderate Risk	Moderate/Low Risk
	LIKELY	High Risk	Moderate Risk	Moderate/Low Risk	Low Risk
	LOW LIKELIHOOD	Moderate Risk	Moderate/Low Risk	Low Risk	Negligible Risk
	UNLIKELY	Moderate/Low Risk	Low Risk	Negligible Risk	Negligible Risk

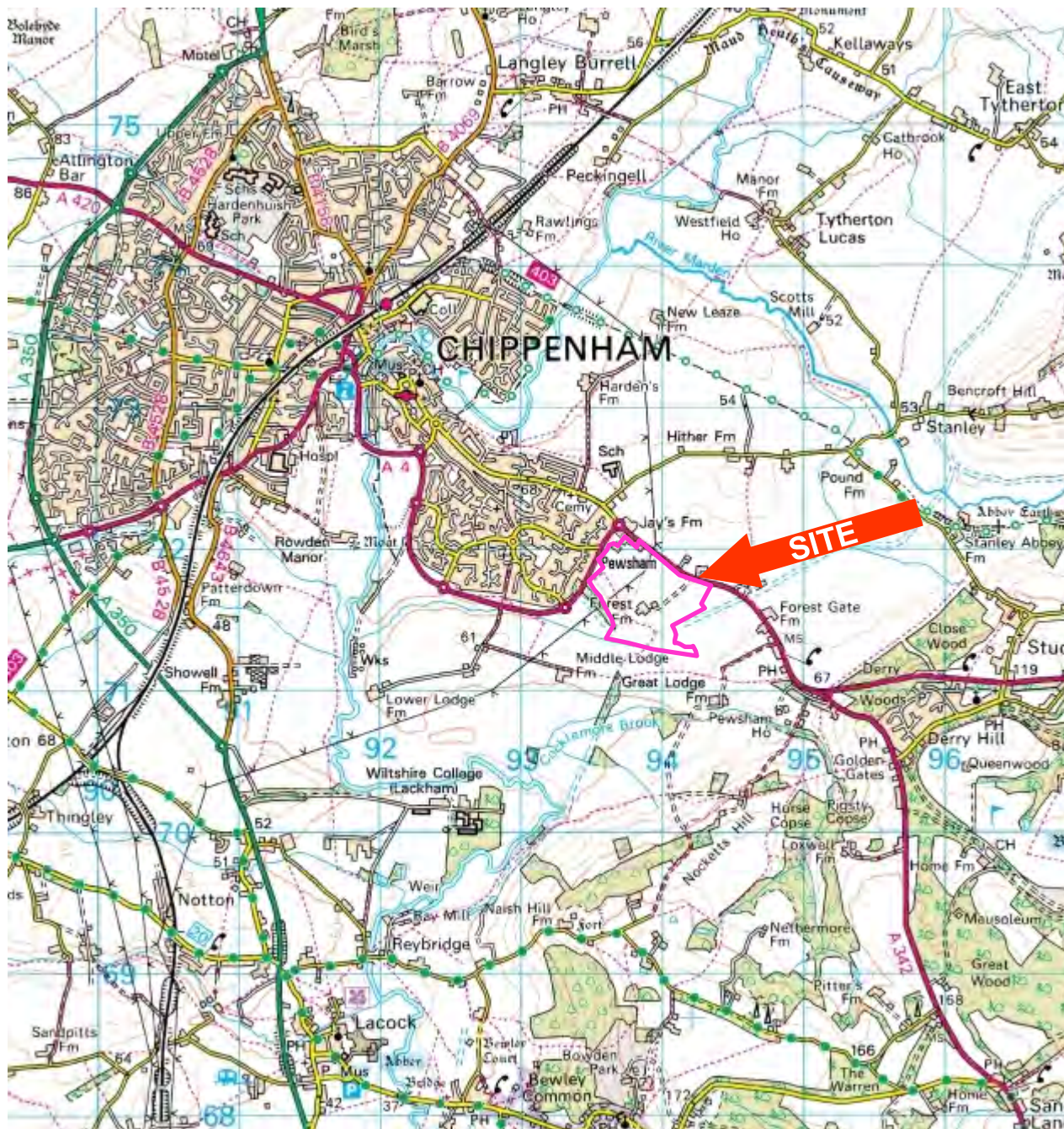
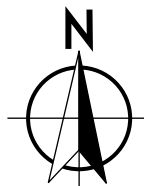
These risk classifications are defined as follows:

- **Very High Risk** - There is a high probability that severe harm could arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
- **High Risk** - Harm is likely to arise to a designated receptor from an identified hazard at the site without appropriate remediation action.
- **Moderate Risk** - It is possible that without appropriate remediation action harm could arise to a designated receptor. It is relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely that such harm would be relatively mild.
- **Low Risk** - It is possible that harm could arise to a designated receptor from an identified hazard. It is likely that, at worst if any harm was realised any effects would be mild.
- **Negligible Risk** - The presence of an identified hazard does not give rise to the potential to cause harm to a designated receptor.

This preliminary risk assessment matrix and classification system is based on guidance produced by Department for Environment, Food and Rural Affairs (Defra) and the Environment Agency in connection with contaminated land assessment.

APPENDIX 1

Site Location Plan



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Not to scale.

Project Title: Forest Farm, Chippenham
Client: Gleeson Land
BRD Reference: BRD2483-OP1-B
Date Issued: October 2023



- KEY**
- Site boundary
 - Proposed link road alignment
 - Residential development area
 - Amenity Public Open Space / Parks
 - Green Infrastructure / Natural Greenspace
 - SuDS features (indicative)
 - Existing trees and associated RPA
 - Existing hedgerows retained
 - Indicative proposed planting
 - Existing Public Right of Way retained
 - Proposed primary access routes (6.5m)
 - Existing farm access retained and used as strategic pedestrian / cycle link
 - Proposed strategic pedestrian / cycle link (3m)
 - Proposed pedestrian links (2m)
 - Alignment of existing fuel pipeline and easements

Site Walkover Photographs



Plate 1: Access road to Forest Farm, with the site fields to either side.



Plate 2: Fuel pipeline marker post.

Site Walkover Photographs



Plate 3: The site fields looking from the eastern corner towards the north west.



Plate 4: Photograph of existing ditch along field boundaries.

Project Title: Forest Farm, Chippenham
Client: Gleeson Land
BRD Reference: BRD2483-OP2-B
Date Issued: October 2023



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info@brduk.com

Site Walkover Photographs



Plate 5: The northern fields and central oak tree.



Plate 6: Looking towards the north east boundary and A4 road.

Site Walkover Photographs



Plate 7: Looking south west in the location of the infilled canal.



Plate 8: Photograph of existing borehole monitoring installations within eastern section of site.

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Client: Gleeson Land
BRD Reference: BRD2483-OP2-B
Date Issued: October 2023



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Site Walkover Photographs



Plate 9: Forest Farm farmyard and fuel storage tanks (outside of application boundary).



Plate 10: The farm bungalow and above ground fuel tank (outside of application boundary).

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Site Walkover Photographs

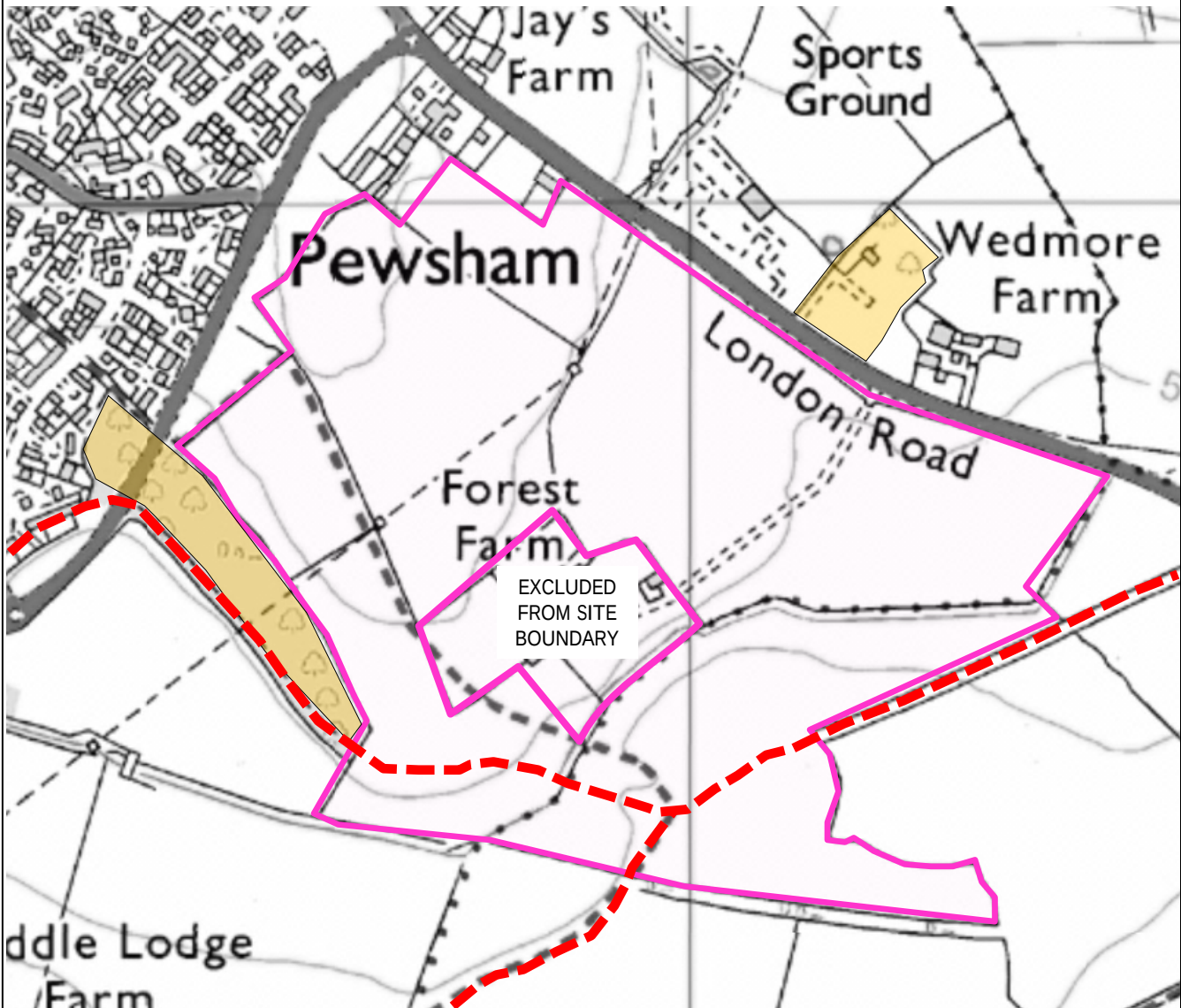
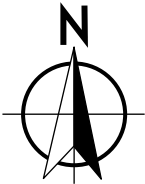


Plate 11: The base of the quarry pits in the location of Forest brickworks.



Plate 12: The steep sided banks of the brickworks quarry pits.

Site Layout Plan



Key:

 Former Brick Works

 Approx. former route of Wilts & Berks Canal

 Site Boundary

Not to scale.

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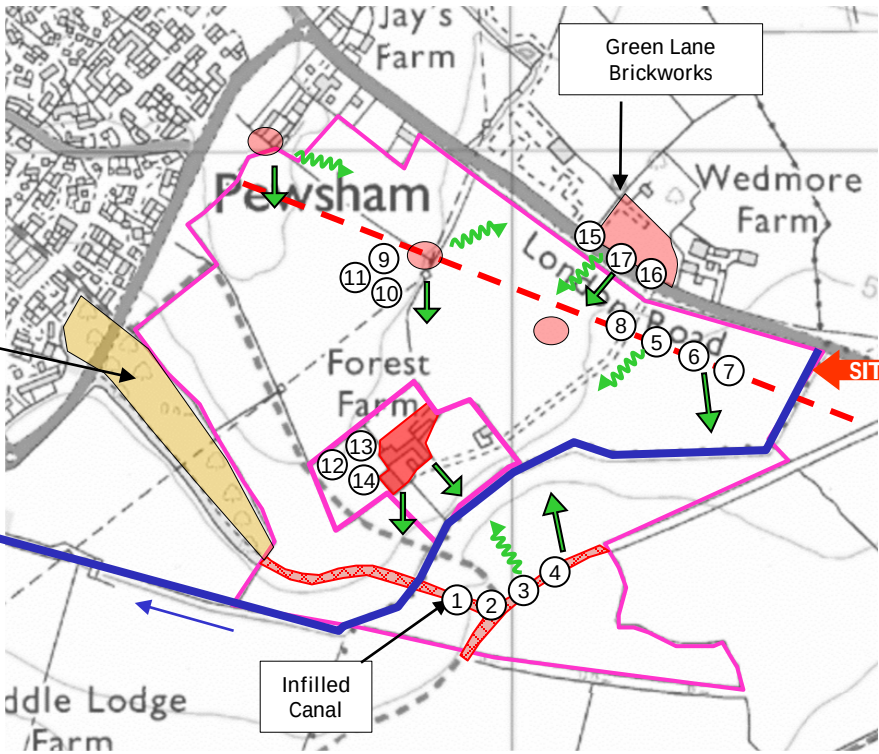
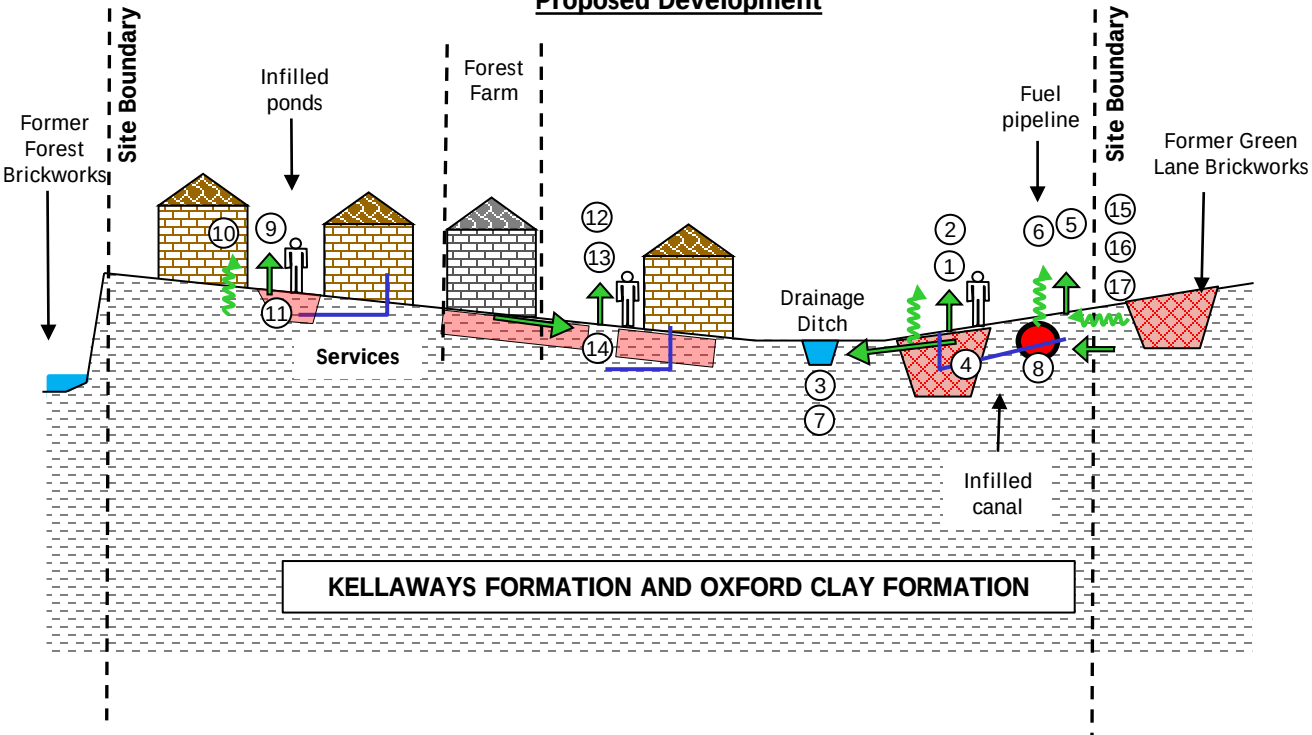
Project Title: Forest Farm, Chippenham
Client: Gleeson Land
BRD Reference: BRD2483-OP3-B
Date Issued: October 2023



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Initial Conceptual Model

Proposed Development



KEY:

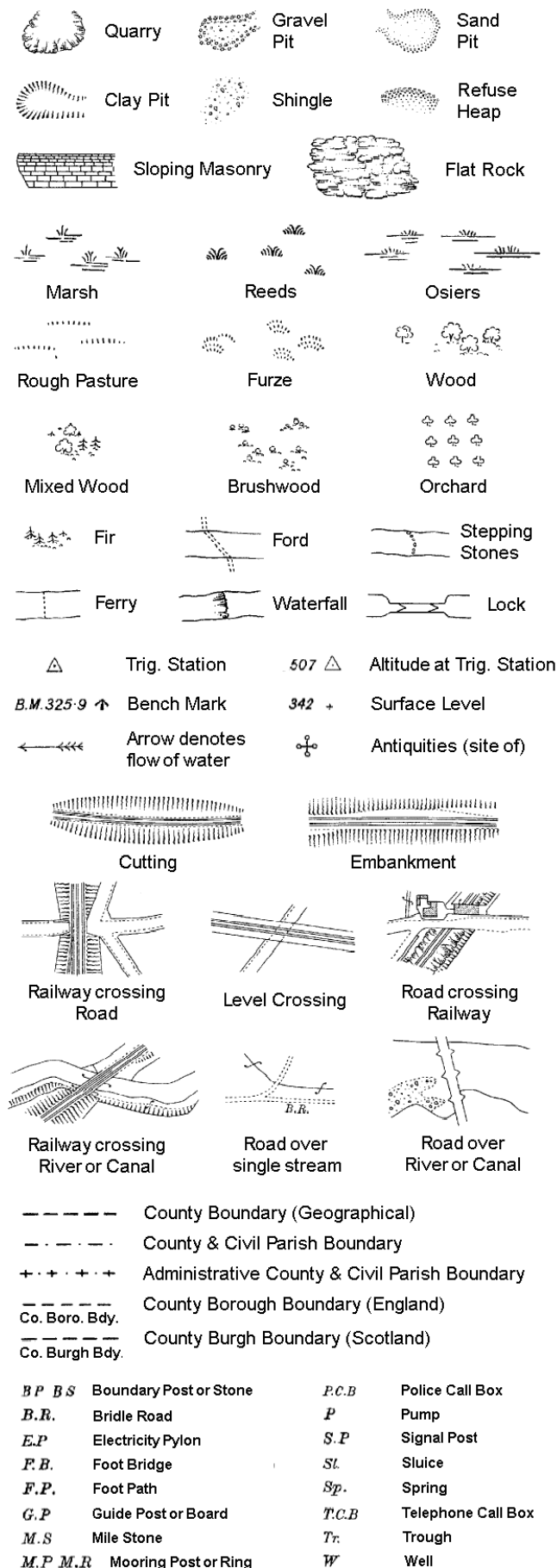
- Infilled ponds
- Fuel pipelines
- Ditch

Project Title: Forest Farm, Chippenham
Client: Gleeson Land
BRD Reference: BRD2483-OP4-B
Date Issued: October 2023

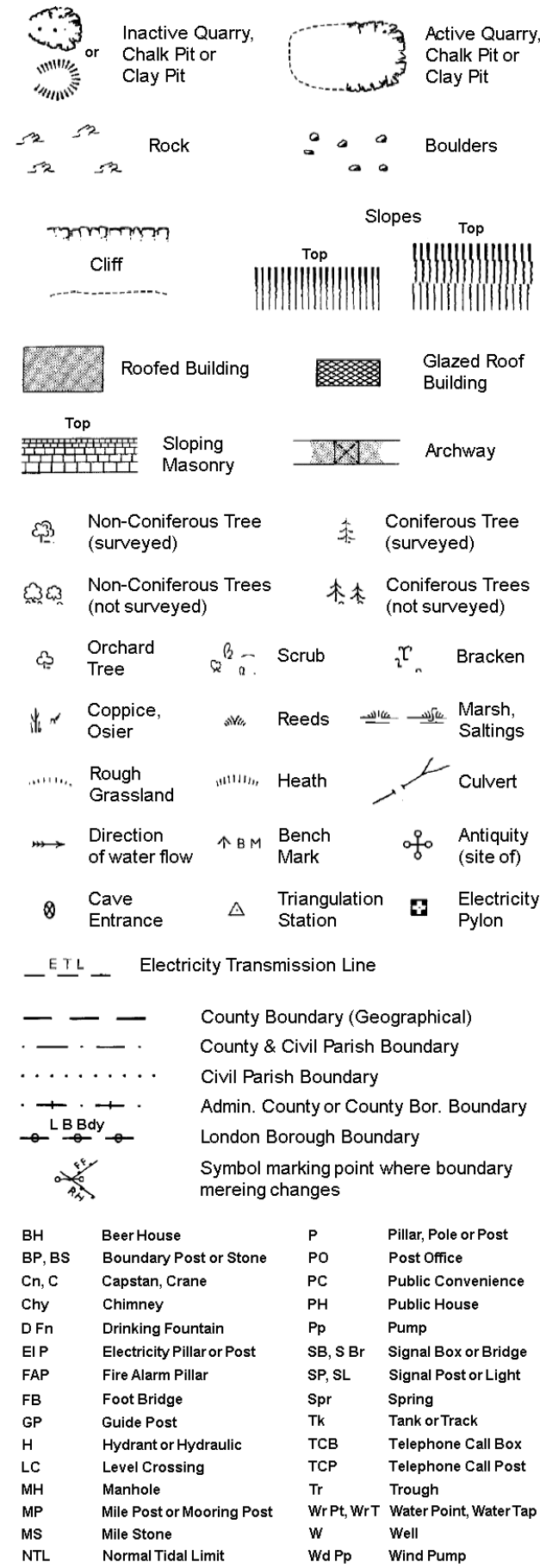
APPENDIX 2

Historical Mapping Legends

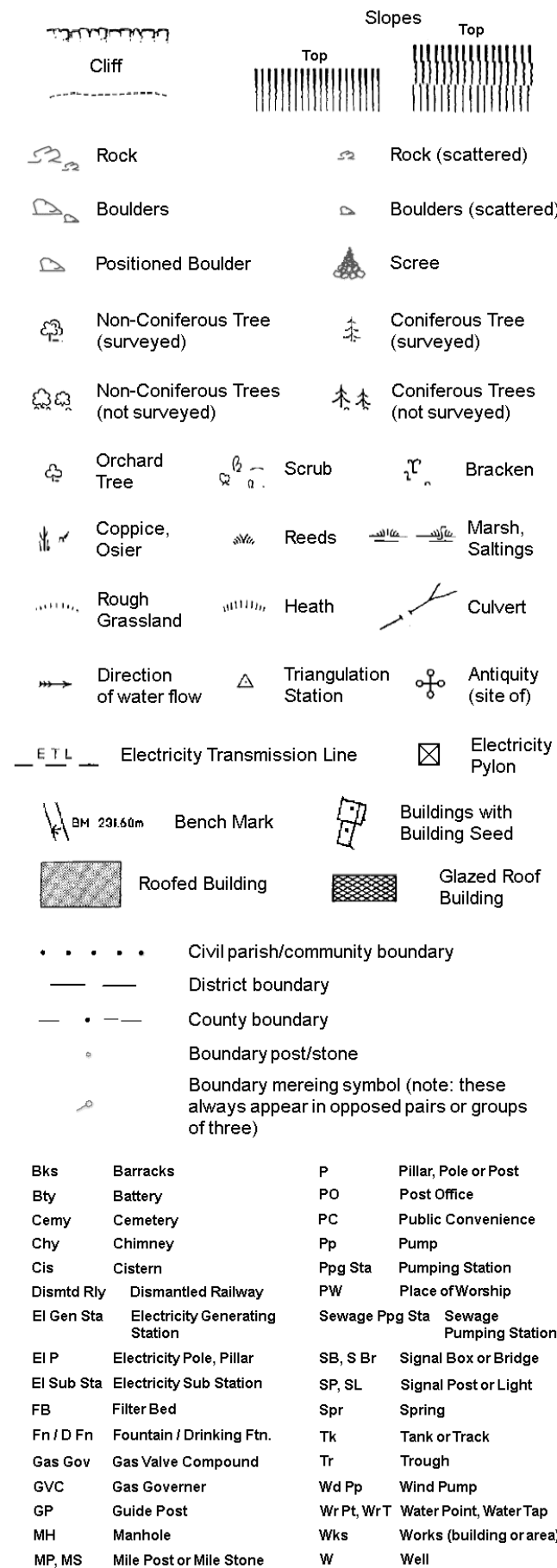
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



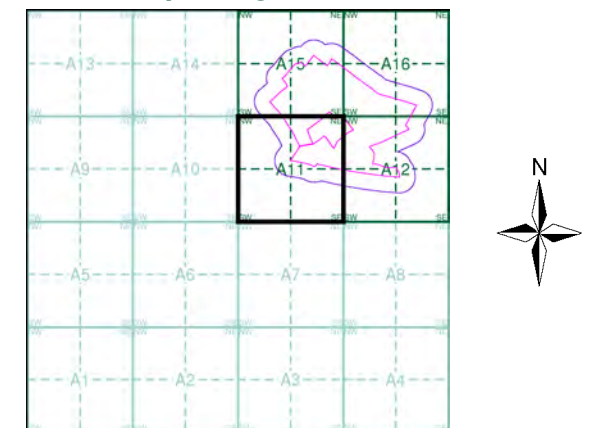
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Wiltshire	1:2,500	1886	2
Wiltshire	1:2,500	1900	3
Wiltshire	1:2,500	1924	4
Ordnance Survey Plan	1:2,500	1981	5
Ordnance Survey Plan	1:1,250	1986	6
Additional SIMs	1:1,250	1987	7
Additional SIMs	1:1,250	1988	8
Ordnance Survey Plan	1:1,250	1989	9
Additional SIMs	1:2,500	1990	10
Large-Scale National Grid Data	1:1,250	1993	11
Large-Scale National Grid Data	1:2,500	1993	12
Historical Aerial Photography	1:2,500	2001	13

Historical Map - Segment A11



Order Details

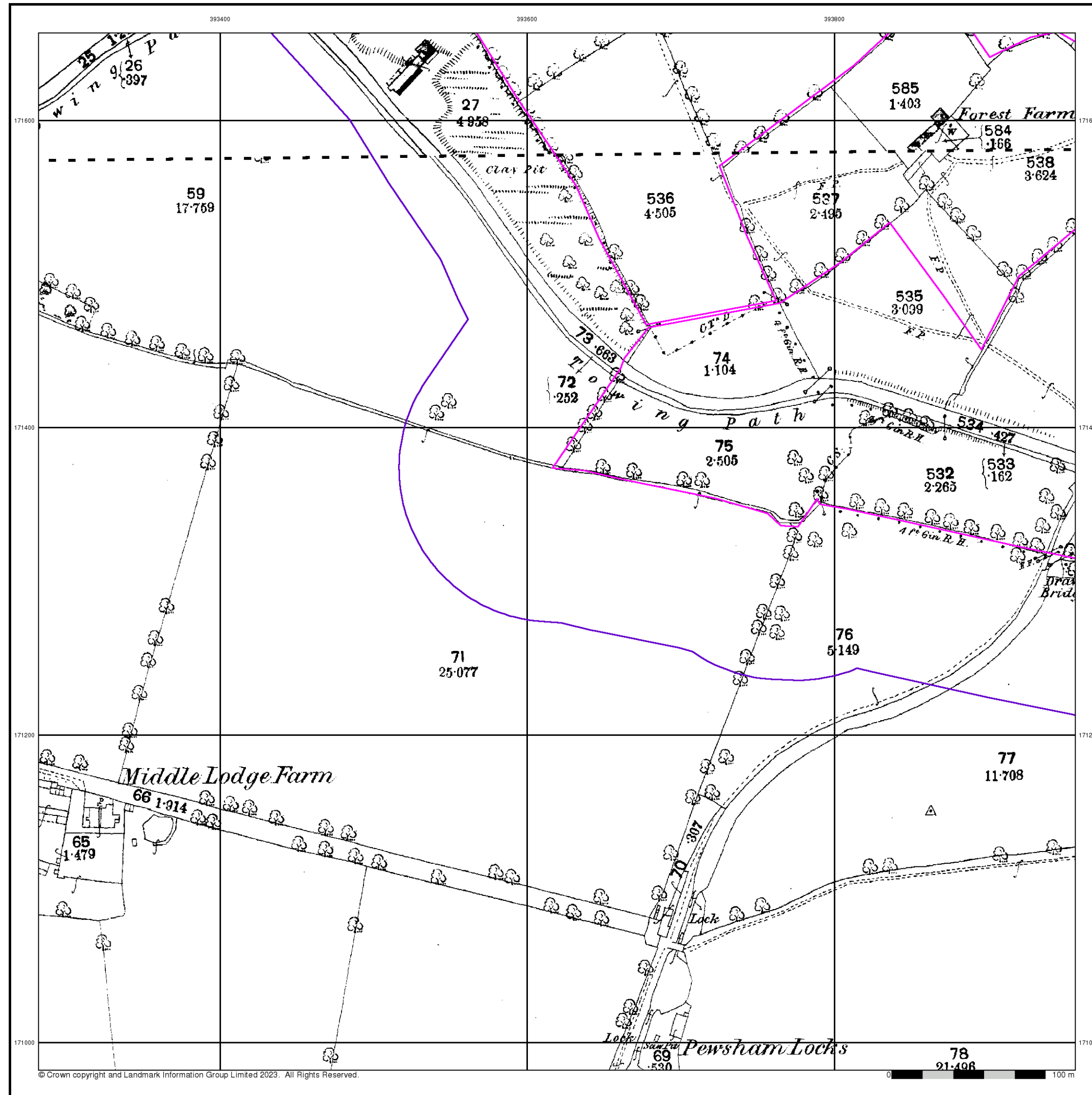
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Wiltshire

Published 1886

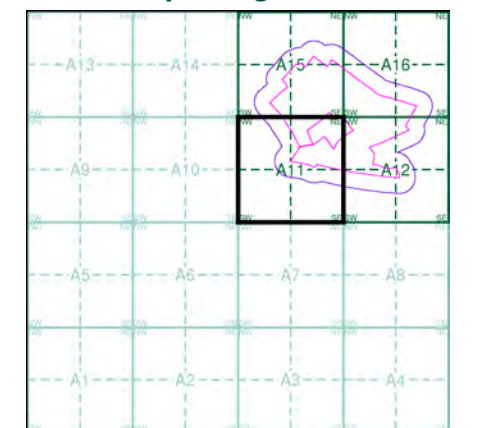
Source map scale - 1:2,500

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)

026_03
1886
1:2,500
026_07
1886
1:2,500

Historical Map - Segment A11



Order Details

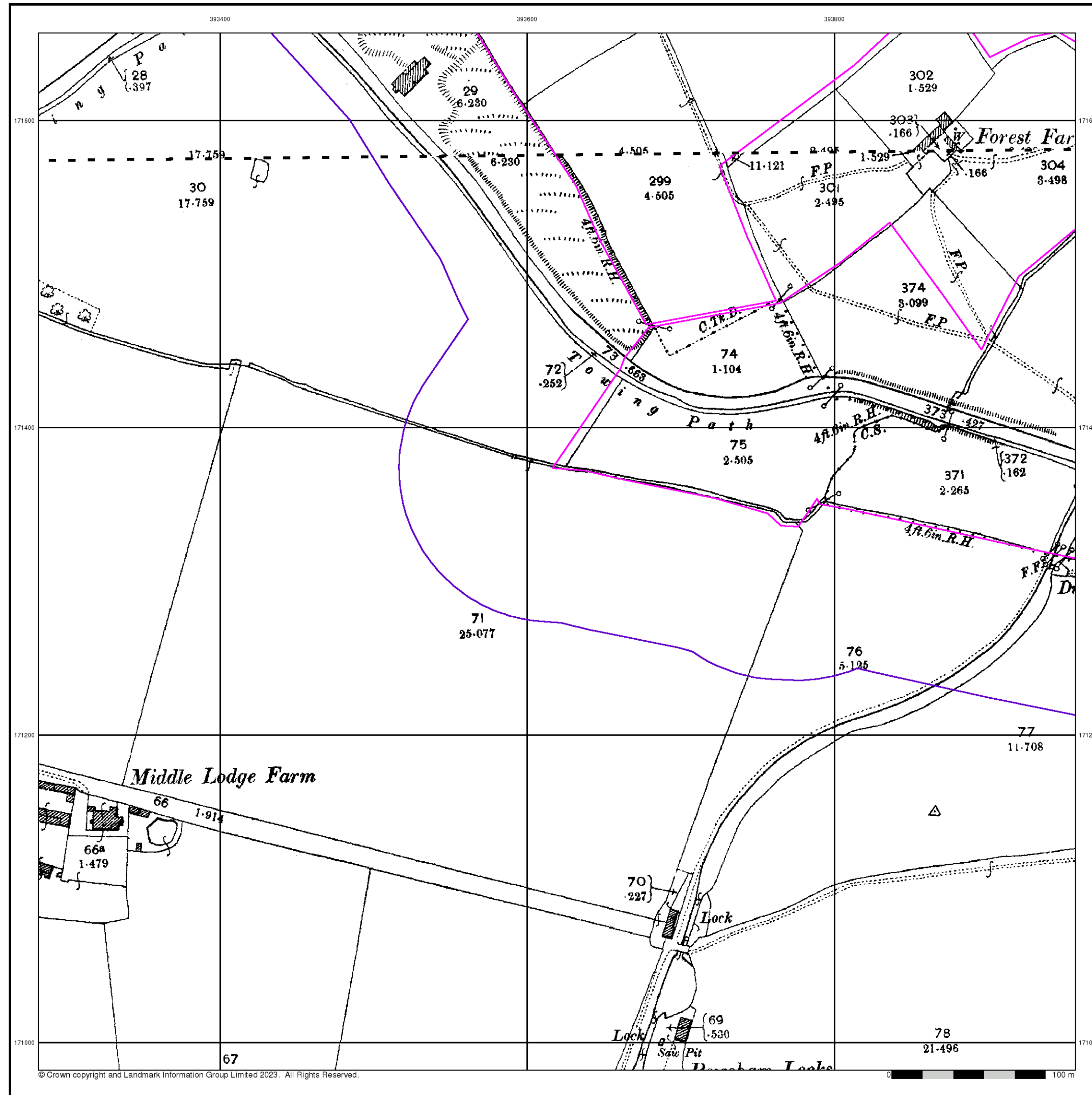
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Wiltshire

Published 1900

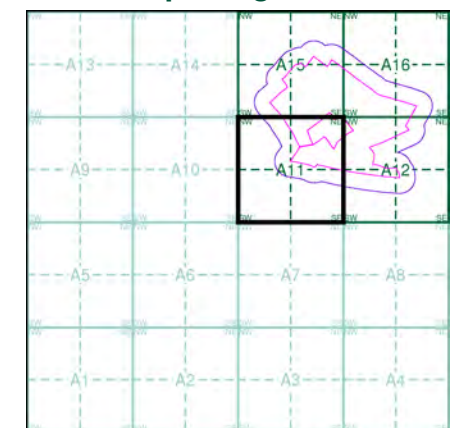
Source map scale - 1:2,500

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)

026_03
1900
1:2,500
026_07
1900
1:2,500

Historical Map - Segment A11



Order Details

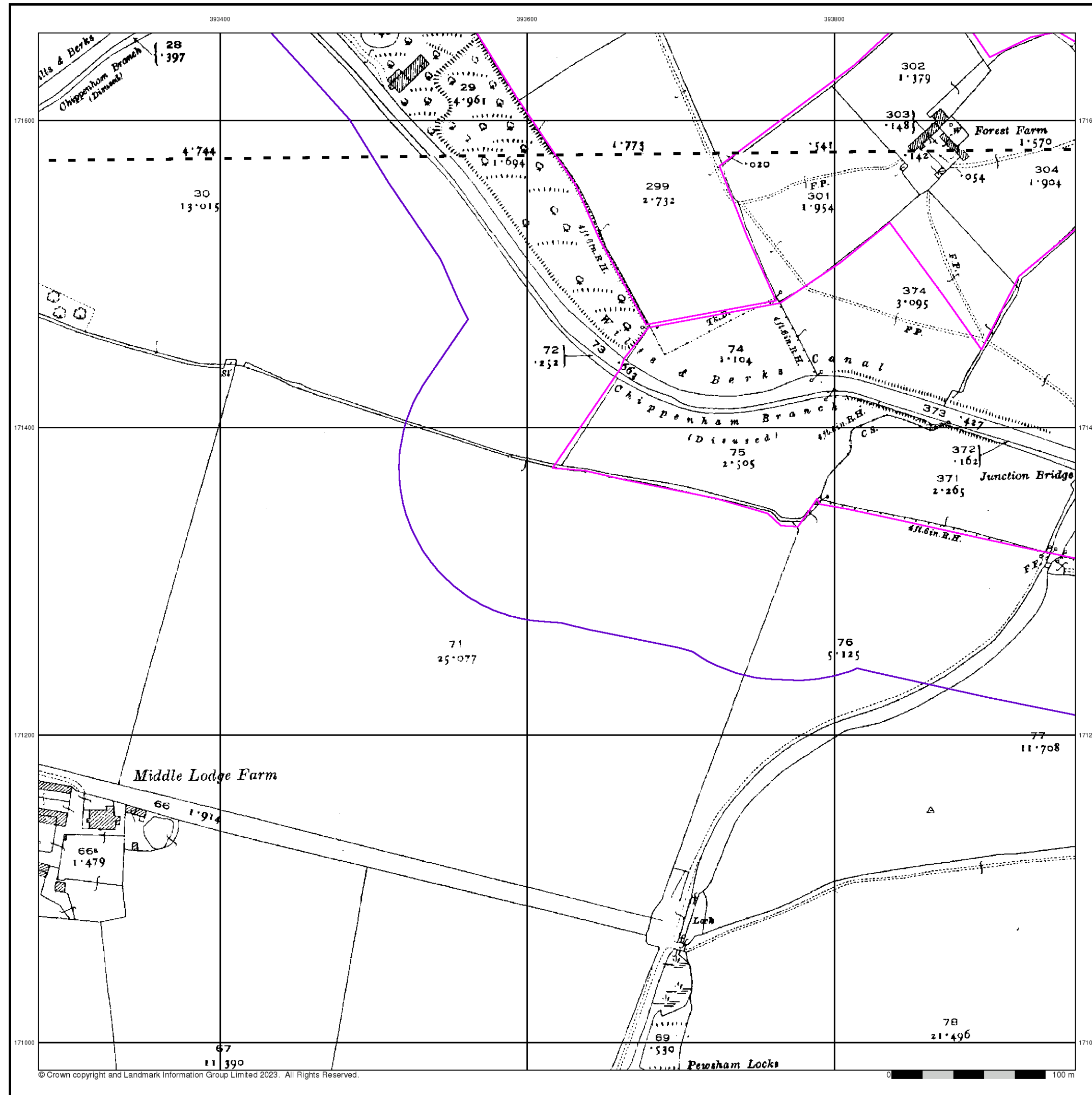
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Wiltshire

Published 1924

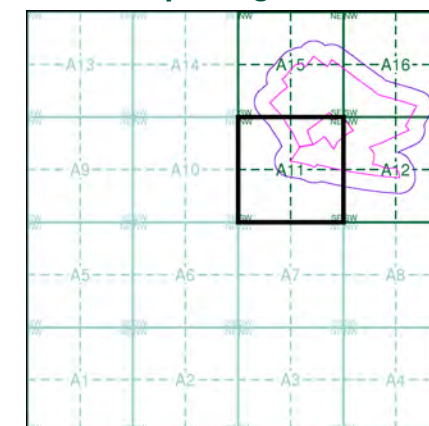
Source map scale - 1:2,500

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)

026_03
1924
1:2,500
026_07
1924
1:2,500

Historical Map - Segment A11



Order Details

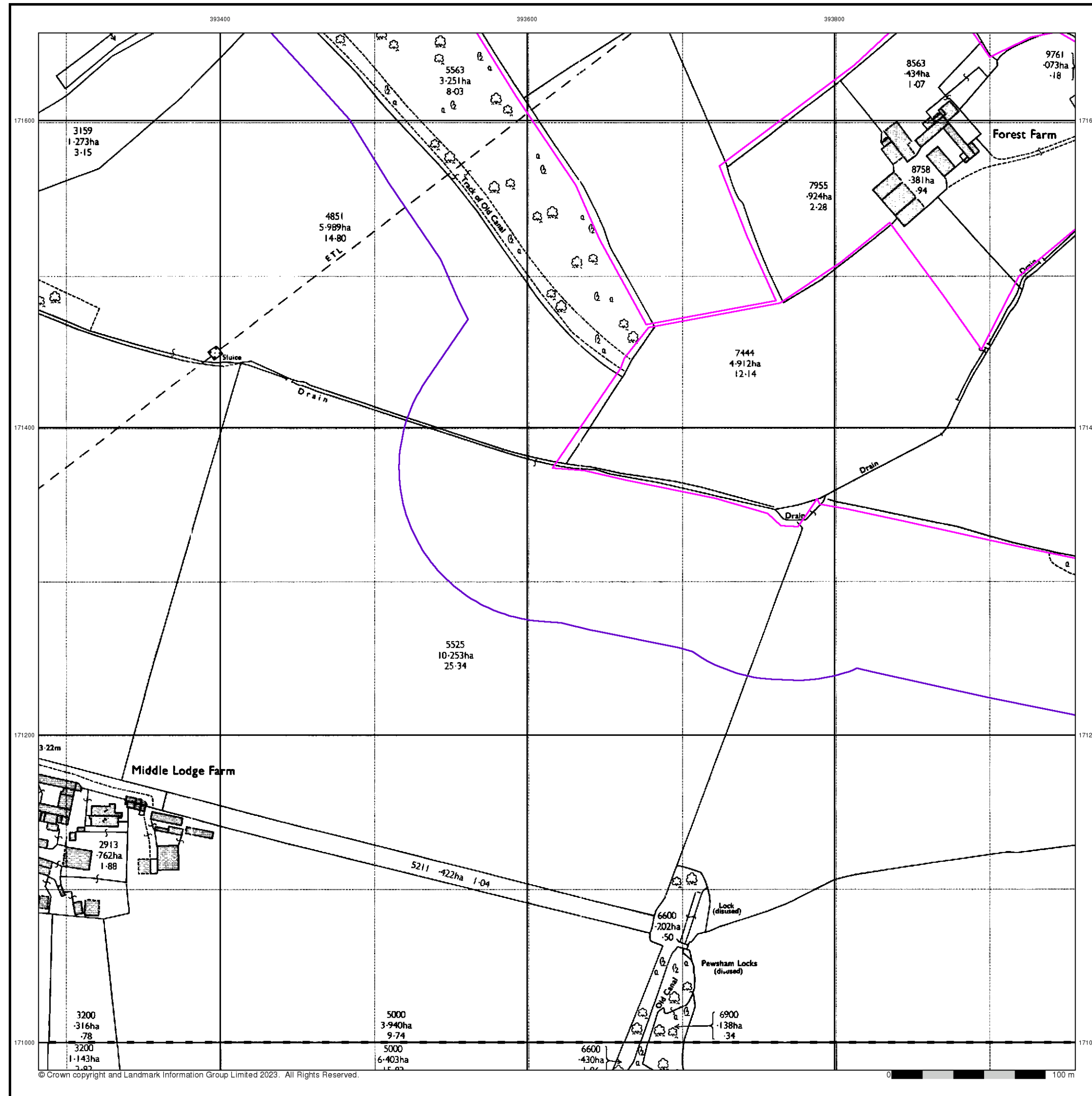
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Ordnance Survey Plan

Published 1981

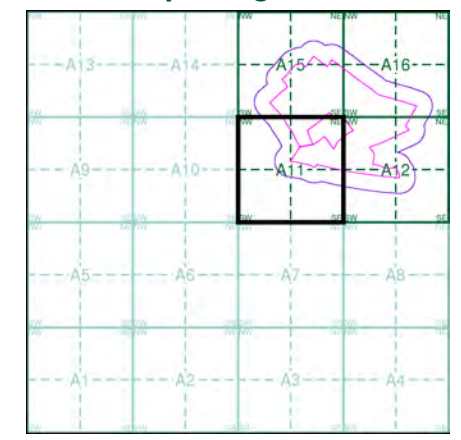
Source map scale - 1:2,500

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)

ST9371
1981
1:2,500
ST9370
1981
1:2,500

Historical Map - Segment A11



Order Details

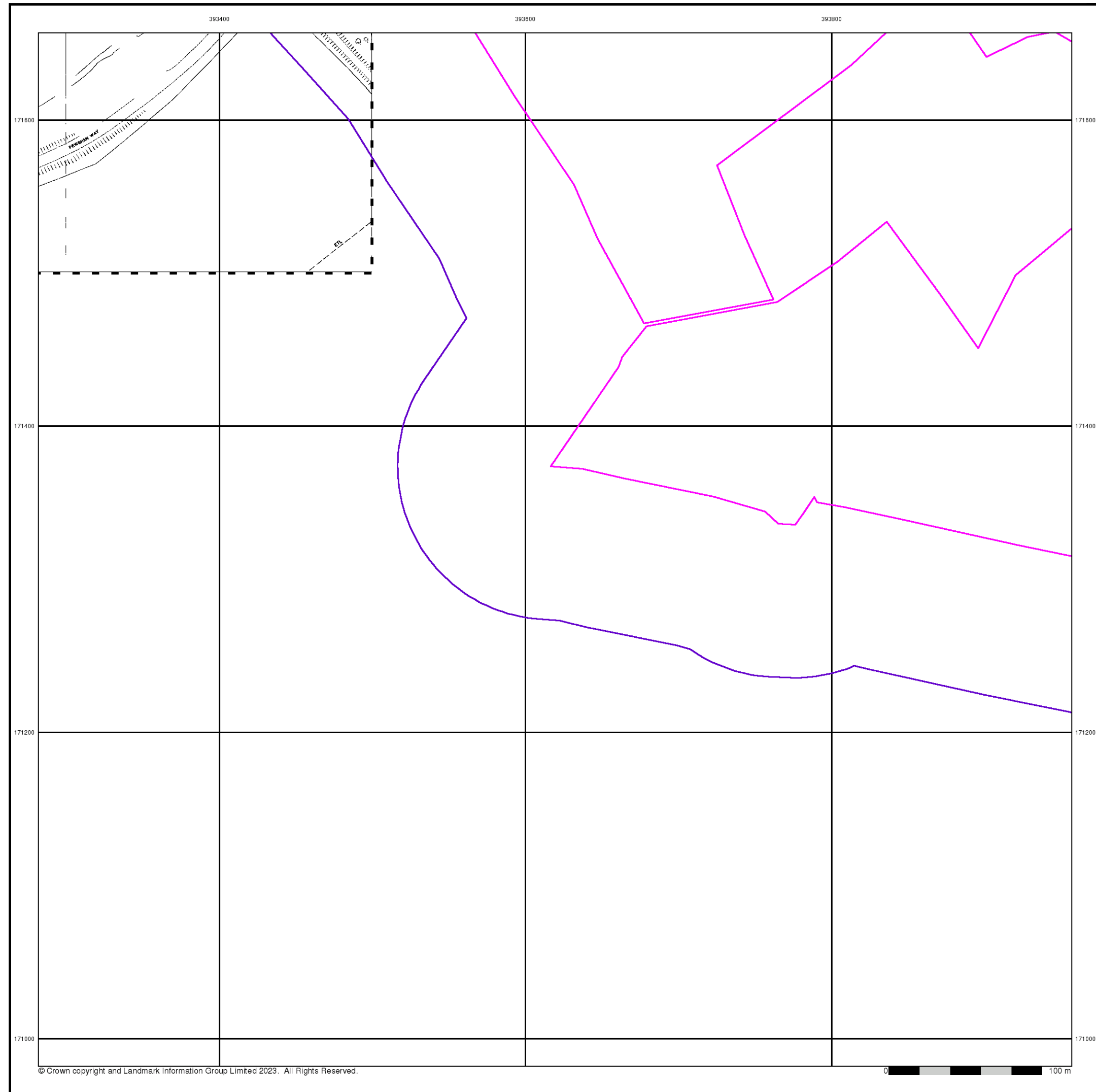
Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Ordnance Survey Plan

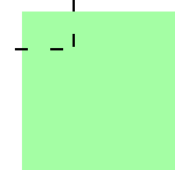
Published 1986

Source map scale - 1:1,250

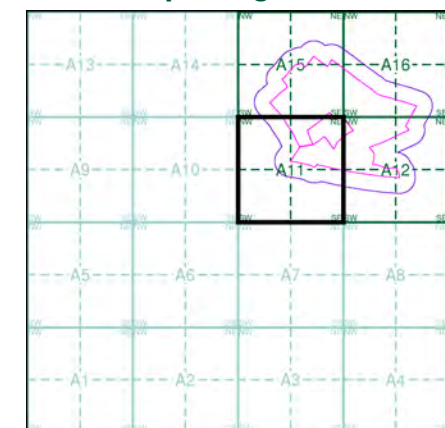
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain.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

ST9371NW
1986
1:1,250



Historical Map - Segment A11



Order Details

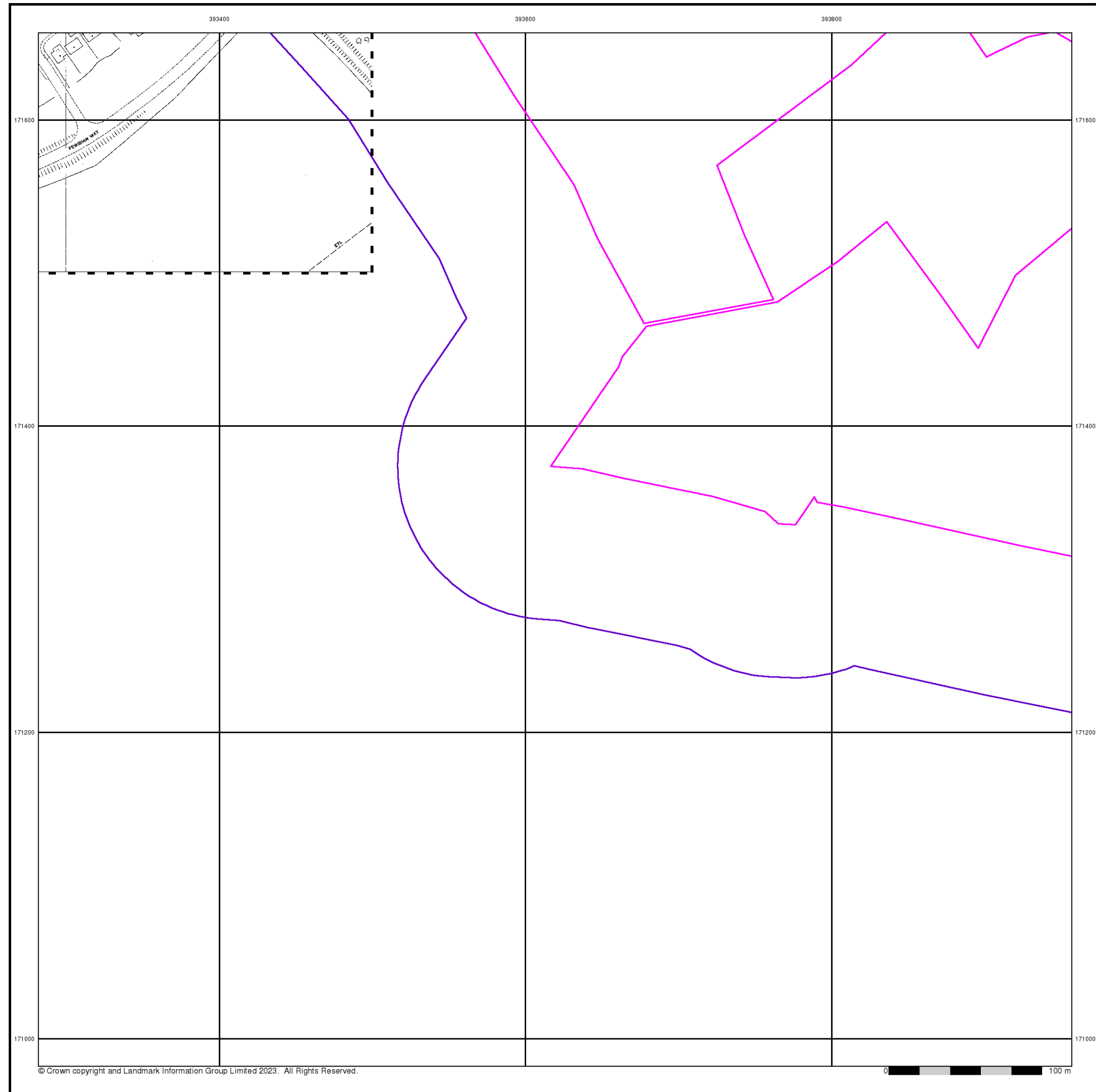
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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Additional SIMs

Published 1987

Source map scale - 1:1,250

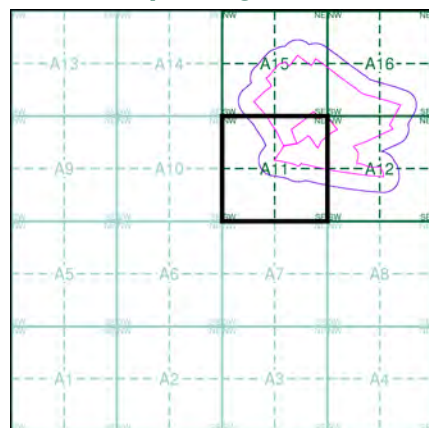
The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps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

Map Name(s) and Date(s)

ST9371NW
1987
1:1,250



Historical Map - Segment A11



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

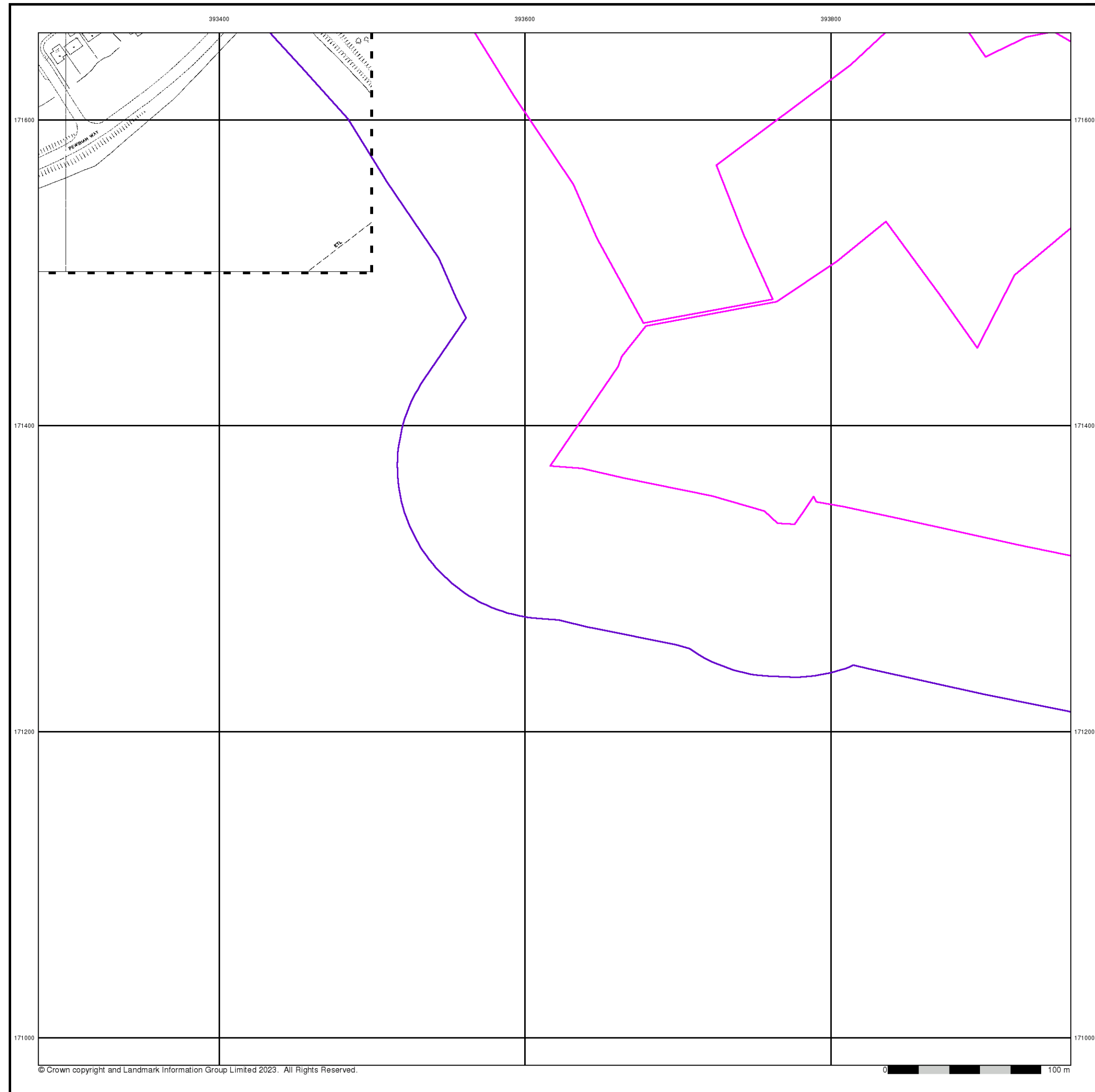
Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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Web: www.envirocheck.co.uk

A Landmark Information Group Service v50.0 26-Oct-2023 Page 7 of 13





Additional SIMs

Published 1988

Source map scale - 1:1,250

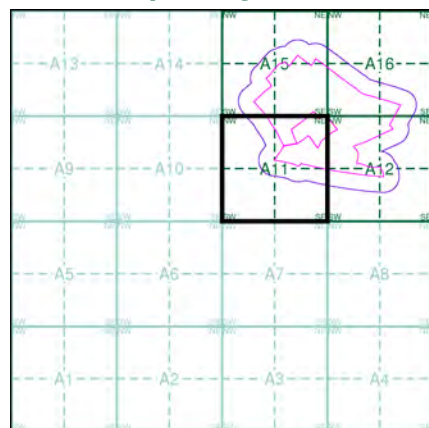
The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps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

Map Name(s) and Date(s)

ST9371NW
1988
1:1,250



Historical Map - Segment A11



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

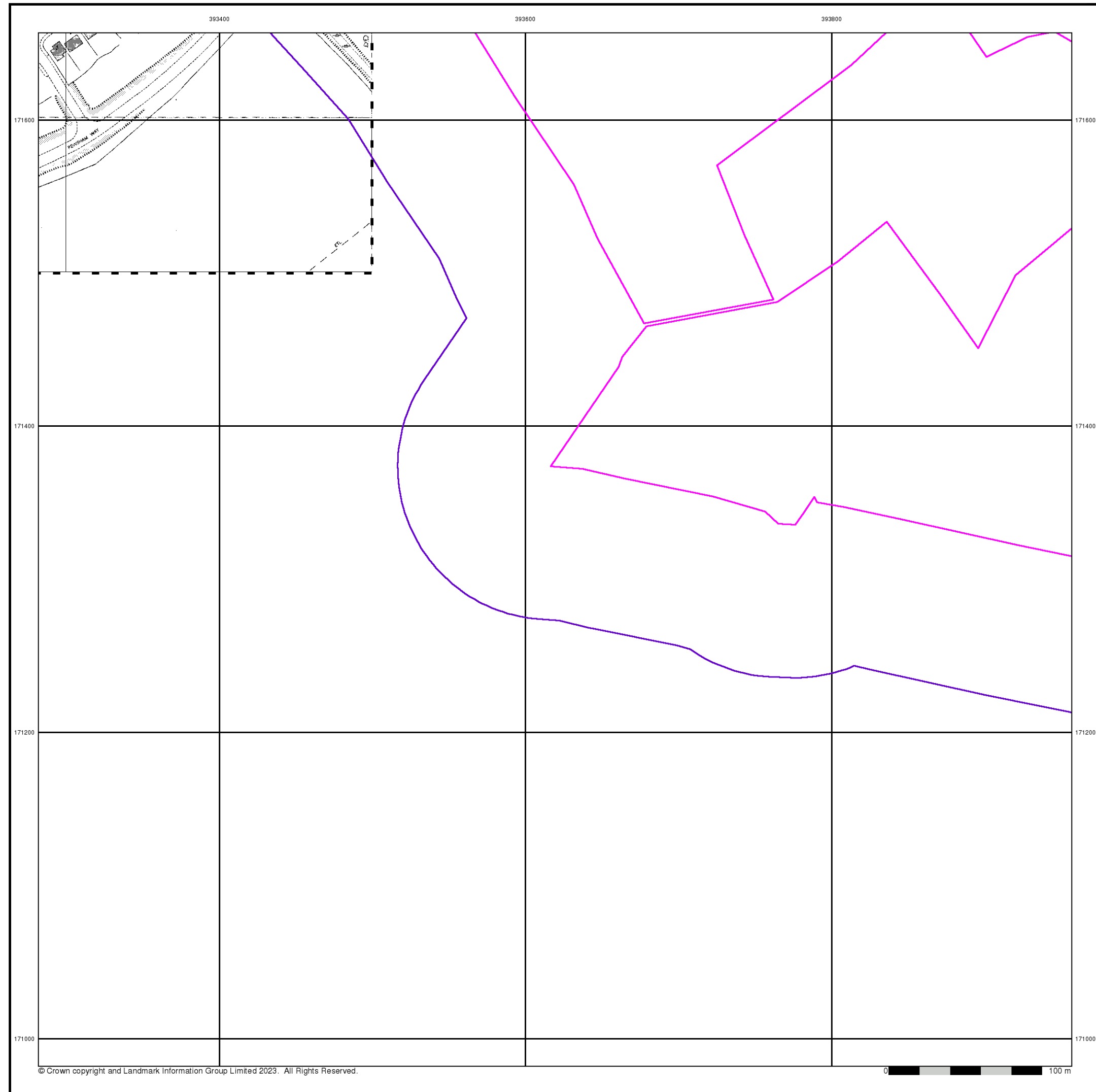
Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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

A Landmark Information Group Service v50.0 26-Oct-2023 Page 8 of 13





Ordinance Survey Plan

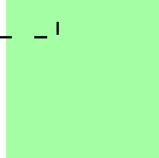
Published 1989

Source map scale - 1:1,250

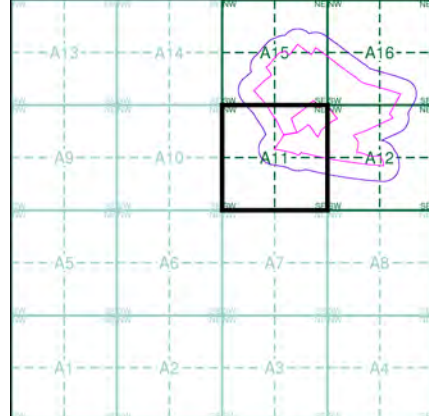
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain.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

ST9371NW
1989
1:1,250



Historical Map - Segment A11



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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A Landmark Information Group Service v50.0 26-Oct-2023 Page 9 of 13



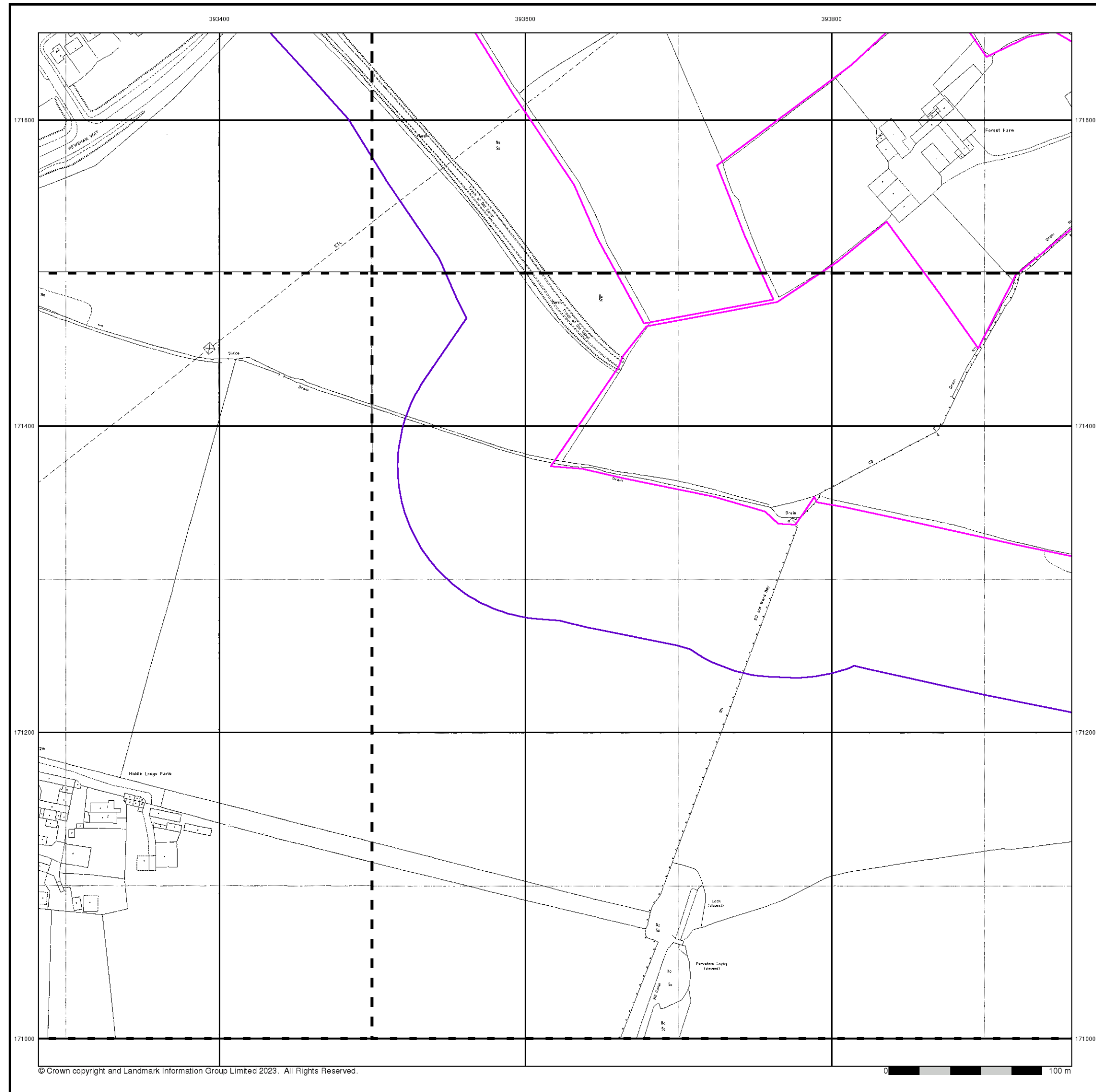
ST	Year	Value
ST9371	1990	12,500



Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

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





Large-Scale National Grid Data

Published 1993

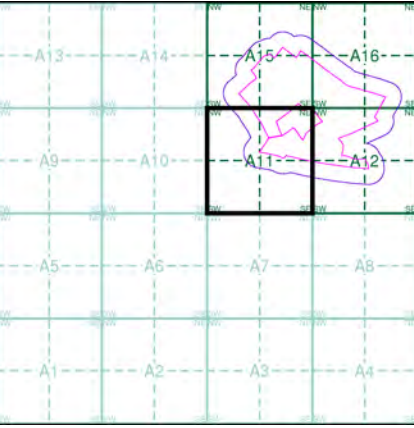
Source map scale - 1:1,250

'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)

ST9371NW 1993 1:1,250	ST9371NE 1993 1:1,250
ST9371SW 1993 1:1,250	ST9371SE 1993 1:1,250

Historical Map - Segment A11



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

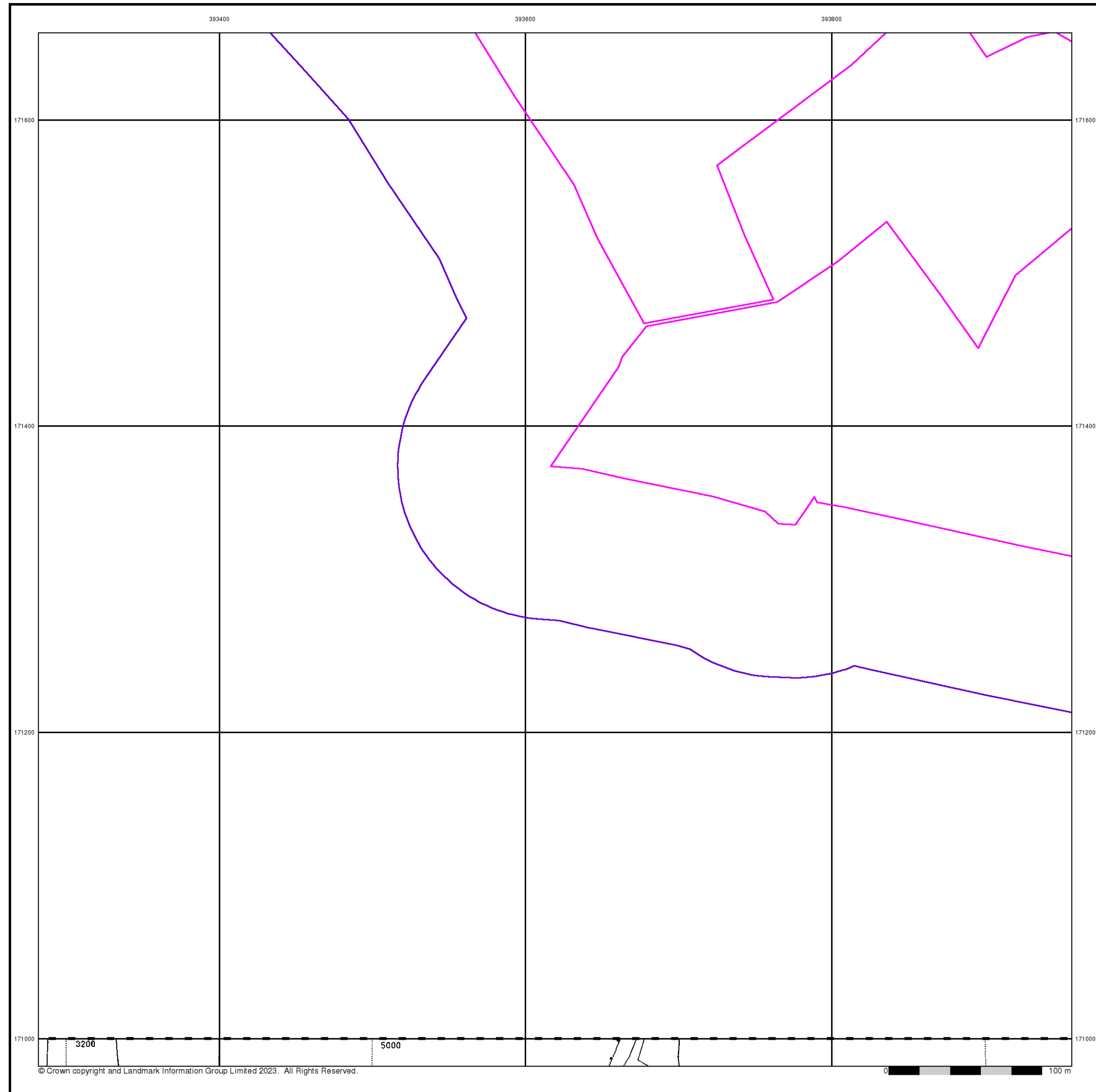
Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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

A Landmark Information Group Service v50.0 26-Oct-2023 Page 11 of 13





Large-Scale National Grid Data

Published 1993

Source map scale - 1:2,500

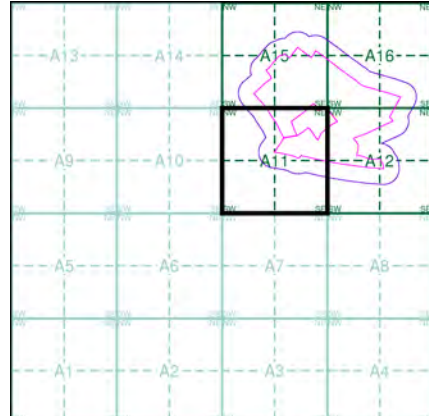
'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic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

Map Name(s) and Date(s)



ST9370
1993
1:2,500

Historical Map - Segment A11



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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

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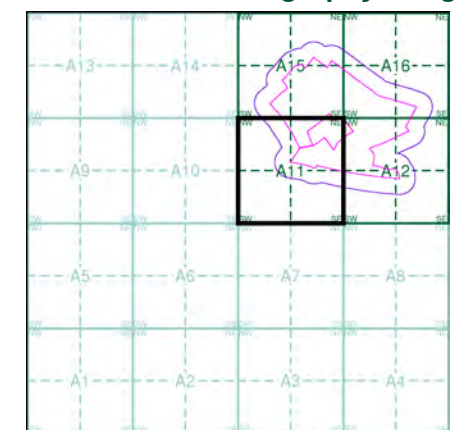


Historical Aerial Photography

Published 2001

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 A11



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

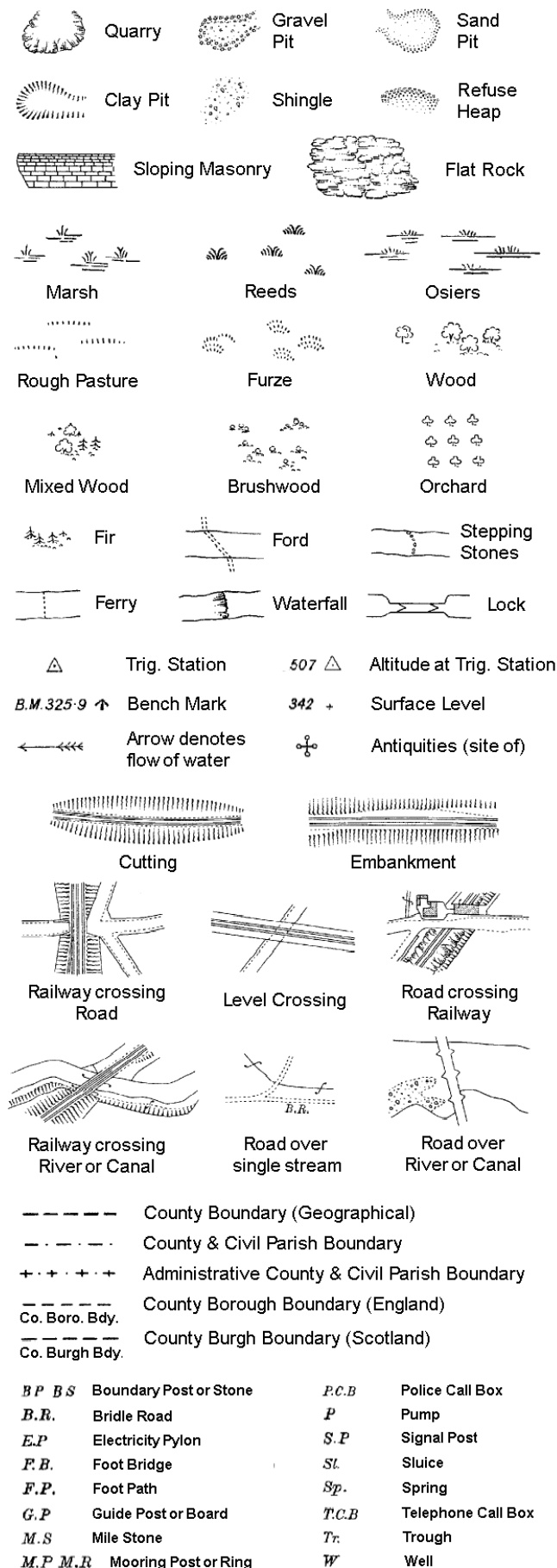
Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



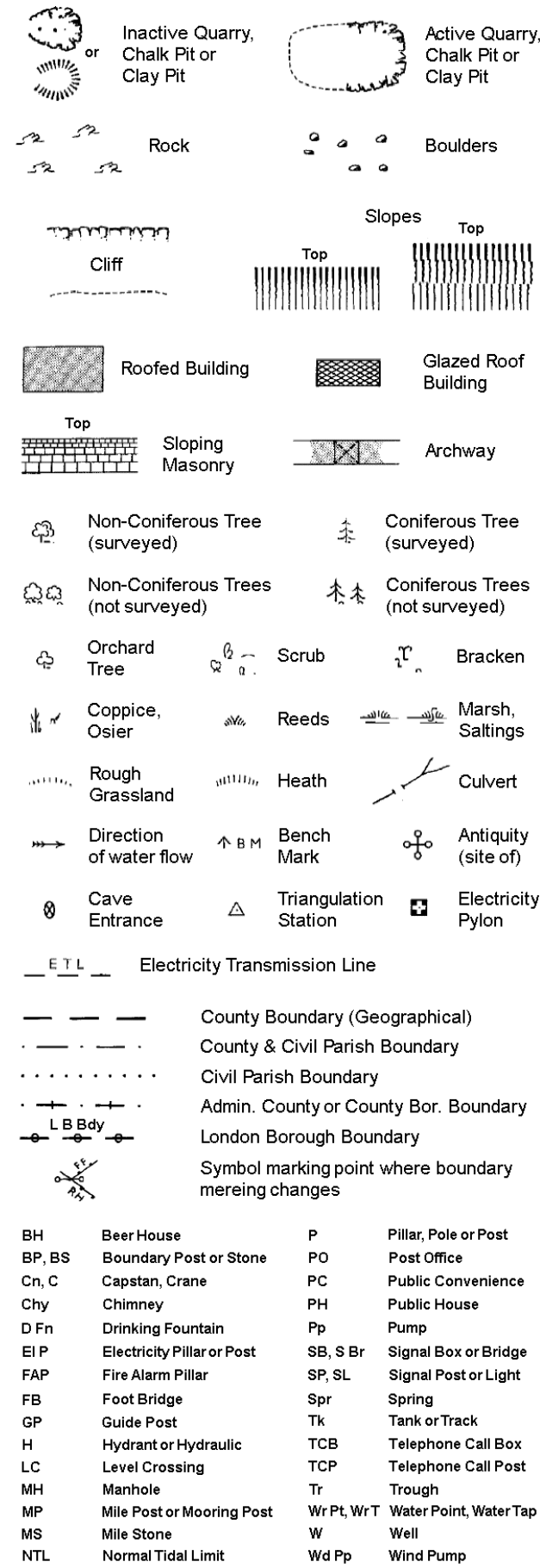
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

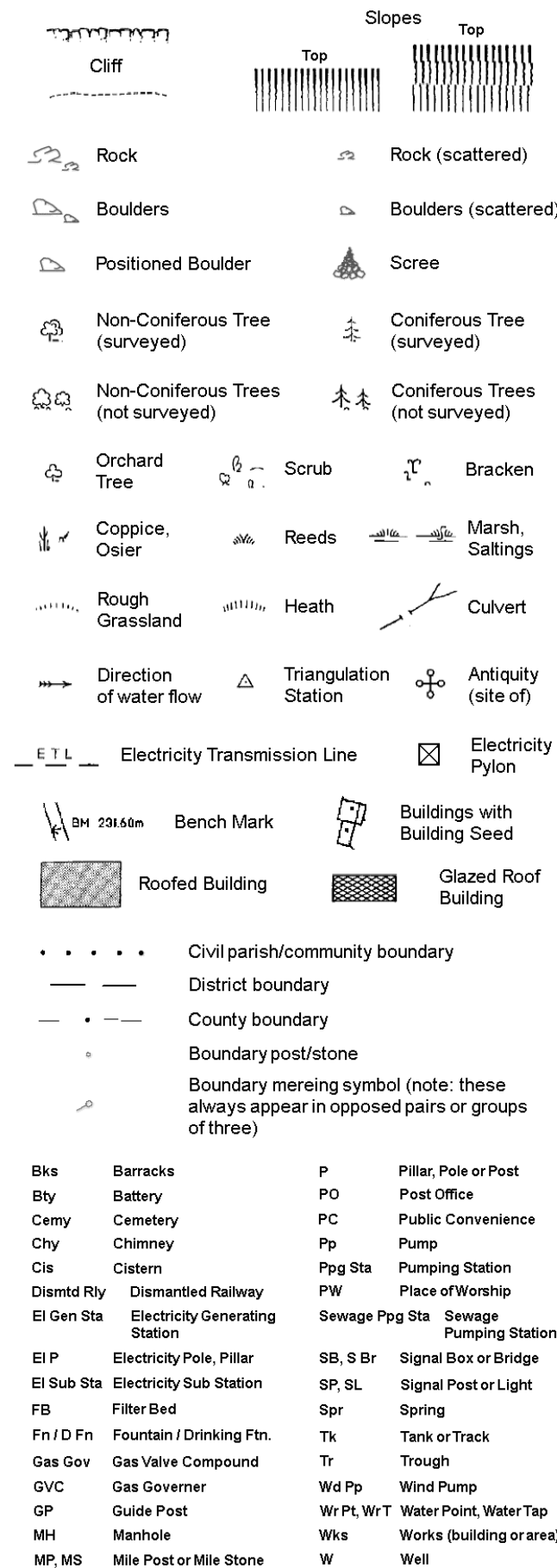
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



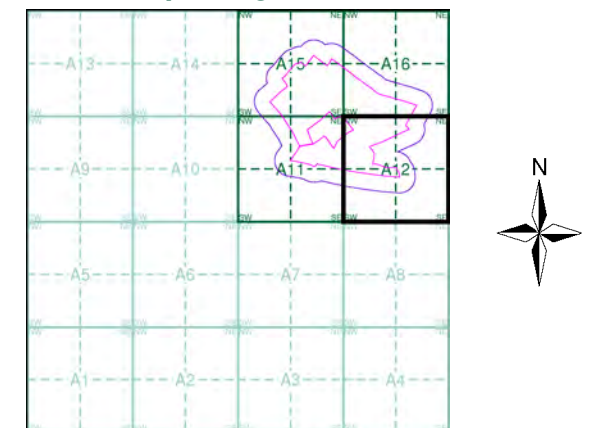
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Wiltshire	1:2,500	1886	2
Wiltshire	1:2,500	1900	3
Wiltshire	1:2,500	1924	4
Ordnance Survey Plan	1:2,500	1981	5
Additional SIMs	1:2,500	1990	6
Large-Scale National Grid Data	1:1,250	1993	7
Large-Scale National Grid Data	1:2,500	1993	8
Historical Aerial Photography	1:2,500	2001	9

Historical Map - Segment A12



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Wiltshire

Published 1886

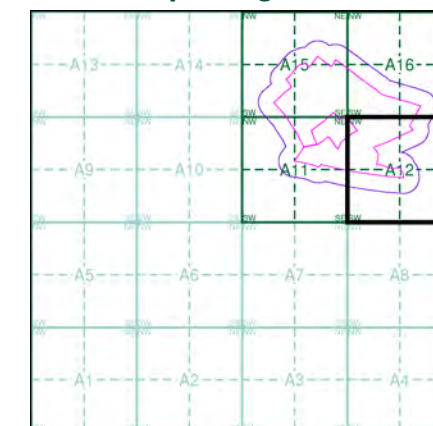
Source map scale - 1:2,500

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)

026_03
1886
1:2,500
026_07
1886
1:2,500

Historical Map - Segment A12



Order Details

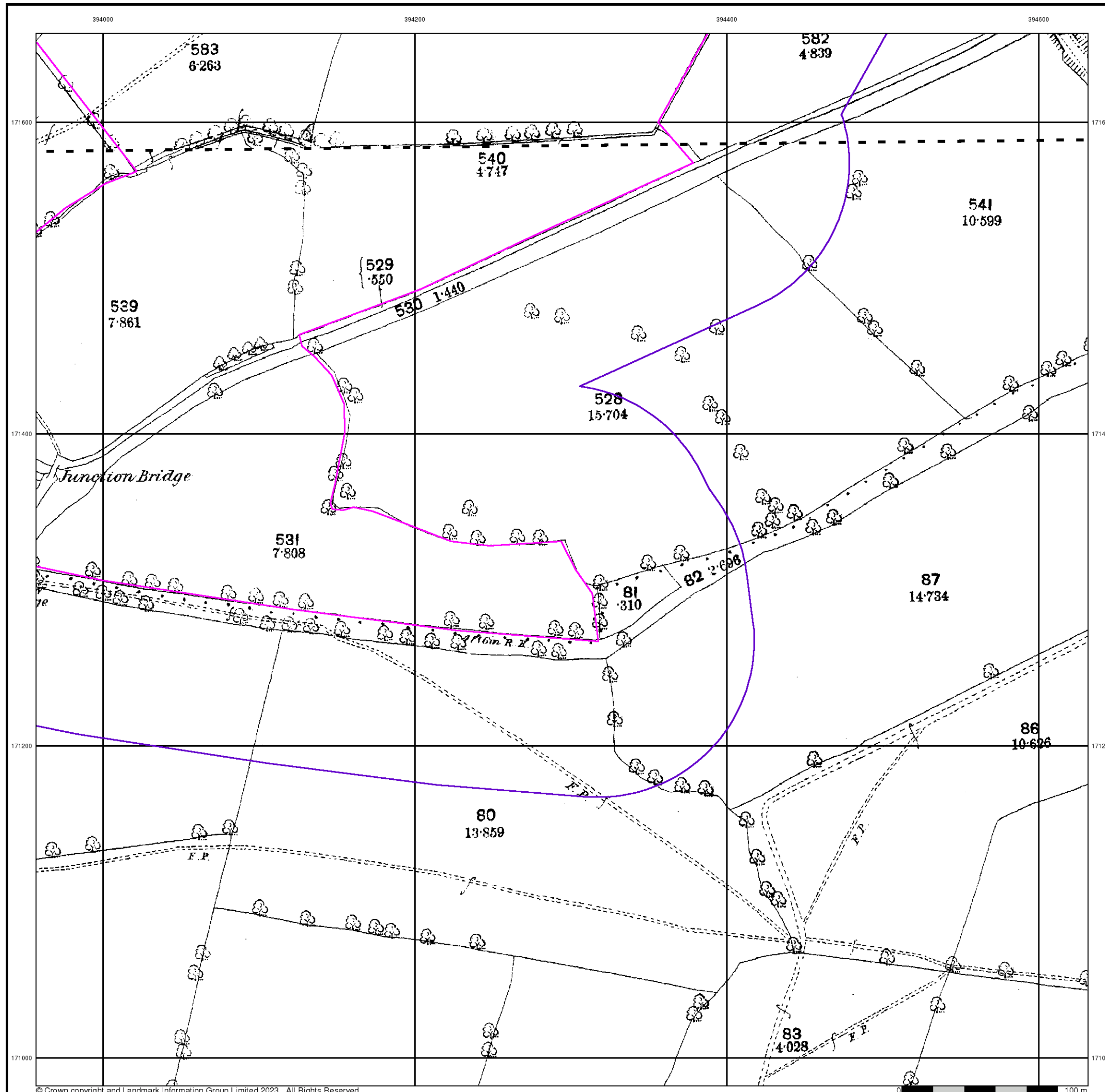
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

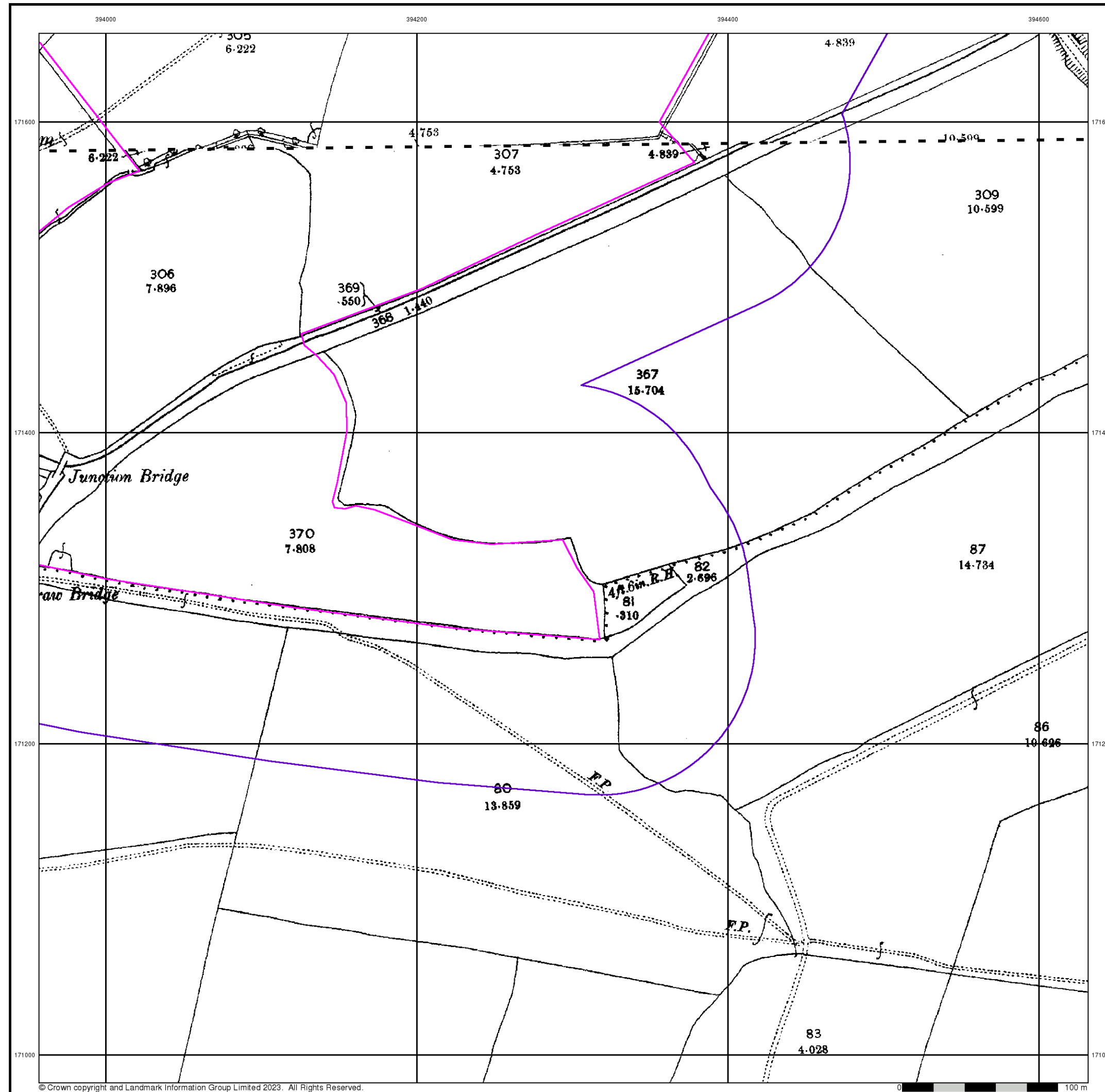
Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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





Wiltshire

Published 1900

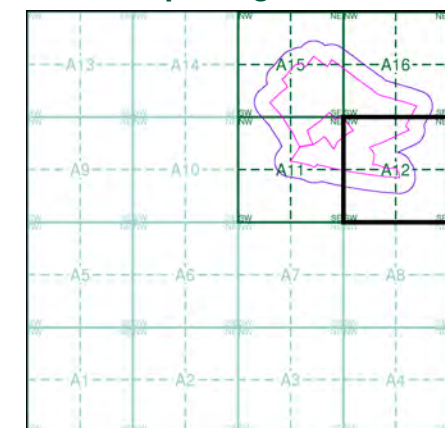
Source map scale - 1:2,500

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)

026_03
1900
1:2,500
026_07
1900
1:2,500

Historical Map - Segment A12



Order Details

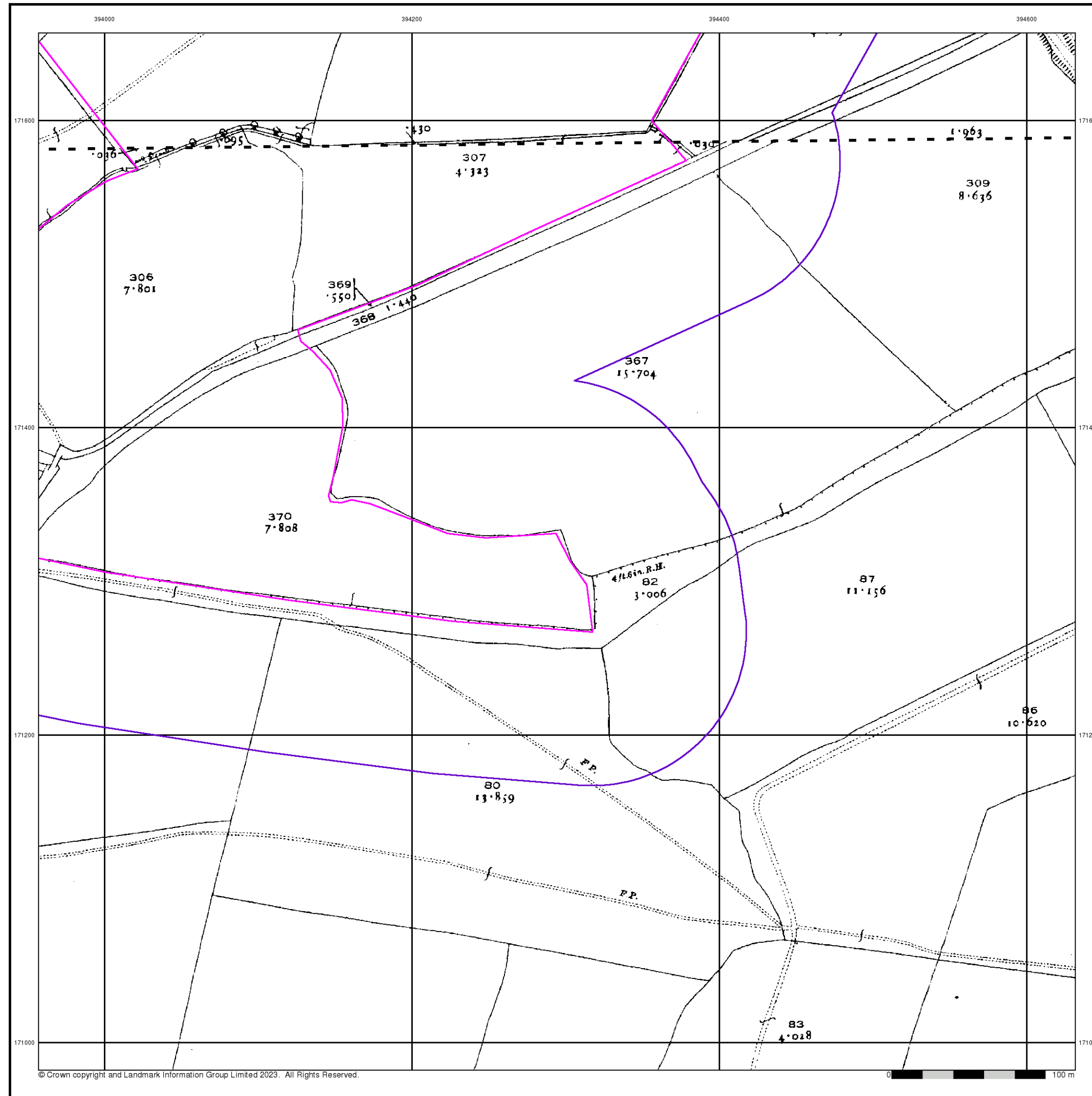
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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



Wiltshire

Published 1924

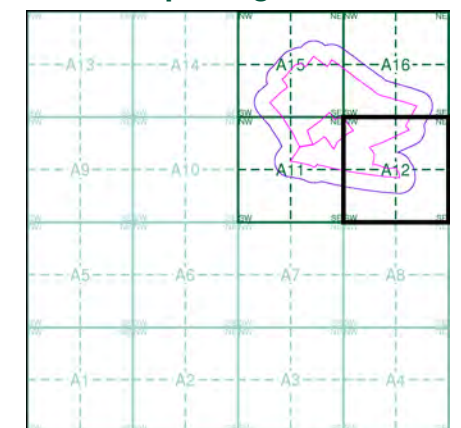
Source map scale - 1:2,500

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)

026_03
1924
1:2,500
026_07
1924
1:2,500

Historical Map - Segment A12



Order Details

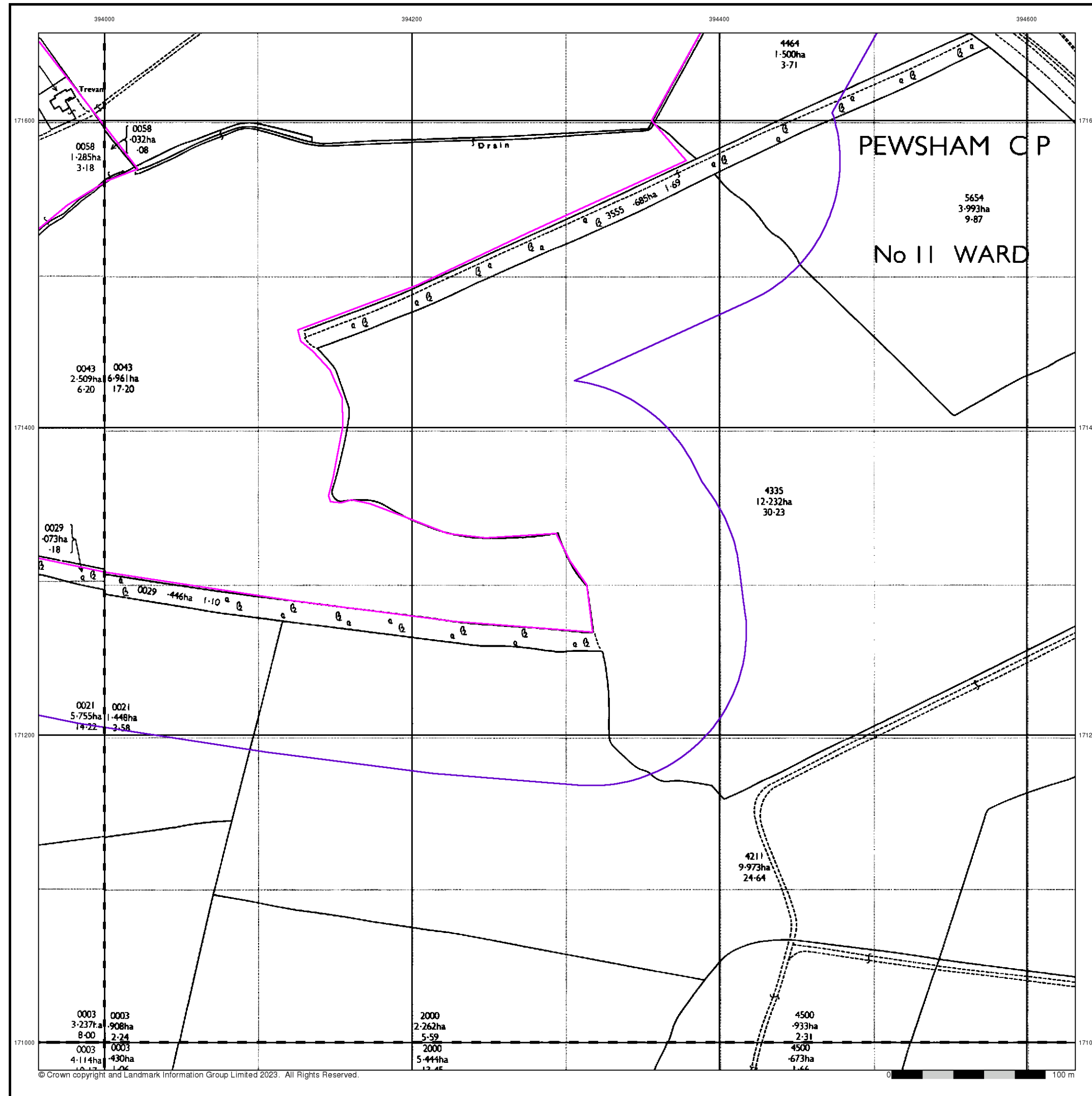
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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Ordnance Survey Plan

Published 1981

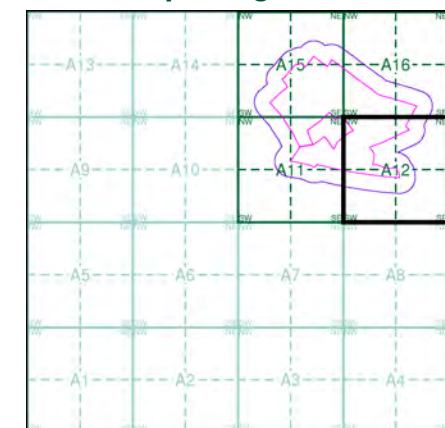
Source map scale - 1:2,500

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)

ST9371 1981 12,500	ST9471 1981 12,500
ST9370 1981 12,500	ST9470 1981 12,500

Historical Map - Segment A12



Order Details

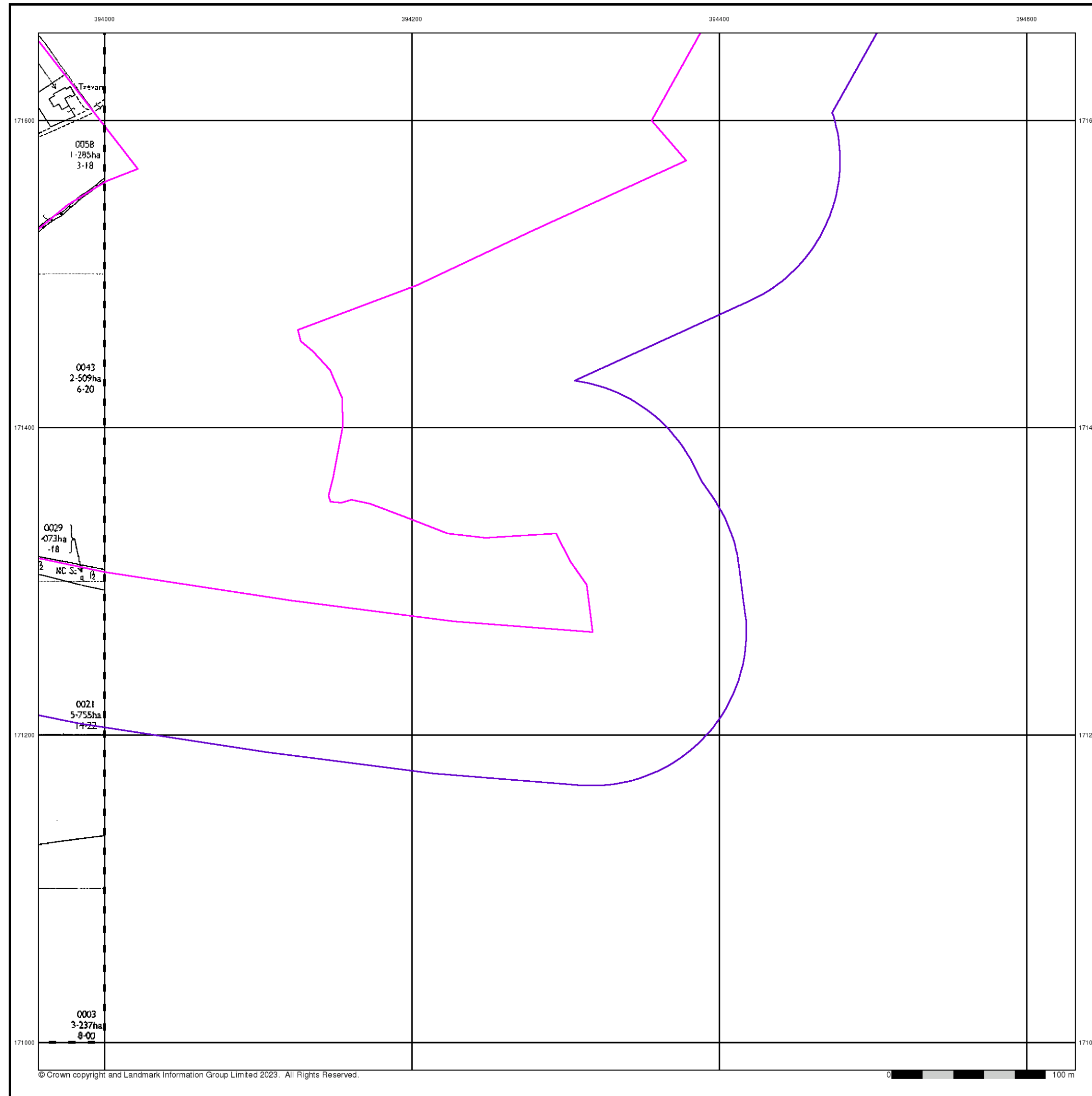
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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0 100 m



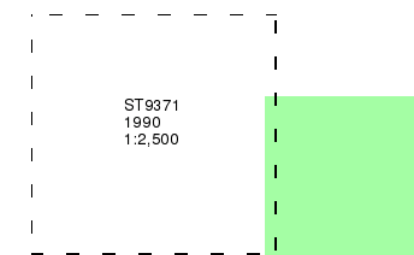
Additional SIMs

Published 1990

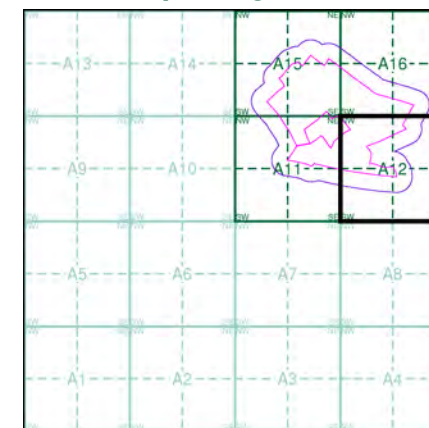
Source map scale - 1:2,500

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 A12



Order Details

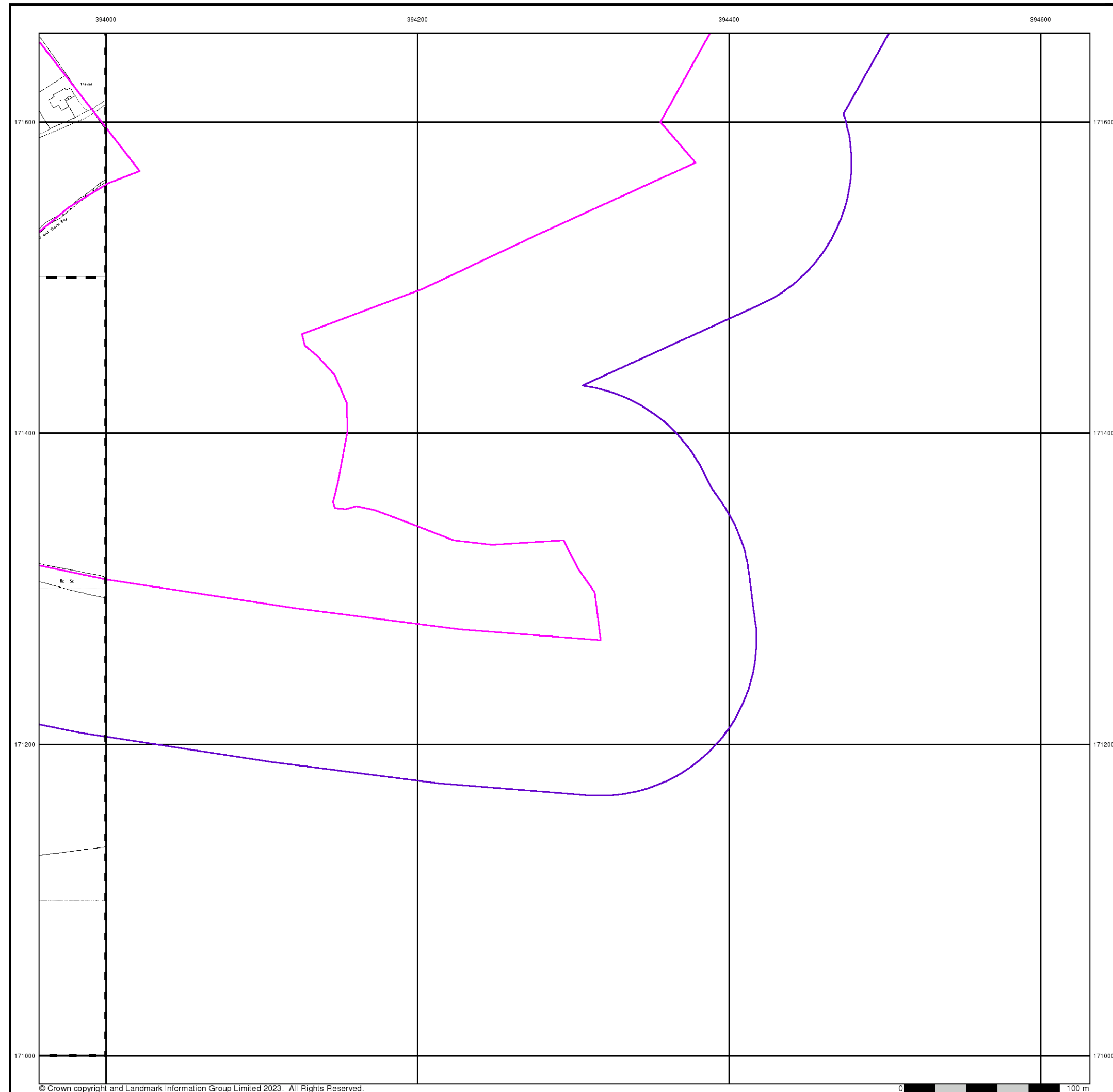
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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Large-Scale National Grid Data

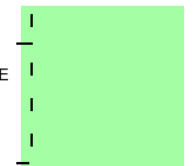
Published 1993

Source map scale - 1:1,250

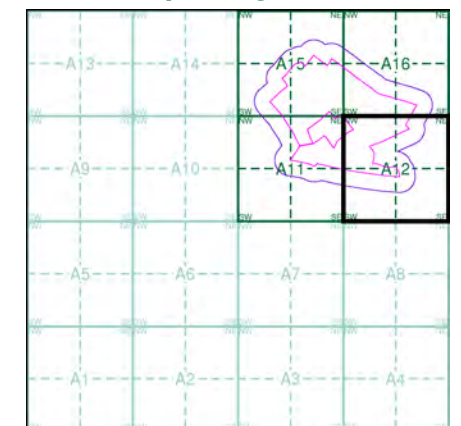
'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic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

Map Name(s) and Date(s)

ST9371NE	1993	1:1,250
ST9371SE	1993	1:1,250



Historical Map - Segment A12



Order Details

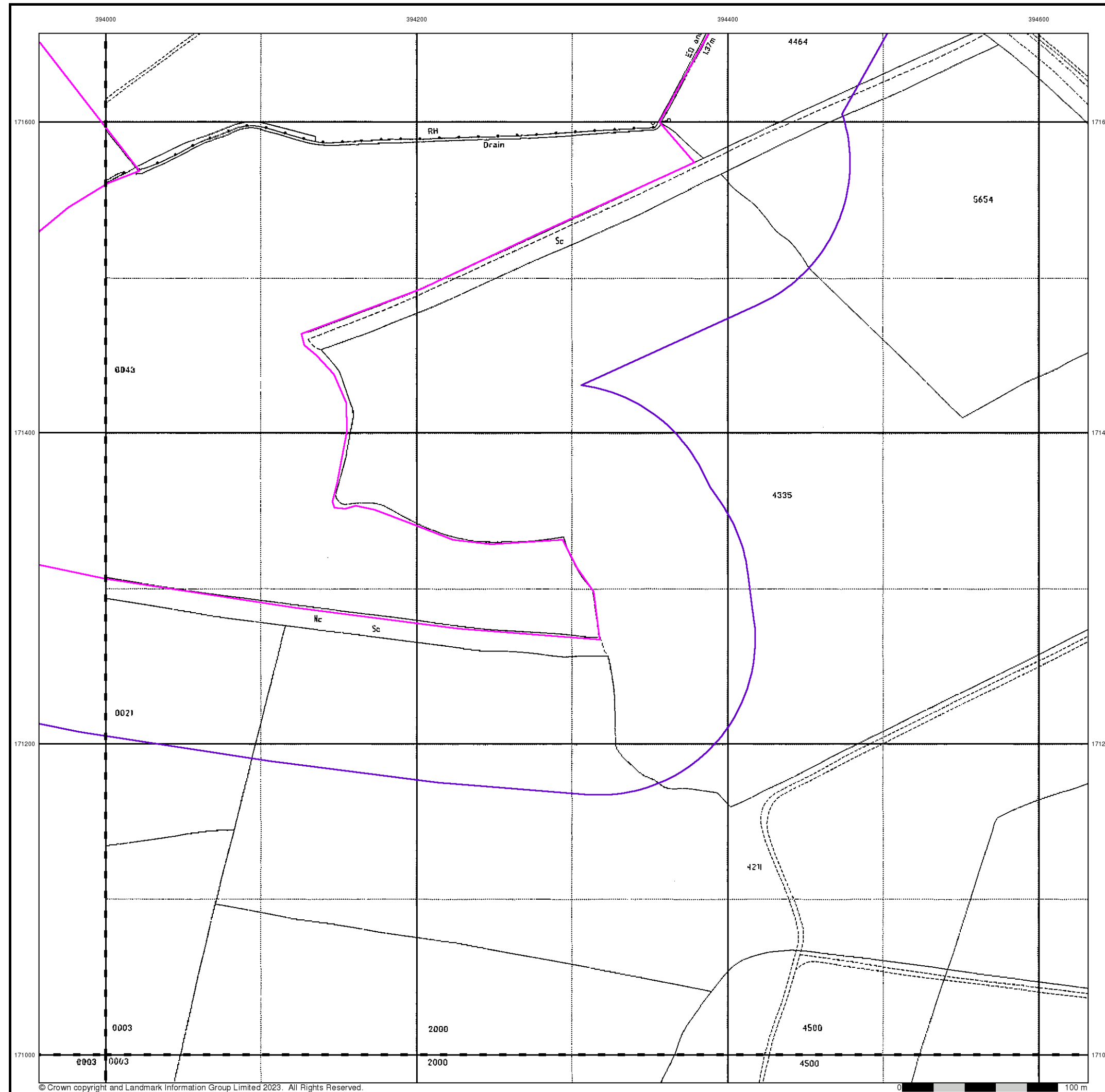
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP

Landmark
INFORMATION GROUP

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Large-Scale National Grid Data

Published 1993

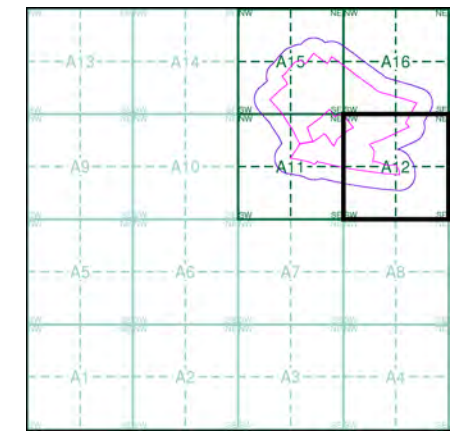
Source map scale - 1:2,500

'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)

ST9471	
1993	
1:2,500	
ST9370	ST9470
1993	1993
1:2,500	1:2,500

Historical Map - Segment A12



Order Details

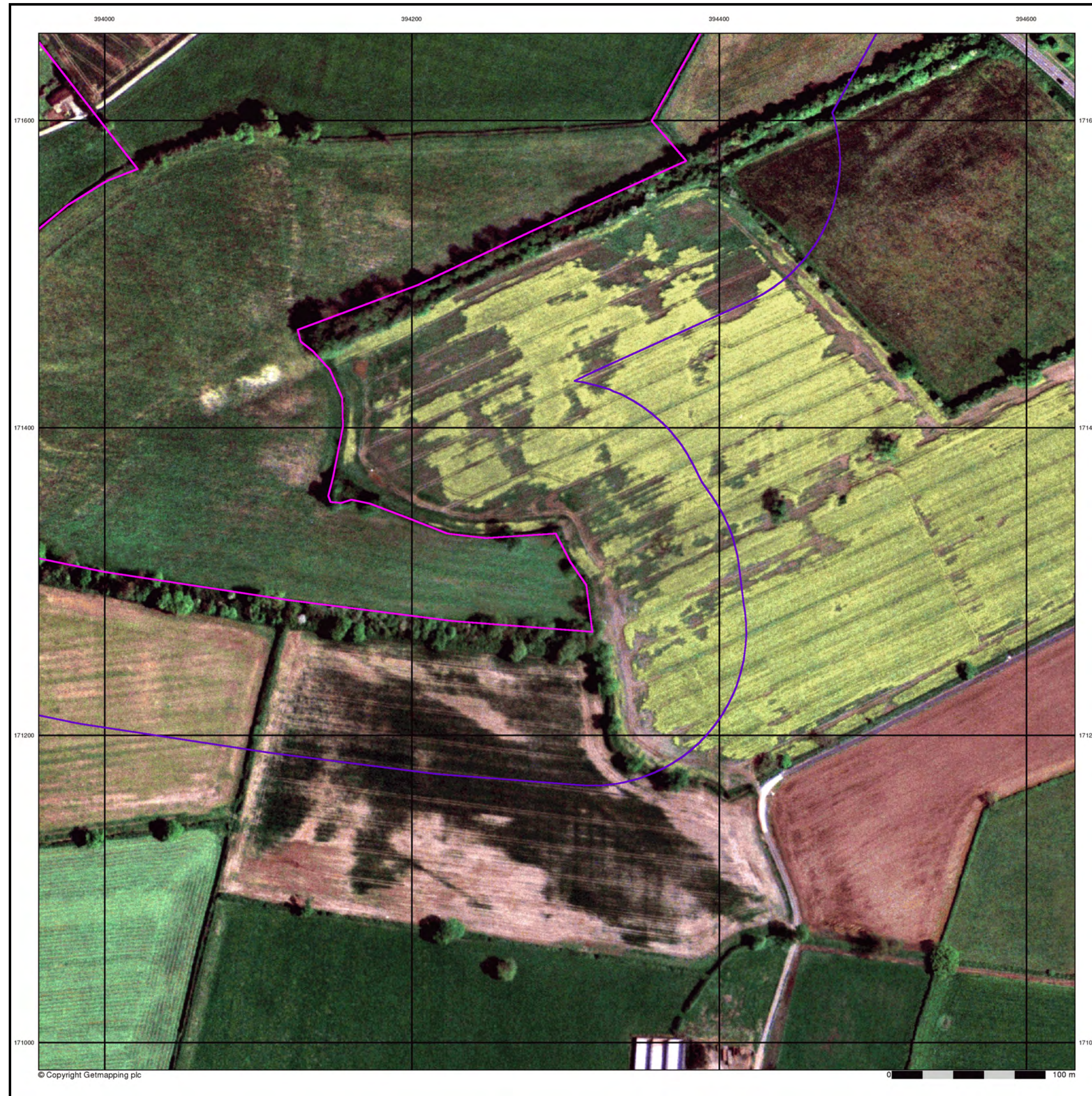
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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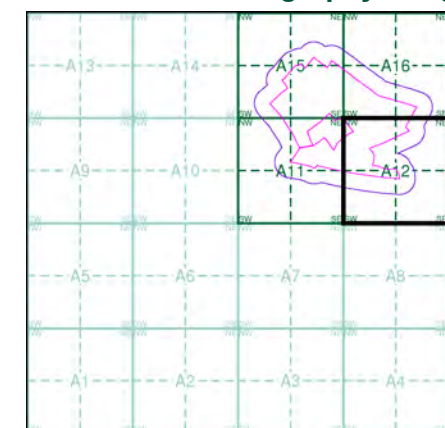


Historical Aerial Photography

Published 2001

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 A12



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

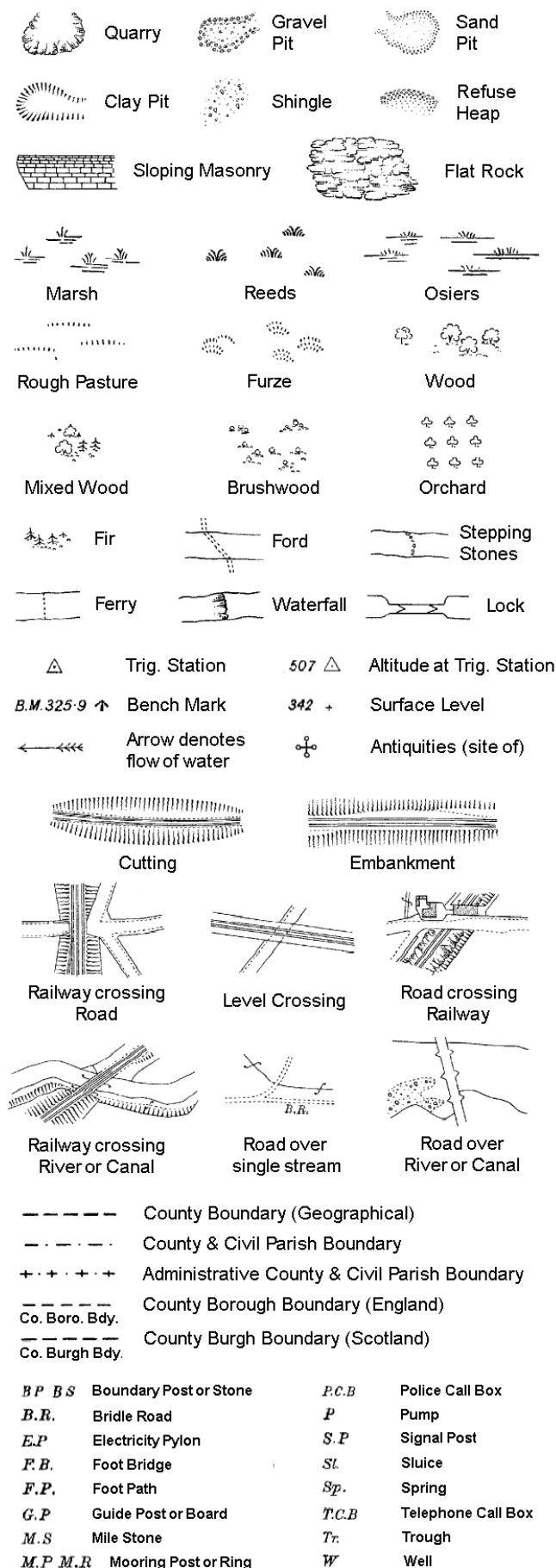
Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



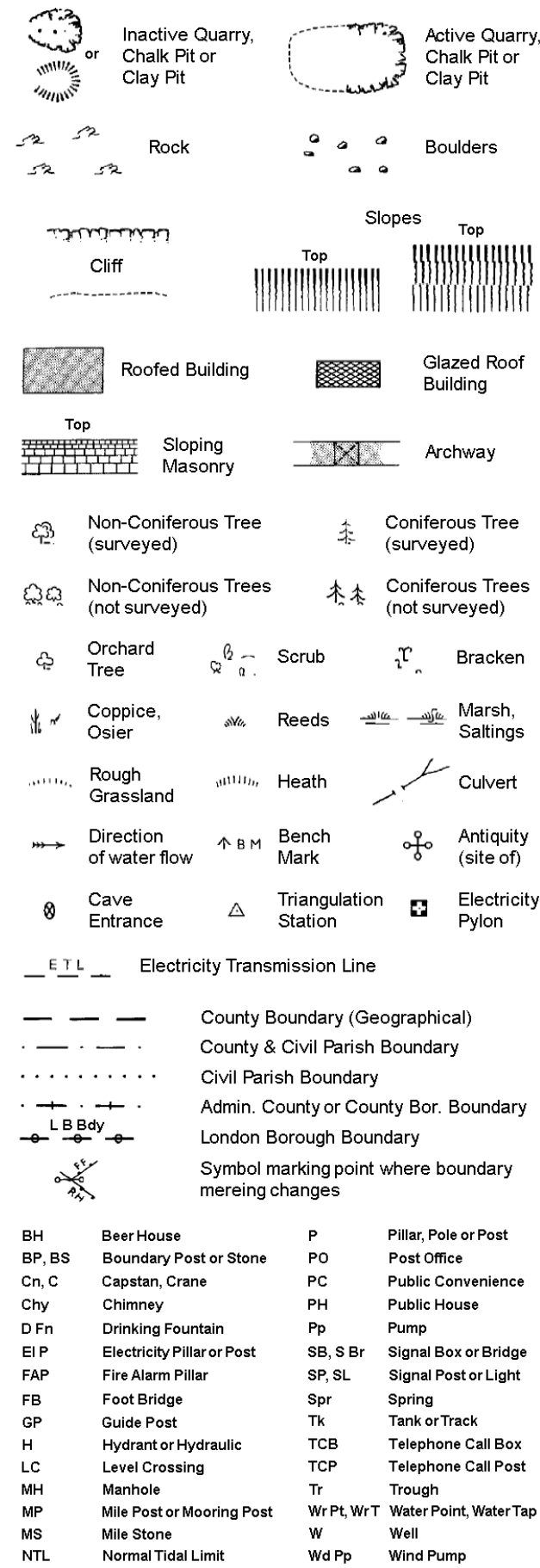
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

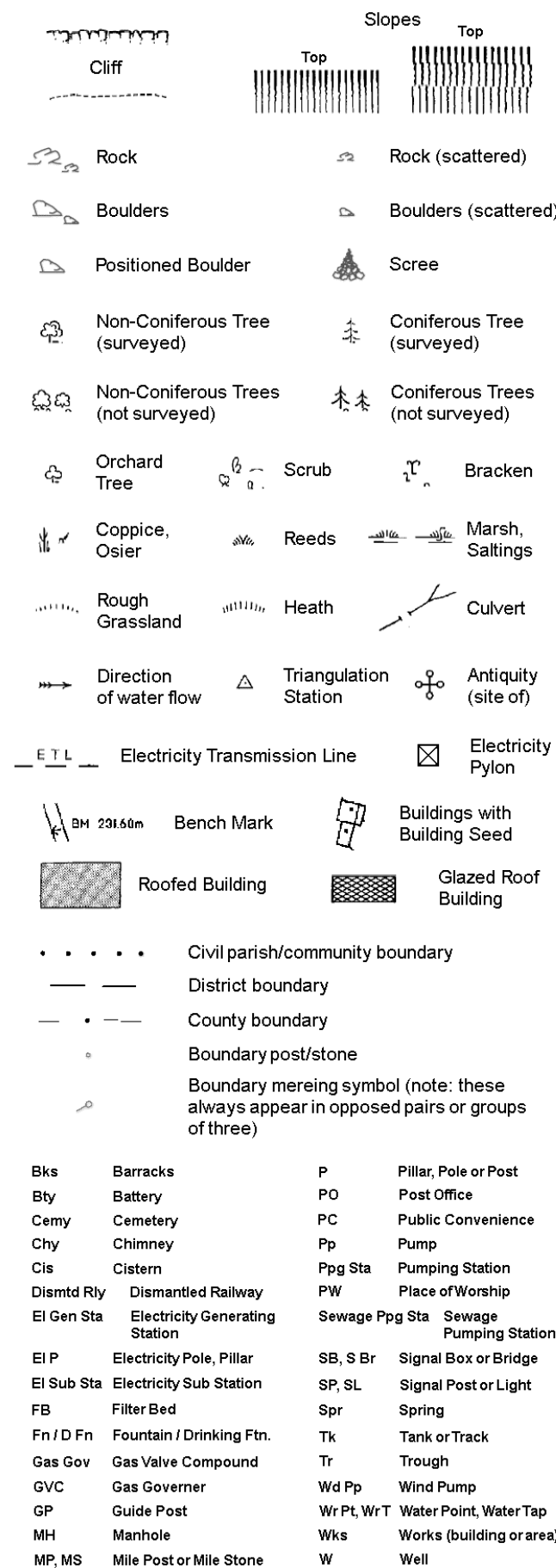
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



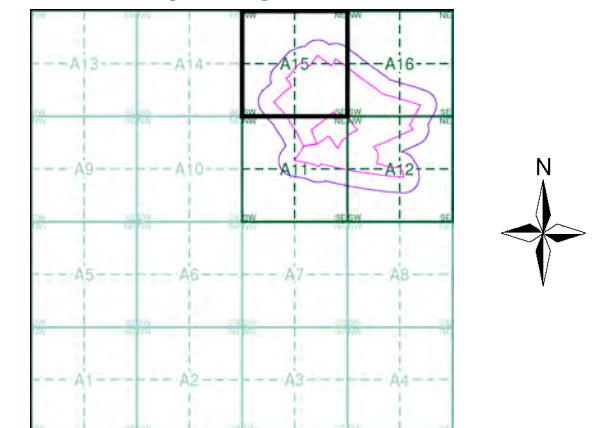
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Wiltshire	1:2,500	1886	2
Wiltshire	1:2,500	1900	3
Wiltshire	1:2,500	1924	4
Ordnance Survey Plan	1:1,250	1967 - 1986	5
Ordnance Survey Plan	1:2,500	1968 - 1981	6
Additional SIMs	1:1,250	1985 - 1987	7
Ordnance Survey Plan	1:1,250	1987 - 1989	8
Additional SIMs	1:1,250	1988	9
Additional SIMs	1:2,500	1990	10
Large-Scale National Grid Data	1:1,250	1993	11
Historical Aerial Photography	1:2,500	2001	12

Historical Map - Segment A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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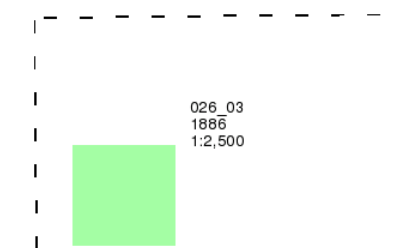
Wiltshire

Published 1886

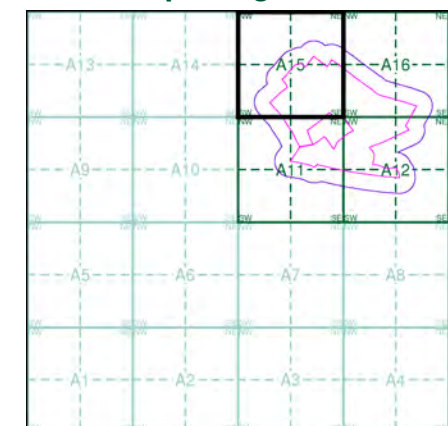
Source map scale - 1:2,500

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 A15



Order Details

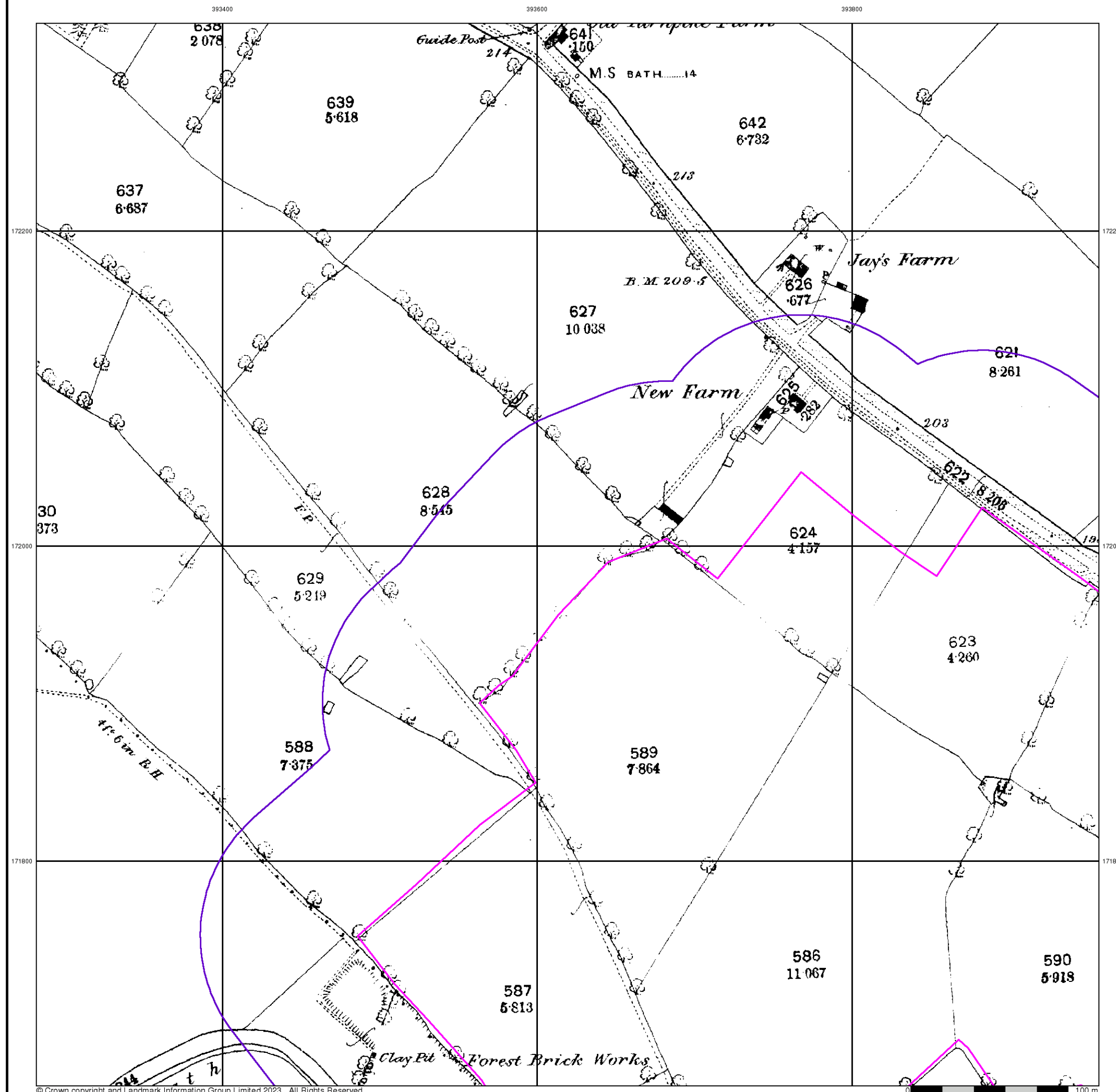
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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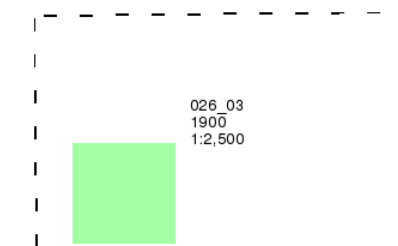
Wiltshire

Published 1900

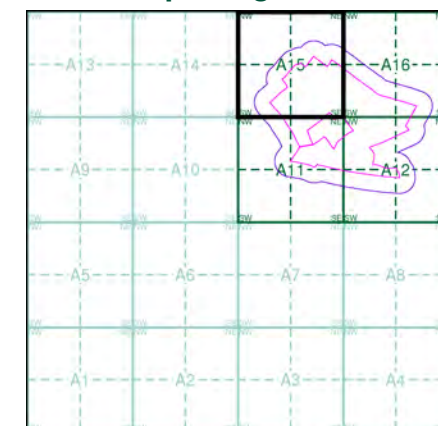
Source map scale - 1:2,500

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 A15



Order Details

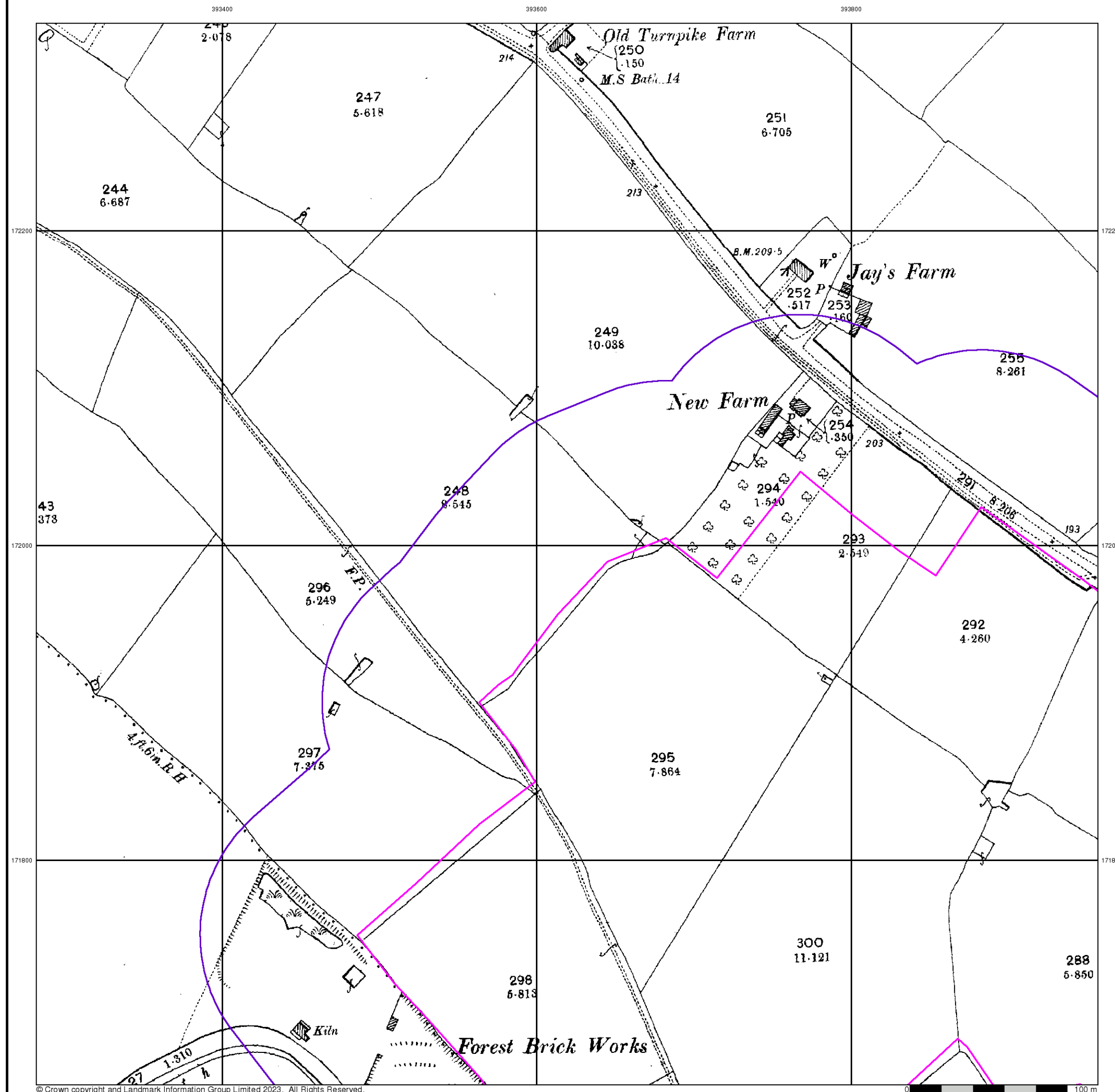
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

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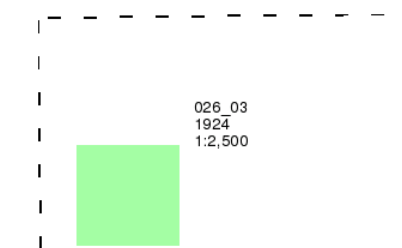
Wiltshire

Published 1924

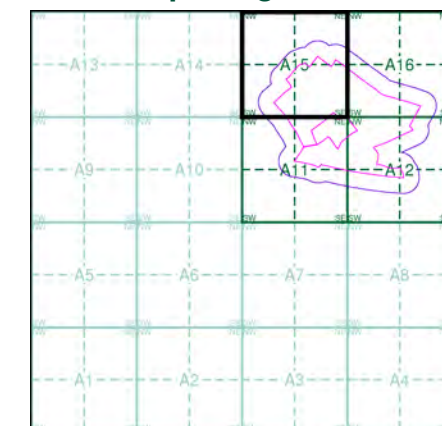
Source map scale - 1:2,500

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 A15



Order Details

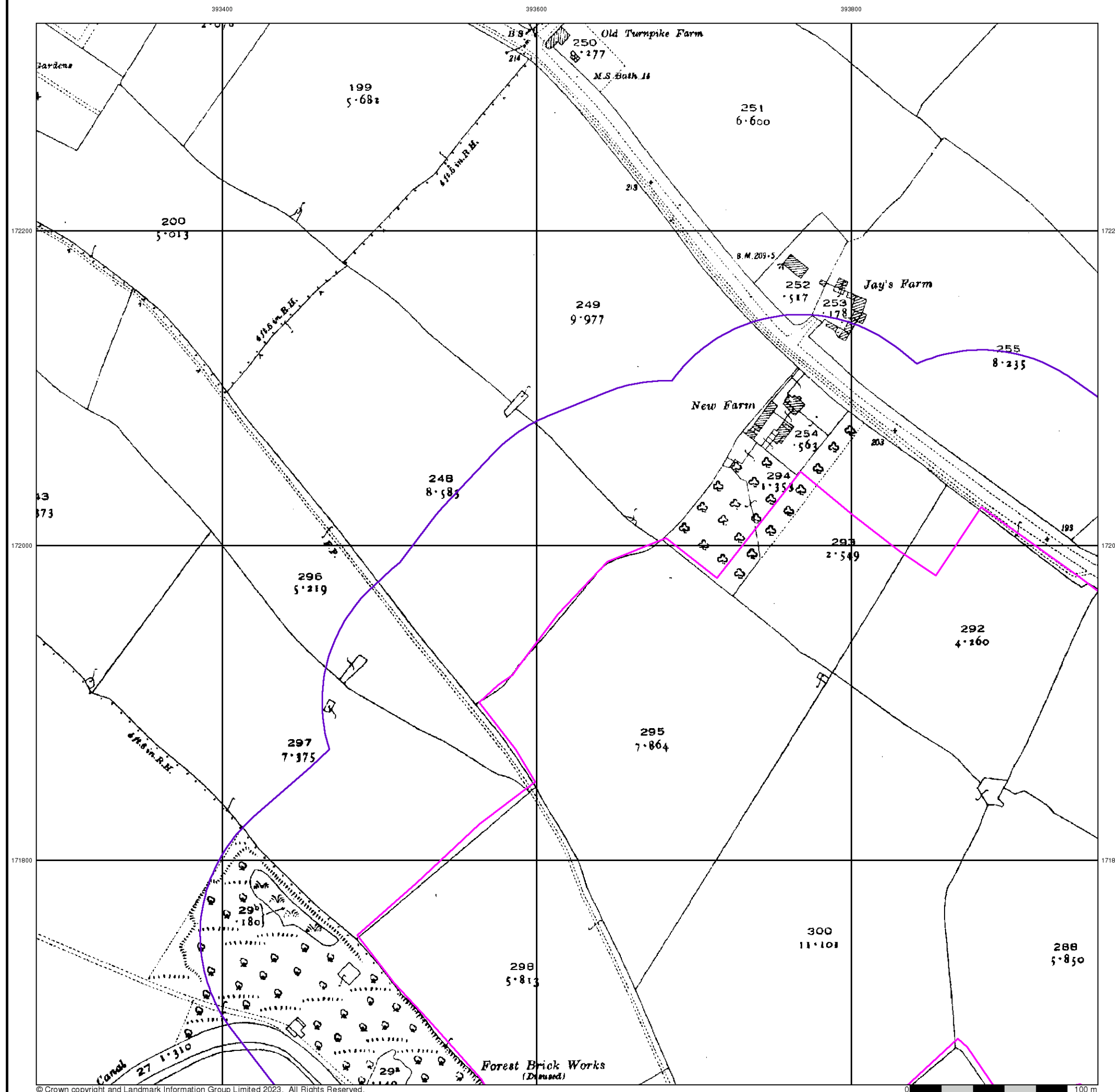
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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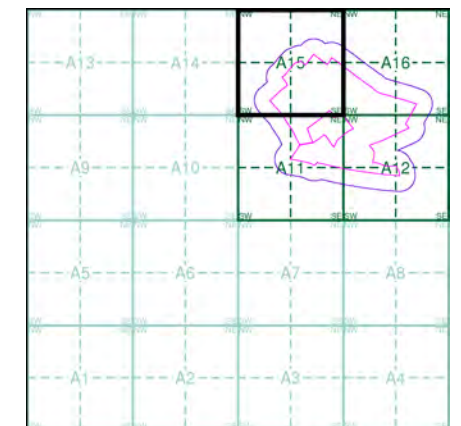




Map Name(s) and Date(s)

ST9372SW	ST9372SE
1967	1967
1:1,250	1:1,250
ST9371NW	
1986	
1:1,250	

Historical Map - Segment A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP

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Ordnance Survey Plan

Published 1968 - 1981

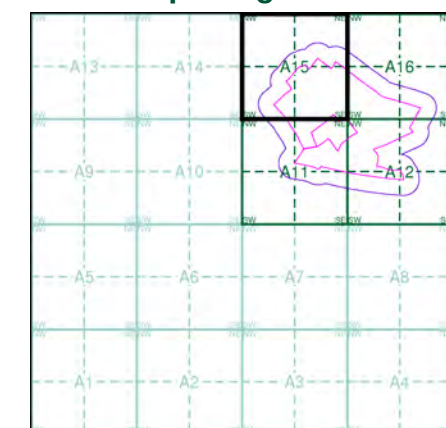
Source map scale - 1:2,500

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)

ST9372
1968
1:2,500
ST9371
1981
1:2,500

Historical Map - Segment A15



Order Details

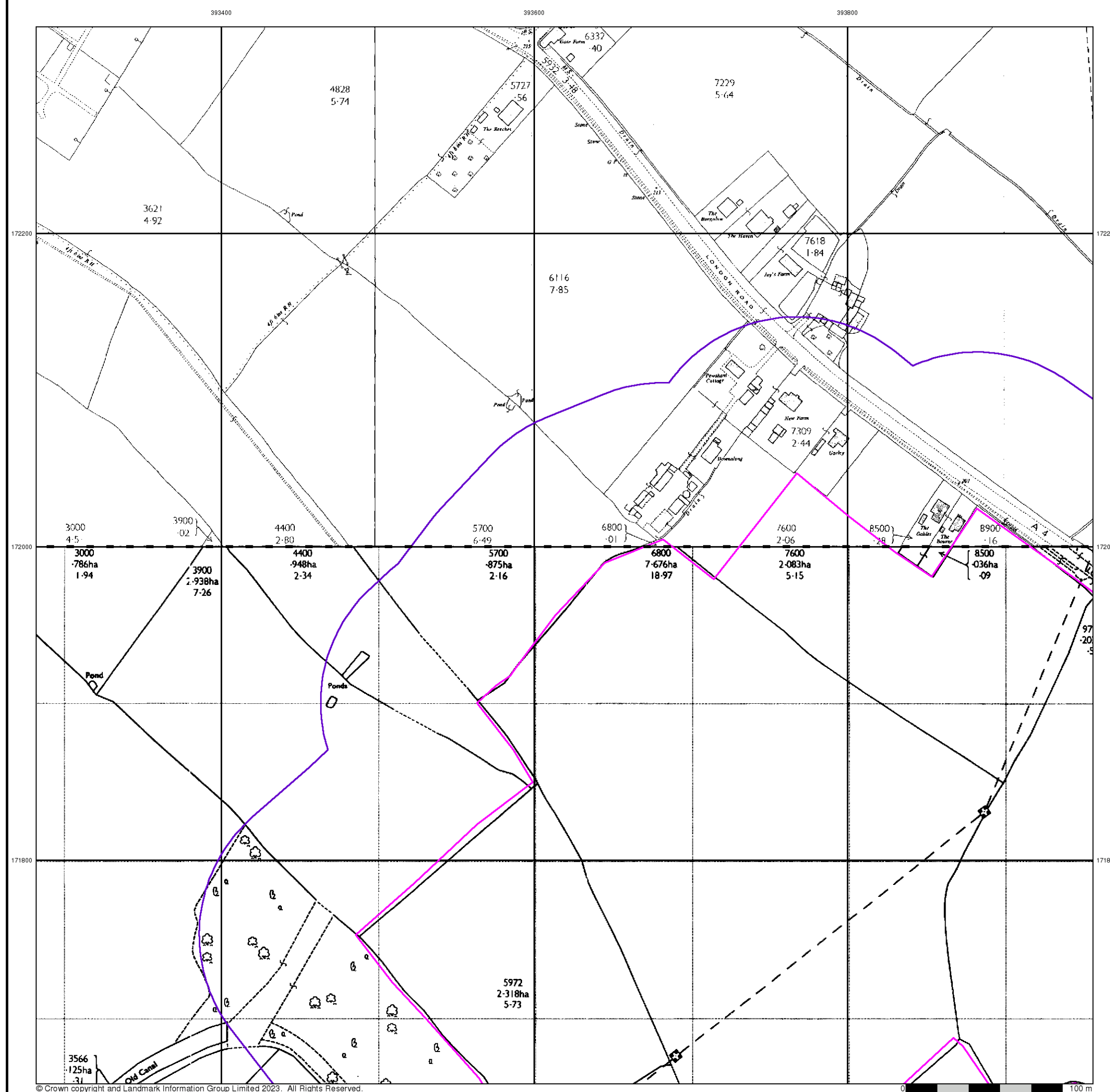
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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Additional SIMs

Published 1985 - 1987

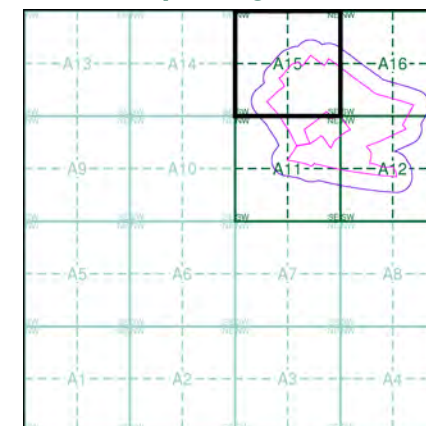
Source map scale - 1:1,250

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)

ST9372SW	1985	1:1,250
ST9371NW	1987	1:1,250

Historical Map - Segment A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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Ordnance Survey Plan

Published 1987 - 1989

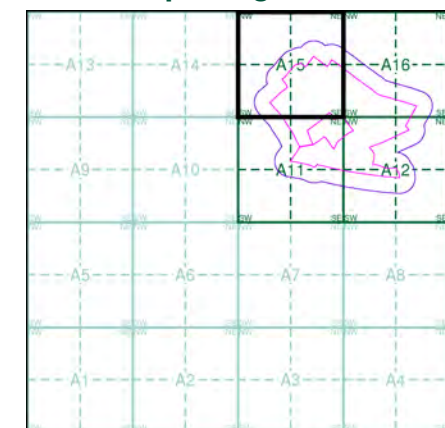
Source map scale - 1:1,250

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)

ST9372SW	ST9372SE
1989	1987
1:1,250	1:1,250
ST9371NW	
1989	
1:1,250	

Historical Map - Segment A15



Order Details

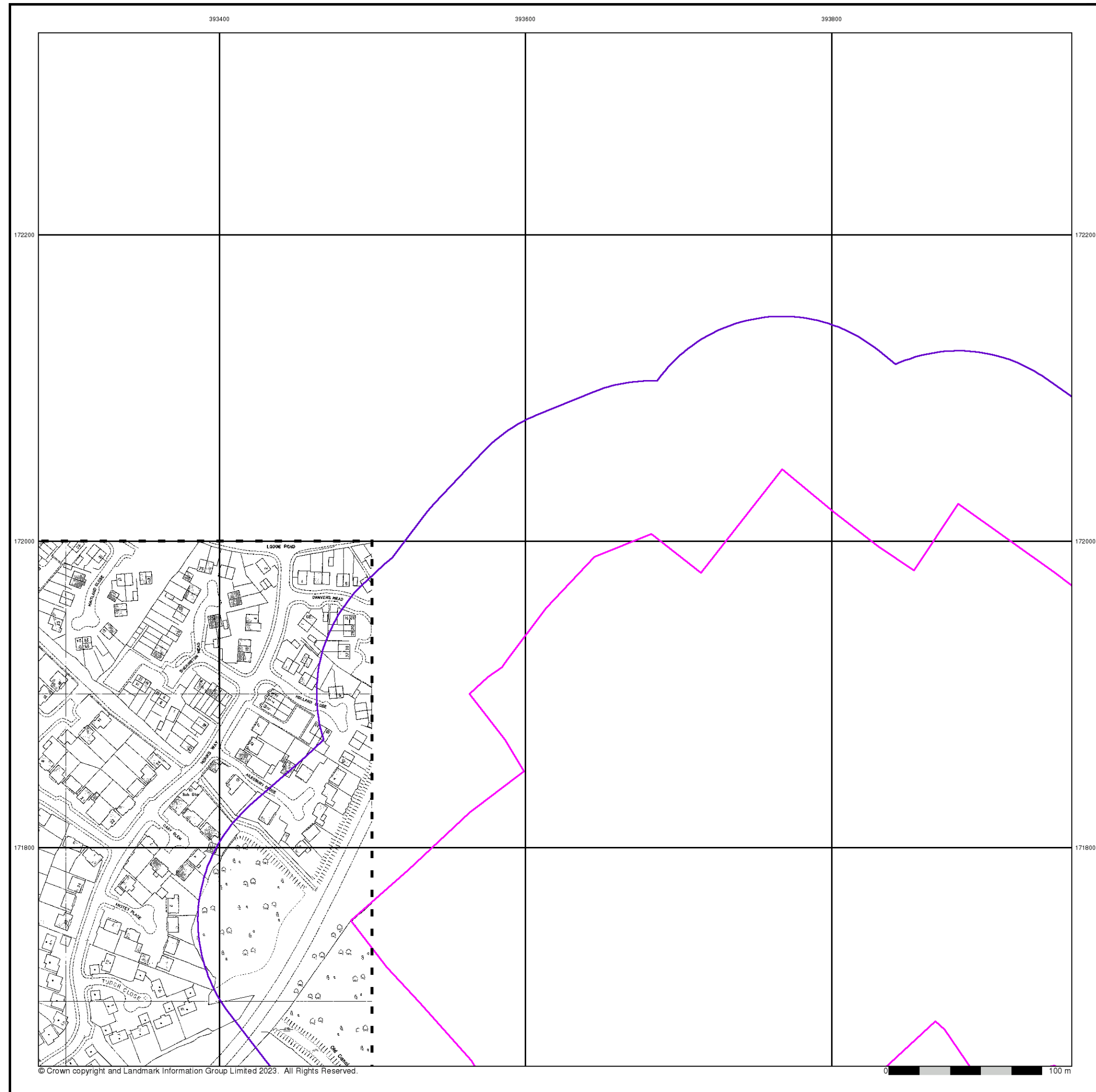
Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

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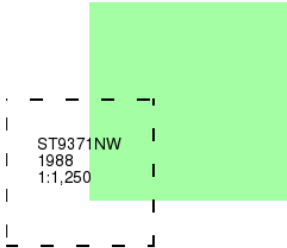
Additional SIMs

Published 1988

Source map scale - 1:1,250

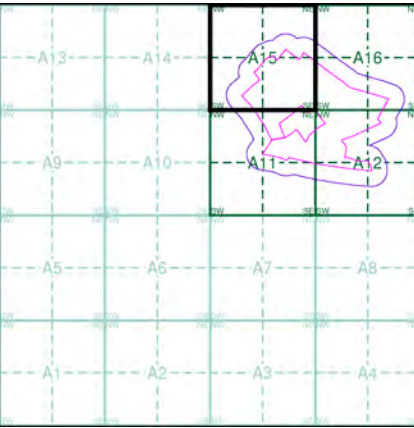
The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps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

Map Name(s) and Date(s)



ST9371NW
1988
1:1,250

Historical Map - Segment A15



Order Details

Order Number:	322197480_1_1
Customer Ref:	BRD2483
National Grid Reference:	393660, 171380
Slice:	A
Site Area (Ha):	38.87
Search Buffer (m):	100

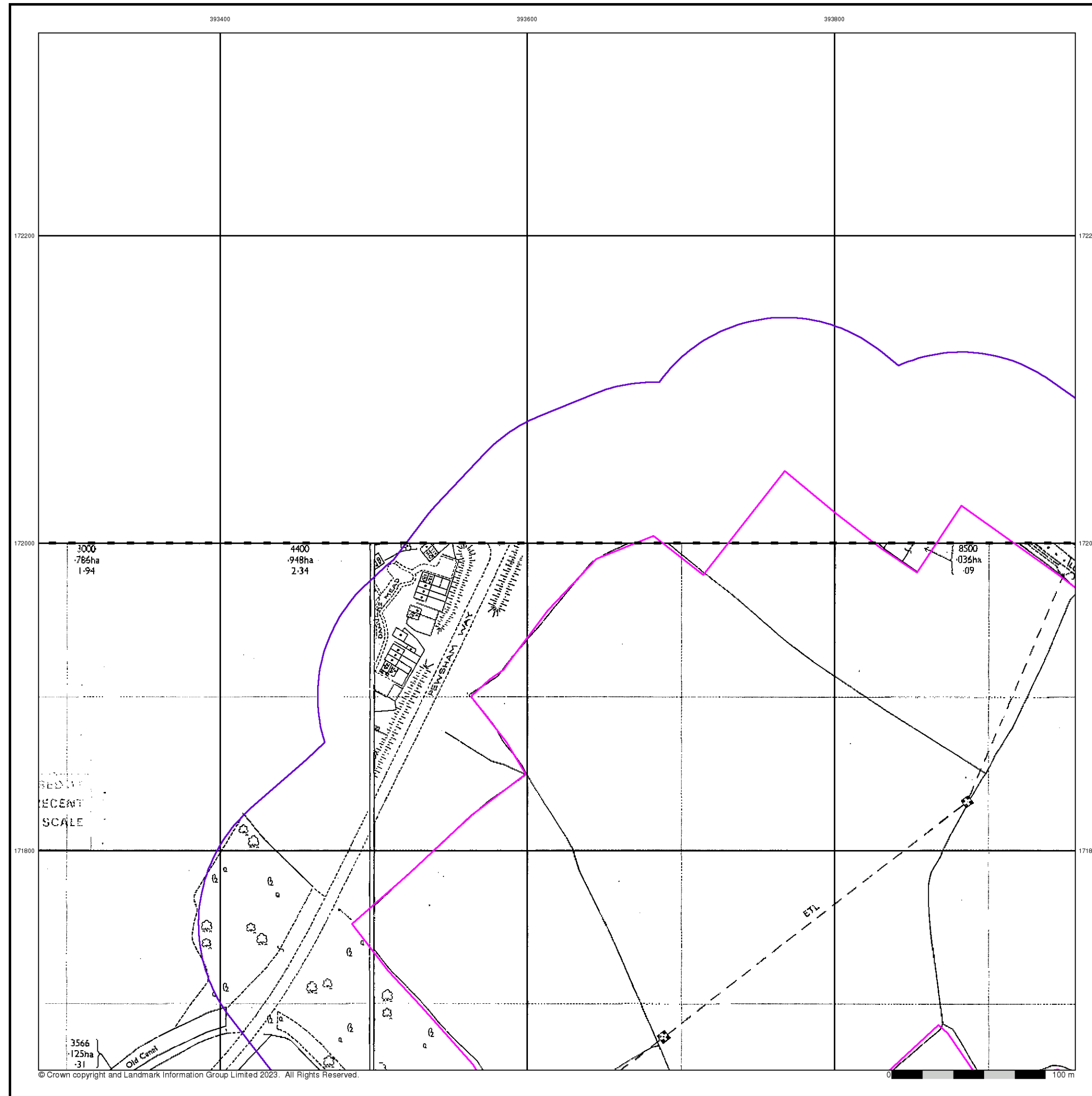
Site Details

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A Landmark Information Group Service v50.0 26-Oct-2023 Page 9 of 12



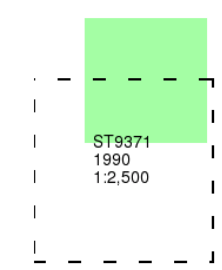
Additional SIMs

Published 1990

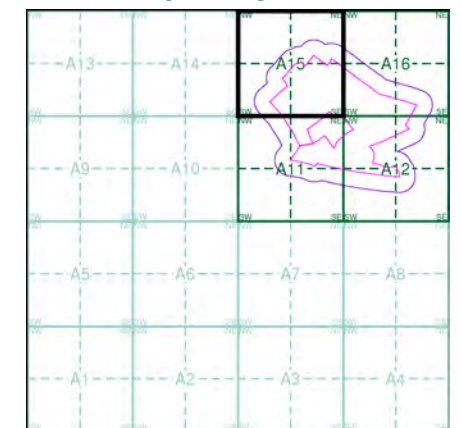
Source map scale - 1:2,500

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 A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

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Large-Scale National Grid Data

Published 1993

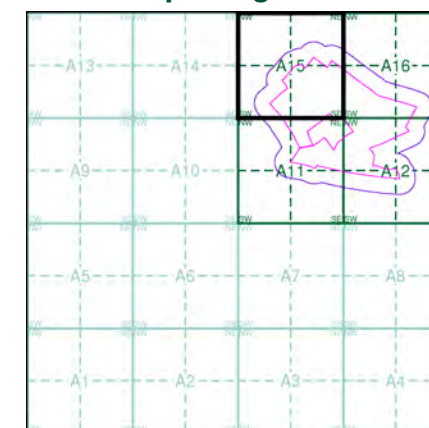
Source map scale - 1:1,250

'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)

ST9372SW	ST9372SE
1993	1993
1:1,250	1:1,250
ST9371NW	ST9371NE
1993	1993
1:1,250	1:1,250

Historical Map - Segment A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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

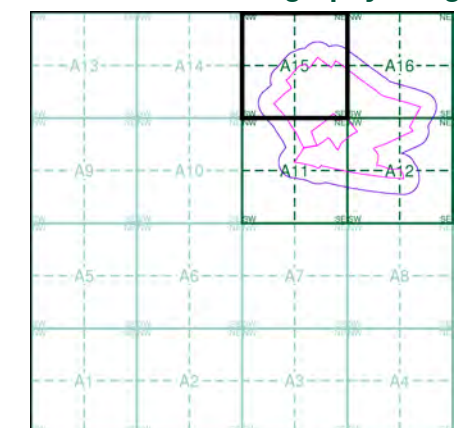


Historical Aerial Photography

Published 2001

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 A15



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

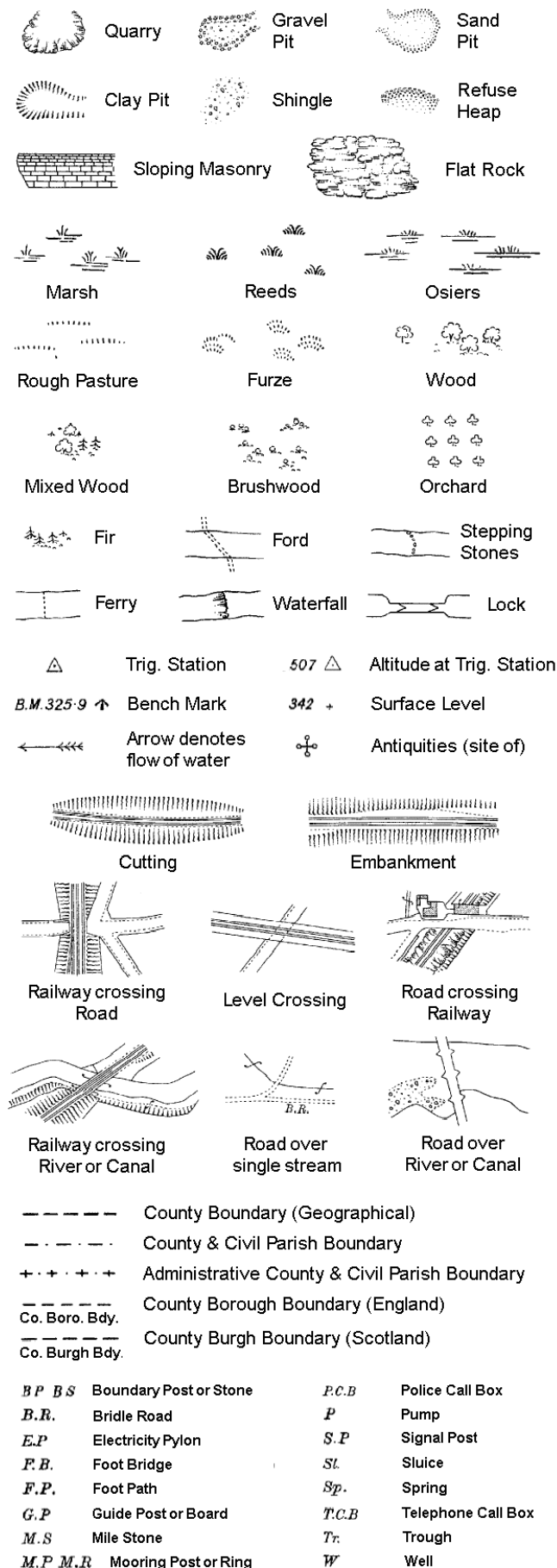
Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP

Landmark
INFORMATION GROUP

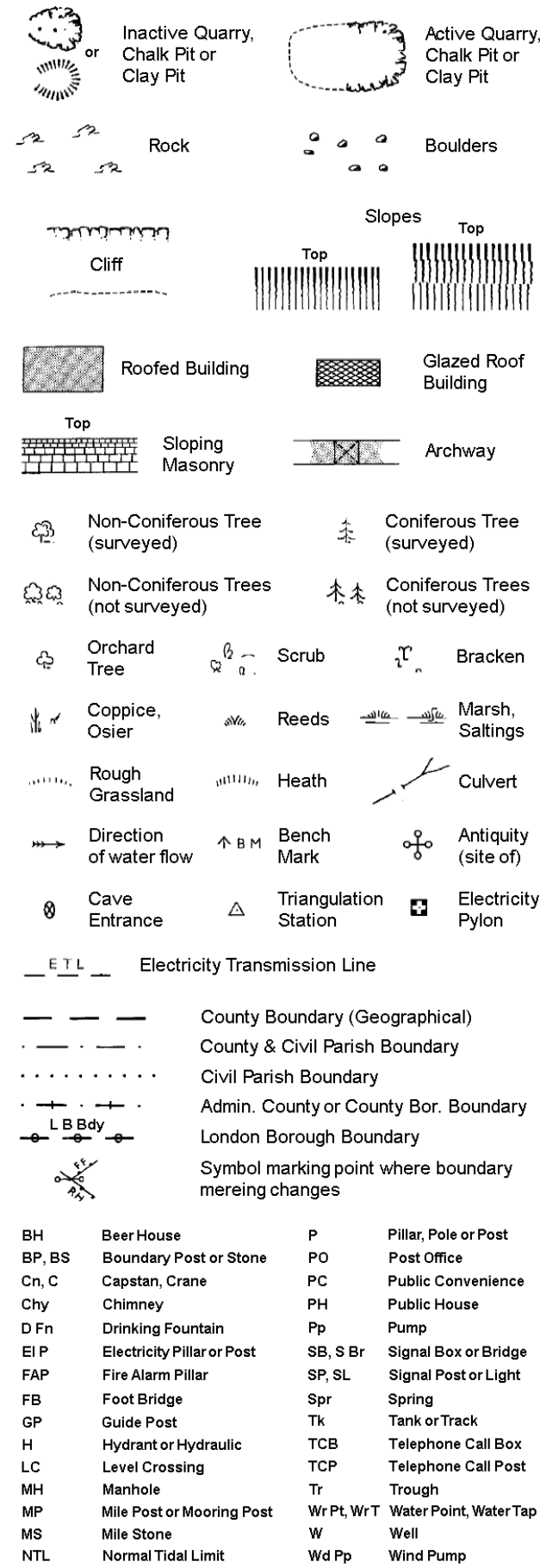
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

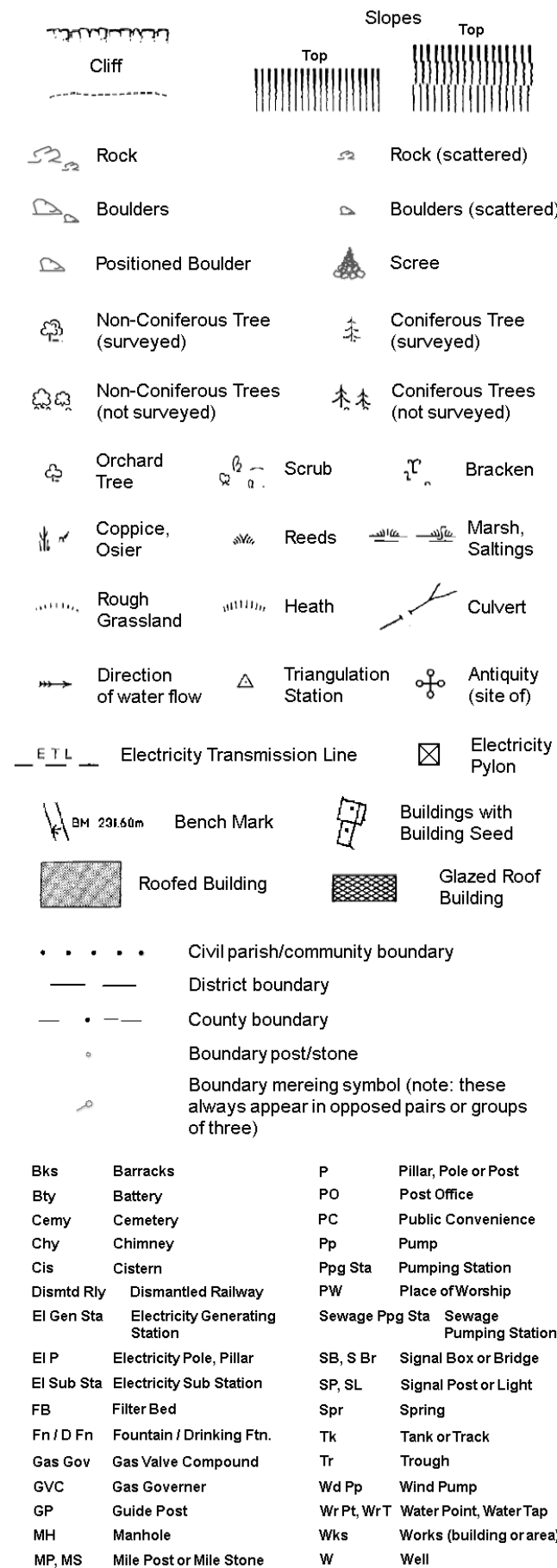
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



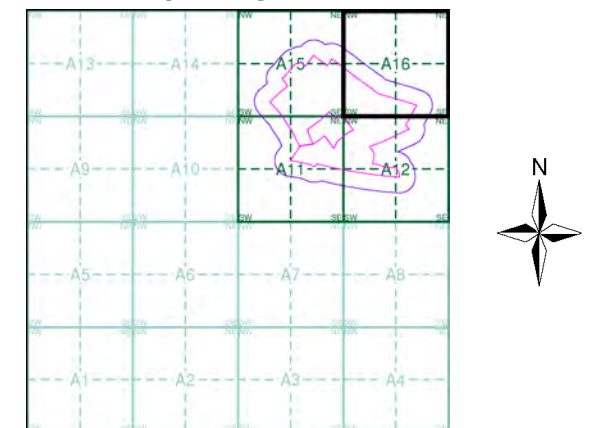
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Wiltshire	1:2,500	1886	2
Wiltshire	1:2,500	1900	3
Wiltshire	1:2,500	1924	4
Ordnance Survey Plan	1:1,250	1967	5
Ordnance Survey Plan	1:2,500	1968 - 1981	6
Ordnance Survey Plan	1:1,250	1987	7
Additional SIMs	1:2,500	1990	8
Large-Scale National Grid Data	1:2,500	1993	9
Large-Scale National Grid Data	1:1,250	1993	10
Historical Aerial Photography	1:2,500	2001	11

Historical Map - Segment A16



Order Details

Order Number: 322197480_1_1
Customer Ref: BRD2483
National Grid Reference: 393660, 171380
Slice: A
Site Area (Ha): 38.87
Search Buffer (m): 100

Site Details

Forest Farm, Pewsham, CHIPPENHAM, Wiltshire, SN15 3RP



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