Preliminary Investigation Report

at
Thames Young Mariners, Riverside Drive, Richmond TW10 7RX

for
Surrey County Council

Reference: 20295/PIR Rev1.0
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This is not a valid document for use in the design of the project unless it is titled Final in the document status box.

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

Commission

Soils Limited was commissioned by Surrey County Council to undertake a Preliminary Investigation on Thames Young Mariners, Riverside Drive, Richmond TW10 7RX. The scope of the investigation was outlined in the Soils Limited quotation reference Q25989 rev 101, dated 30th March 2022.

Caveat

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

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

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

Legislation and Liability

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

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

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

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

Under the legislation, Contaminated Land is defined as: -

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

Where the Act defines harm as:

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

and pollution of controlled waters is defined as: -

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

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

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

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

Limitations and Disclaimers

This Preliminary Investigation Report relates to the site located at Thames Young Mariners (TYM), Riverside Drive, Richmond TW10 7RX and was prepared for the sole benefit of Surrey County Council (The "Client") for the brief described in the Commission of this report.

The contents, recommendations and advice given in the report are subject to the Terms and Conditions given in Quotation Q25989 rev 101, dated 30th March 2022 accepted by the by Pick Everard on behalf of the Client on 1st June 2022.

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

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

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

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

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

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

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

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

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

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

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

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

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Section 1 Introduction

1.1 Objective

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

1.2 Site Location

The Site was located west of Riverside Drive, approximately 1.2km northeast of Teddington and 1.1km southeast of Twickenham, within the boundary of the London Borough of Richmond upon Thames (LBRuT), at a postcode of TW10 7RX. The centre of the site had an approximate O.S Land Ranger Grid Reference of TQ 16397 72304.

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

1.3 Proposed Development

The proposal comprised demolition of the existing TYM complex and associated building and construction of new main building, guest residential accommodation, changing block, staff residential accommodation, repair workshop and camping changing block. The layout comprised the main building located in the northwest corner followed by three guest accommodation buildings arranging approximately in a circle southeast of the main building. To the east of the main building was the changing block, and along the southern boundary was the staff accommodation building. Within the southwestern corner of the site was the camping changing block and repair workshop. Surrounding the building would be communal grassland. The use of the site would remain the same. The life span of the development was anticipated to be 100 years.

In compiling this report reliance was placed on document, Pre-Application Report 02, Issue number P01 dated March 2022 and was prepared by Pick Everard. The recommendations provided within this report are made exclusively in relation to the scheme outlined above and must not be applied to any other scheme without further consultation with Soils Limited. Soils Limited must be notified about any change or deviation from the scheme outlined.

The proposed development plans have been provided in Appendix A.

Section 2 Site Conditions

2.1 Site Walkover

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

Table 2.1 Site Walkover Record (On-site)

Use of Site	Approximately 9ha of land and water, with an educational activity centre offering land and water-based activities. Approximately 3.7ha of the current site was cover by an artificial lake. Surrounding the northern and eastern sides of the lake was woodland, becoming grassland with pockets of trees along the south-eastern side. Within the south-western corner was the main Thames Young Mainers (TYM) complex.
Structures	The activity centre (TYM complex) was located within the south-western corner and included a cluster of single storey, brick, timber, and metal buildings, with exception of the main building, with had a lower ground floor looking out on to the lake. The remaining area southwest of the main complex was outdoor amenity space and a few storage buildings
Site Topography	The lake was at an elevation similar to the River Thames of ~5m Above Ordinance Datum (AOD). The land south of the lake was rising in a southerly direction with the central point of the existing TYM complex at ~9m AOD, the land then rising to ~11m AOD along the southern boundary. The north-east section of the site and access route in from Riverside Drive had an elevation of between 8 and 9m AOD, based on Google Earth™ elevation data.
Site Covering	A mixture of water, grassland, woodland, and hard landscaping (around TYM complex).
Vegetation	Surrounding the northern and eastern sides of the lake was woodland, becoming grassland with pockets of trees along the south-eastern side.
Potential Contamination Sources	None observed.
Odour	No unusual odour.
Drainage	No surface water drainage systems observed.

Table 2.2 Site Walkover Record (Off-site)

Use of Land	To the north and south open land comprising of woodland and grassland. To the east and west mainly residential.
Area Topography	Typically rising in a south easterly direction.
Vegetation	Woodland and grassland to the north and south.
Potential Contamination Sources	None observed.

2.2 Site Drainage

No surface water drainage systems observed. Surface water assume to drain via infiltration for flow into the existing lake.

2.3 Site Photographs

The site photographs have been included within Appendix E.

Section 3 Geology, Hydrogeology, Hydrology and Radon

3.1 Anticipated Geology

The 1:50,000 BGS map showed the site to be located upon Artificial Deposits, with underlying superficial deposits of Kempton Park Gravel Member and bedrock of the London Clay Formation.

3.1.1 Artificial Deposits – Infilled Ground

Artificial Deposits (Made Ground) labelled as infilled ground exists where the natural ground surface has been excavated and subsequently partially or wholly backfilled with worked ground.

3.1.2 Kempton Park Gravel Member

The Kempton Park Gravel Member is part of the river terrace deposits, which form the base of the Maidenhead Formation. The river terrace deposits were formed by ancient floodplains associated with the rivers of south-east England. The rivers have been subject to at least three changes of level since Pleistocene times, forming a complex series of river terrace deposits. The Kempton Park Gravel is found at an elevation below the current river. The composition varies greatly, depending on the source material that was available in the river's catchment. Deposits generally consist of sands and gravels of roughly bedded flint or chert gravels commonly in a matrix of silts and clays.

3.1.3 London Clay Formation

The London Clay Formation comprises stiff grey fissured clay, weathering to brown near surface. Concretions of argillaceous limestone in nodular form (Claystones) occur throughout the formation. Crystals of gypsum (Selenite) are often found within the weathered part of the London Clay, and precautions against sulphate attack to concrete are sometimes required.

The upper boundary member of the London Clay Formation is known as the Claygate Member and marks the transition between the deep water, predominantly clay environment and succeeding shallow-water, sand environment of the Bagshot Formation.

The lower boundary is generally marked by a thin bed of well-rounded flint gravel and/or a glauconitic horizon. The formation overlies the Harwich Formation or where the Harwich Formation is absent the Lambeth Group.

3.2 Hydrogeology

To assess the vulnerability of groundwater to contamination, consideration must be given to the leaching characteristics of the overlying soils and the characteristics of the strata in the unsaturated zone. Information on the geological strata such as lithological type and

permeability characteristics has been combined with the physical properties of the soil to produce varying degrees of vulnerability.

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

Table 3.1 Hydrogeological Assessment

Hydrogeological Data		Comment
On-site Aquifers	Superficial	Secondary A Aquifer[1]
	Bedrock	Unproductive Aquifer[2]
Groundwater Vulnerability		Medium Vulnerability Secondary Aquifer
Source Protection Zones (SPZ)		None within 1000m
Abstraction	Potable	None within 2000m
	Non-potable	986m S
Sensitive Land Uses		Local Nature Reserve – Ham Lands – On site
Surface Water Features		On-site
Flood Risk from Rivers or Seas		Yes
Flood Risk from Surface Water		No
Flood Risk from Groundwater		Yes – Potential for flooding of property situated below ground level.

Note(s): [1] Secondary A are 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. [2] Unproductive strata are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

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

3.3 Hydrology

The approximate elevation of the site was between ~5 and 11m AOD. The anticipated groundwater flow direction is given in Table 3.2.

Table 3.2 Hydrological Assessment

Type	Direction	Notes
Surface water	N	Vertically down/ follow site topography down to the north.
Groundwater	W	Towards the River Thames, but could also be impacted by tidal direction.

3.4 Radon Gas

The Landmark Report indicated that the site **was not situated** within an area where protection or risk assessment against the ingress of radon was required. Radon protection measures **will not be required** within the proposed new development. It is not possible in the course of a survey or inspection to determine whether radon gas is present as the gas is colourless and odourless. Tests can be undertaken to assess the concentration of radon in existing structures.

Section 4 Site History

4.1 Historic Map Study

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

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

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

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

Table 4.1 Historic Development of the Site

Site History	Date Range	
	From	To
Coldharbour including a cluster of buildings, including Draw Well noted on the northern central part of the site. Gravel pit noted approximately centrally on the western side of the site.	1865	1913
Southwestern side of the site part of gravel excavation works. Cluster of building associated with the gravel excavation located in the southwest corner of the site.	1913	1934
Lake present across the northern half of the site, with dock and lock located centrally along the western boundary. Cluster of building in the southwest corner no longer present and replaced with new building slightly further into the site to the northeast. Tank was noted in the southwest corner of the site.	1934	1945
1945 aerial image shows most of the site cover by water, except for the southwestern corner, far northeast corner and a spit of land extending into the site across from the southeast corner. The land in the northeast corner was predominantly covered with trees. The area in the southwest, had a scattering of tree and between industrial infrastructure relating to the sand and gravel works.	1945	1959

Site History	Date Range	
	From	To
The 1959 to 1962 map shows significant infilling of the lake around the north, east and southern sides of the site forming a contained lake within the site. Sand and Gravel Works no longer present, with new structures located to the right-hand side of the dock (located centrally along the western boundary) and labelled Thames Young Mariners Base. Access road to the TYMs via south-eastern corner.	1959	1971
Buildings associated with Thames Young Mariners extended out in a southeast direction. New access road present running along the southern side of the site exiting in the north-eastern corner.	1971	1971
No significant changes noted.	1971	2022

Table 4.2 Historic Off-site Development

Off-site Development	Date Range	
	From	To
River Thames ~10m west of the site, with boat house noted 116m west. Draw Well noted 106m south. Majority of the area surrounding the site to the north, east and south open fields with occasionally trees marked along the field boundaries.	1865	1968
Boat house 116m west no longer present. Development of land within dwellings, on the western side of the River Thames, from 120 southwest of the site. Boat houses noted along the river associated with the dwellings. Gravel pit noted 35m south.	1968	1913
Gravel pit extends off-site to the south for ~240m.	1913	1920
Shutter Works located 79m southwest. Motor & Boat Building Works located 118m northwest.	1920	1934
Excavations relating to the sand and gravel works now extend beyond 250m in a southerly direction. The lake across the northern side of the site extends out past 250m beyond the site in a northeast direction. Miniature Rifle Range noted beyond 250m northeast of the site. Development of residential dwellings along the western side of the River Thames.	1934	1945
1945 aerial shows the lake on-site extending out from the eastern side of the site beyond 150m, and to the northeast beyond 250m. A second water body was located past 250m to the south.	1945	1959
Water body to the south now infilled. A lake is present off the 35m northeast of the site stretching ~640m in a northwest to southeast direction. Works located 100m southwest.	1959	1971
Lake 35m northeast now infilled and new road and dwellings constructed off the north-eastern boundary of the site.	1971	1973
Shutter Works 79m southwest and Works 100m southwest demolished.	1973	1982
Dwellings construction where the former Shutter Works and Works to the west and southwester were located.	1982	1982
No significant changes.	1982	2022

Table 4.3 Potential Sources of Pollution Indicated from Historic Maps

Source	Direction	Distance (m)	Date Range	
			From	To
Sand and Gravel Works (Buildings)	SW	0	1913	1959
Motor & Boat Building Works	W	118	1920	2022
Shutter Works	SW	79	1920	1973
Tank	SW	0	1934	1959
Infilled Ground (Made Ground)	NW-S	0	1959	2022

Source	Direction	Distance (m)	Date Range	
			From	To
Works	SW	100	1959	1973

4.2 Bomb damage and the potential for Unexploded Ordnance

A Detailed Unexploded Ordnance Risk Assessment was carried out by 1st Line Defence (ref: DA15987-00, dated 16/09/22). The report assessed that there was an overall **Medium Risk** from German and anti-aircraft unexploded ordnance at the site, and a **Low - Medium Risk** from Allied unexploded ordnance.

The report recommended the following risk mitigation measures:

All Works

- UXO Risk Management Plan
- Site Specific UXO Awareness Briefings to all personnel conducting intrusive works.

Medium Risk Areas – Open Intrusive Works (trial pits, service pits, open excavations, shallow foundations etc.)

- UXO Specialist On-site Support

Boreholes and Piled Foundations

- Intrusive Magnetometer Survey of all borehole and pile locations/clusters down to maximum bomb penetration depth.

Section 5 Environmental Records and Consultation

5.1 Dataset Information

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

Table 5.1 Environmental Significance of Data

Source	Direction	Distance (m)
Contaminated Land Register Entries and Notices	None	None
Discharge Consents	"	"
Integrated Pollution Prevention and Control	"	"
Local Authority Pollution Prevention and Controls	"	"
Local Authority Pollution Prevention and Control Enforcements	"	"
Nearest Surface Water Feature	On-site	0
Pollution Incidents to Controlled Waters (Significant Incidents only)	NW	73
Prosecutions Relating to Authorized Processes	None	None
Registered Radioactive Substances	"	"
Substantiated Pollution Incident Register	"	"
Nearest Potable Abstraction Point	"	"
Nearest Non-Potable Abstraction Point	"	"
Water Industry Act Referrals	"	"
Source Protection Zones	"	"
Extreme Flooding from Rivers or Sea Without Defences	"	"
Flooding from Rivers or Sea Without Defences	"	"
Areas Benefiting from Flood Defences	"	"
Flood Water Storage Areas	"	"
Flood Defences	"	"
BGS Recorded Landfill Sites	"	"
Historical Landfill Sites	"	"
Licensed Waste Management Facilities	"	"
Local Authority Recorded Landfill Sites	"	"
Potentially Infilled Land (Non-Water)	NW	0[2]
Potentially Infilled Land (Water)	None	None
Registered Landfill Sites	"	"
Registered Waste Transfer Sites	"	"
Registered Waste Treatment or Disposal Sites	"	"
Control of Major Accident Hazards Sites (COMAH)	"	"
Notification of Installations Handling Hazardous Substances	"	"
Planning Hazardous Substance Consents	"	"

Note(s): [1] Unknown Sewage. [2] Unknown filled ground.

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

Table 5.2 Industrial Land Uses

Industrial Land Uses Directory within 250m	Direction	Distance (m)	Status
Works	W	139	Unspecified
Works	W	143	Unspecified
Boatbuilders & Repairers	W	156	Active
Cabinet Makers	W	156	Inactive
Refrigeration Equipment Manufacturers & Distributors	W	158	Inactive
Medical Equipment Manufacturers	W	158	Inactive
Cleaning Materials & Equipment	W	196	Inactive
Plant & Machinery Repairs	W	205	Active
Ports, Docks & Harbours	W	205	Inactive
Clothing & Fabrics - Manufacturers	W	205	Inactive
Printers	W	205	Inactive
Lampshade Manufacturers & Distributors	W	205	Inactive
Garage Services/ Repair and Servicing	W	205	Inactive
Home furnishings - Manufacturers	W	205	Inactive
Works	W	210	Unspecified
Works	W	214	Unspecified
Cleaning Services - Domestic	W	206	Inactive
Garage Services	W	227	Active
New Island Filling Station	W	228	Obsolete

Table 5.3 Geological Hazards

Source	Nearest Distance from Site/Type
Coal Mining Affected Areas	None within 250m
Mining Instability	None within 250m
Natural and Mining Cavities	None within 250m
Potential for Collapsible Ground Stability Hazards	Very low
Potential for Compressible Ground Stability Hazards	Moderate
Potential for Ground Dissolution Stability Hazards	No hazard
Potential for Landslide Ground Stability Hazards	Very low
Potential for Running Sand Ground Stability Hazards	Very low
Potential for Shrinking or Swelling Ground Stability Hazards	Moderate

5.2 Site Sensitivity Maps

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

5.3 Regulatory Enquires

As part of the Preliminary Investigation Report the local authority was contacted and asked to provide any information on potential risks pertaining the site. At the time of reporting no additional information was available.

5.4 Soil Geochemistry

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

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

Table 5.4 Soil Geochemistry

Determinant	Indicated Soil Geochemistry (mg kg^{-1})
Arsenic	25 – 35
Cadmium	<1.8
Chromium	40 – 60
Lead	<150
Nickel	15 – 30

Based on a residential land-use there were no elevated concentrations based on the soil geochemistry.

Section 6 Data Collection Summary

6.1 General

The findings of the data collection are summarised below:

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

Table 6.1 Site Environs

Environs	Summary
Geology	Artificial Deposits (Made Ground), Superficial deposits of the Kempton Park Gravel Member overlying the London Clay Formation bedrock.
Hydrogeology	Artificial Deposits/ Kempton Park Gravel Member classed as a Secondary A aquifer and could support shallow groundwater. The London Clay Formation bedrock was unproductive strata and acts as an aquiclude to the deep groundwater regime.
Source Protection Zone (SPZ)	None within 1000m.
Surface Water Flow	Anticipated to be vertically down or follow site topography down to the north.
Groundwater Flow	West towards the River Thames but could also be affect by tidal flow.
Radon	No radon risk.
Flooding	The site was at risk of flooding from rivers or sea, and potential for property situated below ground level to be at risk from groundwater flooding.
Geological Hazard	Moderate hazard from compressible and shrinking or swelling ground.
Local Authority Response	No additional information available at the time of reporting.
Soil Chemistry	Indicated levels below residential land-use guideline values.
Ecological	Local Nature Reserve – Ham Lands – On site

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

Table 6.2 Summary of Potential Contamination Sources

Contaminative Source	Direction	Distance (m)	Date Range		Data Source
			From	To	
On-Site					
Sand and Gravel Works (Buildings)	SW	0	1913	1959	HM
Tank	SW	0	1934	1959	HM
Infilled Ground (Made Ground)	NW-S	0	1959	2022	HM/DS
Off-Site					
Motor & Boat Building Works	W	118	1920	2022	HM
Shutter Works	SW	79	1920	1973	HM
Works	SW	100	1959	1973	HM
Works	W	139	Unspecified		DS
Works	W	143	Unspecified		DS
Boatbuilders & Repairers	W	156	Active		DS

Contaminative Source	Direction	Distance (m)	Date Range From	To	Data Source
Cabinet Makers	W	156	Inactive		DS
Refrigeration Equipment Manufacturers & Distributors	W	158	Inactive		DS
Medical Equipment Manufacturers	W	158	Inactive		DS
Cleaning Materials & Equipment	W	196	Inactive		DS
Plant & Machinery Repairs	W	205	Active		DS
Ports, Docks & Harbours	W	205	Inactive		DS
Clothing & Fabrics - Manufacturers	W	205	Inactive		DS
Printers	W	205	Inactive		DS
Lampshade Manufacturers & Distributors	W	205	Inactive		DS
Garage Services/ Repair and Servicing	W	205	Inactive		DS
Home furnishings - Manufacturers	W	205	Inactive		DS
Works	W	210	Unspecified		DS
Works	W	214	Unspecified		DS
Cleaning Services - Domestic	W	206	Inactive		DS
Garage Services	W	227	Active		DS
New Island Filling Station	W	228	Obsolete		DS

Note(s): SW – Site walkover, HM – Historic Maps, DS – Datasheet, GC – Geochemistry, LA – Local Authority, GE Google Earth

Section 7 Preliminary Conceptual Site Model

7.1 General

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

7.2 Sources and Pathways of Contamination

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

7.2.1 Potential Pathways

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

Table 7.1 Applicable Pathways

Pathway	Present	Comment
Inhalation of dust	✓	-
Inhalation of vapour/gases	✓	-
Ingestion and absorption via direct contact	✓	-
Migration via surface runoff	✓	Via hardstanding or low permeable ground
Migration in solution via groundwater	✓	-
Migration of gases via permeable soils	✓	-
Direct contact with construction material	✓	-
Services and utilities	✓	-

7.2.2 Potential Sources of On-site Contamination.

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

The sources are presented in Table 7.2.

Table 7.2 On-site Potential Contamination Sources

Source	Likely	Reasoning
Sand and Gravel Works (Buildings)	✓	Historic processes could have impacted the site.
Tank	✓	Potential for historic leakages/spillages or fuels (contents of tank unknown)
Infilled Ground (Made Ground)	✓	Infilled ground could contain substances / materials which could be harmful to vulnerable receptors.

7.2.3 Potential Off-site Sources of Contamination

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

These sources have been presented in given in Table 7.3.

Table 7.3 Off-site Potential Contamination Sources

Source	Direction	Distance (m)	Likely	Reasoning
Shutter Works	SW	79		Down hydraulic gradient from the site and unlikely to be impacted by tidal groundwater movement due to the distances from the site.
Works	SW	100		
Motor & Boat Building Works	W	118		
Works	W	139		
Works	W	143		
Boatbuilders & Repairers	W	156		
Cabinet Makers	W	156		
Refrigeration Equipment Manufacturers & Distributors	W	158		
Medical Equipment Manufacturers	W	158		
Cleaning Materials & Equipment	W	196		
Plant & Machinery Repairs	W	205		
Ports, Docks & Harbours	W	205		
Clothing & Fabrics - Manufacturers	W	205		
Printers	W	205		
Lampshade Manufacturers & Distributors	W	205		
Garage Services/ Repair and Servicing	W	205		
Home furnishings - manufacturers	W	205		
Works	W	210		
Works	W	214		

Source	Direction	Distance (m)	Likely	Reasoning
Cleaning Services - Domestic	W	206		Down hydraulic gradient from the site and unlikely to be impacted by tidal groundwater movement due to the distances from the site.
Garage Services	W	227		
New Island Filling Station	W	228		

7.3 Potential Contaminants

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

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

Table 7.4 Potential Contaminants

Potential Contaminative Sources	Contaminants / Chemical Properties
Sand and Gravel Works (Buildings)	Metals, Semi-metals and non-metals, PAHs, TPHs, Asbestos, pH
Tank	Metals, Semi-metals and non-metals, PAHs, TPHs
Infilled Ground (Made Ground)	Metals, Semi-metals and non-metals, PAHs, TPHs, Asbestos, pH, Ground Gases

7.4 Potential Exposure Receptors

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

The assessment for potential receptors is presented in Table 7.5.

Table 7.5 Potential Receptors

Potential Receptor		Present
Human Health	Future users of the site (End Users)	✓
	Construction workers on-site (Site Workers)	✓
	Service and maintenance workers (Site Maintenance)	✓
	Site neighbours and wider public (Off-site Users)	✓
Groundwater/Controlled Waters	Surface Water	✓
	Shallow Aquifer	✓
	Deep Aquifer	-
Buildings & Materials	Buildings and Confined Spaces	✓
	Buried Structures	✓
	Buried Services	✓
Ecosystems	Flora and fauna	✓

7.5 Preliminary Conceptual Site Model and Risk Assessment

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

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

Table 7.6 Preliminary Conceptual Site Model and Risk Assessment Methodology

Source (Table 7.2 & Table 7.3)	Potential Contaminant (Table 7.4)	Exposure Pathway (Table 7.1)	Receptor (Table 7.5)	Initial Assessment from Preliminary Investigation Report Information			Comments	Proposed Investigation
				Severity	Probability	Risk		
Sand and Gravel Works (Buildings), Tank, Infilled Ground (Made Ground) On-site historic and current site usage.	Metals, Semi-metals and non-metals, PAHs	Inhalation of dust	Site Workers/Site Maintenance	Medium	Unlikely	Low	Site located on bedrock of the London Clay Formation, which was classified as unproductive strata and would act as an aquiclude to the groundwater receptors. Overlying superficial deposits of Kempton Park Gravel Member anticipated to be granular and could support local groundwater.	Phase II ground investigation to confirm the ground conditions present and chemical testing prior to undertaking a generic quantitative risk assessment.
			End Users	Medium	Low	Moderate/Low		
			Off-site Users	Medium	Unlikely	Low		
	TPHs	Inhalation of vapour/gases	Site Workers/Site Maintenance	Mild	Unlikely	Very low		
			End Users					
			Off-site Users	Minor	Unlikely	Very low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, pH, Asbestos	Ingestion and absorption via direct contact	Site Workers/Site Maintenance	Medium	Unlikely	Low		
			End Users	Medium	Low	Moderate/Low		
	Metals, Semi-metals and non-metals, PAHs, TPHs, pH	Migration via surface runoff	Surface Water	Mild	Low	Low		
			Flora and fauna	Mild	Low	Low		
		Migration in solution via groundwater	Surface Water	Mild	Low	Low		
			Shallow Aquifer	Mild	Low	Low		
			~~Deep Aquifer~~	-	-	-		
			Flora and fauna	Mild	Low	Low		
		Direct contact with construction material	Buried Structures	Medium	Low	Moderate/Low		
			Buried Services					
	PAHs, TPHs	Migration of gases via permeable soils	Building and Confined Spaces	Mild	Unlikely	Very Low		
			End Users	Mild	Unlikely			
			Off-site Users	Minor	Unlikely	Very Low		
Infilled Ground (Made Ground) On-site and Off-site contaminative processes.	Ground Gases	Inhalation of Vapour/gases	Site Workers/Site Maintenance	Medium	Low	Moderate/low	Significant areas of historically infilled land on and off the site.	Phase II ground investigation to confirm the ground conditions present and gas monitoring to confirm risk from ground gases.
			End Users	Medium	Low			
			Off-site Users	Mild	Low	Low		
	Ground Gases	Migration of gases via permeable soils	Site Workers/Site Maintenance	Medium	Low	Very Low		
			End Users	Medium	Low			
			Off-site Users (On-site source)	Mild	Low	Low		
			Building and confined spaces	Mild	Low			

Section 8 Recommendations

8.1 General

Based on the information obtained during the compilation of this Preliminary Investigation and the preliminary conceptual site model, a potential for a **moderate/low** risk of contamination has been identified, an intrusive investigation is therefore considered to be necessary to further quantify the risks identified. Any subsequent intrusive investigation may reveal additional on-site sources of contamination that were not identified in the Preliminary Investigation and Site Walkover. Any additional sources of contamination or unexpected ground conditions that may promote the migration of contamination will be included and assessed in terms of significance within an updated Conceptual Site Model.

8.2 UXO

Medium risk from UXO which requires following risk mitigation measures:

All Works

- UXO Risk Management Plan
- Site Specific UXO Awareness Briefings to all personnel conducting intrusive works.

Medium Risk Areas – Open Intrusive Works (trial pits, service pits, open excavations, shallow foundations etc.)

- UXO Specialist On-site Support

Boreholes and Piled Foundations

- Intrusive Magnetometer Survey of all borehole and pile locations/clusters down to maximum bomb penetration depth.

8.3 Proposed Further Site Works

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

The general requirements for further environmental investigation are presented in Table 8.1. Provision of a specific site investigation strategy, schedule, rates, etc. will be subject to agreement of terms, conditions and methodology with the regulator on the basis of applicable standards and guidance and can be provided in draft form on request. However, as the proposed investigation may be subject to subsequent change and agreement with all parties, it will not be further detailed in this report.

Table 8.1 Proposed Further Environmental Investigation

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

Note(s): TBC – To be confirmed

8.4 Discovery Strategy

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

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

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

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

List of Figures

List of Appendices

Figure 1 – Site Location Map

Job Number 20295	**Project** Thames Young Mariners, Riverside Drive, Richmond TW10 7RX
Client Surrey County Council	**Date** September 2022

Appendix A Proposed Development Plans

Confidential

SURREY COUNTY COUNCIL

SURREY OUTDOOR LEARNING & DEVELOPMENT CENTRE THAMES YOUNG MARINERS

PRE-APPLICATION REPORT 02

ISSUE NUMBER P01

March 2022

PICK EVERARD

imagine.explore.create

Document History

Issue	Date	Comments	Author	Checked
P01	25/03/2022	Issue for review & comment	SOB	LH

SURREY COUNTY COUNCIL

SOLD | Surrey Outdoor Learning & Development

PICK EVERARD

Turner & Townsend

Vail Williams

ATKINS

Contents

Introduction

1

1.1 Introduction

Project Overview

Thames Young Mariners (TYM), requires redeveloping in order to bring the site up to current health and safety standards with modern, fit for purpose facilities which will allow SOLD to increase its service capacity and strengthen its commercial operation for Surrey County Council.

Please refer to Pre-App document 1 for further background information.

1.2 LBR Consultation Summary

An initial engagement meeting with the London Borough of Richmond Planning Department took place on 28th February 2022 at the TYM (Thames Young Mariners) site. The following points summarise the key points of discussion:

- Concerns impact on Metropolitan Open Land due to extent of additional floor area compared to existing. Further details required regarding existing building floor areas and extent of existing hardstanding.
- Proposals should highlight where there is replacement of existing facilities and where new/intensified activities are being introduced.
- Concerns raised regarding the two staff accommodation buildings/dwellings located towards the entrance to the site, suggested these should be revisited in the proposals.
- Suggestion that site arrangement should be revisited to focus within the area of previously developed land/existing 'cluster' developed areas of the site.
- Concern raised with the two storey elements of the site layout with suggestion that buildings should predominantly be two storeys.
- Comments that proposals should respond to the natural environment and ensure ecological surveys are up to date and proposals should achieve a biodiversity net gain.

The content of this report captures the progress made since the initial engagement.

Design Development

2

Revised Schedule of Accommodation

Revised Brief

Following the feedback received at the initial pre-application meeting, the client team have undertaken a full review of the proposed gross internal areas. Working with the SOLD (Surrey Outdoor Learning & Development) team, a holistic look at the provision and operation in order to identify the opportunities to make reductions in the proposed gross internal area. This has been detailed in the schedules (right).

Proposed Gross Internal Area

The adjacent schedules present the original proposed gross internal area presented in the original pre-application report and the revised, reduction proposed GIA

Pending the full building survey, the current existing built area has been calculated at 1,646sqm.

Existing Gross Internal Area = **1,646sqm GIA**

Original Proposed Gross Internal Area = **3,336sqm GIA**

Reduced Proposed Gross Internal Area = **2,235sqm GIA**

GIA Reduction = 1,101sqm

Proposed External Amenity

A separate analysis of the existing & proposed external amenity provision is to be developed as part of the next steps.

Schedule	Building Provision	GIA Area* (sqm)	Quantity	Total Area (sqm)
1.0	Main Building	1050	1	1050
2.0	Guest Residential Accommodation	255	4	1021
3.0	Changing & Drying	122	6	730
4.0	Staff Residential Accommodation	106	2	212
5.0	Storage	151	1	151
6.0	Camping	172	1	172
XX	*External Covered Storage / Racking*	*n/a*	*n/a*	*n/a*
			Total GIA (sqm)	**3336**

Schedule 1 - Pre-App 1 Schedule

Schedule	Building Provision	Approx GIA	Quantity	Total Area (sqm)	
1.0	Main Building	910	1	910	← Area reduction = 140sqm
2.0	Guest Residential Accommodation	255	3	765	← Reduced from 4no units to 3no units, area reduction = 256sqm
3.0	Changing Block (Ground Floor)	210	1	210	← Reduced from 6no units to 1no unit, area reduction = 520sqm
4.0	Staff Residential Accommodation	120	1	120	← Reduced from 2no units to 1no + studio, area reduction = 92sqm
5.0	Repair Workshop	50	1	50	← Area reduction = 101sqm
6.0	Camping Changing Block	180	1	180	← Area increase due to plant requirement = 8sqm
			Total GIA (sqm)	**2235.00**	← Overall GIA Redution = **1,101sqm**

Schedule 2 - Pre-App 2 Schedule

2.2 Existing Landscape Analysis

1. Access point

2. Parking, drop off & delivery

3. Accommodation

4. Slipway / Lake access

5. Camping Area

6. Vegetation area; subject to further investigation

7. Pontoon

8. Assault Course

9. Lock

10. Path around lake

11. Path in overgrown area

12. Litte Squirrels & Outdoor Learning Zones

2.3 Site Opportunities

1. Review arrival point to establish opportunities for improvements; create a 'Sense of Arrival'
2. Look at improvements to access to the 'Main Hub'
3. Enhance immediate arrival point to 'Main Hub'
4. Create a central cluster of facilities that will encourage social interaction around the main hub with connections to new visitor accommodation, enhance outdoor space to offer a flexible and usable environment for orientation, assembly and activities
5. Maximise views to the lake and beyond
6. Improve access to lake for boating and all water activities
7. Introduce new feature obstacle course at waters edge as well as improving mooring area
8. Make better use of the area to the south of the site; creating an area for glamping.
9. Improve accessibility to the wider site and re-establish existing pathways and look at resting, viewing and activity points
10. Explore the area to the north of the lake to better understand how this portion of the site can support the activities and learning outcomes of the centre.
11. New pontoon link to northern edge of lake

2.4 Revised Proposed Site Masterplan

2.5 Existing & Proposed External Amenity

External Landscape & External Amenity Area

NB. A measured analysis will be undertaken at the next stage

Proposed Landscape & External Amenity Areas

2.6 Existing & Proposed Development Overlay

The image shows the existing development overlaid on the footprint of the proposed development.

As illustrated, the proposed development is within the same locale as the existing.

Existing Development (to be demolished)

Proposed Development

2.7 Proposed Block Plan

Legend

1. Access road (existing & reconfigured)
2. Drop off & Pick up (existing provison, to be reconfigured)
3. Parking (replacement of existing provision)
4. Guest Accommodation External Amenity (new)
5. External Dining (new)
6. External Dining Terrace (replacement of existing)
7. Low Ropes Challenge Course (existing)
8. Climbing Wall (replacement & relocation of existing)
9. Causterian Challenge Course (new)
10. High Ropes Course (new)
11. Archery (existing)
12. Camping Area (existing)
13. Trim Track (existing)
14. Slipway (existing)
15. Deliveries
16. Refuse Store (relocation)

Main Entrance Reception

2.8 Proposed Context Plans

Image 1 Proposed Ground Floor Context Plan

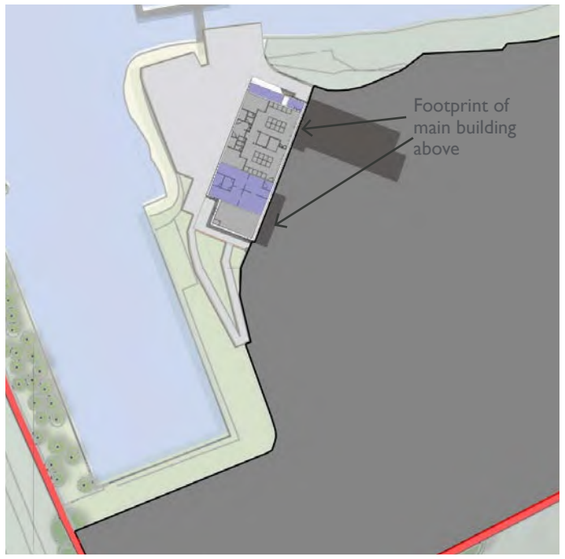


Image 2 Proposed Lower Ground Floor Context Plan

2.9 Proposed General Arrangement Plans

Key Plan

2.9.1 Proposed Main Building - Ground Floor

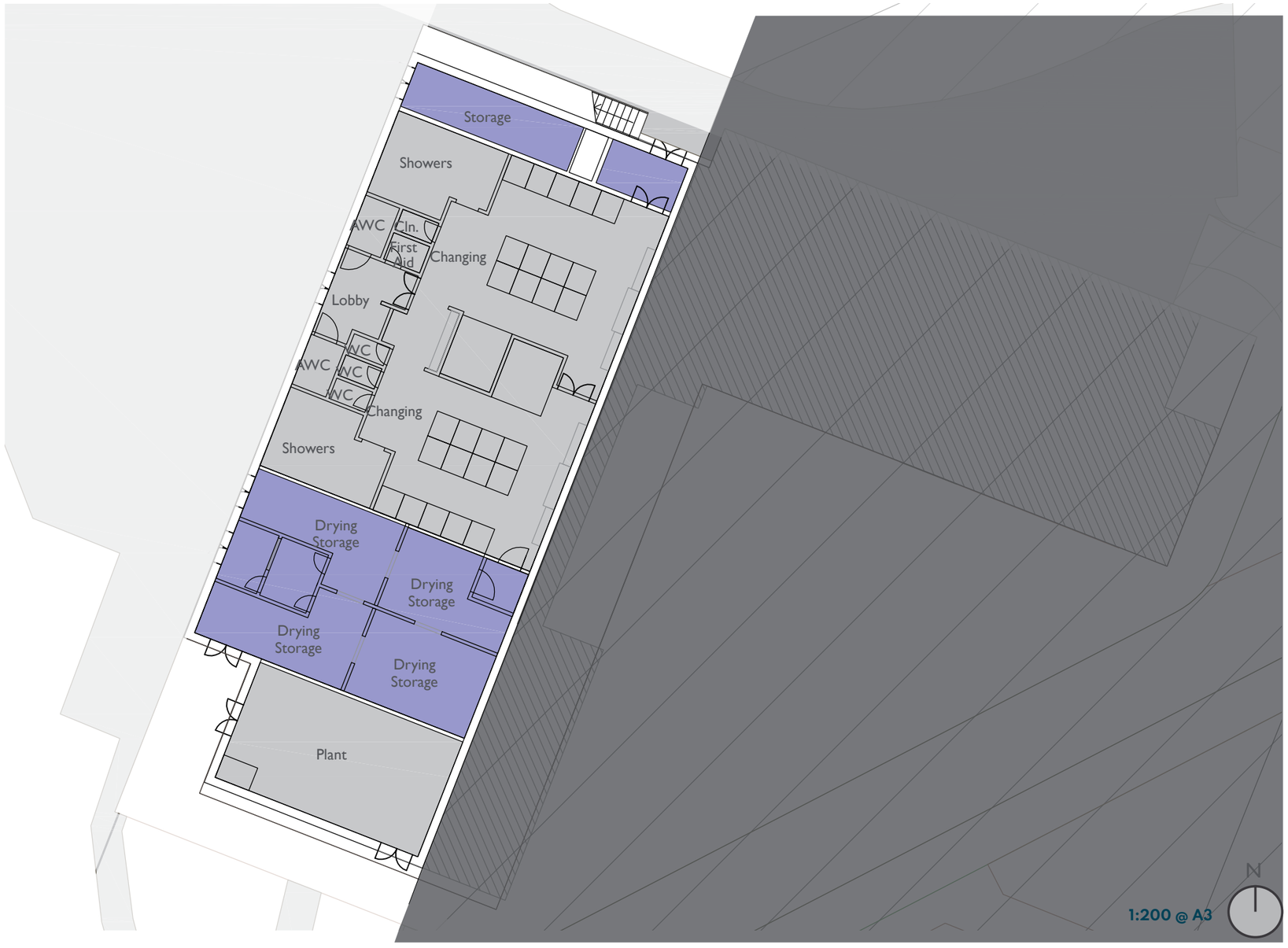
The provision within the new main building will replace the pre-existing provision but will vastly improve the operation of this provision by being designed to modern standards, removing the limitations of the outdated and unsuitable accommodation, providing fit-for-purpose, flexible spaces, with improved layout and access.

2.9 Proposed General Arrangement Plans

Key Plan

2.9.2 Main Building - Lower Ground

The provision within the new main building will replace the pre-existing provision but will vastly improve the operation of this provision by being designed to modern standards, removing the limitations of the outdated and unsuitable accommodation, providing fit-for-purpose, flexible spaces, with improved layout and access.

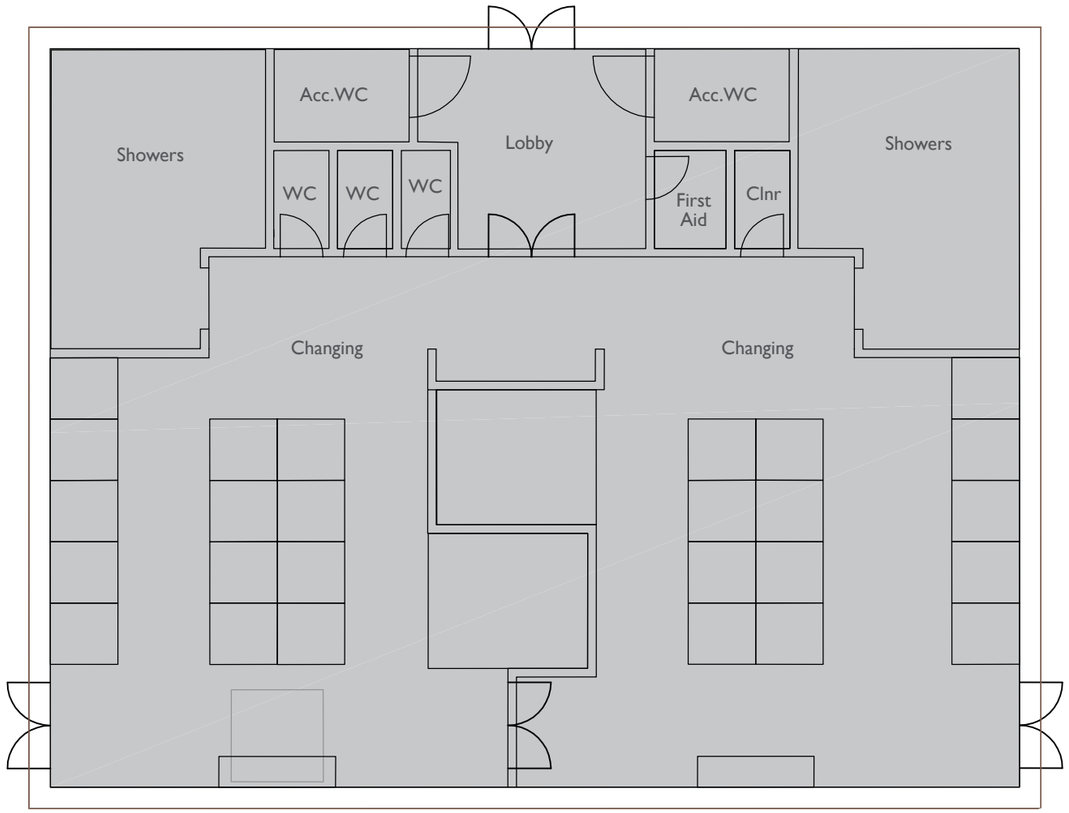


2.9 Proposed General Arrangement Plans

Key Plan

2.9.3 Changing Block

The proposed changing block provision will replace the pre-existing provision but will vastly improve the operation of this provision by being designed to modern standards, removing the limitations of the outdated and unsuitable accommodation, with improved layout and accessibility



Changing

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2.9 Proposed General Arrangement Plans

Key Plan

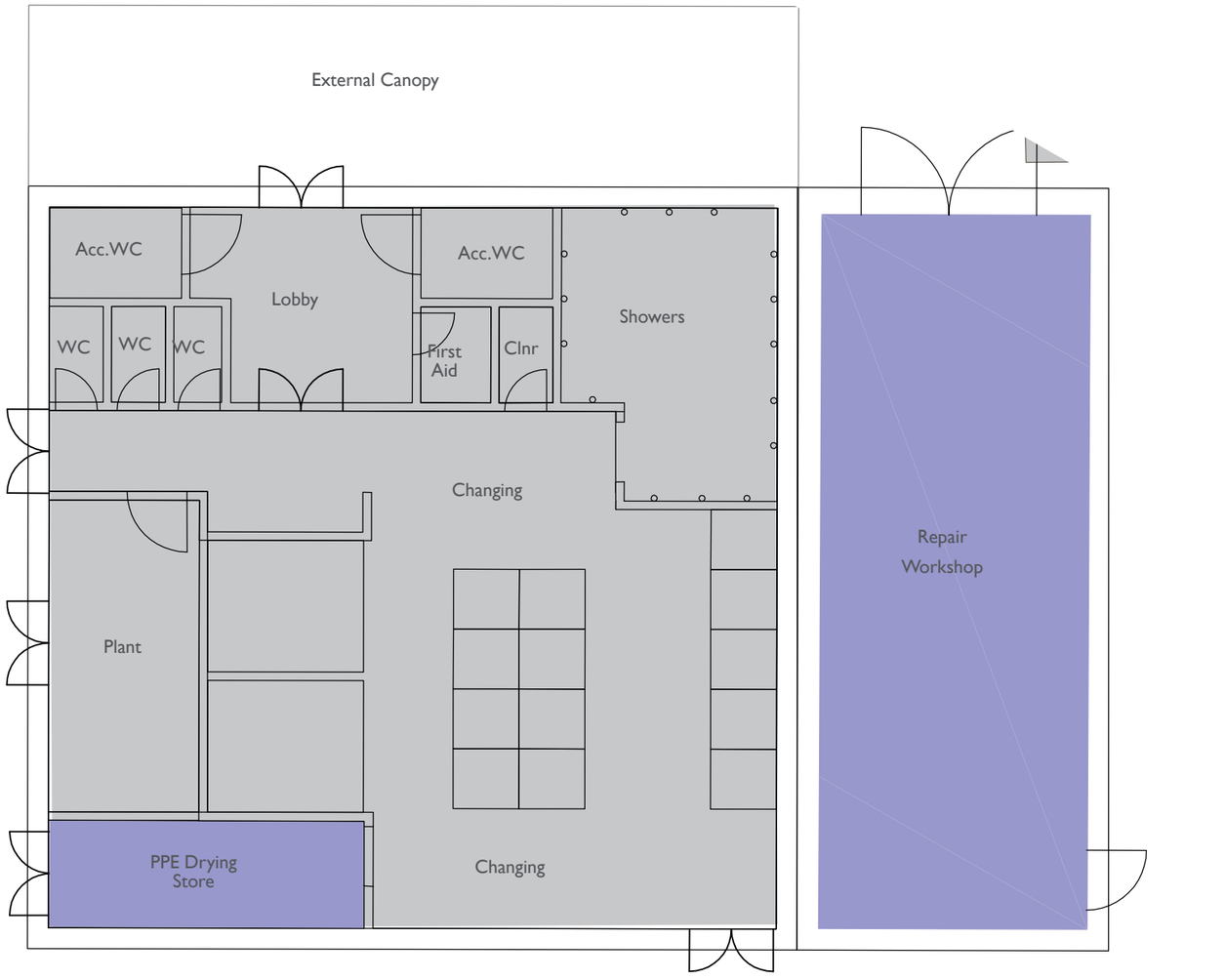
2.9.4 Camping Changing Block & Repair Workshop

Camping Changing

The proposed camping changing block is a new provision on site and will serve as a dedicated facility to camping guests throughout their stay at TYM. This accommodation is located adjacent to the camping area, providing improved access and provision and improving the overall operation of the site by providing discrete accommodation for different user groups.

Repair Workshop

Adjacent to this, is the re-provision of the repair workshop which is currently located at the lower ground level of the existing main building. This will be accessed of the existing hardstanding track.



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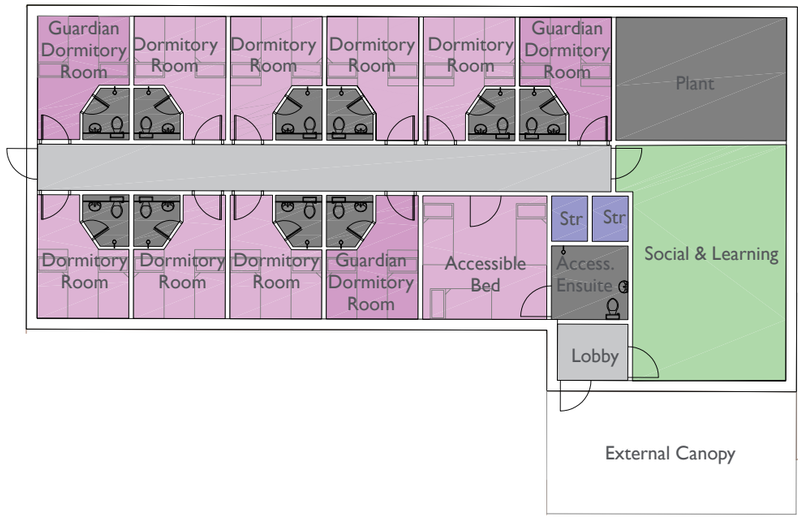
2.9 Proposed General Arrangement Plans

Key Plan



2.9.5 Guest Residential Block

The guest residential blocks are a new provision to provide overnight dormitory style accommodation for visitors. Each of the residential blocks are identical in their layout.

Within each of the 3no guest residential dormitories, there is a social area which will be used by the overnight visitors. However it will also be used as a group learning space throughout the day.

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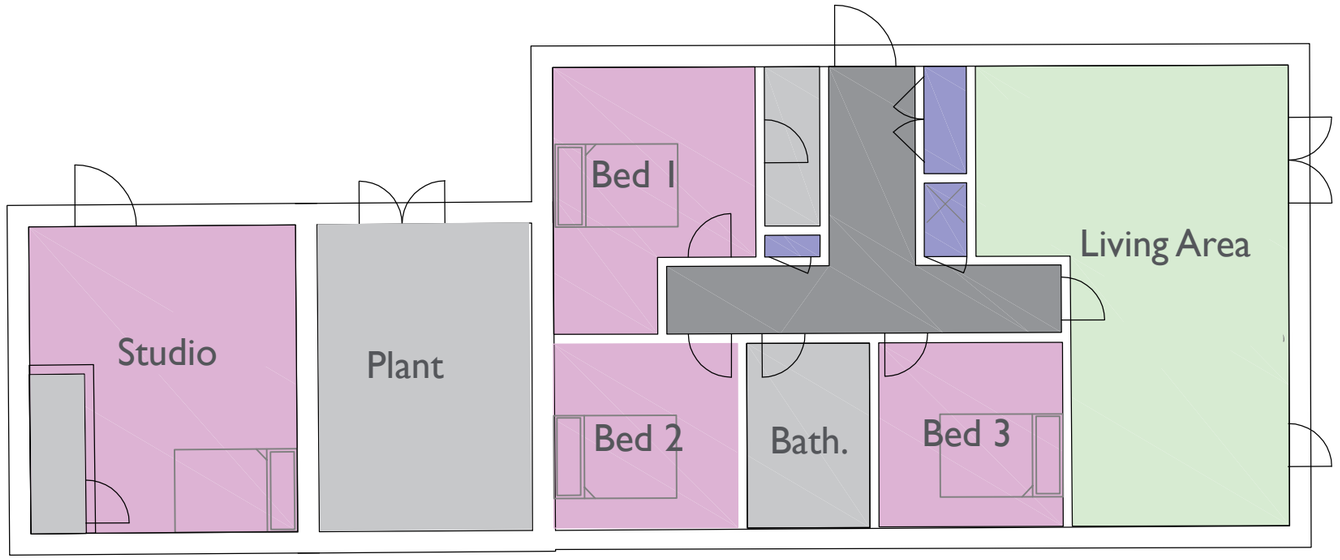
2.9 Proposed General Arrangement Plans

Key Plan

2.9.6 Staff Residential Accommodation

The three bed dwelling and adjacent single person studio apartment are reprovision of the existing staff accommodation on the site.



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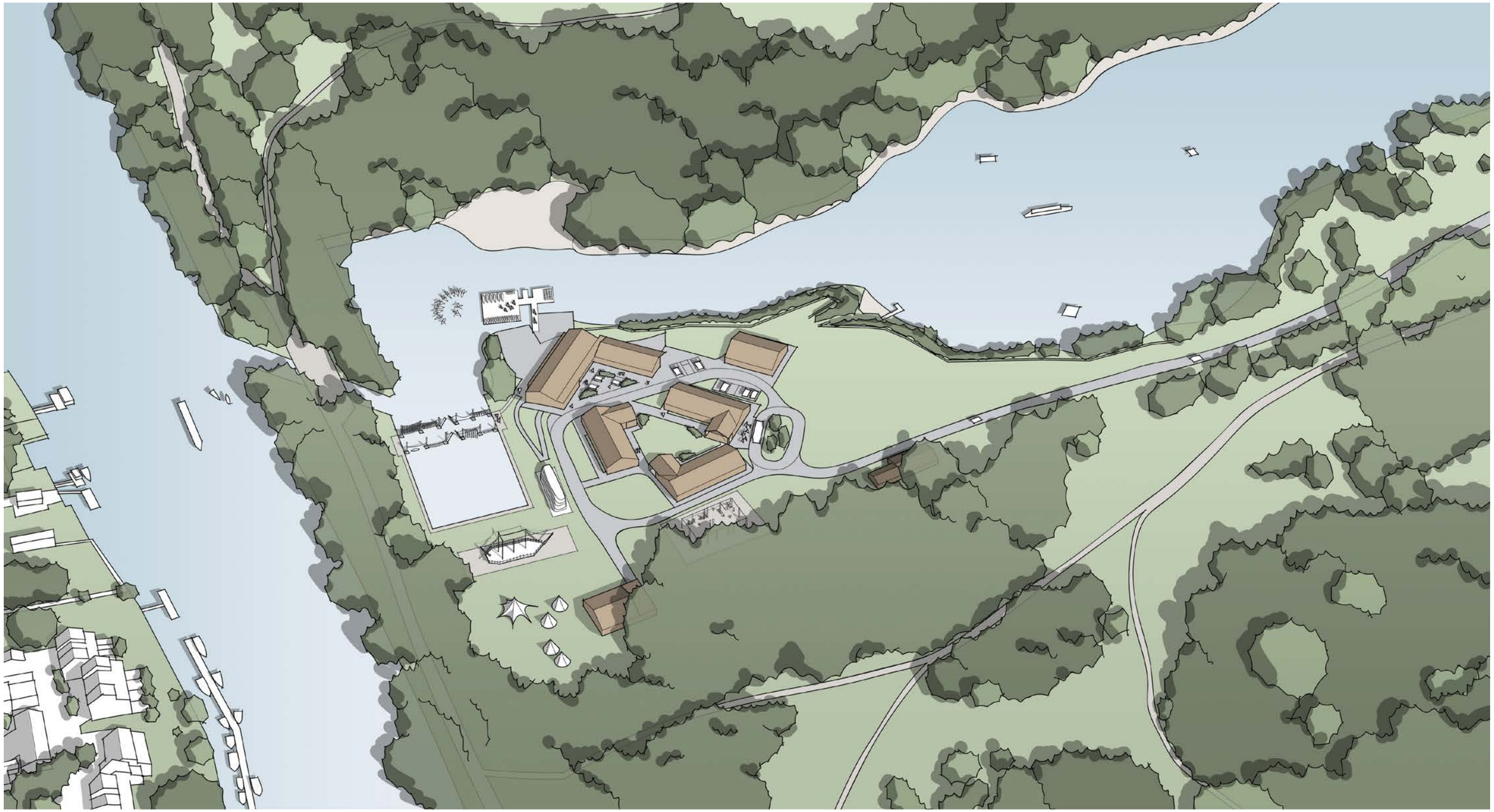
2.10 Proposed 3D Sketch



Technical Design Development

3

3.1 Site Access Strategy

Introduction

Surrey County Council (SCC) is proposing to redevelop the Thames Young Mariners (TYM) site run by Surrey Outdoor Learning and Development (SOLD) in the London Borough of Richmond upon Thames (LBRuT). As a result of this site redevelopment, it is planned to replace and improve the facilities on the site and so increase the days of operation to cater for the running of the site all year round. At present the site runs seasonally.

The proposed scope of works for transport was issued to London Borough of Richmond upon Thames (LBRuT) on 10th March 2022 for pre-application comments and agreement. It is proposed to undertake a Transport Statement and Travel Plan for submission with the planning application.

The intention is that activities/visit types currently only offered seasonally will be able to be offered all year round. Consequently the expectation is that daily trip numbers will not be significantly higher than the existing trip numbers that occur during the current seasonal offer, but that these trip numbers will take place throughout the whole of the year as a result of the improvements to the site.
This report outlines the transport aspects understood at this stage of planning and travel opportunities.

On-site Proposals

On the site it is proposed to improve the parking facilities and access arrangements. Currently, the on-site proposals under development are to incorporate improved parking for all modes, and review vehicle movement on and around the site in line with the proposed locations of the replacement buildings.

It is planned to develop a passing place on the existing access route for vehicles to pass safely without encroaching onto the grass, due to the narrow vehicle access. There is also consideration to incorporate a drop off and turning area along the access road, so avoiding the need for those vehicles dropping site visitors off from having to fully enter the site.

It is proposed to retain the development within the currently developed area on the site as much as possible as so not to encroach on undeveloped green space.

Existing Site Operation

Programmes offered
SOLD offers outdoor learning programmes to a wide range of user groups along with residential stays in the on-site Tipi villages. School overnight stays and most day visits are offered seasonally, generally between April and October.

The teaching and learning programmes can be catered to suit the visitor depending on the needs and requirements. Some of the programmes offered include Duke of Edinburgh, TAZ Family (The Adventure Zone for families), half term holiday activity days and also training courses.

Times of programmes
The start and finish times of the programmes vary depending on the booking. The following are the main programmes offered at the site:

- Day visits and TAZ day visits at the site run from 09:30 to 16:30.
- Residential visits, including TAZ residential run from Monday 12:00 to Wednesday 13:00, Wednesday 12:00 to Friday 13:00, Friday 18:00 to Sunday 16:30.
- Evening activities during the summer months run between 18:00 and 20:30.
- Morning open water swimming sessions run on 2 or 3 mornings per week between 07:00 and 09:00.

The vast majority of these timings avoid the need to arrive or depart the site in traditional commuter peak hours. It can also be seen that residential visits all include at least one middle day where no trips would be expected to be generated.

3.1 Site Access Strategy

Existing Site Operation Continued

Vehicles accessing the site and trip generation

Vehicle movement information have been provided by SOLD for the site for the previous year (01 April 2021 to 29 March 2022) as existing. The following are the conclusions drawn from this:

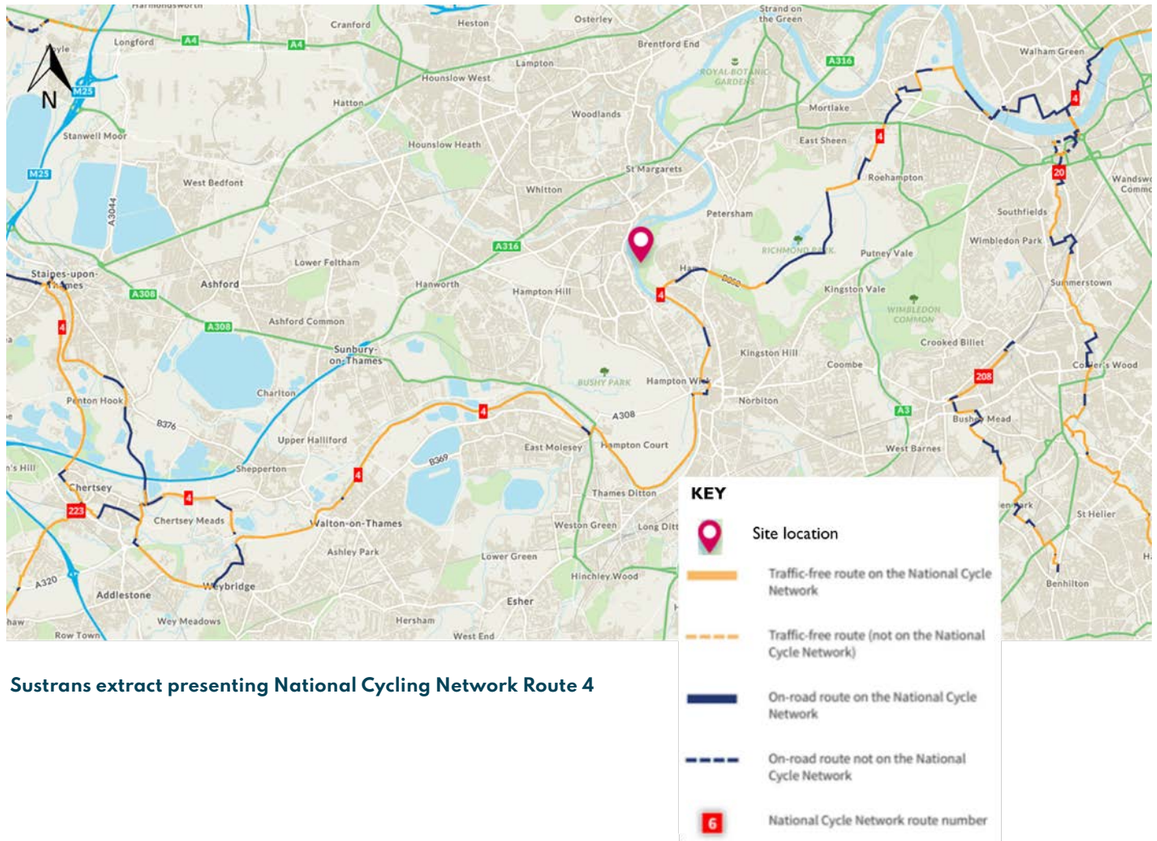
- Coaches and some cars for day visits drop off and return later the same day to pick up and so each generate 4 two-way vehicle trips per day. Minibuses and other cars for day visits can remain on site for the duration, dependent of the booking type and so each generate 2 two-way vehicle trips per day.
- For residential stays, coaches and some cars drop off on the first day, leave the site, then return to pick up on the last day, therefore only generating 2 two-way trips each on the first and last day of the visit with no vehicle trips generated on the days in between. Minibuses and other cars arrive on the first day and do not leave until the last day, therefore only generating 1 one-way trip each on the first and last day of the visit and again no vehicle trips generated on the days in between for the residential stays. Consequently an insignificant number of vehicle trips are made by visitors between the first and last days of a residential visit. Most residential visits are for two nights so cover 3 days, so would have one middle day that generates no vehicles trips as previously stated.
- For TAZ and TAZ family bookings, parents either drop off and return later or stay for the duration. Some are residential stays and so stay for 2 nights on allotted days. TAZ bookings usually arrive by car however some visitors do travel by walking, cycling or public transport.
- The majority of bookings (91%) at the site are TAZ which are run throughout the year. Between 2021 and 2022, this resulted in a total of 7,816 two-way car trips, 1,302 walking or cycling trips and 225 public transport trips, for the duration between April and March. This is an average of 21 two-way car trips each day for TAZ bookings.

Public transport and sustainable travel trip generation

As mentioned in the final point in Section 3.2, information provided by SOLD, provides data confirming that visitors also travel by walking, cycling and public transport to the TYM site. It was recorded that, during 01 April 2021 to 29th March 2022, 37% of people travelled by walking or cycling and 6% travelled by public transport in the bookings during this period. 3.3.1

Cycling

There are currently cycle routes in close proximity to the site for visitors to use. This includes National Cycle Network Route 4. This route links users between central London to the east, travelling through Richmond Park. To the west, it continues past Hampton Court Park, Weybridge, Windsor, and eventually ends in Wales. It includes both traffic free and on-road routes. An extract from Sustrans of National Cycle Network Route 4 can be seen in the image (right).



Sustrans extract presenting National Cycling Network Route 4

3.1 Site Access Strategy

Existing Site Operation Continued

Vehicles accessing the site and trip generation continued

To improve connectivity across the borough, LBRuT have proposed to develop further cycle routes, plus additional routes identified by Transport for London. The existing LBRuT routes partially cover National Cycle Network Route 4. An extract from LBRuT Active Travel Strategy can be seen in Appendix A showing existing and these proposed routes. These existing cycle routes and proposed cycle routes enable visitors to travel to and from the site on recognised cycle routes, of which the majority are traffic free, and increase scope for visitors to the site in the future.

Public transport

The nearest bus stops are approximately 800m from the site. These stops serve service 371, which frequently runs between Kingston Upon Thames and North Sheen, 24 hours a day, 7 days a week. This includes a stop at Richmond Station, which is approximately 4.1km from the site and is around a 15 minute journey on the bus.

Conclusion

It is proposed to undertake a Transport Statement and Travel Plan as part of this planning submission (to be agreed with LBRuT highways in response to the proposed scope at the time of this report).

Due to many of the activities/visit types currently only being offered seasonally and the improvement proposals to allow these activities to be able to be offered all year round, the expectation is that daily trip numbers will not be significantly higher than the existing trip numbers that occur during the current seasonal offer, but that these trip numbers will take place throughout the whole of the year as a result of the improvements to the site.

The transport study will include, but not be limited to, a discussion on parking provision and use, further public transport information, expected future vehicle and visitor trips and a conclusion and so will develop on the information provided in this report and any further information requested. This report is based on data known at this stage and is subject to change.

At the time this report was written, the scope of the transport work has not yet been agreed as no comments regarding the submitted proposed scope have yet been received from LBRuT. The scope of the transport works is therefore subject to change as a result of future LBRuT comments and feedback.

Refer to Appendix Existing and proposed cycle routes and connections

3.1 Site Access Strategy

Access Strategy Development

The access strategy is in progress but is as yet not comprehensive.

The image right is in response to early tracking of the larger vehicles that will need access to the site and illustrates how these can be accommodated within the site arrangement.

A formal car park close to the main building has been shown which provides a 'like-for-like' of the existing parking provision. At busier times overspill parking is accommodated on the grassed area along the length of the main access road (as indicated in the dashed yellow zone).

A gyratory to provide a drop-off and pick-up point for vehicles including a coach has also been indicated.

As part of the design development, the design team will continue to assess the access requirements including but not limited to; potential passing bays on the main single track access road, overspill provision and coach parking, safe pedestrian flows, safe cycle route and bicycle parking.

3.2 Technical Design Development

3.2.1 MEP Strategy & Technical Note

Refer to Appended Documents

3.2.2 Sustainability Strategy & Technical Note

Refer to Appended Documents

3.2.3 Structural Engineering Strategy & Technical Note

Refer to Appended Documents

3.2.4 Civil Engineering Strategy Statement

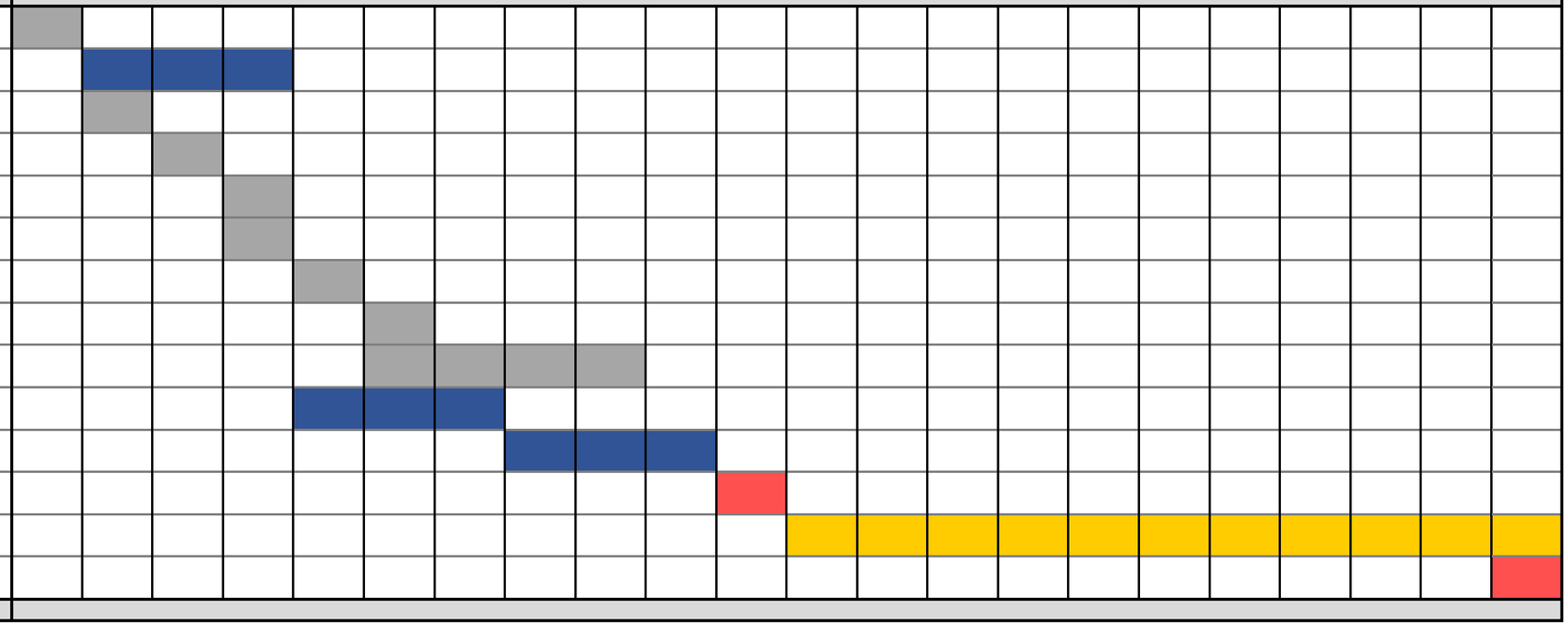
Refer to Appended Documents

Next Steps

4

4.1 Programme

#	Key Activity	Start	End
1	RIBA Stage 1 Review	25/11/2021	23/12/2021
2	RIBA Stage 2	10/01/2022	25/03/2022
3	Pre-Application Meeting #1	24/01/2022	28/01/2022
4	Pre-Application Meeting #2	21/02/2022	25/02/2022
5	Public Consultation Event	07/03/2022	11/03/2022
6	Pre-Application Meeting #3	21/03/2022	25/03/2022
7	Planning Application Submission	25/04/2022	29/04/2022
8	Planning Application Validation	02/05/2022	13/05/2022
9	Planning Application Determination	16/05/2022	12/08/2022
10	RIBA Stage 3	11/04/2022	17/06/2022
11	RIBA Stage 4	04/07/2022	09/09/2022
12	Governance	09/09/2022	03/10/2022
13	RIBA Stage 5	06/10/2022	01/09/2023
14	Operational	01/09/2023	01/09/2023



4.2 Planning Application Sumbission List

The following lists the doucmentation which may be required as part of the final planning package submission:

- Design & Access Statement (DAS)
- Planning Statement
- Photomontage
- ~~Streetscapes~~ *
- Transport Assessment
- Parking Layouts *
- Parking Survey
- Travel Plan
- Fire Statement (by Fire Engineer)
- Construction Management Statement
- Delivery and servicing plan
- Flood Risk Assessment (FRA)
- Sustainability Report
- Sustainable drainage proforma
- Statement of sustainable drainage systems
- Foul sewage and utilities statement
- Community engagement report
- Sustainable construction checklist
- Energy Report
- Decentralised Energy Network feasibility assessment
- Open space assessment
- Landscaping scheme
- Tree survey
- Ecological Appraisal
- Green/brown roof details
- Daylight assessment
- Land contamination desk study
- Community Infrastructure Levy (CIL) forms
- Health impact assessment

* For further discussion with Planning Officer

4.3 Next Steps

The following details the next key actions:

Site Surveys:
- On receipt of surveys, undertake survey review & analysis of findings in relation to provisional site strategy to verify areas
- Existing baseline landscape amenity / provision analysis

Design Development:
- Elevational treatment
- Further Massing Studies
- Develop Landscape amenity & provision
- Further develop & coordinate energy strategy within architectural proposal

Continue to Develop Technical Strategies:
- Transport
- Sitewide access
- Fire
- Ecology
- Sustainability
- SuDs & Drainage
- Energy
- Demolition & Phasing strategy

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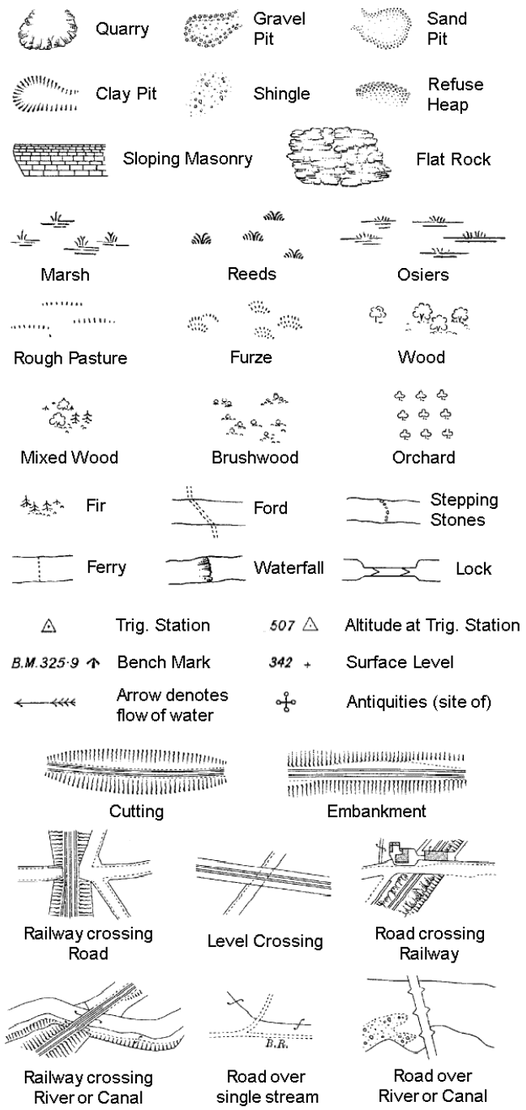
Appendix B Country Series and Ordnance Survey Maps

Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

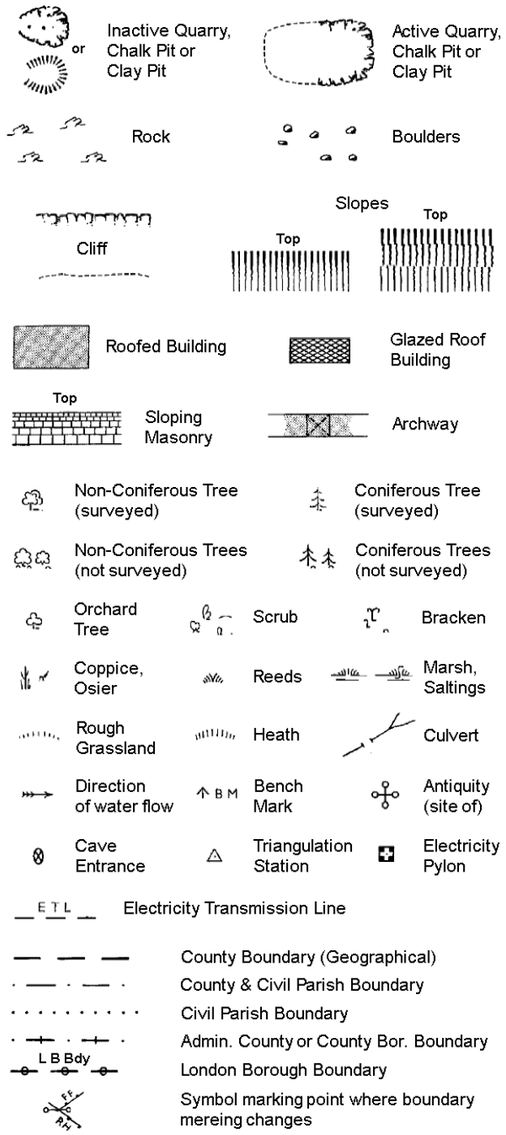
Administrative County & Civil Parish Boundary

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

Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

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



County Boundary (Geographical)

County & Civil Parish Boundary

Civil Parish Boundary

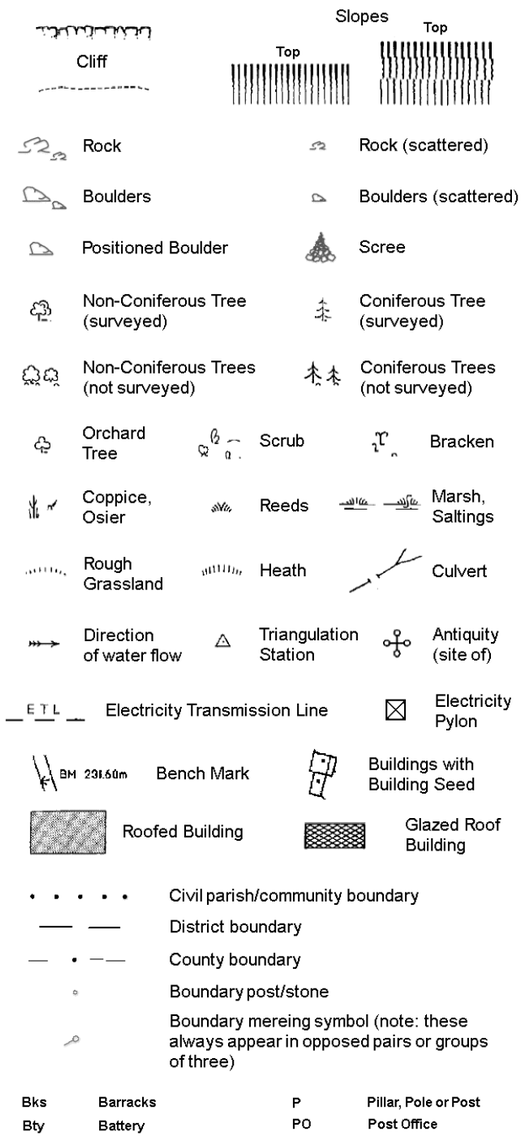
Admin. County or County Bor. Boundary

L B Bdy London Borough Boundary

Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

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



Civil parish/community boundary

District boundary

County boundary

Boundary post/stone

Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

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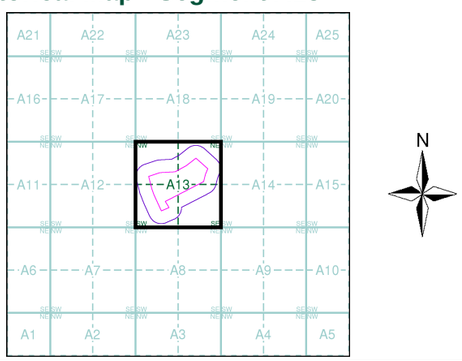
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:2,500	1865 - 1880	2
Surrey	1:2,500	1891	3
Middlesex	1:2,500	1896	4
London	1:2,500	1896	5
Surrey	1:2,500	1898	6
Surrey	1:2,500	1913	7
Middlesex	1:2,500	1914 - 1915	8
Middlesex	1:2,500	1934	9
Surrey	1:2,500	1934	10
Historical Aerial Photography	1:1,250	1946	11
Ordnance Survey Plan	1:1,250	1959	12
Additional SIMs	1:1,250	1959 - 1977	13
Ordnance Survey Plan	1:2,500	1960	14
Additional SIMs	1:2,500	1960	15
Ordnance Survey Plan	1:1,250	1969 - 1979	16
Ordnance Survey Plan	1:2,500	1971	17
Supply of Unpublished Survey Information	1:1,250	1973	18
Additional SIMs	1:1,250	1983	19
Large-Scale National Grid Data	1:1,250	1991	20
Historical Aerial Photography	1:2,500	1999	21

Historical Map - Segment A13



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Customer Ref:	20295
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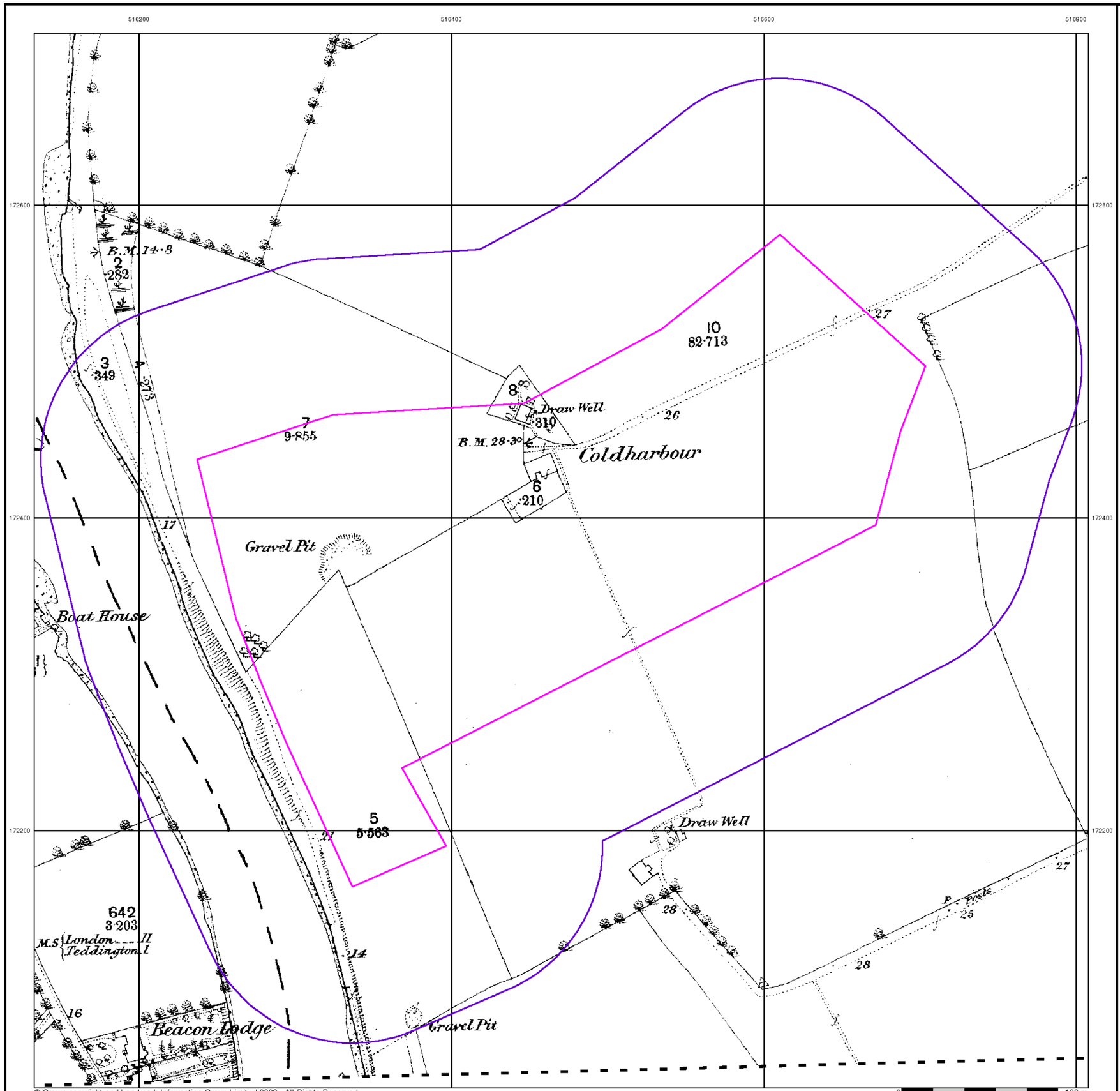
Search Buffer (m):	100

Site Details

Thames Young Mariners O E C, Ham Fields, RICHMOND, TW10 7RX



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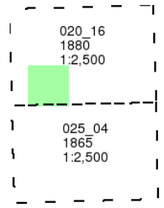
Middlesex

Published 1865 - 1880

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)



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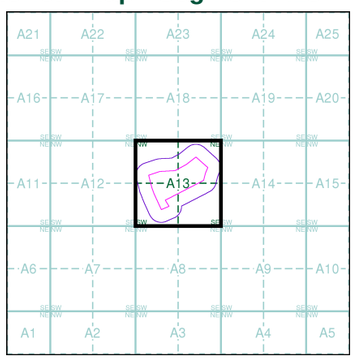

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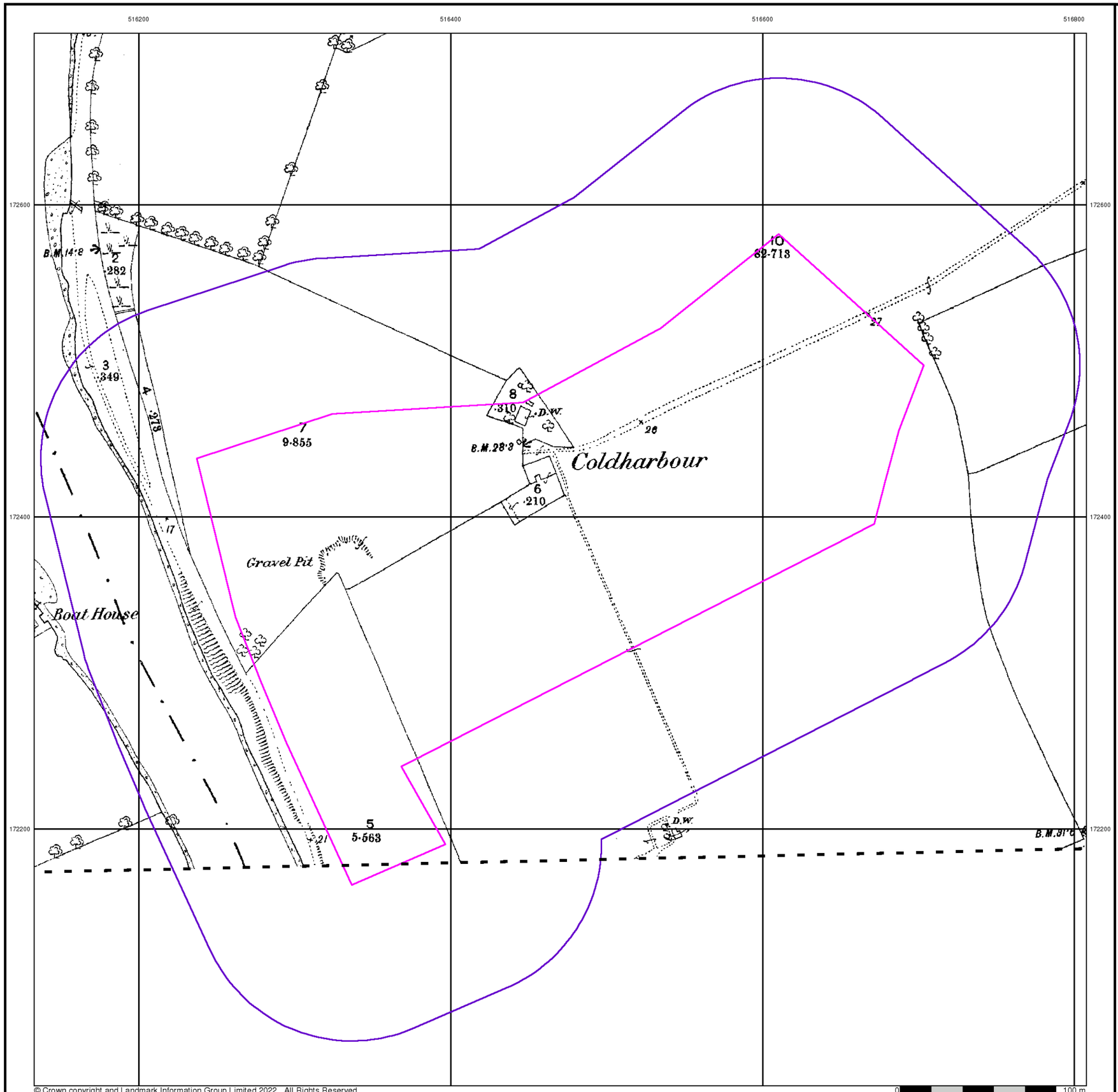

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Surrey

Published 1891

Source map scale - 1:2,500

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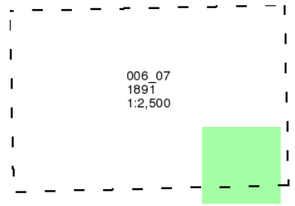

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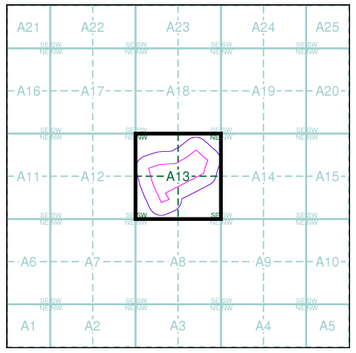

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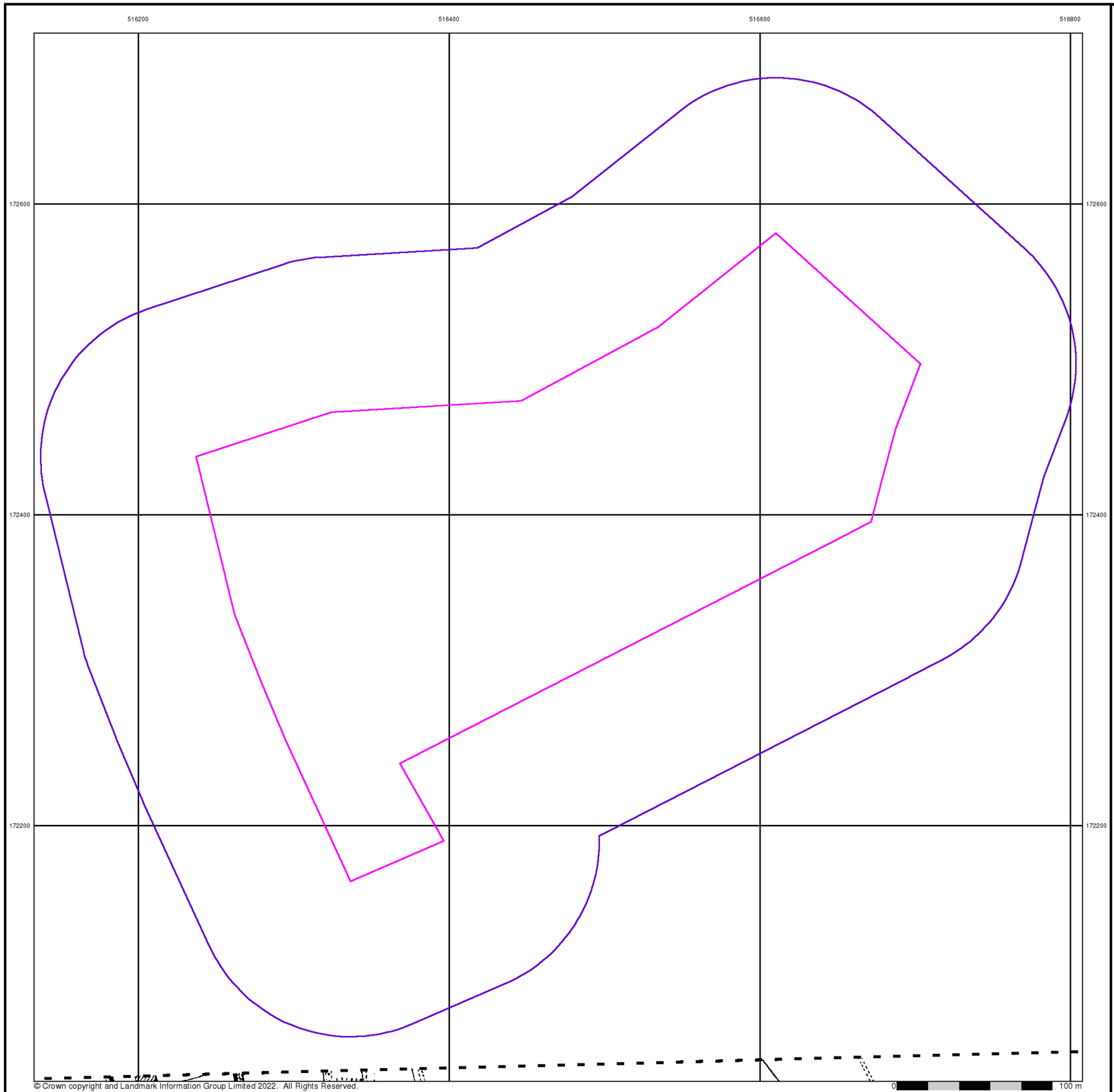

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Middlesex

Published 1896

Source map scale - 1:2,500

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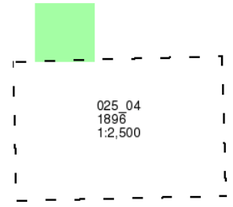

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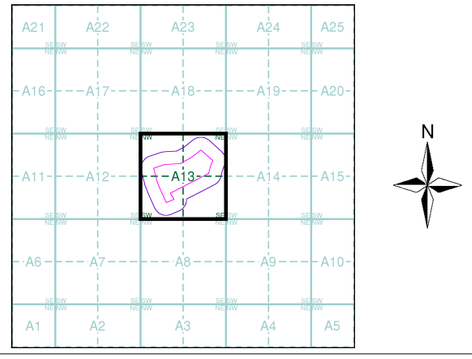

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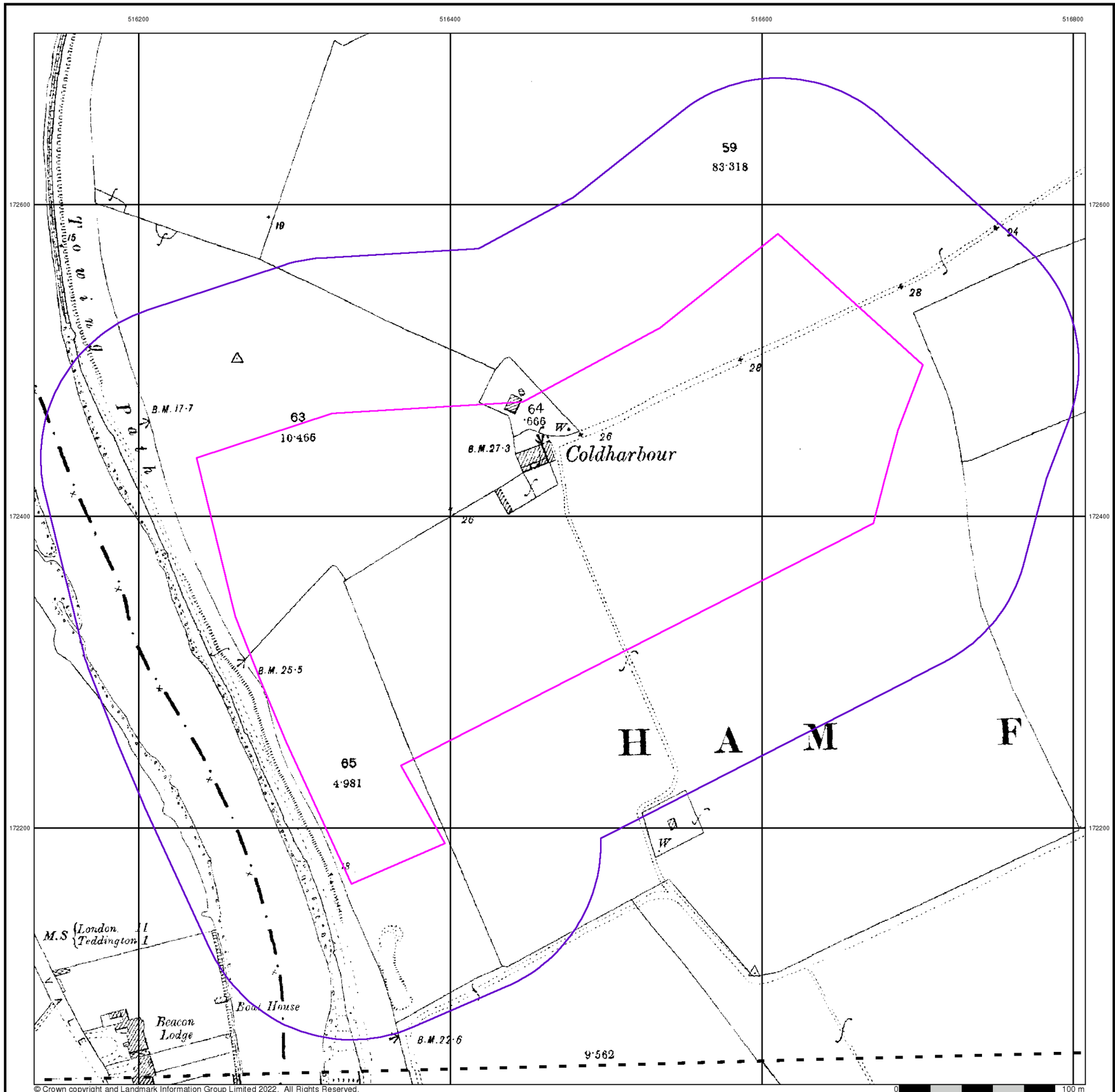

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London

Published 1896

Source map scale - 1:2,500

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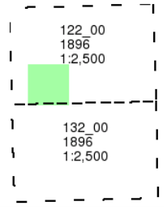
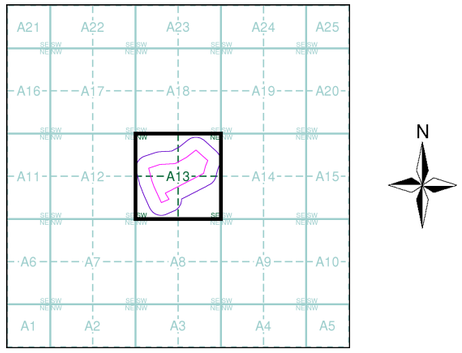


Historical Map - Segment A13



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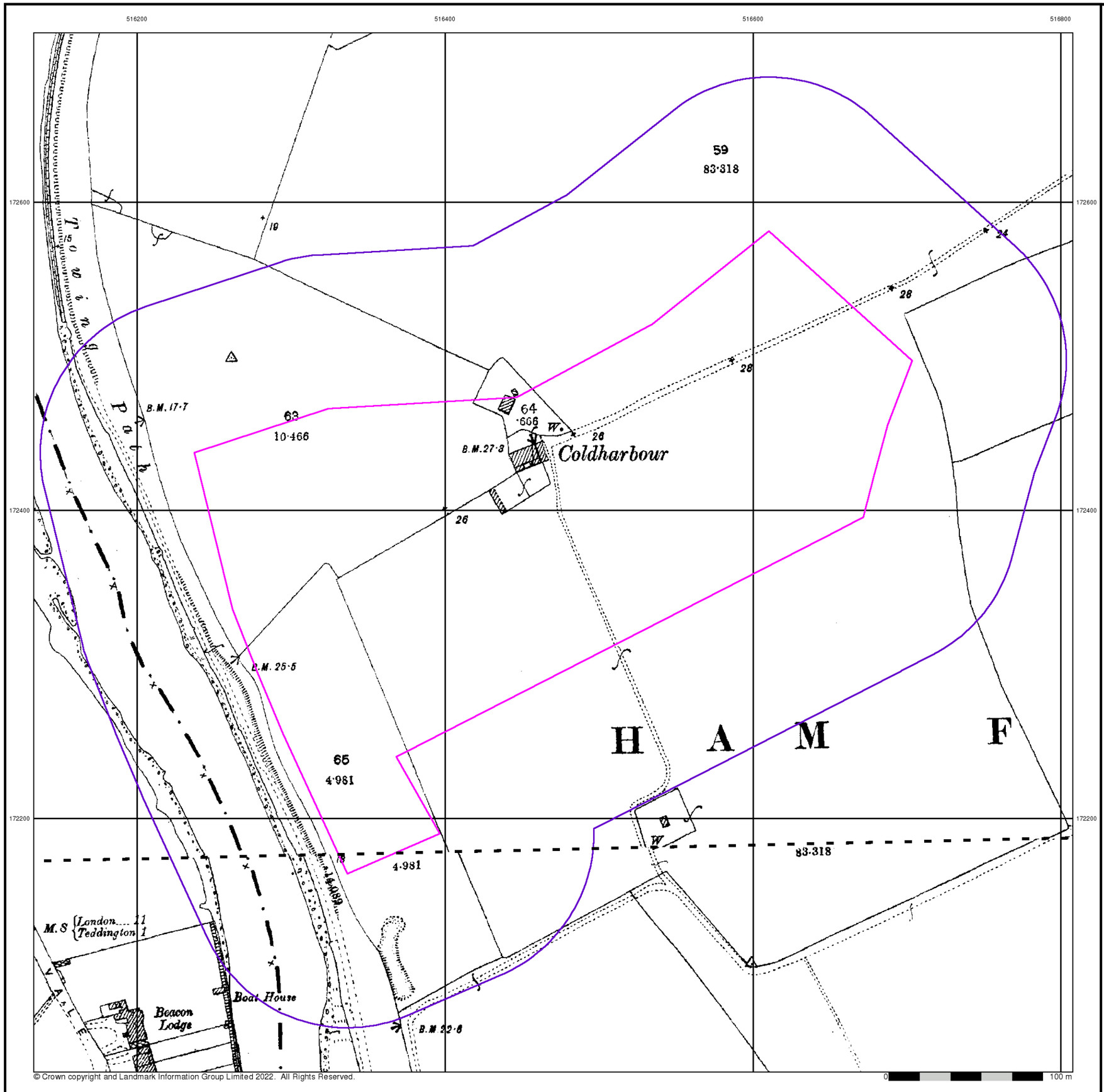

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Surrey

Published 1898

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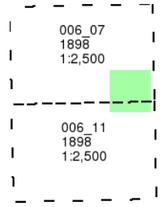

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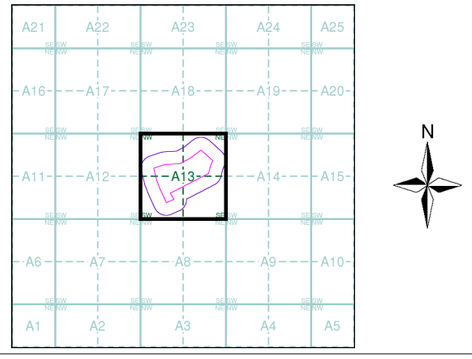

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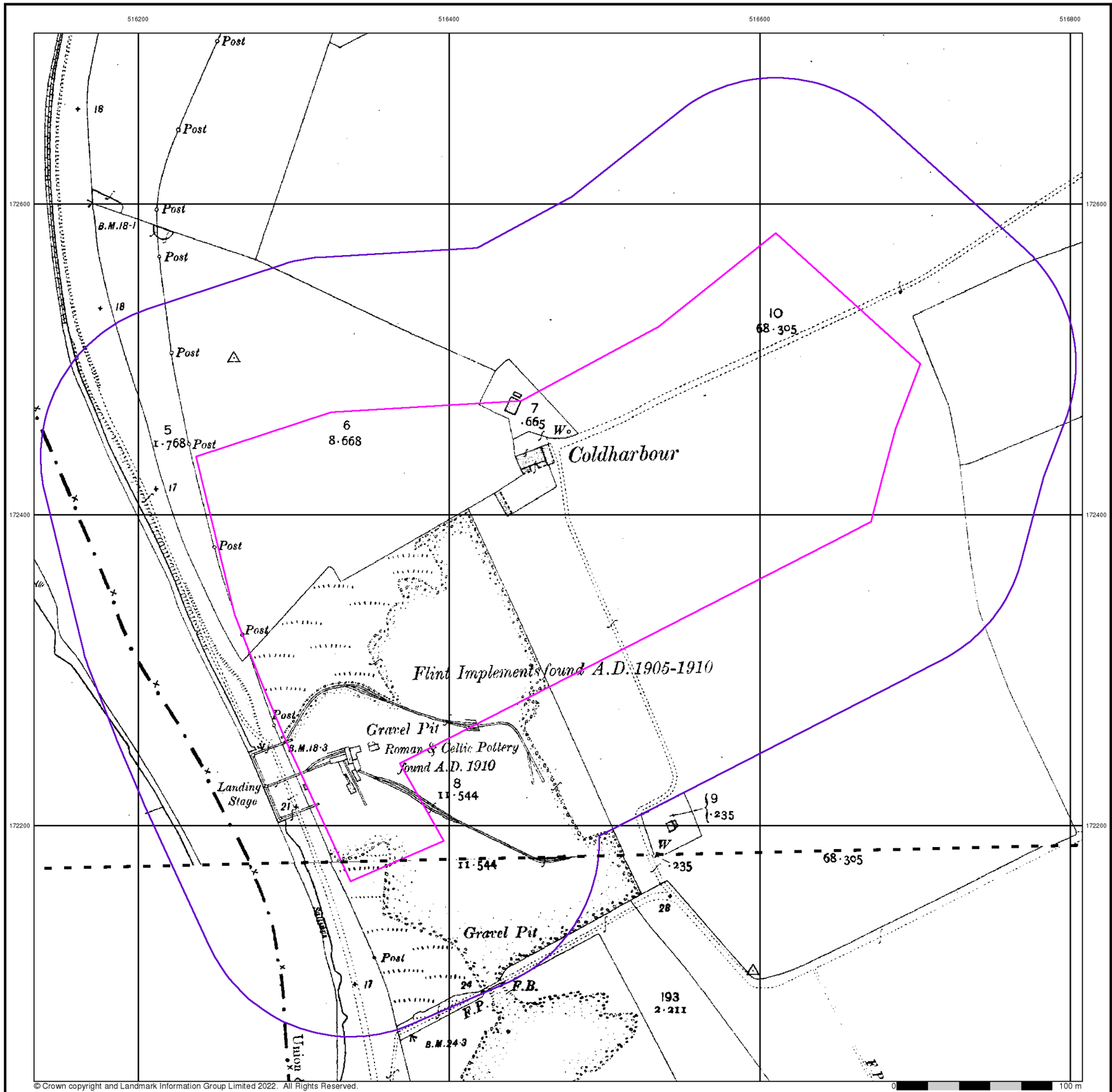

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Surrey

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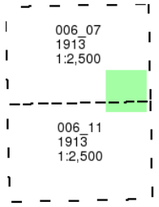

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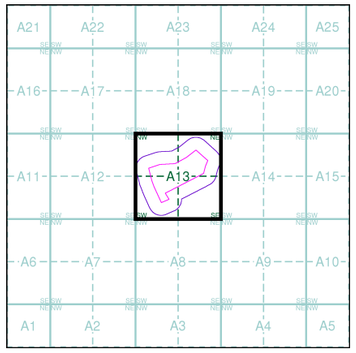

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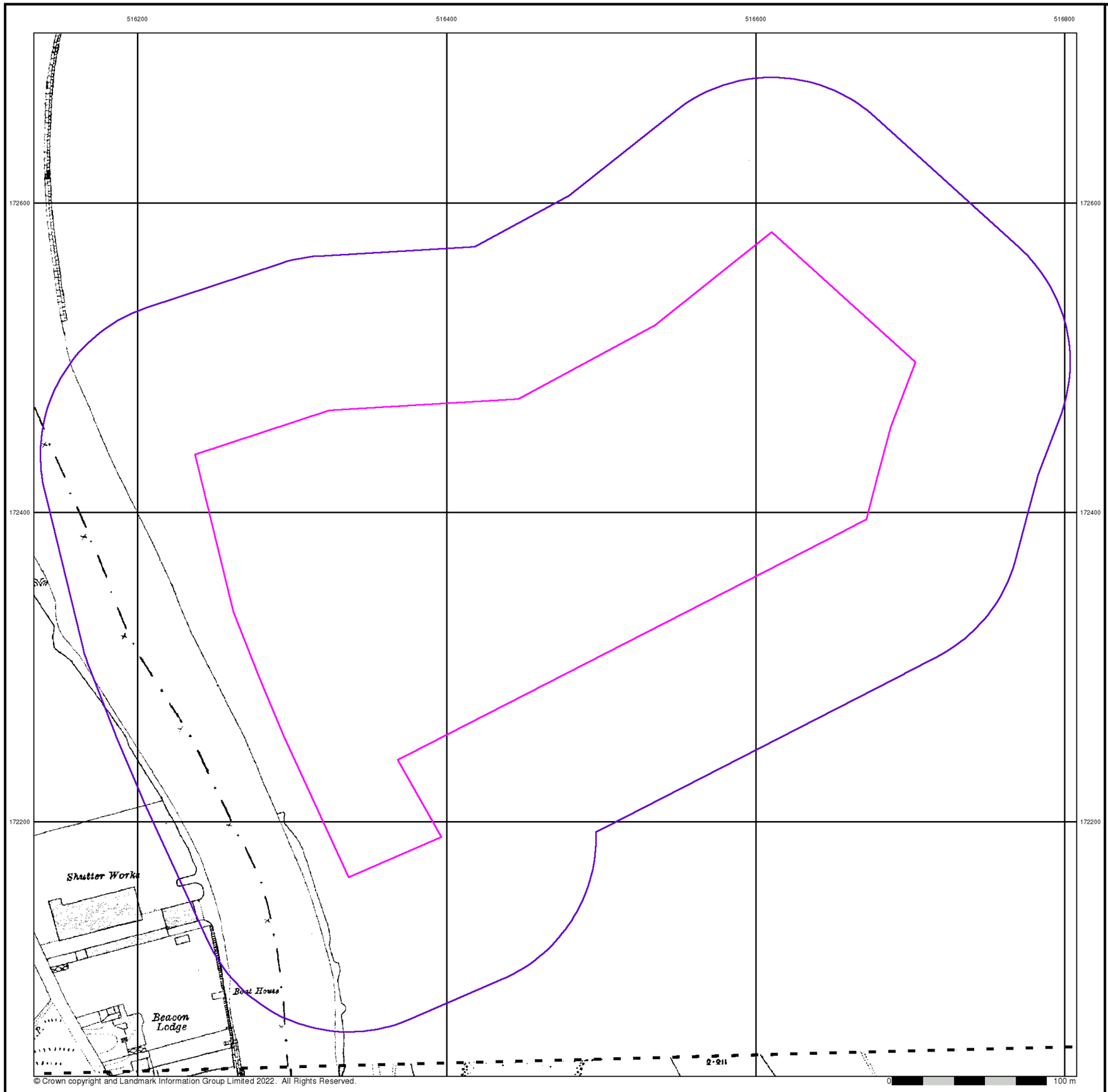

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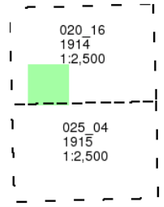
Middlesex

Published 1914 - 1915

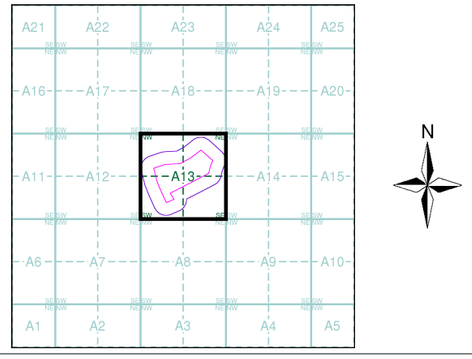
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



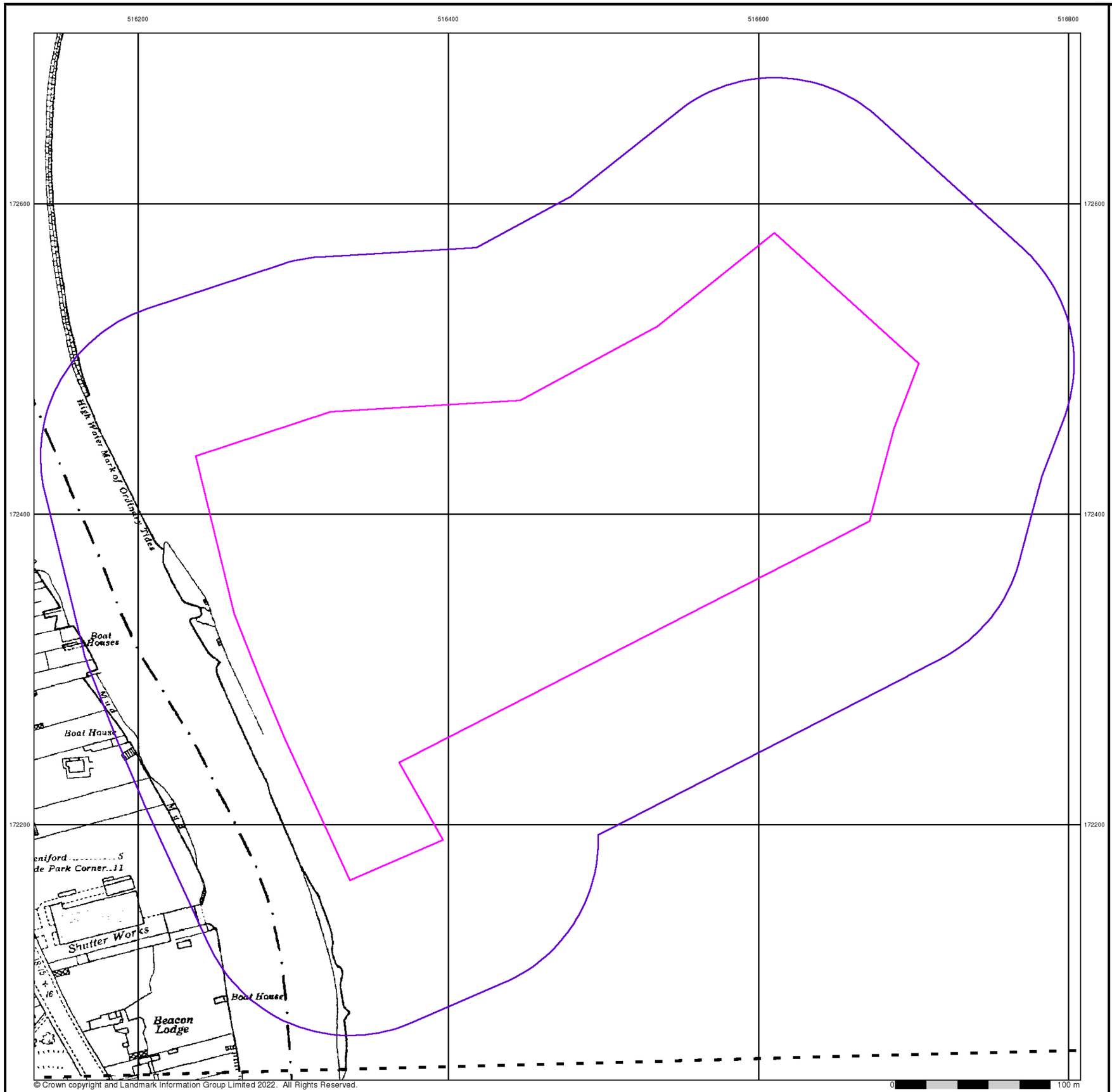
Order Details

Order Number:	300223772_1_1
Customer Ref:	20295
National Grid Reference:	516460, 172390
Slice:	A
Site Area (Ha):	8.93
Search Buffer (m):	100

Site Details

Thames Young Mariners O E C, Ham Fields, RICHMOND, TW10 7RX

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



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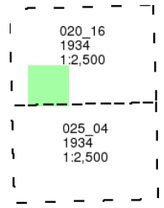
Middlesex

Published 1934

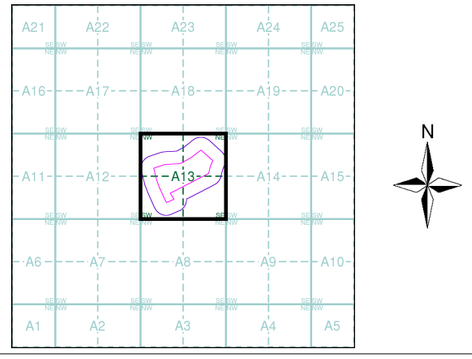
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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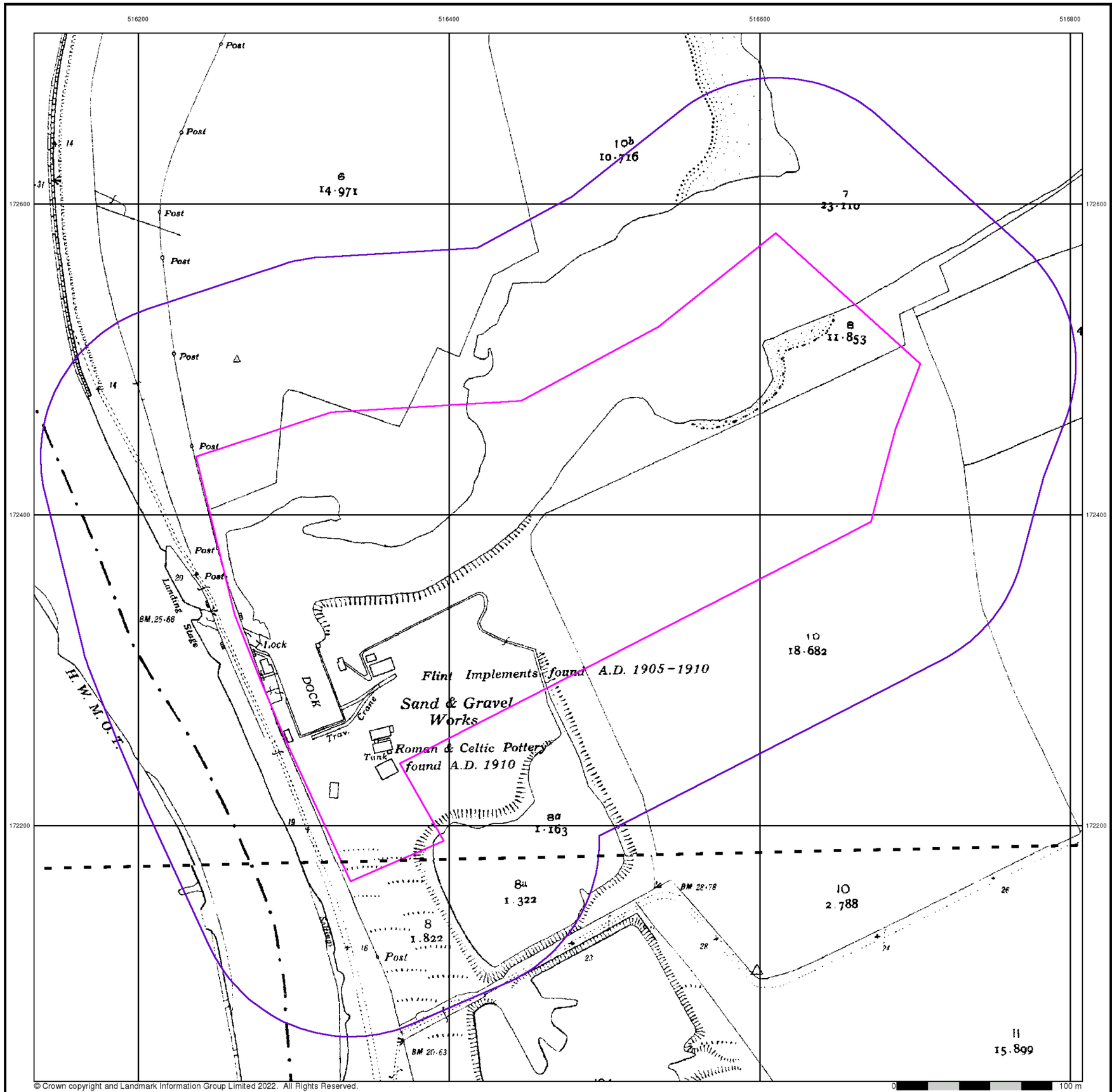

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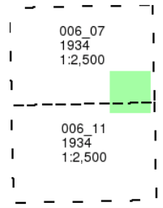
Surrey

Published 1934

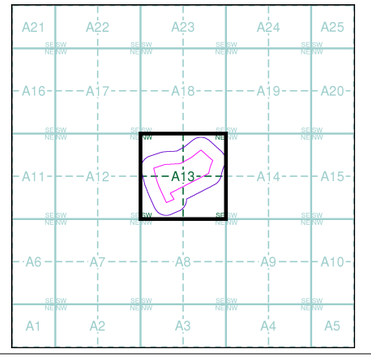
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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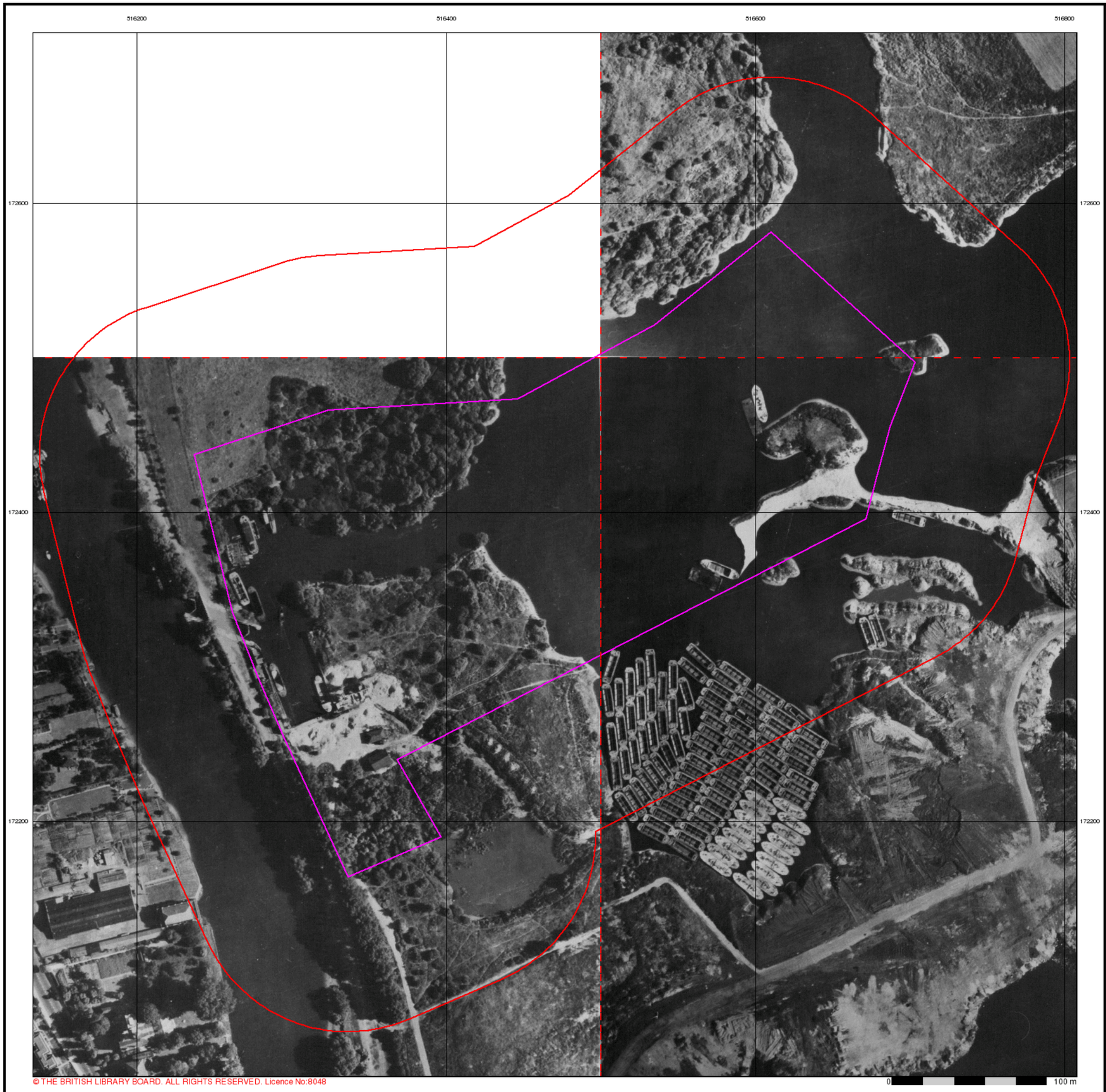

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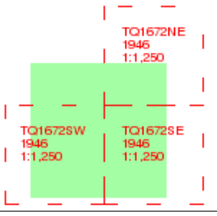
Historical Aerial Photography

Published 1946

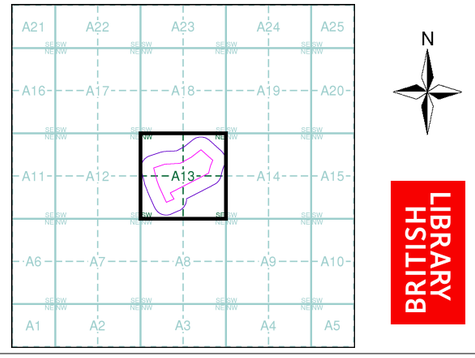
Source map scale - 1:1,250

The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

Map Name(s) and Date(s)



Historical Aerial Photography - Segment A13



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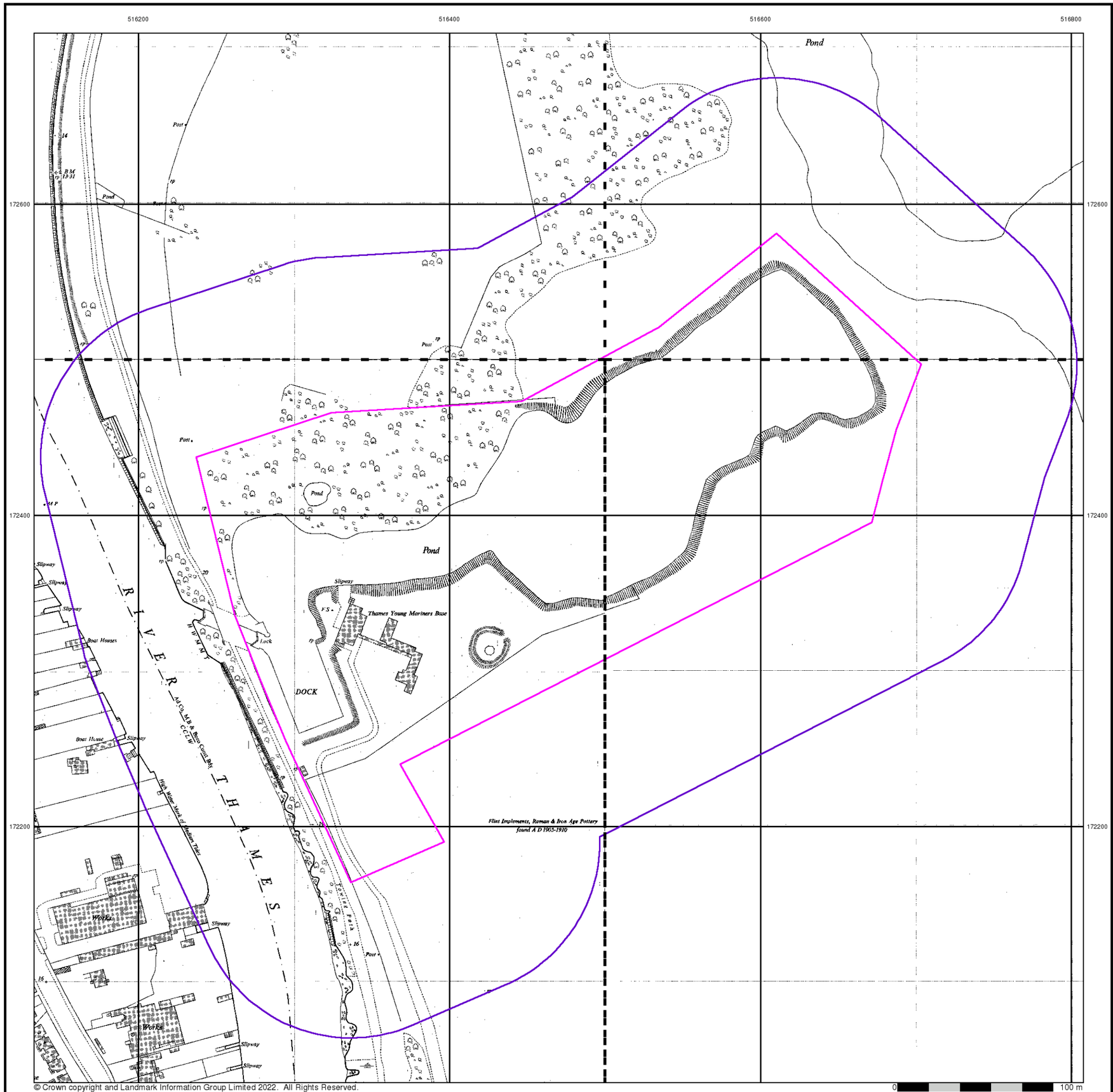

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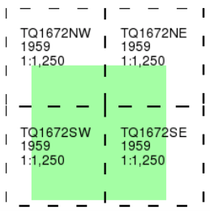
Ordnance Survey Plan

Published 1959

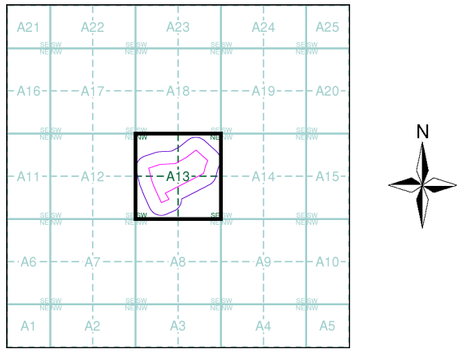
Source map scale - 1:1,250

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)



Historical Map - Segment A13



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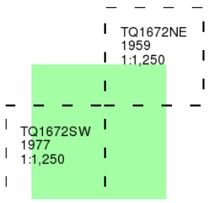
Additional SIMs

Published 1959 - 1977

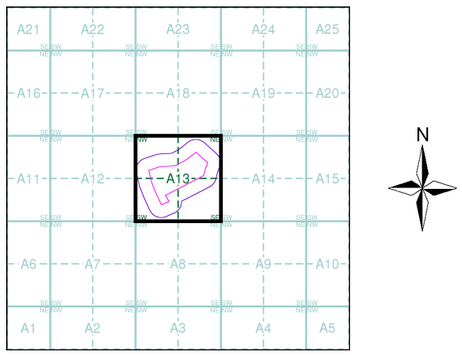
Source map scale - 1:1,250

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)



Historical Map - Segment A13



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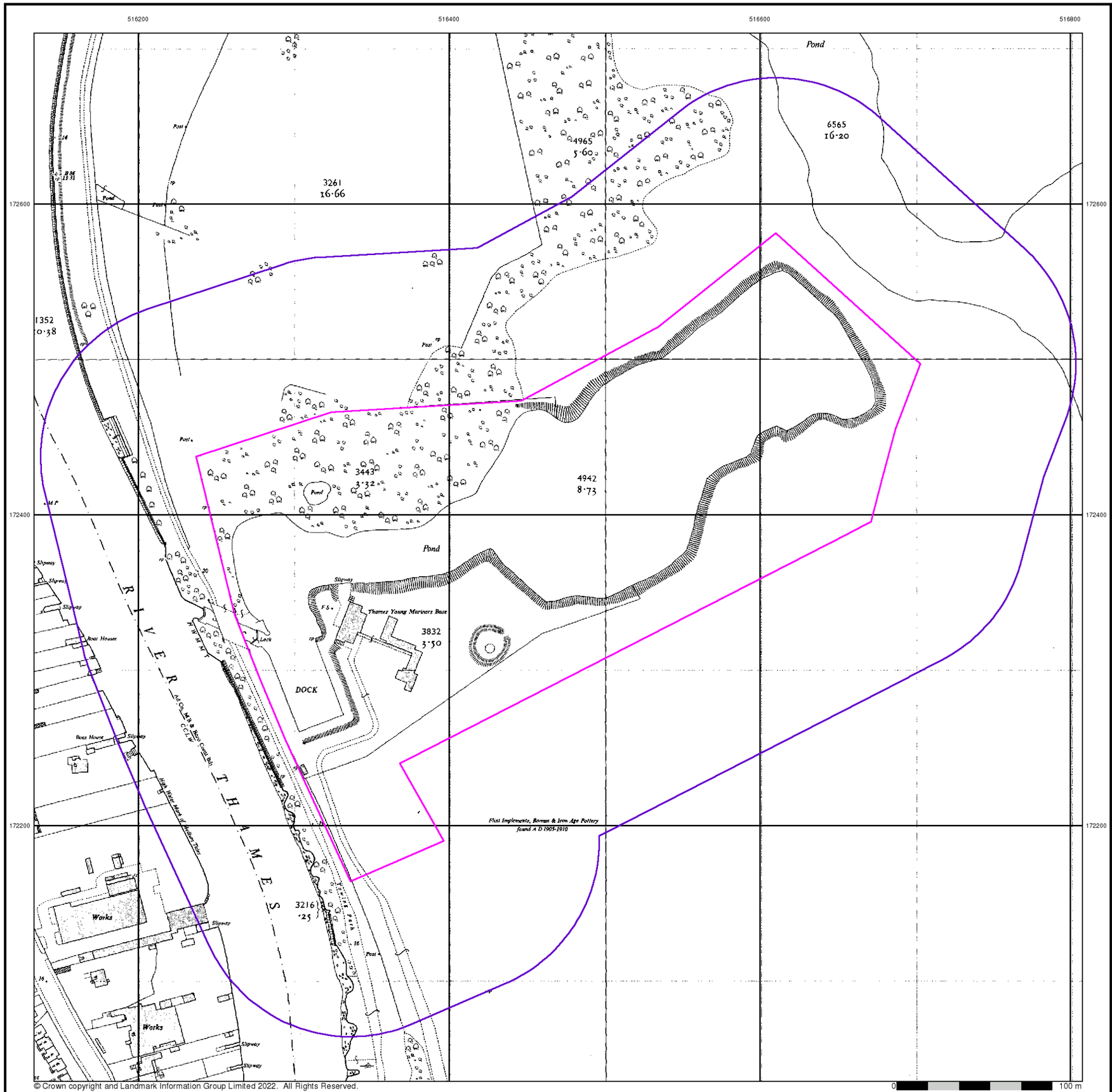

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Ordnance Survey Plan

Published 1960

Source map scale - 1:2,500

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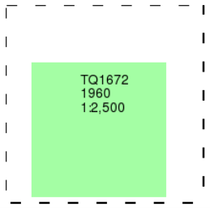
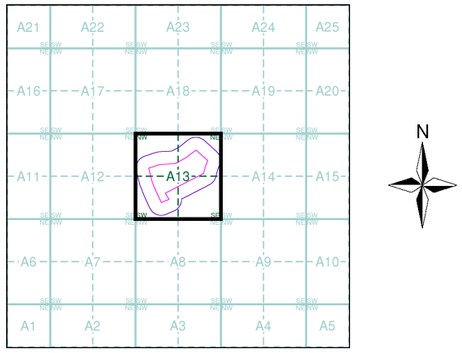
Map Name(s) and Date(s)



Historical Map - Segment A13



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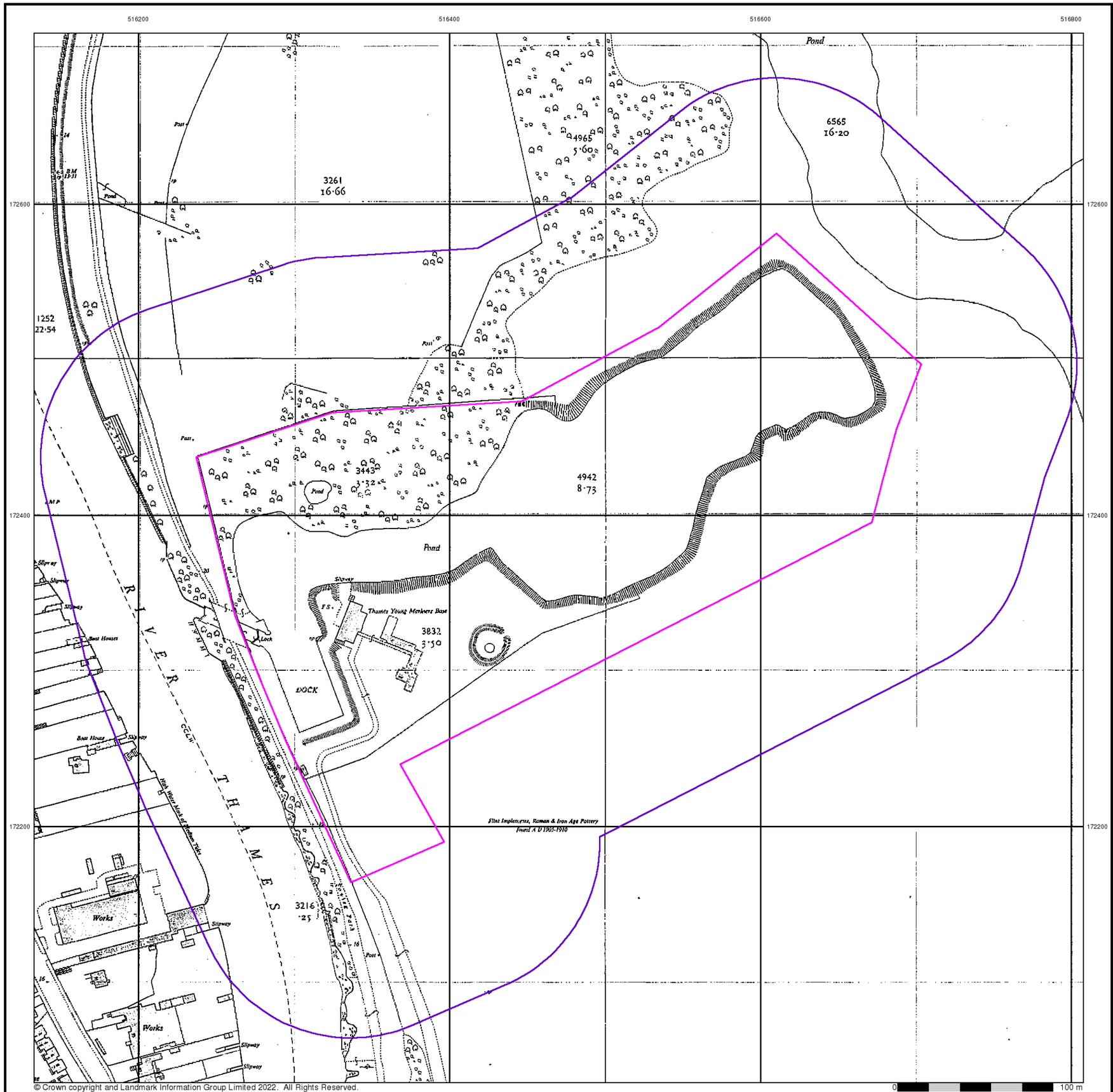

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Additional SIMs

Published 1960

Source map scale - 1:2,500

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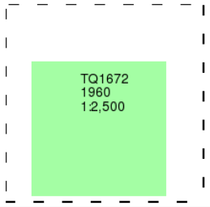
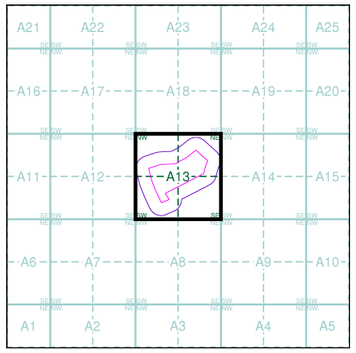
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	300223772_1_1
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Site Details

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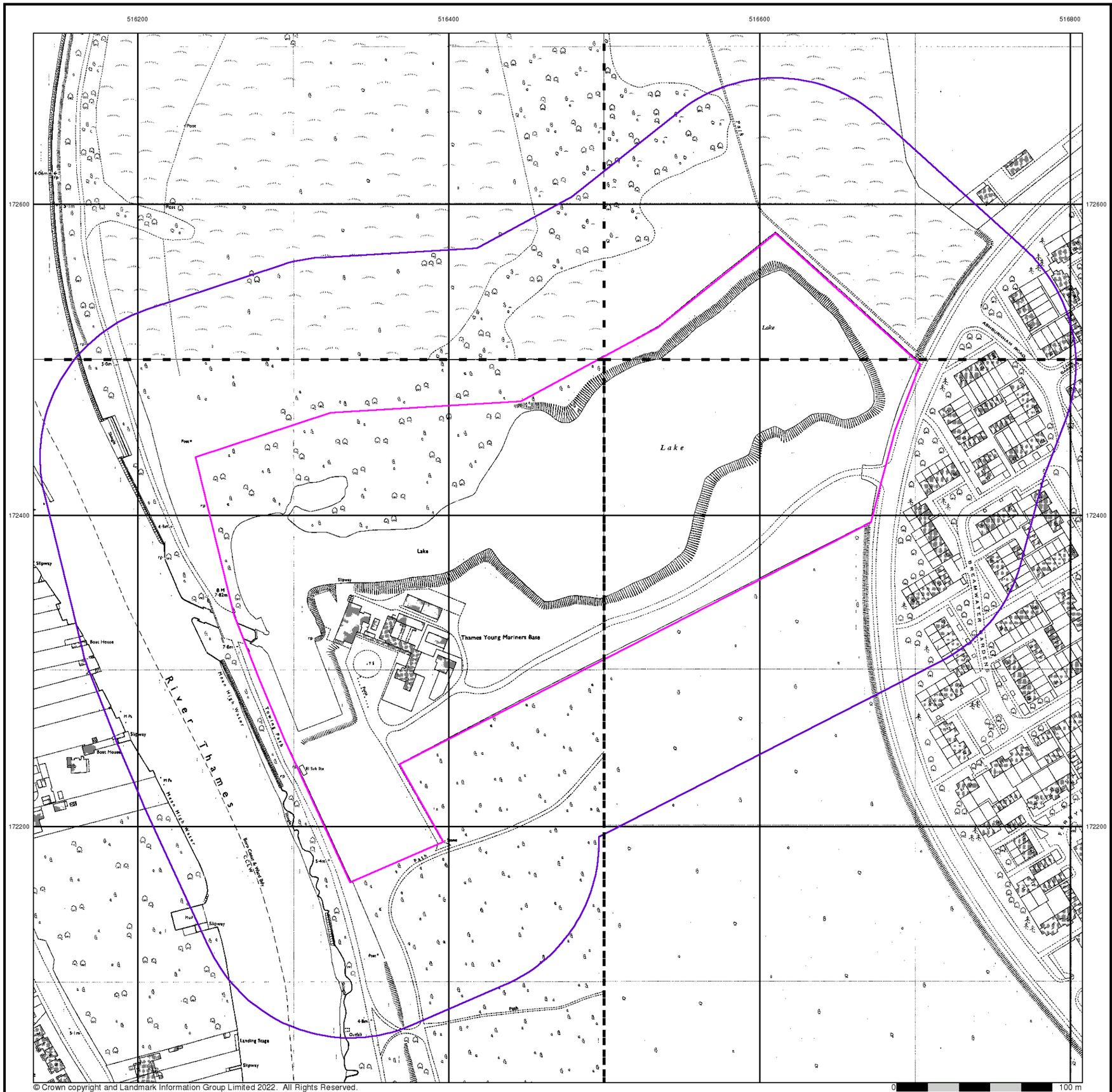

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Ordnance Survey Plan

Published 1969 - 1979

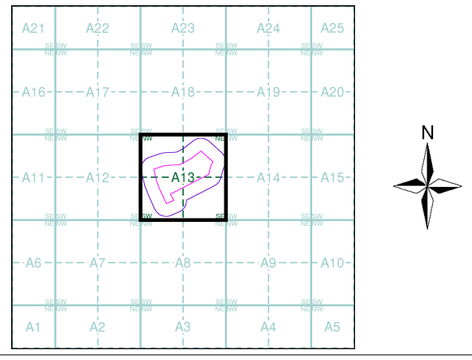
Source map scale - 1:1,250

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)

TQ1672NW 1972 1:1,250	TQ1672NE 1969 1:1,250
TQ1672SW 1979 1:1,250	TQ1672SE 1969 1:1,250

Historical Map - Segment A13



Order Details

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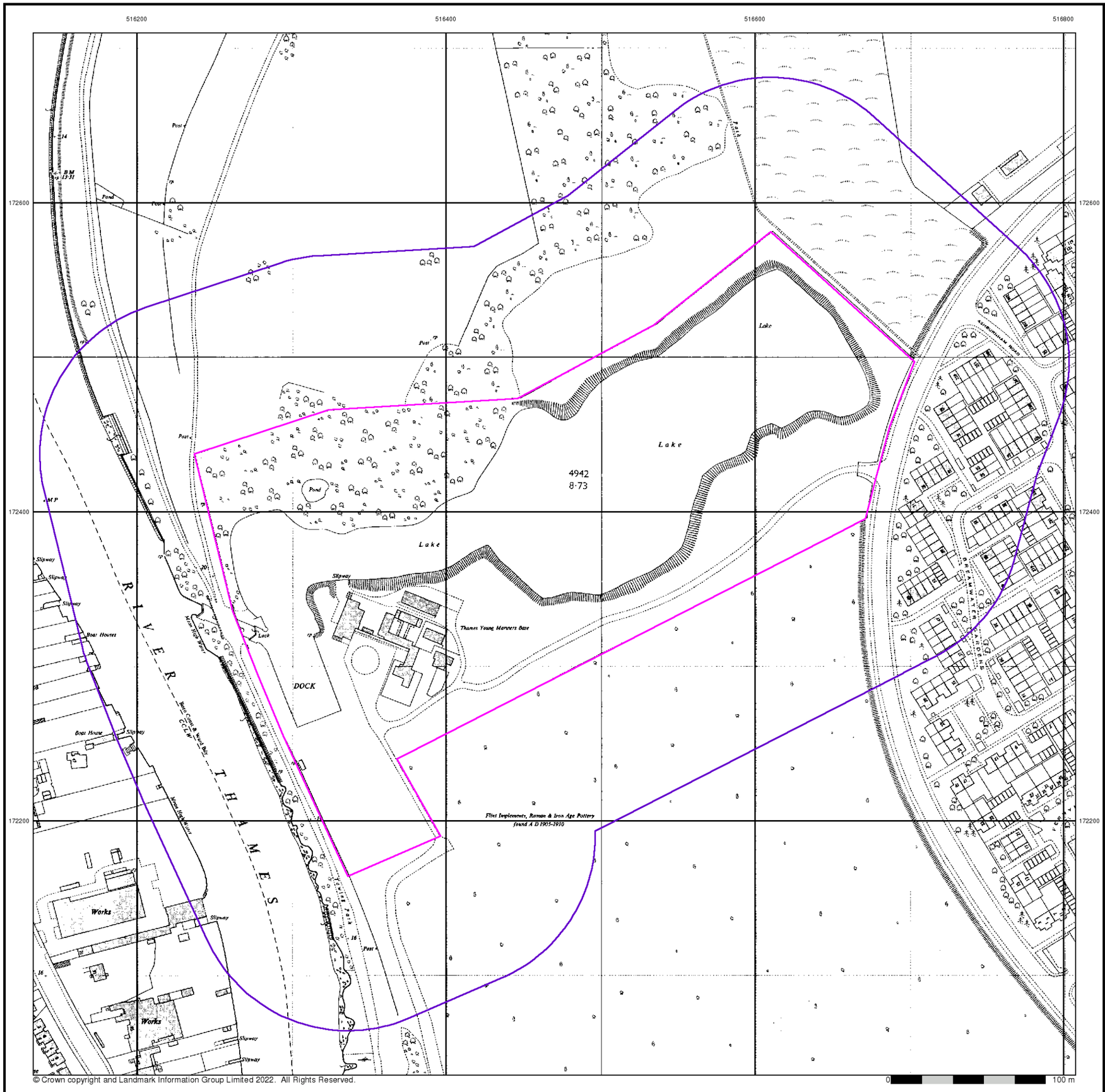

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Ordnance Survey Plan

Published 1971

Source map scale - 1:2,500

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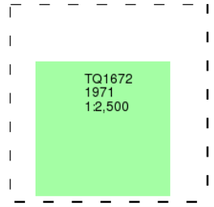
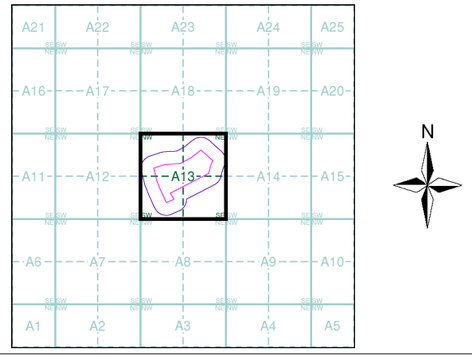
Map Name(s) and Date(s)



Historical Map - Segment A13



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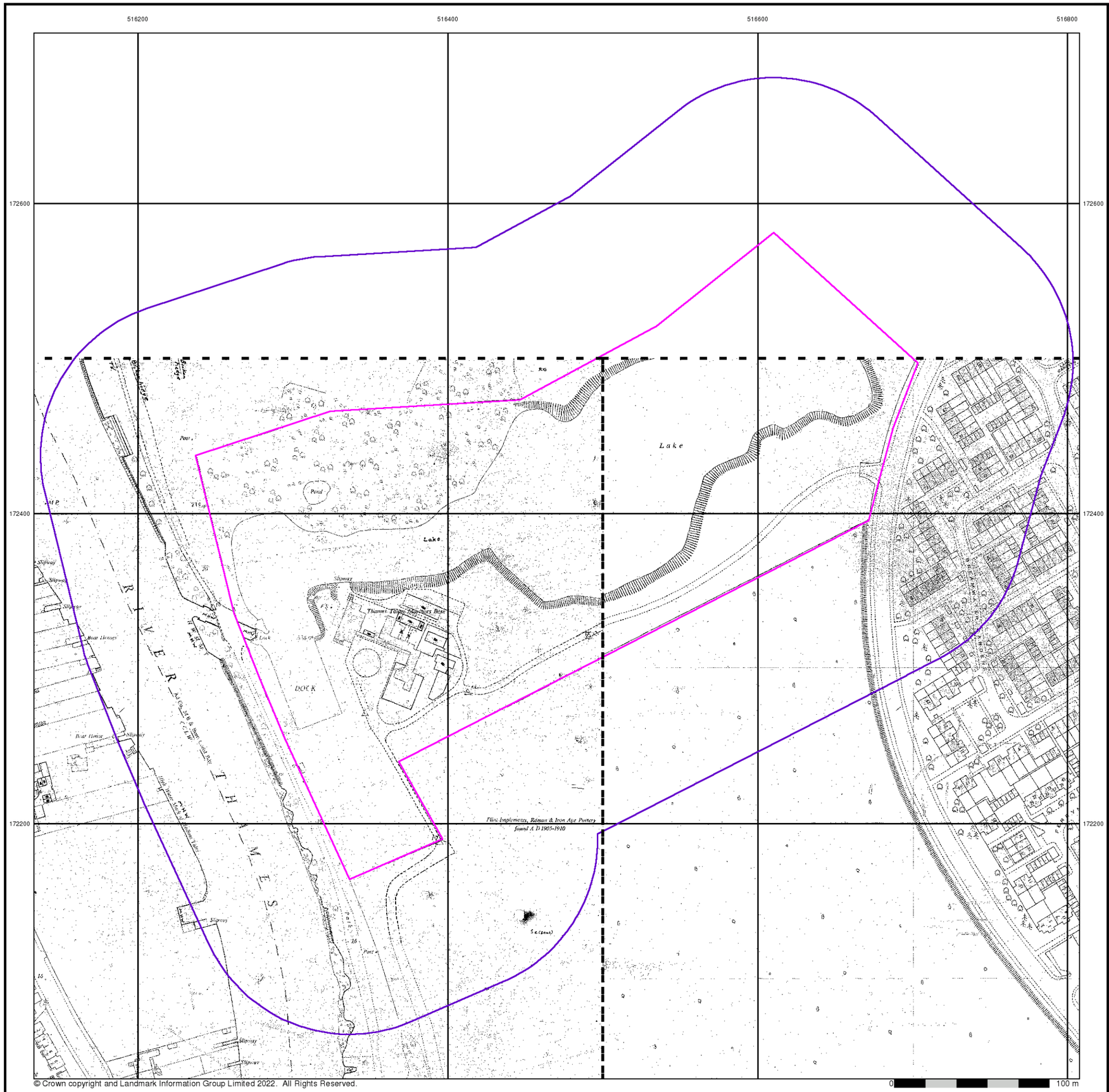

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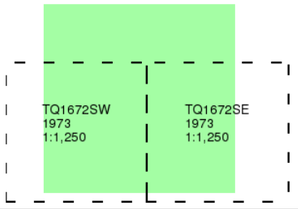
Supply of Unpublished Survey Information

Published 1973

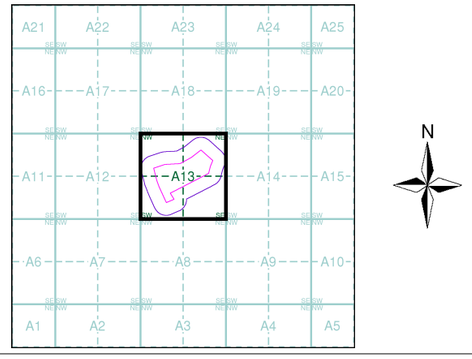
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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Additional SIMs

Published 1983

Source map scale - 1:1,250

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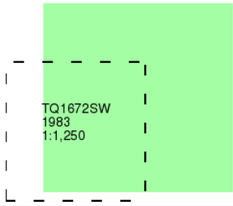
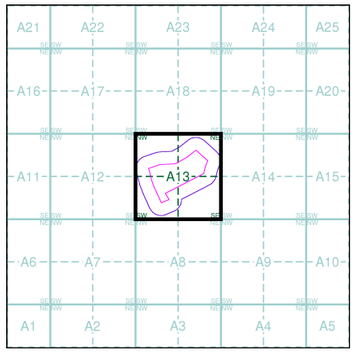
Map Name(s) and Date(s)



Historical Map - Segment A13



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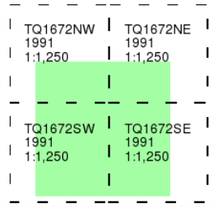
Large-Scale National Grid Data

Published 1991

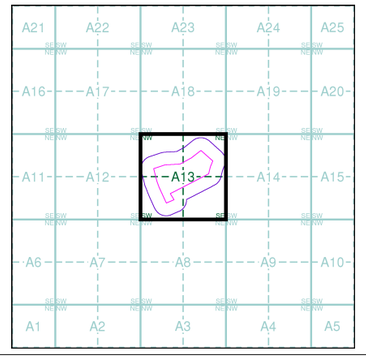
Source map scale - 1:1,250

'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)



Historical Map - Segment A13



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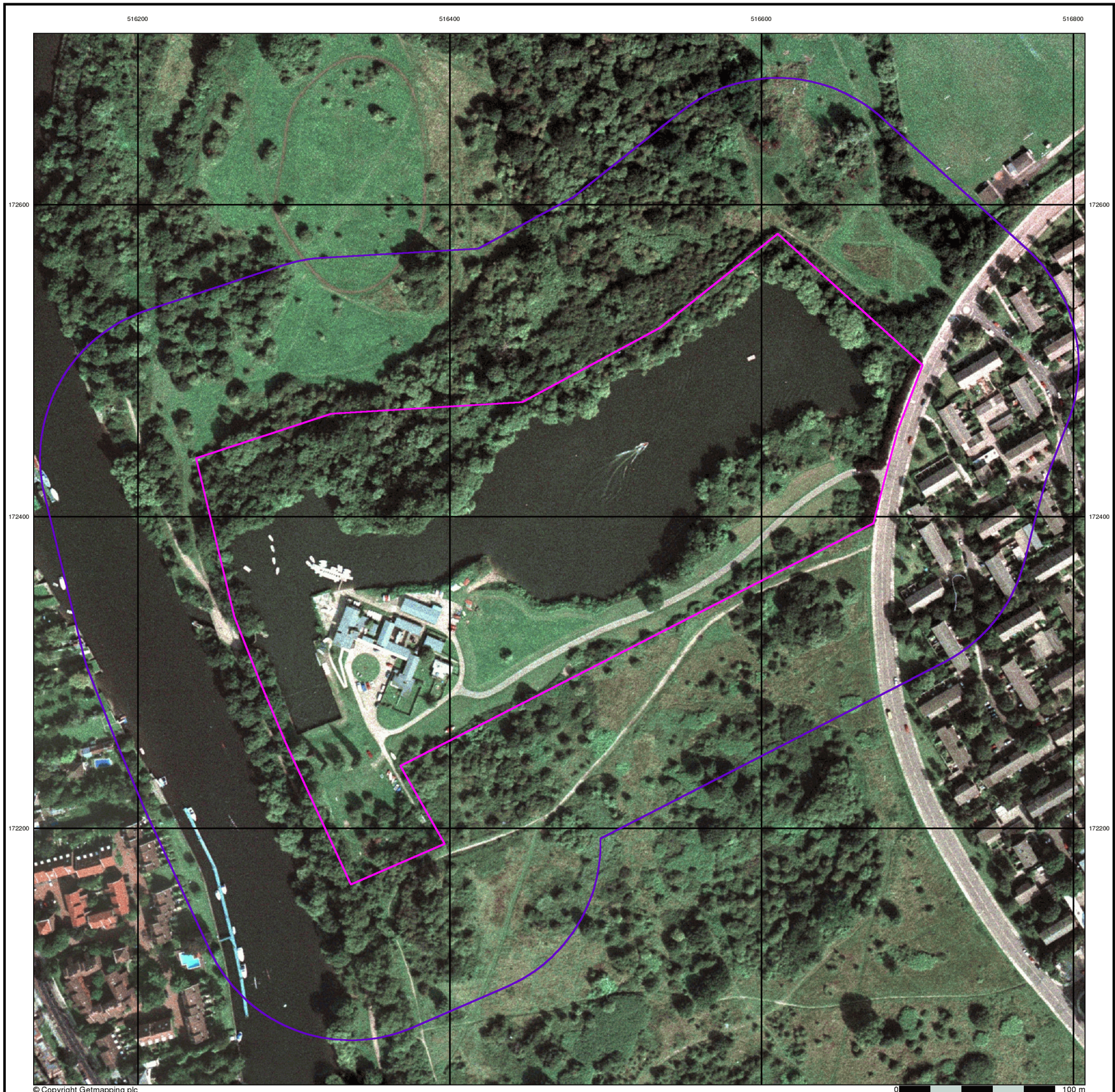

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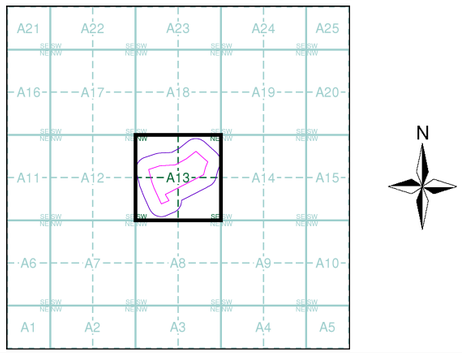
Historical Aerial Photography

Published 1999

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

Historical Aerial Photography - Segment A13



Order Details

Order Number:	300223772_1_1
Customer Ref:	20295
National Grid Reference:	516460, 172390
Slice:	A
Site Area (Ha):	8.93
Search Buffer (m):	100

Site Details

Thames Young Mariners O E C, Ham Fields, RICHMOND, TW10 7RX

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Mixed Wood
Deciduous
Brushwood
Fir
Furze
Rough Pasture
Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
·285 Surface Level
Sketched Contour
Instrumental Contour
Main Roads
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
Sunken Road
Raised Road
Road over Railway
Railway over River
Railway over Road
Level Crossing
Road over River or Canal
Road over Stream
Road over Stream
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. Rural District Boundary
Civil Parish Boundary

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

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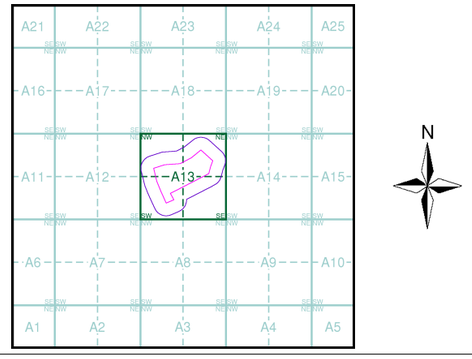
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:10,560	1869	3
Surrey	1:10,560	1871	4
London	1:10,560	1896	5
Surrey	1:10,560	1898 - 1899	6
Middlesex	1:10,560	1920	7
Middlesex	1:10,560	1920	8
Surrey	1:10,560	1920	9
Surrey	1:10,560	1920	10
Surrey	1:10,560	1933	11
Middlesex	1:10,560	1934 - 1935	12
Middlesex	1:10,560	1938	13
Surrey	1:10,560	1938	14
Surrey	1:10,560	1938	15
Ordnance Survey Plan	1:10,000	1940	16
Historical Aerial Photography	1:10,560	1948	17
Ordnance Survey Plan	1:10,000	1966	18
Ordnance Survey Plan	1:10,000	1975	19
London	1:25,000	1985	20
Ordnance Survey Plan	1:10,000	1992	21
10K Raster Mapping	1:10,000	1999	22
10K Raster Mapping	1:10,000	2006	23
VectorMap Local	1:10,000	2021	24

Historical Map - Slice A



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Landmark INFORMATION GROUP
Tel: 0844 844 9952
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Web: www.envirocheck.co.uk

Russian Military Mapping Legends

1:5,000 and 1:10,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Fireproof Building
- Prominent Fireproof Building
- Non-fireproof Building
- Non-fireproof Building (non-dwelling)
- Factory, mill, and flour mill, with chimneys
- Factory, mill, and flour mill, without chimneys
- Power Station, drawn to scale
- Hydroelectric Power Station
- Radio Station, drawn to scale
- Telephone Station, drawn to scale
- Abandoned Open-pit Mine or Quarry
- Open-pit Salt Mine
- Pit
- Oil Deposit or Well
- Oil Seepage
- Tailings Pile
- Fuel Storage Tanks
- Natural Gas Tank
- Bench Mark
- Drill Hole
- Burial Mound
- Triangulation Point on Burial Mound
- Single-track Railroad
- Double-track Railroad and Station Building
- Coniferous Forest
- Deciduous Forest
- Mixed Forest
- Lawns
- Citrus Orchard
- Wet Ground
- Scattered Vegetation

243,8 Values for prominent elevations

186.0 Numbers for spot elevations, depth soundings, contour lines, etc.

0,2 Velocity of the current, width of river bed, depth of river

Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

А а (A)	З з (Z)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	Т т (T)	ъ (–)
Д д (D)	Л л (L)	У у (U)	ы (Y)
Е е (E)	М м (M)	Ф ф (F)	ь (')
Ё ё (YO)	Н н (N)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Ц ц (TS)	Ю ю (YU or IU)
			Я я (YA or IA)

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

- Government and Administrative Buildings
- Military and Industrial Buildings
- Military and Communication Areas
- Subway Entrance
- Partly Demolished Buildings
- Demolished Buildings
- Built-Up Area with Fireproof Buildings Predominant
- Built-Up Area with Non-Fireproof Buildings Predominant
- Individual Fireproof Building
- Prominent Industrial Building
- Individual Dwelling, Fireproof
- Ruins of an Individual Dwelling
- Factory or Mill Chimney
- Factory or Mill with Chimney
- Factory or Mill without Chimney
- Mine or Open Pit Mine
- Operating Shaft or Mine
- Non-Operating Shaft or Mine
- Salt Mine
- Tailings Pile
- Pit
- Stone Quarry
- Gas Pump or Service Station
- Fuel Storage or Natural Gas Tank
- Oil or Natural Gas Derrick
- Small Hydroelectric Power Station
- Power Station
- Transformer Station
- Cemetery
- Burial Mound (height in metres)
- Triangulation Point on Burial Mound
- Triangulation Point
- Bench Mark
- Bench Mark (monumented)
- Telegraph Office
- Telephone Station
- Radio Station
- Radio Tower
- Airfield or Seaplane Base
- Landing Strip
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Direction and velocity of current
- Well
- Water Reservoir or Rain Water Pit
- Spring
- Isobath with value
- Heavy (Index) Contour Line
- Contour Line and Value
- Half Contour Line
- Spot Elevation Value
- Coniferous
- Deciduous
- Mixed
- Scrub

Key to Numbers on Mapping

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Middlesex	1:10,560	1869	3
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Surrey	1:10,560	1920	10
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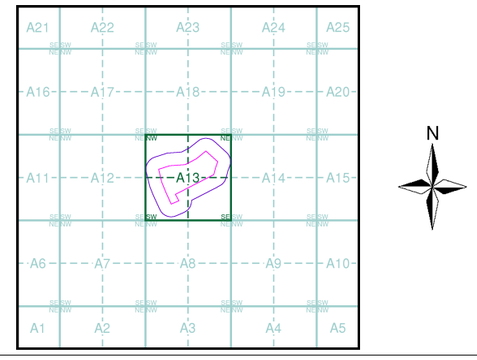
10K Raster Mapping	1:10,000	2006	23
VectorMap Local	1:10,000	2021	24

Russian Map - Slice A



Order Details

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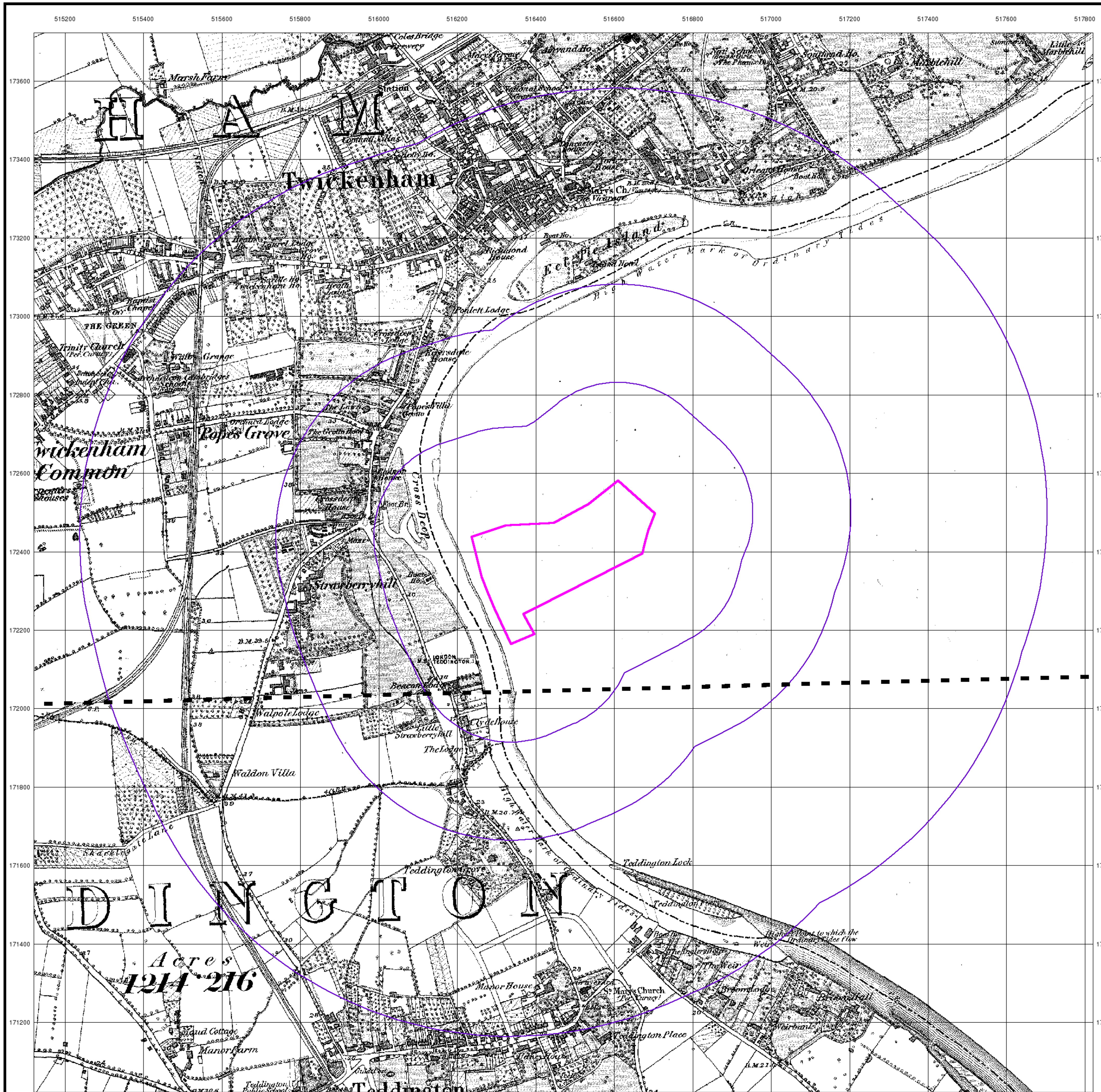
Search Buffer (m):	1000

Site Details

Thames Young Mariners O E C, Ham Fields, RICHMOND, TW10 7RX



0 400 m

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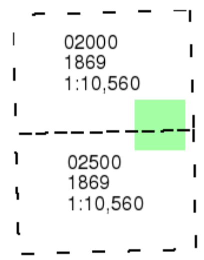
Middlesex

Published 1869

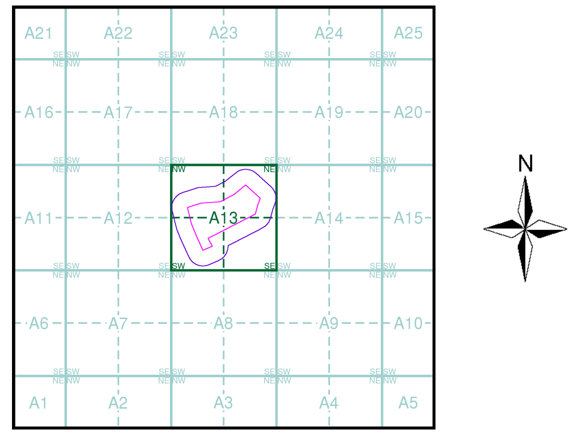
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940`s, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)



Historical Map - Slice A



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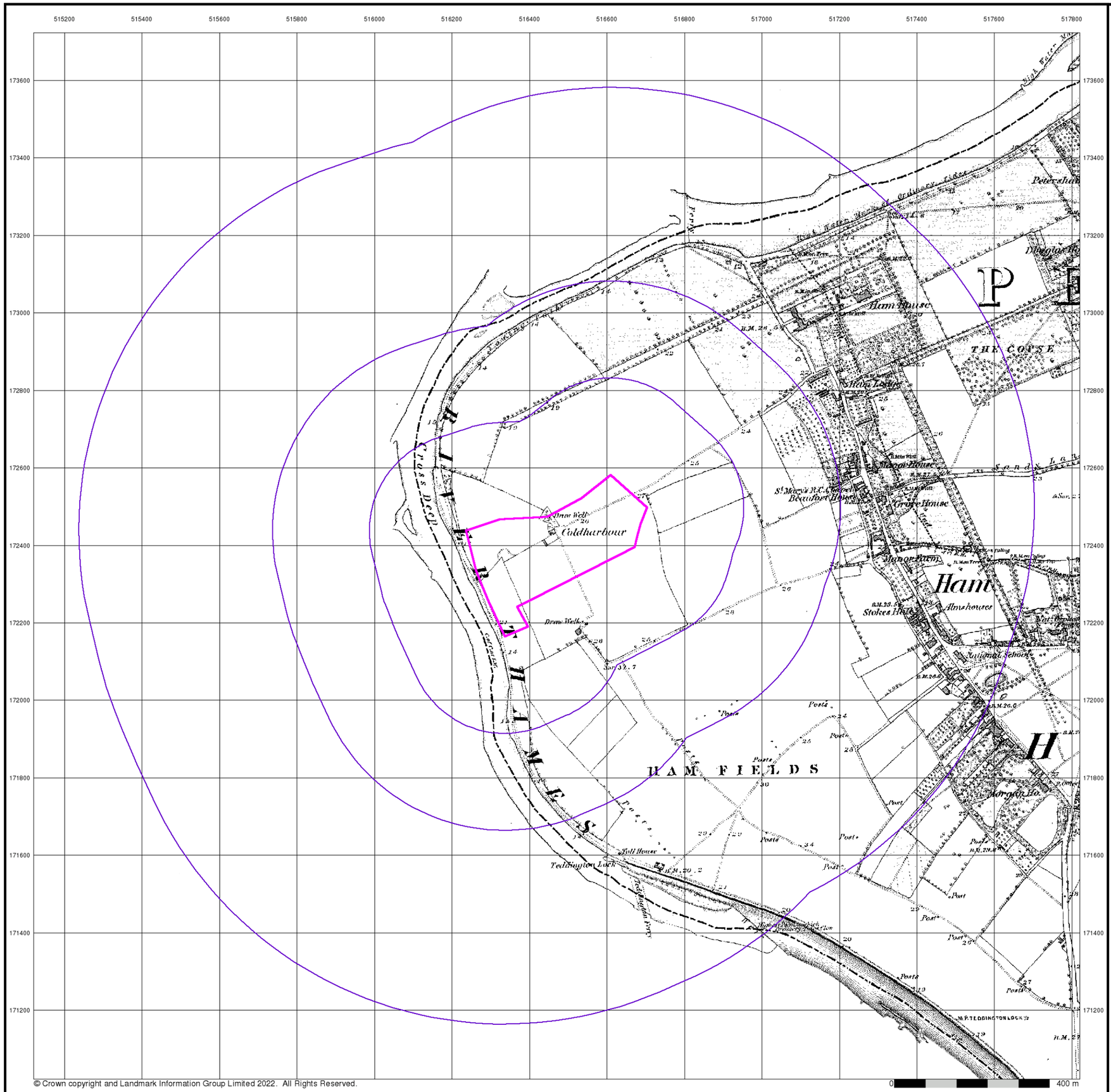

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Surrey

Published 1871

Source map scale - 1:10,560

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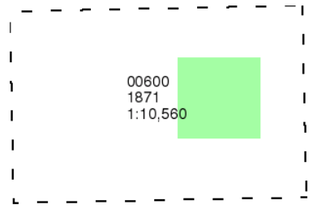
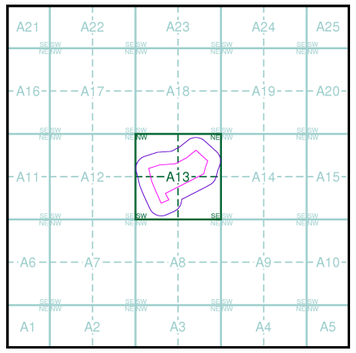
Map Name(s) and Date(s)



Historical Map - Slice A



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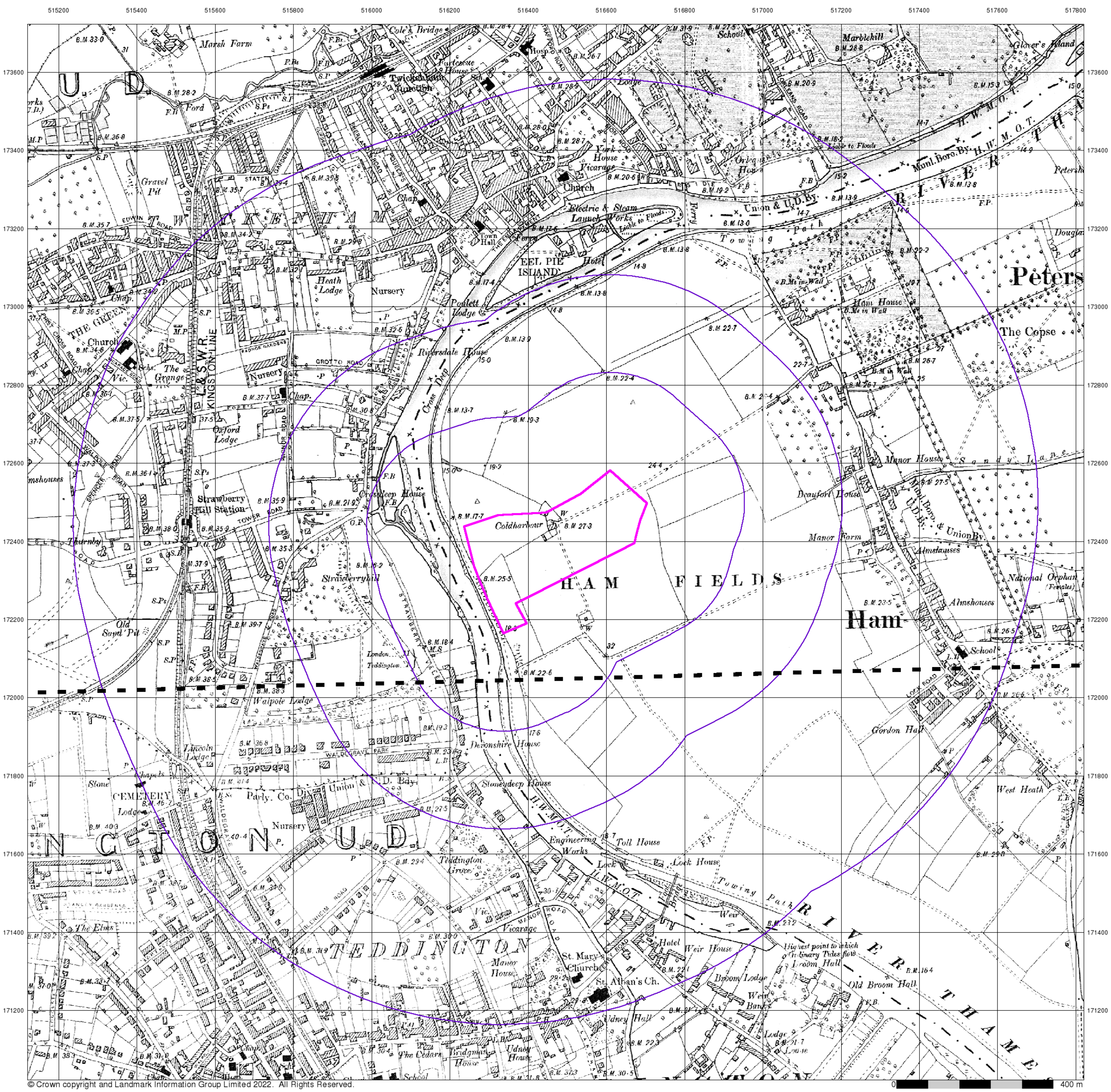

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0 — 400 m

soils LIMITED
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London

Published 1896

Source map scale - 1:10,560

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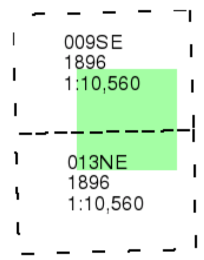
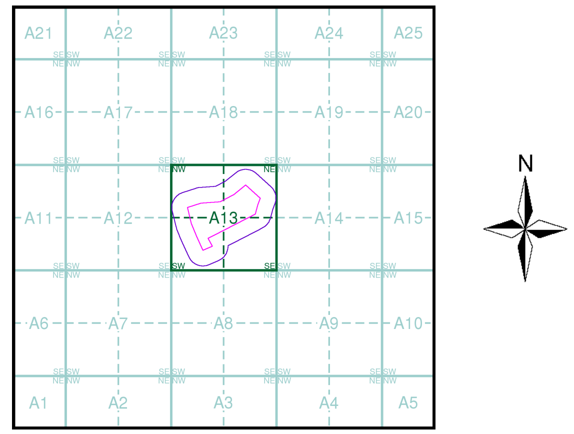


Historical Map - Slice A



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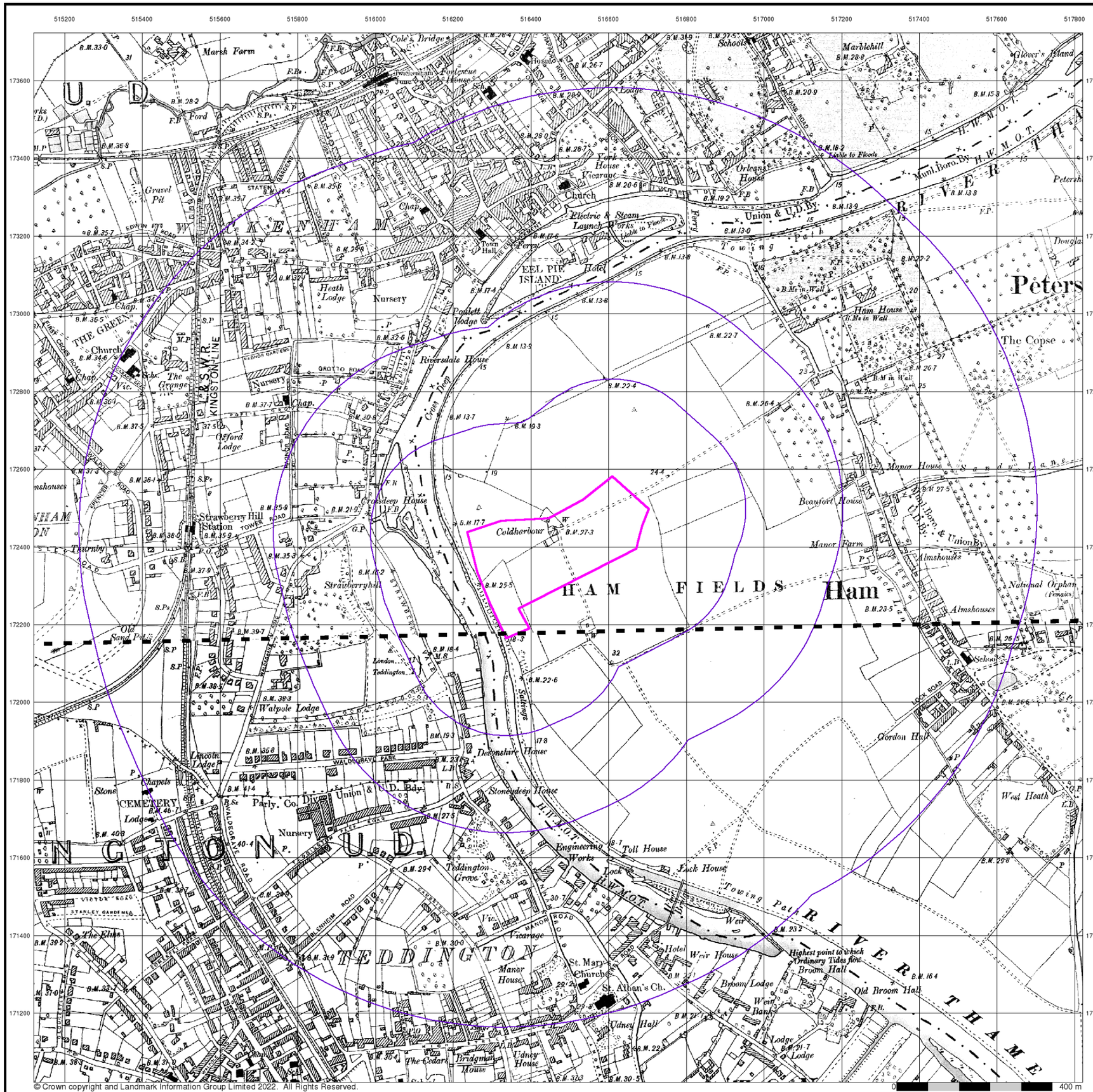

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Surrey

Published 1898 - 1899

Source map scale - 1:10,560

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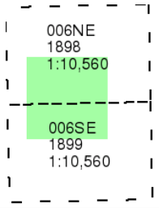
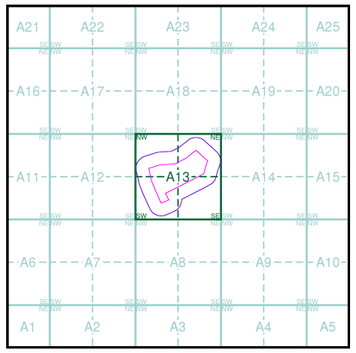


Historical Map - Slice A



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