

Preliminary Geo-Environmental Risk Assessment

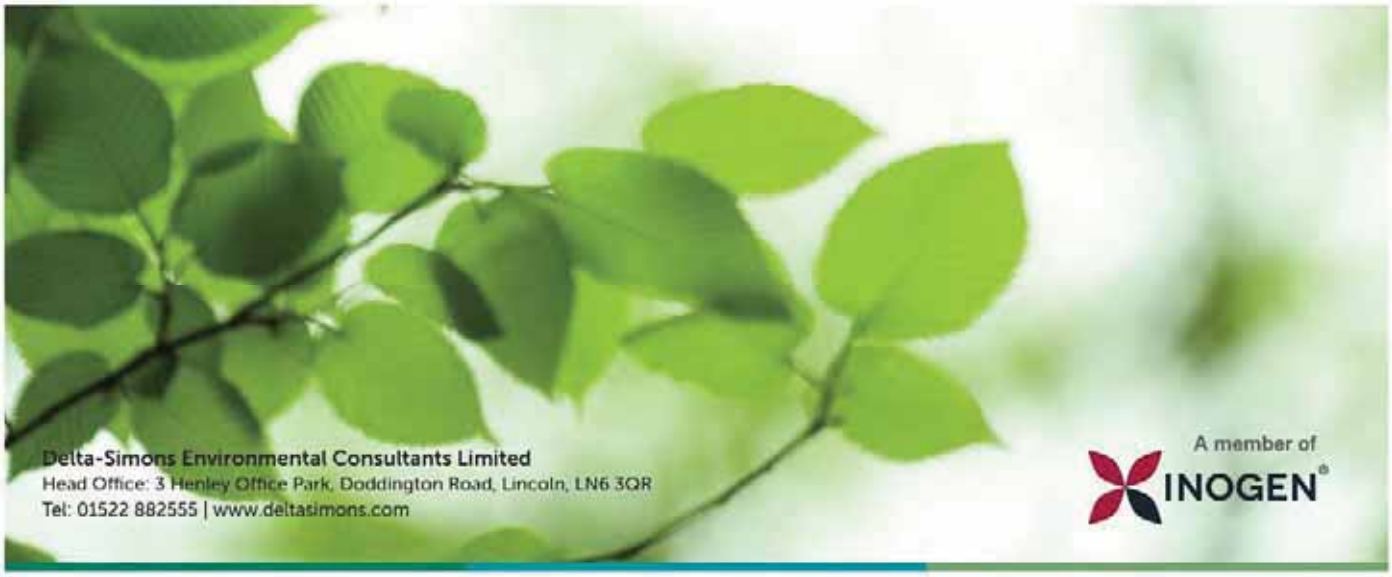
Brook Farm, Dane End, Therfield, Royston, Hertfordshire, SG8 9RH

Presented to **Mr Richard Evans**

Issued: February 2018

Delta-Simons Project No. 18-0137.01

deltasimons



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Report Details

Client	Mr Richard Evans
Report Title	Preliminary Geo-Environmental Risk Assessment
Site Address	Brook Farm, Dane End, Therfield, Royston, Hertfordshire, SG8 9RH
Project No.	18-0137.01
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Quality Assurance

Issue No.	Status	Issue Date	Comments	Author	Technical Review	Authorised
1	Final	9th February 2018				
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About us

Delta-Simons is a trusted, multidisciplinary environmental consultancy, focused on delivering the best possible project outcomes for customers.

Specialising in Environment, Health & Safety and Sustainability, Delta-Simons provide support and advice within the property development, asset management, corporate and industrial markets. Operating from nine locations - Lincoln, Birmingham, Dublin, Durham, Leeds, London, Manchester, Norwich and Nottingham - we employ over 70 environmental professionals, bringing experience from across the private consultancy and public sector markets.

Delta-Simons is proud to be a founder member of the Inogen® Environmental Alliance, enabling us to efficiently deliver customer projects worldwide by calling upon over 4,330 resources in our global network of consultants, each committed to providing superior EH&S and sustainability consulting expertise to our customers. Inogen® Environmental Alliance offers its clients more consultants, with more services in more countries than the traditional multinational consultancy.

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1.0 Introduction

1.1 Appointment

Delta-Simons Environmental Consultants Limited ("Delta-Simons") was instructed by Mr Richard Evans (the "Client") to prepare a Preliminary (Geo-Environmental) Risk Assessment for a residential property located off Dane End in Therfield, Royston, SG8 9RH (the "Site"). A Site Location Plan is included as Figure 1.

1.2 Context & Purpose

The aim of this Report is to identify likely environmental issues associated with soil and groundwater conditions that may affect the proposed development of the Site. This Report is designed in accordance with 'the Model Procedures for the Management of Land Contamination (CLR 11)' and the relevant Planning Practice Guidance (Land Affected by Contamination) https://www.gov.uk/guidance/land-affected-by-contamination.

The proposed development for the Site is the construction of a new two-storey residential property.

1.3 Scope of Works

- Review of the environmental setting of the Site, including the current use / status of the Site and surrounding area, and review of the geology, hydrogeology and hydrology;
- Review of regulatory information relating to the Site (A Landmark Envirocheck Report for the Site (Ref. 155717132_1_1), dated February 2018);
- Review of the historical activities of the Site and surrounding area from historical maps included as part of the Envirocheck Report;
- Review of the online planning records for the Site;
- Review Coal Authority (CA) online data;
- Consult and review information from the Local Authority in relation to Part 2A of the 1990 Environmental Protection Act;
- Complete a Site reconnaissance by undertaking a visual inspection of readily accessible areas of the Site;
- Complete an interview with a Site representative;
- Develop an outline Conceptual Site Model and undertake a Preliminary Risk Assessment with respect to potential contamination focussed on the proposed land use;
- Identify potential contamination risks and / or liabilities associated with the proposed development of the Site; and
- Provide commentary on potential land contamination in the context of the proposed development.

In completing this Assessment, Delta-Simons has utilised the following data sources and third party information:

- British Geological Survey (BGS) data;
- Environment Agency (EA) online data; and
- Information provided by North Hertfordshire District Council.

1.4 Limitations

The standard limitations associated with this assessment are presented in Appendix A. In addition, there are the following specific limitations that apply to this assessment:

- The Consultant undertaking the Site inspection will observe for evidence of invasive species, particularly Japanese Knotweed. It should be noted however that the Consultant is not a trained ecologist and a separate survey undertaken by an experienced Ecologist should be completed to provide a robust assessment;

- The Report includes a preliminary assessment for the potential for radon gas hazards. A detailed radon assessment falls outside of the scope of this report, and the requirement for radon mitigation measures in the proposed development should be identified separately to the satisfaction of North Hertfordshire District Council; and
- A commentary has been provided regarding existing Site services in the context of assessing environmental and geotechnical issues, however a detailed review of all overhead or underground services is outside the scope of this assessment.

2.0 Site Context & Data Review

2.1 Site information

Co-ordinates	Centred approximately at National Grid Reference 534520, 236460.	**Elevation**	141 m AOD
		Area	0.65 Ha
Site Location	The Site is located off Dane End in Therfield, approximately 4 km south of Royston.		
Proposed Development Description	The proposed development for the Site is the construction of a new residential house in the location of an existing agricultural building. The proposed development will comprise a two-storey building, a driveway using an existing access road, pond and soft landscaping covering the rest of the Site. Sketches of the development proposals are presented in Figure 3.		
Current Site Use	Delta-Simons conducted a Site visit on 5th February 2018. A relevant Feature Plan is included as Figure 2 and pertinent information that was observed or reported on-Site is summarised as follows: ▲ Several connected agricultural outbuildings which are currently unused. Two of the buildings contain plastic piping and timber; ▲ A pond is located in the north of the Site; ▲ A recently built brick structure adjacent to the outbuildings, housing temporary services for the Site; ▲ Two recently installed concrete plinths in the south western corner of the Site for proposed garden outhouses; ▲ A shallow trench has been dug from the south west corner to the west side of the existing agricultural outbuilding with an associated spoil heap; and ▲ There were no obvious signs of past storage tanks being present on the Site.		
Current Surrounding Area	**North**	A residential property, with agricultural fields beyond.	
	East	Dane End, the River Rib and residential properties, with agricultural fields beyond.	
	South	A residential property, with agricultural fields beyond.	
	West	Agricultural Fields, with residential properties beyond.	

2.2 Environmental Setting

Published Geology	From the British Geological Survey (BGS) Geology of Britain Viewer the Site is indicated as being underlain by superficial deposits of Head, comprising clay, silt, sand and gravel. The underlying bedrock is the Lewes Nodular Chalk Formation And Seaford Chalk Formation. Limited depths of Made Ground are considered likely to be present on-Site given absence of historical redevelopment on-Site.
Specific Ground Conditions	From the BGS Borehole Record Viewer, there are no boreholes located in the close vicinity of the Site.

Hydrogeology	The EA classify the superficial deposits (Head) as a Secondary Aquifer - Undifferentiated and the bedrock (Lewes Nodular Chalk Formation And Seaford Chalk Formation) as a Principal Aquifer. The EA data also indicates that the Site is in a Zone II (Total Catchment) designated groundwater Source Protection Zone. According to the Envirocheck Report, there are no licensed abstraction records from groundwater located within 1 km of the Site. The Site is located in a Nitrate Vulnerable Zone. From a BGS borehole log circa 1km to the north of the Site (ref: TL33NW7), underlying groundwater is present at a resting level of approximately 81 m bgl in the Chalk. There are two discharge consents within 250 m of the Site for discharge to groundwater, relating to the discharge of final/treated effluent.
Hydrology	The nearest surface water feature is the River Rib located approximately 10 m to the east of the Site. There is one discharge consent within 250 m of the Site for discharge to surface water relating to the discharge of a freshwater stream/river. According to the Envirocheck Report, there are no licensed abstraction records from surface water located within 500 m of the Site.
Coal Mining	Reference to the Coal Authority on-line viewer indicates that the Site is not with a Coal Mining Reporting Area and is not within a Development High Risk Area. Consequently, a Coal Mining Risk Assessment (CMRA) is unlikely to be required under the planning regime.
Radon Gas	The Site lies within an area where less than 1% of homes are at or above the National Radiological Protection Board (NRPB) recommended “action level” for radon. BRE211 (2007) indicates that no radon protective measures are necessary in the construction of new buildings at the Site.

2.3 Historical Use of the Site & Surrounding Area

Approach	The historical development of the Site and surrounding area has been assessed through a review of available historical OS maps and Google Earth historical satellite imagery. A summary of the key historical Site uses and developments in the surrounding area is presented below. Copies of historical maps are included as Appendix C.
Historical Features On-Site	The Site appears to have been in agricultural use from the earliest recorded mapping in 1878 with several connected buildings and the pond in the same locations on the Site as the most recent mapping in 2017. No sources of potential contamination have been identified.
Potentially Contaminative Historical Features Off-Site	From the earliest available mapping in 1878, surrounding land appears to be in use for agriculture, with several farms located within 250 m of the Site. There are no identifiable historic potential sources of contamination within 250 m of the Site.

2.4 Environmental Database Review

Approach	The Landmark Envirocheck® Report provides a database of environmental information held by various statutory bodies including the EA, Local Authority (LA), Health & Safety Executive (HSE) and HPA amongst others. A full copy of the Envirocheck® Report is provided in Appendix D and the most relevant information is summarised below.
Features On-Site	The Landmark Envirocheck® Report does not list any relevant environmental information on-Site.
Potentially Contaminative Features Off-Site	Pertinent entries included within the Landmark Envirocheck® Report located within 500 m of the Site include two pollution incidents to controlled waters, both involving oil pollutants. The first incident located 127 m south east of the Site dated 1st March 1990 was categorised as a major incident. The second incident located 60 m south east of the Site dated 9th July 1992 was categorised as a minor incident. There is one Manufacturing and Production Point of Interest associated with arable farming, located 389 m south west of the Site. There are no BSG, LA and EA registered landfill sites on or within 500 m of the Site. Within the wider area, pertinent entries include a BGS recorded mineral site (Therfield Chalk Pit) recorded approximately 669 m north of the Site which is no longer in use.

2.5 Planning Review / Regulatory Enquiries

On-line Planning Portal	North Hertfordshire District Council	**Date Accessed**	06/02/2018
Findings	There are seven planning applications for the Site listed on the North Hertfordshire District Council planning portal. The first planning application listed (ref. 85/00145/1) is for the change of use and conversion of farm building to a four bedroom dwelling with garages and 2 workshop units. The application was received in January 1985 and refused in March 1985. The second planning application listed (ref. 86/00583/1) is for the change of use and conversion of farm building to a two bedroom dwelling and 4 workshop units. The application was received in April 1986 and refused in May 1986. The third planning application listed (ref. 14/02225/1PN) is a Prior Approval Notification - Class MB: Change of use of agricultural building to one, three bedroom dwelling and external alterations involving the installation/replacement of windows, doors, roofs and exterior walls. The application was received in August 2014 and withdrawn in September 2014. The fourth planning application listed (ref. 15/02216/1PN) is a Prior Approval Notification - Class Q: Change of use of agricultural building to one, three bedroom dwelling and external alterations involving the installation/replacement of windows, doors, roofs and exterior walls. The application was received in August 2015 and withdrawn in October 2015. The fifth planning application listed (ref. 16/00213/1PN) is a Prior Approval Notification - Class Q: Change of use of agricultural building to one, three bedroom dwelling and external alterations involving the installation/replacement of windows, doors, roofs and exterior walls. The application was received in January 2016 and withdrawn in March 2016. The sixth planning application listed (ref. 16/01031/1PN) is a Prior Approval Notification - Class Q: Change of use of agricultural building to one, three bedroom dwelling and external alterations involving the installation/replacement of windows, doors, roofs and		

	exterior walls. The application was received in May 2016 and prior approval was given in June 2016. The seventh planning application listed (ref. 17/02752/1) is for the erection of one, three bed detached dwelling following demolition of existing agricultural outbuilding. The application was received in October 2017 and conditional permission was given in January 2018. No additional potentially contaminative activities or other information pertinent to this assessment was identified from the historical planning records.
Part 2A of the Environmental Protection Act (EPA) 1990	At the time of writing, the Contaminated Land Officer (CLO) has been contacted for information on the priority of the Site under Part 2A and any information relating to previous intrusive investigations and/or remediation works at the Site. At the time of writing, Delta-Simons had not received a response. Delta-Simons will update this report should the CLO response provide additional pertinent information relevant to this assessment.

2.6 Previous Reports

List of Reports	Delta-Simons has not obtained any previous reports relating to the Site.

3.0 Conceptual Site Model

3.1 Introduction

A Conceptual Site Model (CSM) represents the relationships between contaminant sources, pathways and receptors, to support the identification and assessment of Possible Pollutant Linkages (PPL).

3.2 Potential Contamination Sources

Potential sources of contamination identified as part of the desktop review are presented in the following table:

Source	Location	Dates Present	Potential Associated Contaminants of Concern
Potential Made Ground (albeit likely to be limited in extent)	Site-wide	Pre-1878 to present	Heavy metals, PAHs, TPH
Potential contamination from agricultural use.	Site-wide	Pre-1878 to present	Heavy metals, PAHs, TPH

* Based on UK Department of the Environment Industry Profiles

3.3 Potential Receptors

Relevant potential receptors are considered to include:

- Construction workers.
- Third parties during construction (adjacent Site users and adjacent residents).
- Future Site users and maintenance workers.
- The River Rib water course.
- The underlying aquifers.
- The Built Environment (new buildings and infrastructure / utilities).

3.4 Potential Pathways

The potential pathways are considered to be as follows:

- Direct contact, ingestion or inhalation of soil bound contaminants / dust during or following redevelopment.
- Inhalation of organic vapours associated with contamination.
- Migration of ground gas / vapours into on-Site buildings causing asphyxiation or risk of explosion.
- Leaching of contamination into groundwater followed by migration of groundwater to the wider groundwater environment or discharge to surface waters.
- Direct contact between aggressive ground conditions and new infrastructure.

Source	Pathway(s)	Receptor(s)	Risk Ratings	Justification & Mitigation (if required)
Potential Made Ground (Heavy metals, PAHs and TPH) And Potential contamination from agricultural use. (Heavy metals, PAHs and TPH)	Direct contact/ ingestion and inhalation of dust, vapours and asbestos fibres.	Future Site users. Groundworkers during the redevelopment or during any sub-surface maintenance works.	**Low Risk**	Given the Sites former use as agricultural land and outbuildings, it is considered unlikely that any significantly elevated contamination concentrations are present at the Site. Some Made Ground may be present, and a 'hotspot' protocol should be in place during the redevelopment for ground workers to act upon should suspected contamination be identified. Groundworkers should use appropriate personal protective equipment (PPE), including respiratory protective equipment (RPE), if required, and maintain good standards of hygiene to be protected from any soil contamination which may be present
	Leaching of contamination into groundwater. Vertical and lateral migration of contamination through permeable deposits below the Site.	Controlled waters. (River Rib, underlying aquifers and groundwater SPZ)	**Very Low Risk**	Given the absence of potential significant sources of contamination which are likely to result in impact to underlying groundwater, the risk to controlled water receptors is considered to be very low.
	Direct infiltration in water supply pipes.	Service conduits.	**Low Risk**	Given the absence of potential sources of significant organic contamination, the risk to new water supply pipes is considered to be low. The local water authority may require analysis of soil samples to confirm whether upgraded water supply pipes are required, however.
Potentially contaminated groundwater from off-Site sources.	Lateral migration and subsequent indoor inhalation of volatile vapours.	Groundwater beneath the Site and current and future Site users.	**Very Low Risk**	Aside from two pollution incidents to controlled waters in 1990 and 1992, no additional significant sources of potential contamination have been identified within 500 metres of the Site. As such, it is considered that the risk of off-Site contamination migrating beneath the Site is very low.
Hazardous ground gas (Potential Made Ground).	Accumulation of gas in enclosed spaces and sub-floor voids.	Buildings and future Site users.	**Very Low Risk**	Given the likely absence of significant depths of Made Ground at the Site, the risk from ground gas is considered to be very low. The Site is not located in an area where protection from Radon ground gas is required.

4.0 Conclusions & Recommendations

4.1 Environmental Considerations

Summary	The Site currently consists of several connected agricultural outbuildings, a gravel driveway and a pond. The proposed development includes the demolition of the existing agricultural outbuildings and the erection of a new, two story residential house, in the same location. No significant sources of contamination have been identified at the Site which are considered likely to represent a significant risk to end users of the development.
Soils	The risk of the Site requiring widespread remediation to protect end users is considered to be low, given the absence of potential sources of significant contamination at the Site. If contamination and / or ACMs are identified, then this may have an impact on waste disposal costs.
Groundwater	Significant widespread groundwater contamination is not anticipated.
Ground Gas	It is considered unlikely that a significant ground gas risk exists from anthropogenic sources.
Building Fabric & Services	Widespread contamination at the Site is considered unlikely. However, services are recommended to be placed in clean corridors. A drinking water pipeline assessment may be required from the local water authority.
Recommendations and Development Abnormals	Based on the information obtained to date the following information can be concluded: ▲ Additional, unidentified localised areas of contamination may exist at the Site and an appropriate 'hotspot' protocol should be in place for groundworkers to act upon should such contamination be identified during the construction process; ▲ As with all development sites, groundworkers who are required to perform sub-surface work at the Site should be made aware of the possibility of encountering localised low levels of contamination. Therefore, good standards of personal hygiene should be observed and appropriate levels of PPE/RPE utilised where necessary; ▲ Suitable dust suppression techniques will need to be implemented by groundworkers during construction and demolition works; ▲ Confirmation should be sought from the Local Water Authority as to whether they will require upgraded pipework to be installed for new service installations; and ▲ Elevated costs above standard inert rates (non-hazardous) should be anticipated for disposal of engineering arisings from any Made Ground to include landfill tax. Additional waste classification testing (including WAC testing) is likely to be required to facilitate off-Site disposal of Site-won soils.

Figure 1 – Site Location Plan



Scale: 1 / 500,000 @ A4

LEGEND

Site Boundary

Scale: 1 / 10,000 @ A4

Contains OS data © , Crown Copyright and Database Right (2016/2017)

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Environment - Health & Safety - Sustainability

TITLE:
Site Location Plan
Brook Farm
Royston

DRAWN BY:	SCALE:	PROJECT NO:
EN	To Scale@A4	18-0137.01
CHECKED BY:	REVISION:	FIGURE NO:
AN	1	1
DATE: 02 February 2018		

Figure 2 – Relevant Feature Plan

PH01: View from the north-west corner of the Site, showing the pond and the agricultural outbuildings.

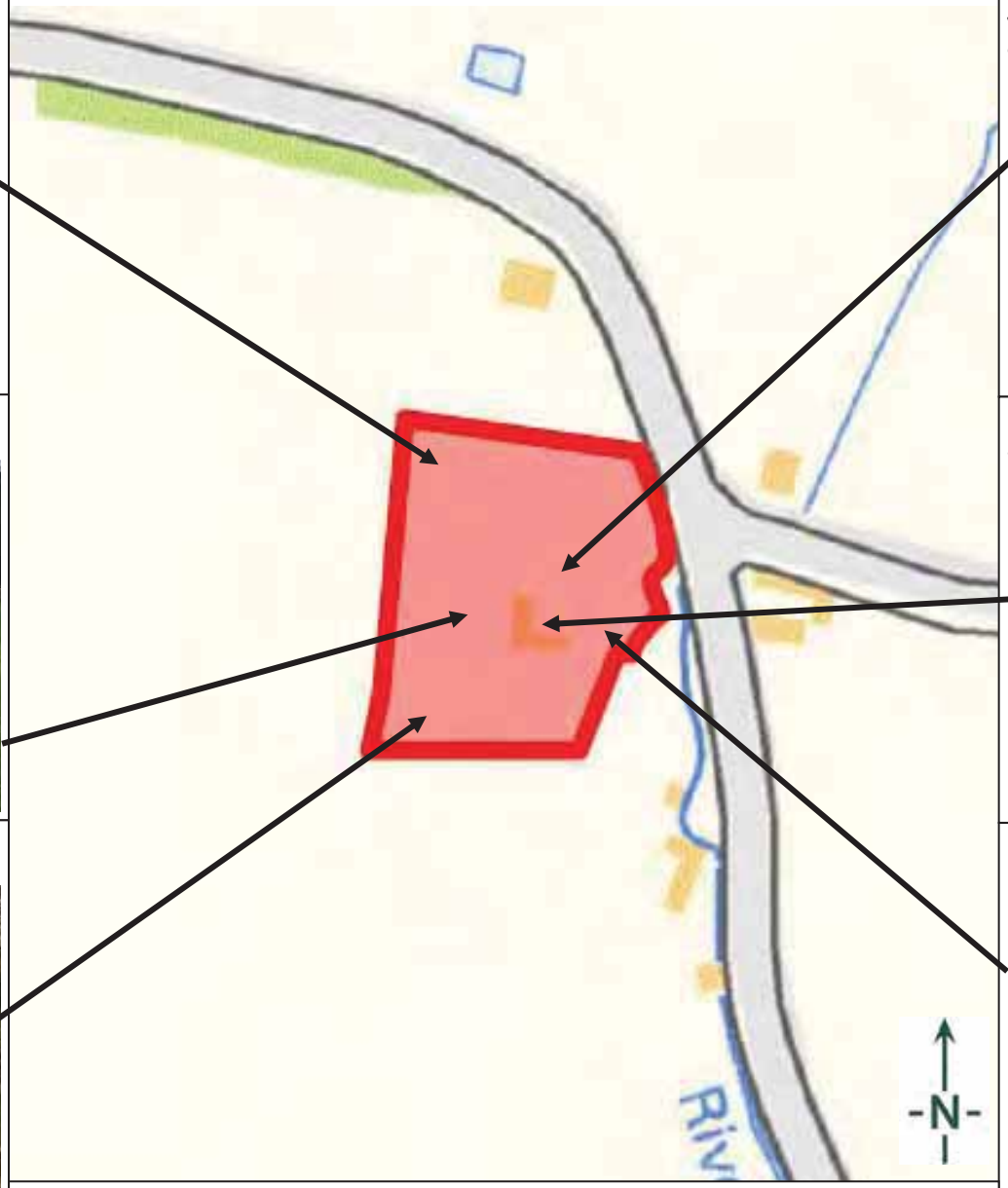


PH02: View of the south of the Site, showing the shallow trench and spoil heap.



PH03: View of the largest concrete plinth located in the south west corner of the Site.





Note: There is uncertainty as unrecorded land use may have occurred and caused contamination that has not been identified by the observations,

PH04: View of the centre of the Site, looking south west. Showing the temporary water and electrical service location.



PH05: View showing the interior of the largest agricultural outbuilding.



PH06: View of the centre of the Site, looking west. Showing the agricultural outbuildings.



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TITLE:
Relevant Features Plan
Brook Farm, Dane End, Therfield
Royston

DWN: AN	SCA: Not to scale	PROJECT NO.: 18-0137.01	
CHK: TH	REV: -	FIGURE NO.: 2	
DATE: February 2018			

Figure 3 – Proposed Development Plan



PROPOSED SITE PLAN

Client: R. Evans Project: Brook Farm, Dane End, Therfield, Herts, SG8 9RH Date: 16/10/2017

BIDWELLS

Site Plan Provided by Client

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TITLE:
Proposed Development Plan
Brook Farm
Royston

DRAWN BY: EN	SCALE: Not to Scale	PROJECT NO: 18-0137.01
CHECKED BY: AN	REVISION: 1	FIGURE NO: 3
DATE: 02 February 2018		

Appendix A - Limitations

Limitations

The recommendations contained in this Report represent Delta-Simons professional opinions, based upon the information listed in the Report, exercising the duty of care required of an experienced Environmental Consultant. Delta-Simons does not warrant or guarantee that the Site is free of hazardous or potentially hazardous materials or conditions.

Delta-Simons obtained, reviewed and evaluated information in preparing this Report from the Client and others. Delta-Simons conclusions, opinions and recommendations has been determined using this information. Delta-Simons does not warrant the accuracy of the information provided to it and will not be responsible for any opinions which Delta-Simons has expressed, or conclusions which it has reached in reliance upon information which is subsequently proven to be inaccurate.

This Report was prepared by Delta-Simons for the sole and exclusive use of the Client and for the specific purpose for which Delta-Simons was instructed. Nothing contained in this Report shall be construed to give any rights or benefits to anyone other than the Client and Delta-Simons, and all duties and responsibilities undertaken are for the sole and exclusive benefit of the Client and not for the benefit of any other party. In particular, Delta-Simons does not intend, without its written consent, for this Report to be disseminated to anyone other than the Client or to be used or relied upon by anyone other than the Client. Use of the Report by any other person is unauthorised and such use is at the sole risk of the user. Anyone using or relying upon this Report, other than the Client, agrees by virtue of its use to indemnify and hold harmless Delta-Simons from and against all claims, losses and damages (of whatsoever nature and howsoever or whensoever arising), arising out of or resulting from the performance of the work by the Consultant.

Appendix B – Risk Definitions

Land Contamination Risk Definitions

The following methodology is based on the methodology presented in CIRIA C552 Contaminated Land Risk Assessment: A Guide to Good Practice 2001. It requires the classification of the:

- Magnitude of the potential consequence (severity) of the Risk occurring: and
- Magnitude of the Probability (likelihood) of the Risk occurring.

The classifications are then compared to indicate the risk presented by each pollutant linkage.

Consequence to Receptor Definition Matrix

	Human Health	**Controlled Waters**	**Buildings/Services**
Severe Consequence	Acute or chronic permanent impact on human health	Sensitive controlled water pollution ongoing, or just about to occur	Catastrophic collapse
Medium Consequence	Chronic permanent impact on human health	Gradual pollution of sensitive controlled water	Degradation of materials
Mild Consequence	Chronic temporary impact on human health	Gradual pollution of non-sensitive controlled water	Damage to building rendering it unsafe.to occupy (e.g. foundation damage resulting in instability)
Minor Consequence	Non-permanent health effects to human health (easily prevented by means such as personal protective clothing etc)	Slight discoloration of water	Easily repairable effects of damage to buildings, structures and services, i.e discoloration of concrete

Probability Definitions

Probability	**Definition in Context**
Higher	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution. Positive evidence of source, pathway and receptor.
Likely	There is a pollution linkage and an event that either appears very likely in the short term and almost inevitable over the long term, or there is evidence at the receptor of harm or pollution. Positive evidence of source, pathway and receptor.
Low Likelihood	There is a pollution linkage and circumstances are possible under which an event could occur. However, it is by no means certain that even over a longer period such event would take place, and is less likely in the shorter term.
Unlikely	There is a pollution linkage but circumstances are such that it is improbable that an event would occur even in the very long term No evidence of hazard, pathway, and receptor

Standard Risk Matrix

		Consequence/ Magnitude of impact			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High**	Very high	High	Moderate	Moderate/Low
	Likely	High	Moderate	Moderate/Low	Low
	Low Likelihood	Moderate	Moderate/Low	Low	Very Low
	Unlikely	Moderate/Low	Low	Very Low	Very Low

Classified risks and likely action

Significance Level	**Definition/Comments**
Very High Risk	There is a high probability that severe harm could arise to a designated receptor from an identified hazard, OR, there is evidence that severe harm to a designated receptor is currently happening. This risk, if realised, is likely to result in a substantial liability. Urgent investigation (if not undertaken already) and remediation are likely to be required. Demonstrable contaminated land situation, highest threat & liability level, urgent action recommended.
High Risk	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability. Urgent investigation (if not undertaken already) is required and remedial works may be necessary in the short term and are likely over the longer term. Likely contaminated land situation, risk assessment and action recommended.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, if is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild Investigation (if not already undertaken) is normally required to clarify the risk and to determine the potential liability. Some remedial works may be required in the longer term. Plausible contaminated land situation, risk assessment and possible action recommended.
Low Risk	It is possible that harm could arise to a designated receptor from an identified hazard, but it is likely that this harm, if realised, would at worst normally be mild. Unlikely contaminated land situation, possible risk assessment and possible action.
Very Low Risk	There is a low possibility that harm could arise to a receptor. In the event of such harm being realised it is not likely to be severe. Negligible risk, no action recommended except vigilance for changes in conditions.

Appendix C –Historical Maps

Gravel Pit
Sand Pit
Other Pits
Quarry
Shingle
Orchard
Osiers
Reeds
Marsh
Wood
Deciduous
Brushwood
Furze
Rough Pasture

Arrow denotes flow of water
Trigonometrical Station
Site of Antiquities
Bench Mark
Pump, Guide Post, Signal Post
Well, Spring, Boundary Post
Surface Level

Instrumental Contour
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

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
Sloping Masonry
Electricity Transmission Line
Pole

Cutting
Embankment
Standard Gauge Multiple Track
Standard Gauge Single Track
Road Under
Road Over
Level Crossing
Foot Bridge
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

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)
Bench mark
Triangulation

Mapping Type
Essex
Hertfordshire
Hertfordshire
Hertfordshire
Hertfordshire
Hertfordshire
Ordnance Survey Plan
Ordnance Survey Plan
10K Raster Mapping
10K Raster Mapping
VectorMap Local

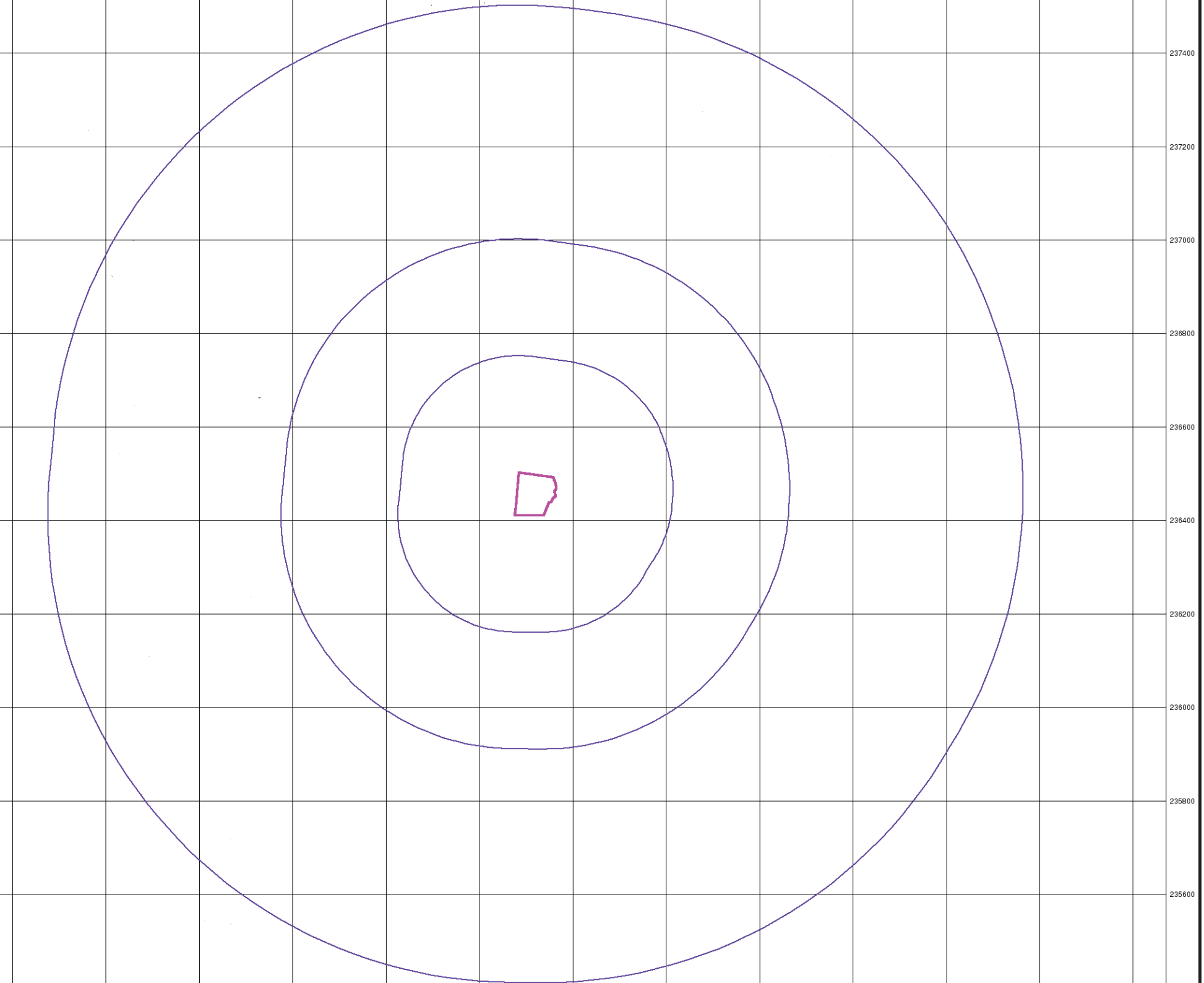
Historical Map - Sli



Order Details

Order Number: 1
Customer Ref: 1
National Grid Reference: 5
Slice: A
Site Area (Ha): 0
Search Buffer (m): 1

Site Details

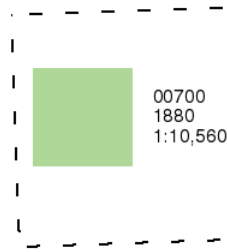


Published 1880

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D



Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1882

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

00400
1882
1:10,560

00800
1883
1:10,560

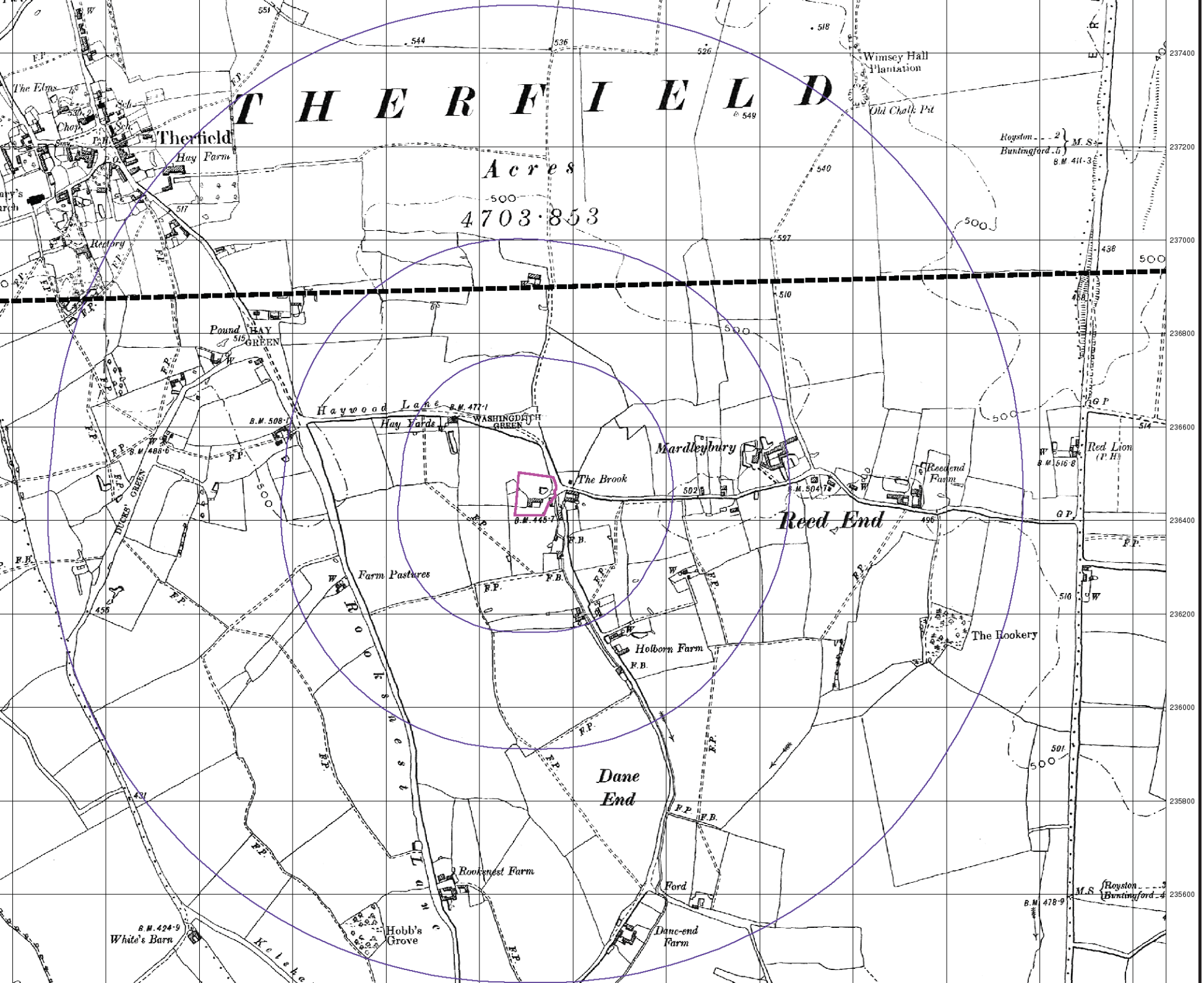
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

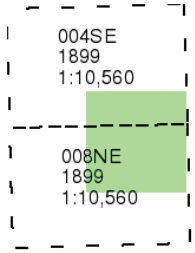


Published 1899

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D



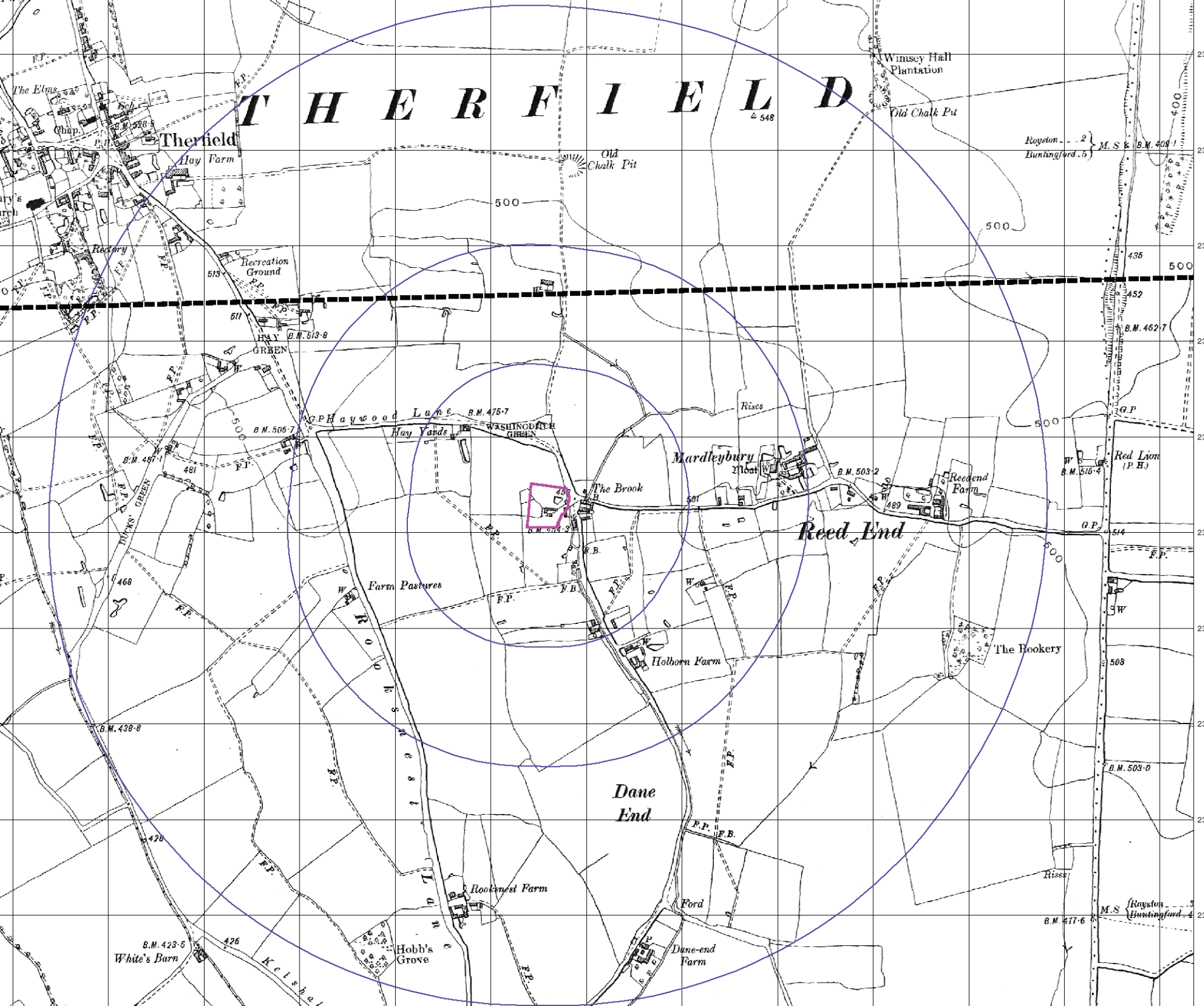
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1925

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

004SE
1925
1:10,560

008NE
1925
1:10,560

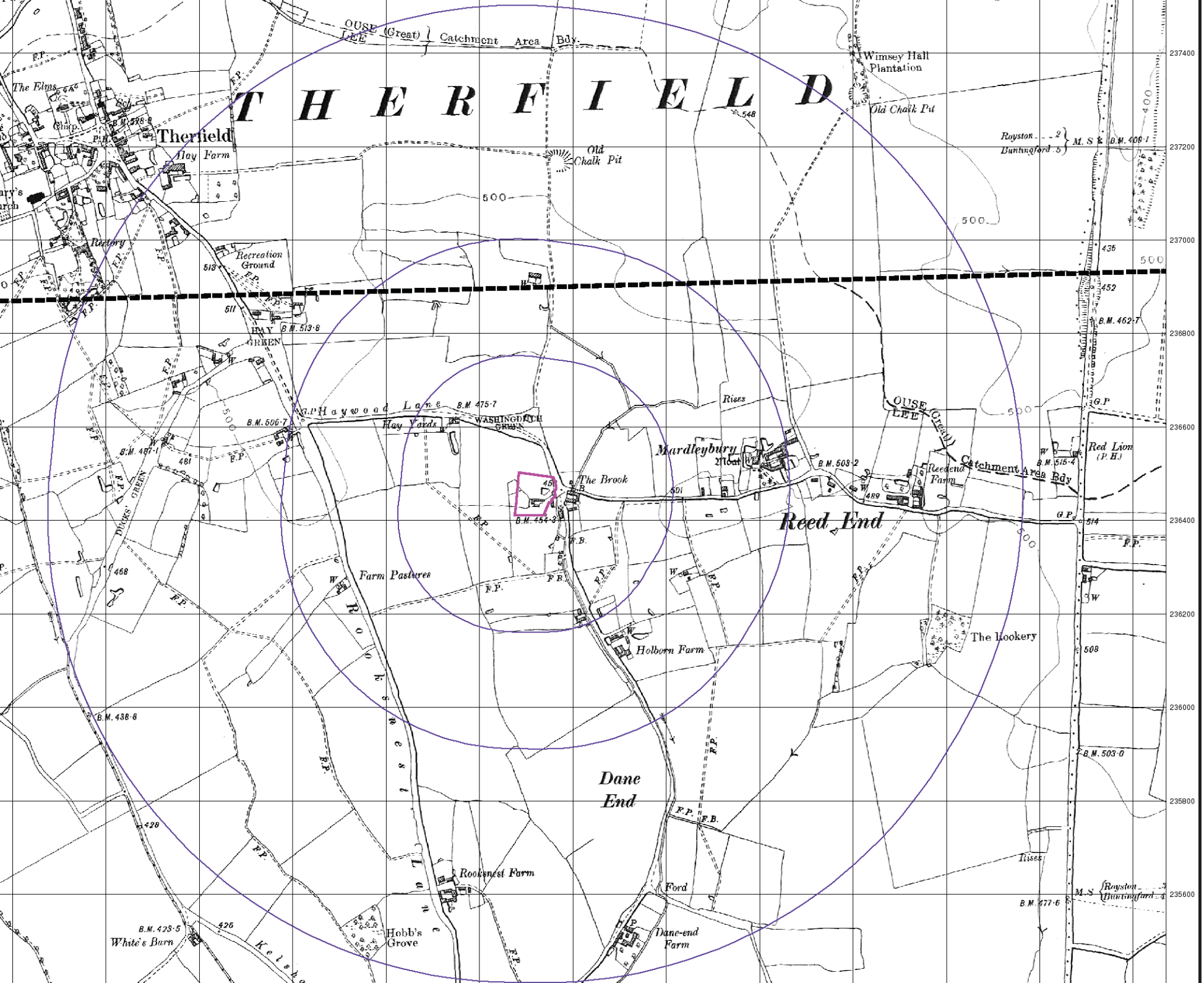
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1925

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

004SE
1925
1:10,560

008NE
1925
1:10,560

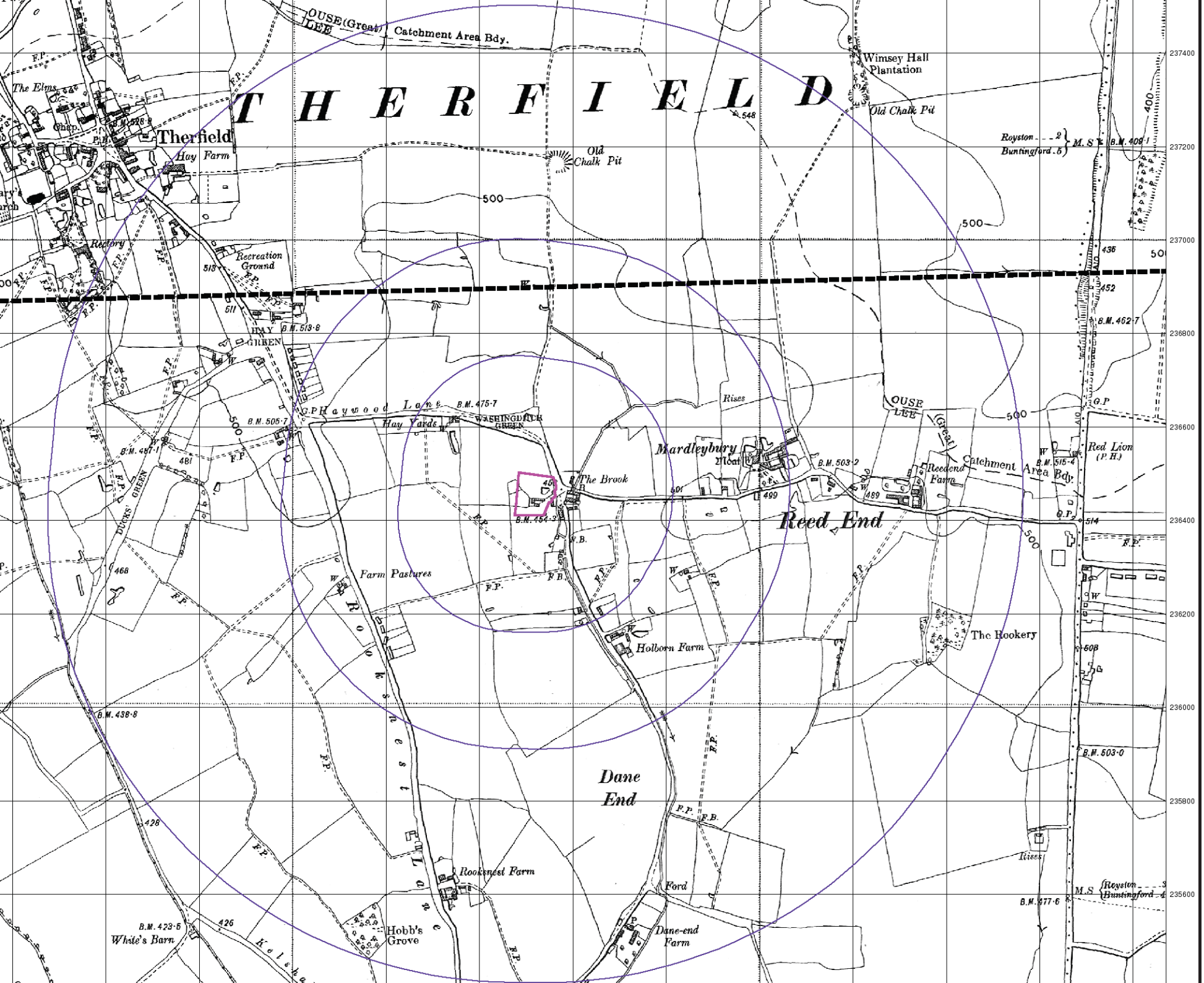
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1947

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

004SE
1947
1:10,560

008NE
1947
1:10,560

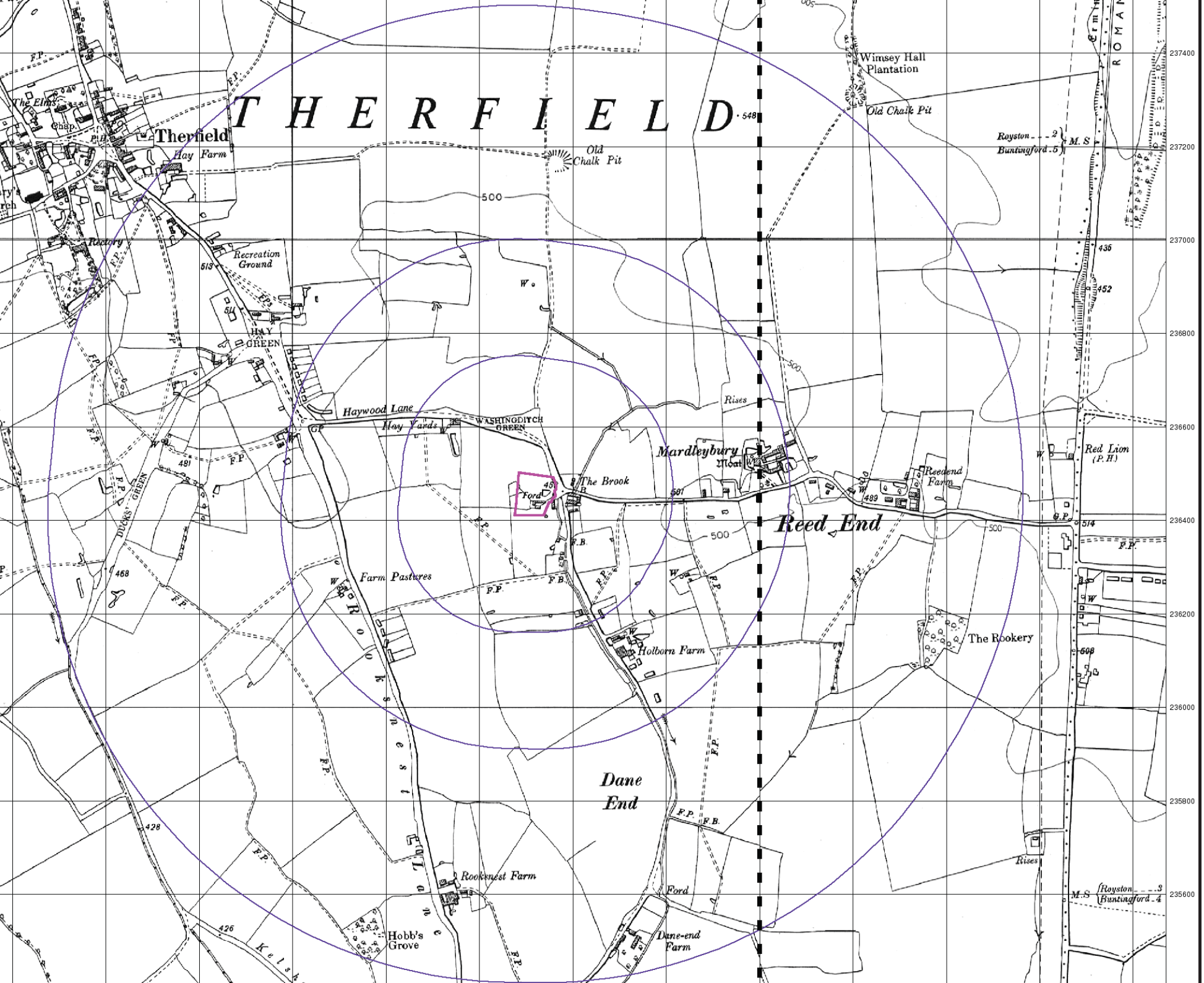
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1960

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

TL33NW
1960
1:10,560

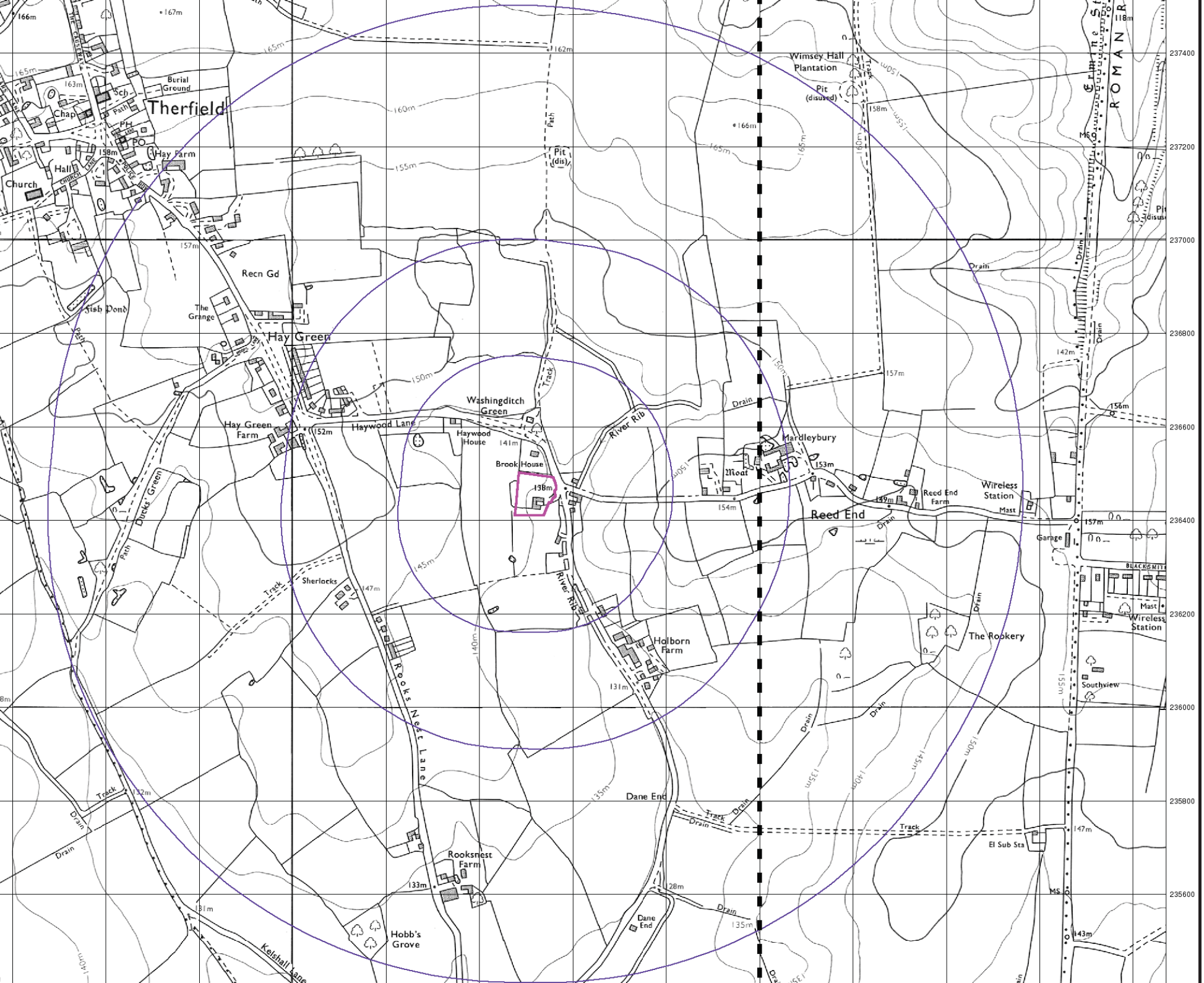
Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1984

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
used to update the 1:10,560 maps
often some years later than the su
were based on the Cassini Project
county or group of counties, giving
areas. In the late 1940`s, a Provisi
the 1:10,560 mapping from a numb
unfinished - with all military camps
maps were initially overprinted with
1:10,000 maps were produced usi
revision process continued until re
10 years or so for urban areas.

Map Name(s) and D

TL33NW
1984
1:10,000

Historical Map - Sli

Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 1999

Source map sca

The historical maps shown were p
1:10,000 colour raster mapping. Th
which replaced the old 1:10,000 m
is highly detailed showing buildings
roads, tracks and paths. Road nam
relevant road number and classific
includes county, unitary authority,

Map Name(s) and D

TL33NW
1999
1:10,000

Historical Map - Sli

Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 2006

Source map sca

The historical maps shown were p
1:10,000 colour raster mapping. Th
which replaced the old 1:10,000 m
is highly detailed showing buildings
roads, tracks and paths. Road nam
relevant road number and classific
includes county, unitary authority,

Map Name(s) and D

TL33NW
2006
1:10,000

Historical Map - Sli

Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

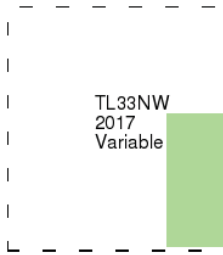


Published 2017

Source map sca

VectorMap Local (Raster) is Ordna
mapping product. These maps are
simple vector dataset at a nominal
Great Britain, that has been design
VectorMap Local is derived from la
scale (covering major towns and ci
and developed rural areas), and 1:
river estuary areas).

Map Name(s) and D



Historical Map - Sli



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

Quarry
Gravel Pit
Sand Pit
Clay Pit
Shingle
Refuse Heap
Sloping Masonry
Flat Rock
Reeds
Osiers
Furze
Wood
Brushwood
Orchard
Ford
Stepping Stones
Waterfall
Lock
Trig. Station
507 Altitude at Trig. Station
Bench Mark
342 Surface Level
Arrow denotes flow of water
Antiquities (site of)
Cutting
Embankment
Level Crossing
Road crossing Railway
Road over single stream
Road over River or Canal
County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
County Borough Boundary (England)
County Burgh Boundary (Scotland)

Inactive Quarry, Chalk Pit or Clay Pit
Active Quarry, Chalk Pit or Clay Pit
Rock
Boulders
Slopes
Cliff
Top
Roofed Building
Glazed Roof Building
Sloping Masonry
Archway
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Bench Mark
Antiquity (site of)
Cave Entrance
Triangulation Station
Electricity Pylon
ETL Electricity Transmission Line
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

Cliff
Slopes
Top
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Positioned Boulder
Scree
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Triangulation Station
Antiquity (site of)
ETL Electricity Transmission Line
Electricity Pylon
BM 231.60m Bench Mark
Buildings with Building Seed
Roofed Building
Glazed Roof Building
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

Mapping Type
Hertfordshire
Hertfordshire
Hertfordshire
Ordnance Survey Plan
Large-Scale National Grid Data
Historical Aerial Photography

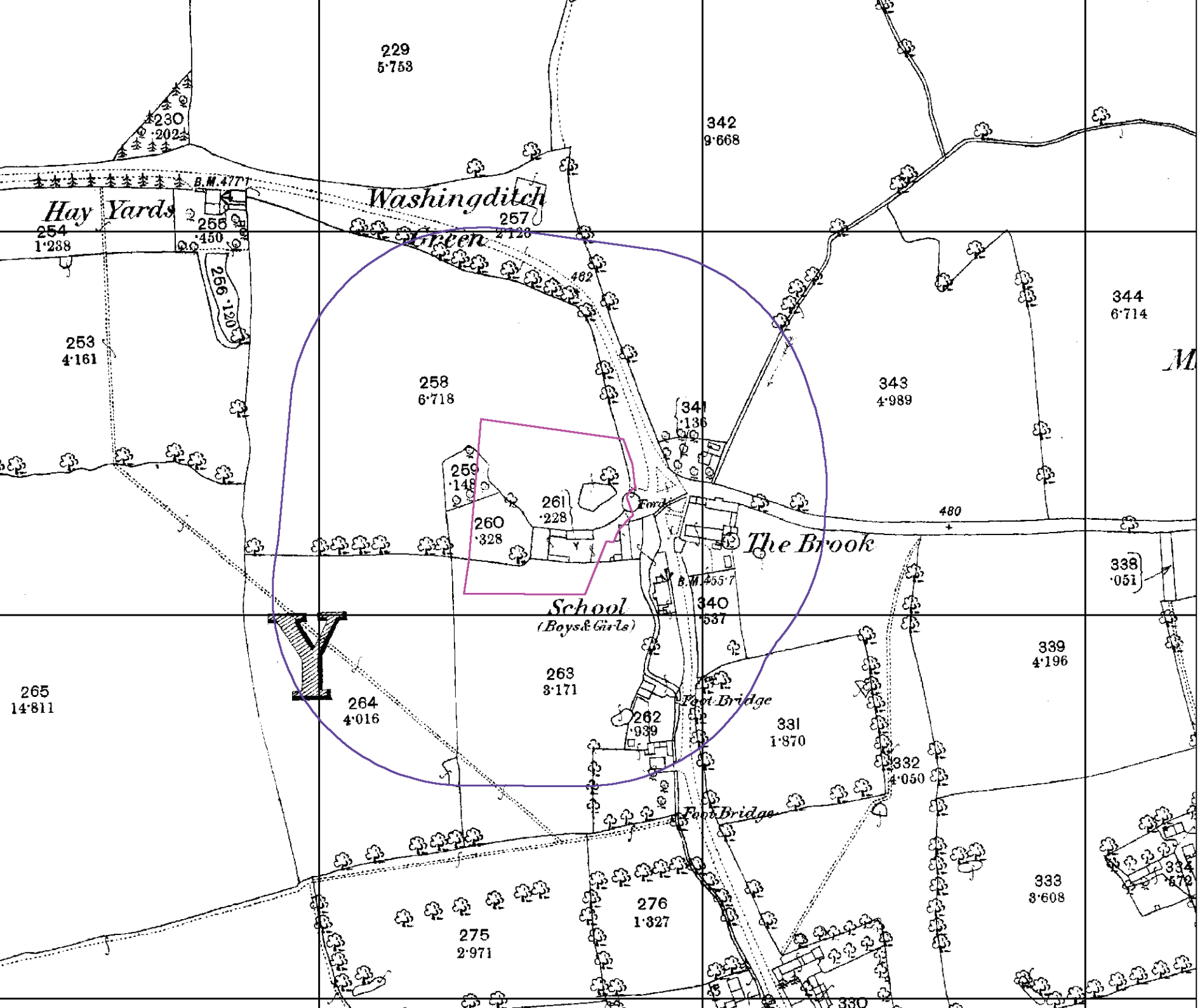
Historical Map - Se



Order Details

Order Number: 1
Customer Ref: 1
National Grid Reference: 5
Slice: A
Site Area (Ha): 0
Search Buffer (m): 1

Site Details

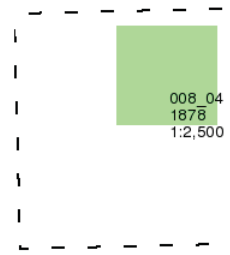


Published 1878

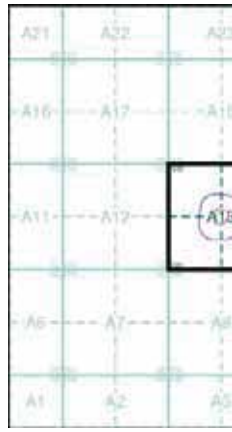
Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
covered the whole of what were co
Britain. The published date given b
surveyed date. Before 1938, all OS
Projection, with independent surve
giving rise to significant inaccuracie

Map Name(s) and D



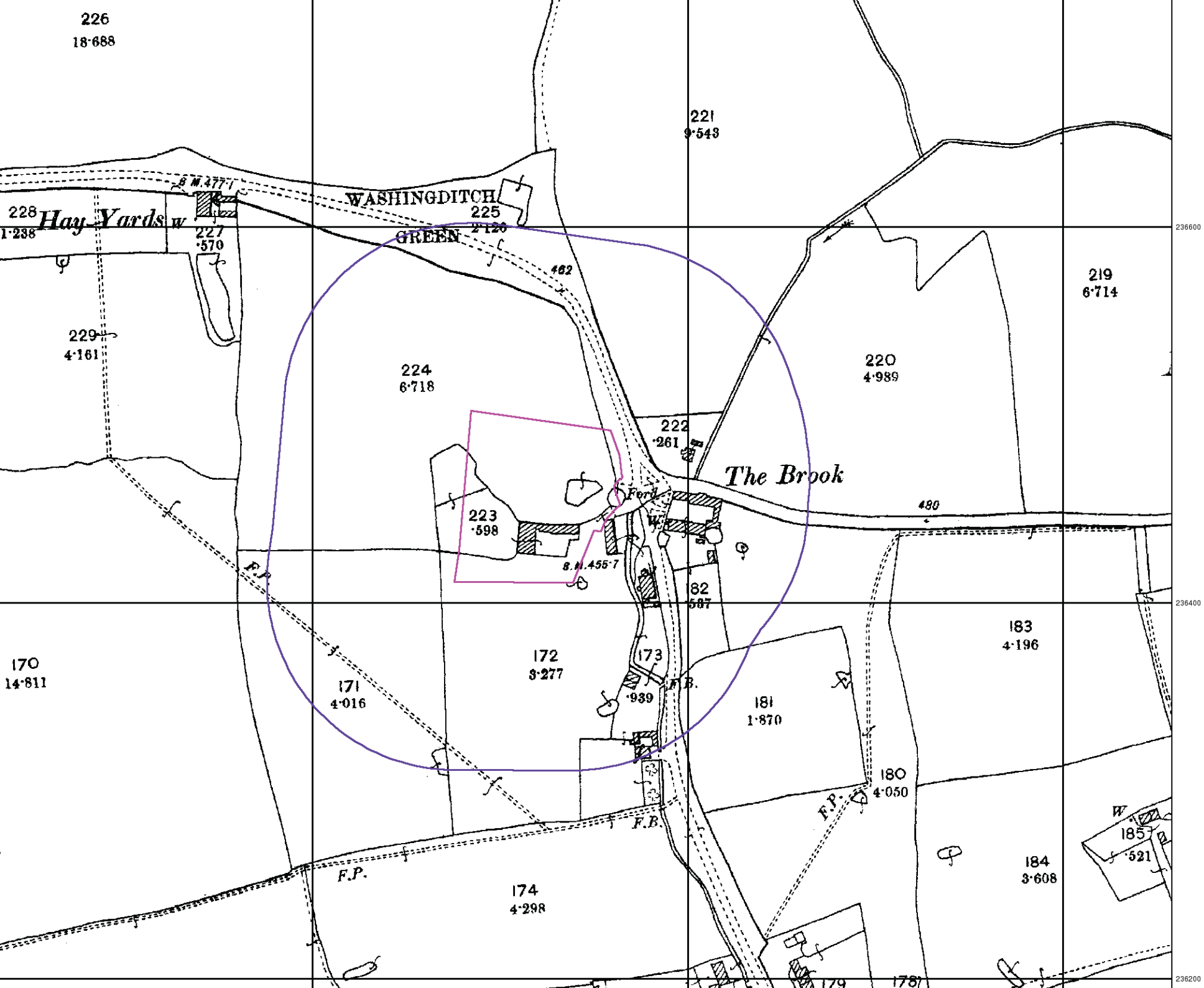
Historical Map - Se



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

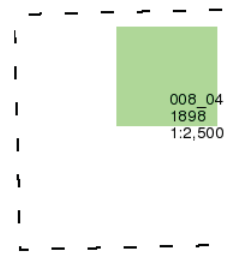


Published 1898

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
covered the whole of what were co
Britain. The published date given b
surveyed date. Before 1938, all OS
Projection, with independent surve
giving rise to significant inaccuracie

Map Name(s) and D



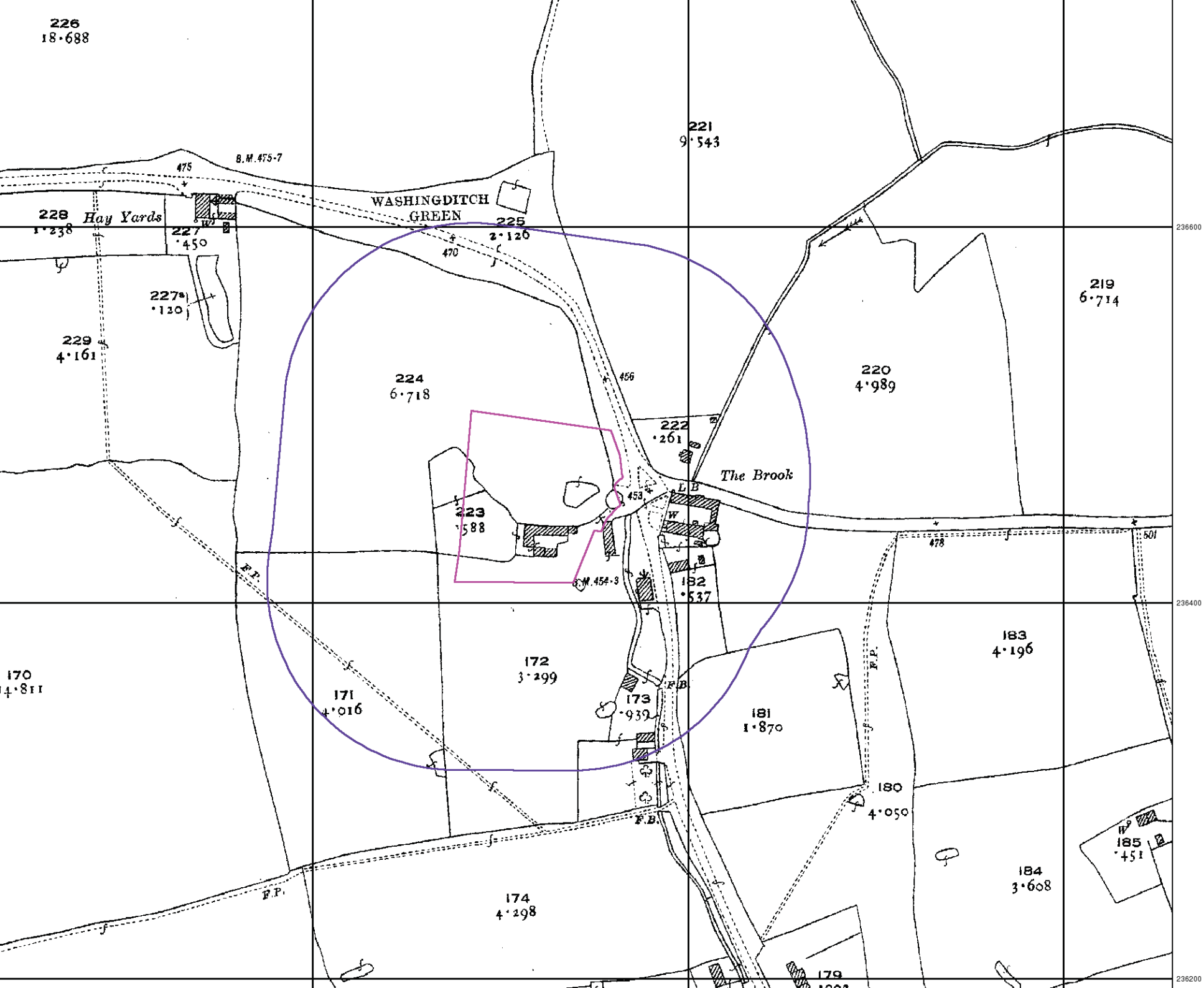
Historical Map - Se



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

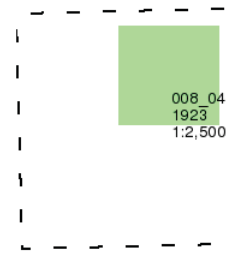


Published 1923

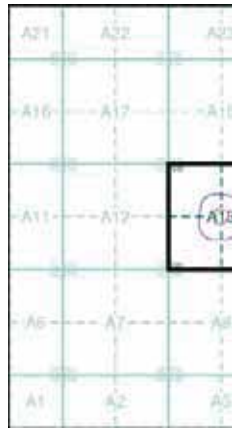
Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
covered the whole of what were co
Britain. The published date given b
surveyed date. Before 1938, all OS
Projection, with independent surve
giving rise to significant inaccuracie

Map Name(s) and D



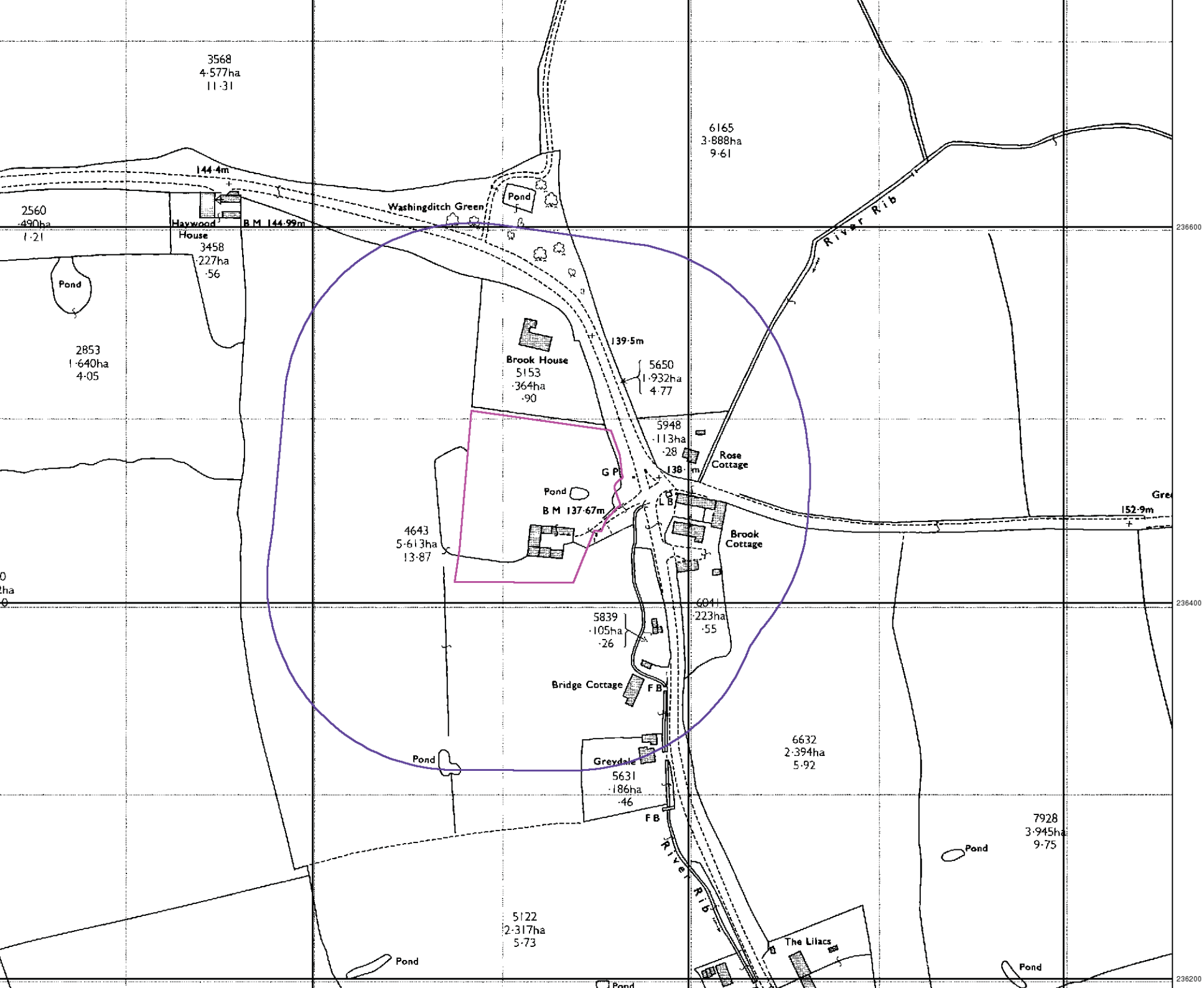
Historical Map - Se



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

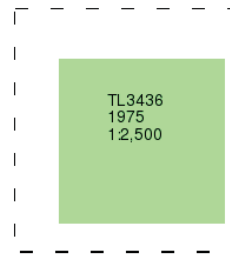


Published 1975

Source map sca

The historical maps shown were re
at the scale adopted for England, W
the 1:2,500 scale was adopted for
covered the whole of what were co
Britain. The published date given b
surveyed date. Before 1938, all OS
Projection, with independent surve
giving rise to significant inaccuracie

Map Name(s) and D



Historical Map - Se



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

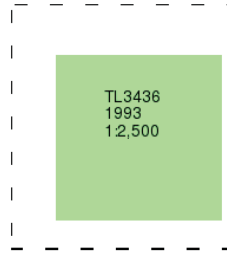


Published 1993

Source sca

'Large Scale National Grid Data' su
'Survey of Information on Microfilm
until 1999. These maps were the fo
provide detailed information on hou
topographic features such as vege
1:2,500 and 1:1,250 scales.

Map Name(s) and D



Historical Map - Se



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details



Published 2000

This aerial photography was produ
photographs provide a seamless, f
Britain

Historical Aerial Pho



Order Details

Order Number:	1
Customer Ref:	1
National Grid Reference:	5
Slice:	A
Site Area (Ha):	0
Search Buffer (m):	1

Site Details

Appendix D – Landmark Envirocheck® Report

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
155717132_1_1

Customer Reference:
18-0137.01

National Grid Reference:
534520, 236460

Slice:
A

Site Area (Ha):
0.65

Search Buffer (m):
1000

Site Details:

Brook Farm, Dane End
THERFIELD
SG8 9RH

Client Details:

Ms J Trevelyan
Delta Simons
3 Henley Office Park
Doddington Road
Lincoln
LN6 3QR