HERTS & ESSEX SITE INVESTIGATIONS

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GEOTECHNICAL ASSESSMENTS – ENVIRONMENTAL ASSESSMENT - DESKTOP STUDY – CONTAMINATED LAND

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Report For :

[redacted]

Phase I DESK TOP STUDY REPORT

Site location :

Site at Heddings Farm, The Lane, Wyboston. Bedford MK44 3AS

June 2019

Report No. 15441

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TABLES AND FIGURES

LIST OF ABBREVIATIONS

BGS	British Geological Society
CIRIA	Construction Industry Research and Information Association
EA	Environment Agency
EFDC	Epping Forest District Council
GL	Ground Level
GW	Groundwater
HESI	Herts & Essex Site Investigations
LAPPC	Local Authority Pollution Prevention and Control
NOS	Not Otherwise Specified (waste material)
NHBC	National House-Building Council
OS	Ordnance Survey
PAH	Poly Aromatic Hydrocarbons
SPZ	Source Protection Zone
TPH	Total Petroleum Hydrocarbons
UFST	Underground Fuel Storage Tanks

DESK STUDY GENERAL NOTES

This report has been prepared based on the findings of investigations into the site conditions using current available data which has been recovered from Envirocheck to provide environmental data in relation to the site and surrounding area. Where possible, local sources have been researched to gain a better understanding of the site conditions. As part of this review, research has been undertaken with the Local Authority and the Environment Agency as to the site condition.

We can confirm that this report has been prepared based on the information gained and that this information is not exhaustive and that subsequent research may reveal additional facts that may influence the reporting. Where possible, this information has been researched.

All geological information has been researched using the British Geological Society website, (the geology viewer). The disclaimer associated with this portal confirms 'The British Geological Society accept no responsibility for omissions or misinterpretations of the data from their Data Bank as this may be old or obtained from Non-BGS sources and may not represent current interpretation.

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The accuracy of map extracts cannot be guaranteed and it should be recognized that different conditions on site may have existed between subsequent to the various map surveys.

We can confirm that within the assessment of the site, various websites have been visited and as such, we cannot confirm the validity of these sites and as such, this information is accepted de facto and without prejudice. Anyone relying on these sources does so at their own risk, however, Herts & Essex Site Investigations does undertake all reasonable care to ensure this data is relevant and correct.

It should be confirmed that the extent of review of this report has undertaken a broad review of on site features which would promote a contamination ground risk, however, this does not include ecological features and in particular Japanese Knotweed which should be reviewed under separate cover.

A review of the site will be made to confirm the extent of obvious Asbestos product or sheet materials either on the surface of the site soils or evident above ground, however, does not constitute a full Asbestos Survey by any means. This should be sought under separate cover.

DOCUMENT INFORMATION AND CONTROL SHEET

Client

[redacted]

Environmental Consultants :

Herts & Essex Site Investigations.
The Old Post Office,
Wellpond Green,
Standon,
Ware,
Hertfordshire.
SG11 1NJ

[redacted]
Web : http://www.hesi.co.uk

Project Manager :

[redacted]

Principal Author :

[redacted]

Qualifications

[redacted]

- ONC - Civil Engineering
- HNC – Civil Engineering
- P.G. Certificate – Geotechnical Engineering, (Inc. Environmental Engineering)
- P.G. Diploma – Geotechnical Engineering, (Inc. Environmental Engineering),
- Master of Science, (Geotechnical Engineering), (Inc. Environmental Engineering)
- SNIFFER modelling course
- CONSIM Groundwater Assessment Course.
- (30 Years in Geotechnical and Environmental Engineering)
- Asbestos Awareness Course;
- Non-Licensed Work with Asbestos Including NNLW.
- Site Supervisors Safety Training Scheme, (SSSTS).
- First Aid Course in Construction – 3 Day Course – 3 years

Document Status and Approval Schedule

Issue No	Status	Date	***Prepared by :*** [redacted] Signature / Date	***Technical review by :*** [redacted] Signature / Date	***Checked By :*** [redacted] Signature / Date
1	Final	June 2019	[redacted]	[redacted]	[redacted]

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REPORT ISSUE RECORD

As part of Herts & Essex Site Investigations approved Quality Management System, the company is required to document the issue of all reports to provide the client with a traceable control mechanism to prevent the issue of unauthorised copies.

All final copy reports are issued to the client on paper headed with Herts & Essex Site Investigations to assist in the identification of copied reports. Additionally, final copies are printed 'Velum' coloured paper for easy identification of final copy reports.

Notwithstanding the above, clients are at liberty to make copies of full or parts of these reports as they see fit, should they wish to do so. Additional controlled copies of documents may be supplied upon request, although, may be charged for, dependent upon the number of copies.

Please note, this reports has not been sent to the Local Authority, NHBC or Environment Agency with only the below issues made. Should copies be required for sending the relevant authorities, this can be undertaken upon request.

Controlled copies of this report have been issued according to the following schedule :-

Issue No	Recipient	Type	No. of copies	Date
1	HESI, (File Copy)	Electronic Copy	1	June 2019
2	[redacted]	Electronic Copy	1	June 2019
3				
4				
5				
6				
7				
8				

EXECUTIVE SUMMARY

PHASE 1 DESK TOP STUDY REPORT

Client	[redacted]		
[redacted] ***Location***	Site at Heddings Farm, The Lane, Wyboston, Bedfordshire. MK44 3AS		
Existing Development	Existing pasture land and farmers field		
Proposed Development	The proposed end use of the site has been identified as three detached private residential dwellings with garage detached from the house and associated landscaping and access routes. The main access into the site is identified from the south east corner of the site.		
Site Settings and Previous Uses	The site is identified with a building within the site from the earliest map record in 1883 until 1951 when this was removed and the site became open pasture land which it remains to date. Surrounding the site, buildings which are likely formed by farm buildings are located to the east and west of the site from the earliest map record and remain in place to date. Some additional buildings are constructed and removed over the site history, although, these are likely to be small sheds and farm buildings. Some 150 meters to the south of the site and 250 meters to the north of the site, smallholdings are in place from 1951-1995. A community centre was constructed in 1983 and removed in 1987 some 20 metres to the south east of the site and Works are constructed 40 meters to the north of the site from 1999 to present day.		
Nearest Surface Water Feature	The nearest surface water feature is recorded as 81 meters to the south of the site which is identified as Begwary Brook		
Geological and Hydrological Profile		***Geology***	***Aquifer Classification***
	Made Ground	Shallow Made Ground Anticipated	Not Classified
	River Terrace Gravel	Sand & Gravel	Secondary A Aquifer
	Peterborough Member	brownish-grey, organic-rich mudstone	Unproductive Stratum
Groundwater Abstractions	The nearest abstraction well is located 271 meters to the south of the site and recorded for spray and irrigation. The nearest potable water abstraction is identified as 402 meters to the south west of the site for Other Industrial / Commercial / Public Services. A significant number of Abstractions extend around the site.		
Source Protection Zone	The site does not lie within a source protection zone		
Potential Sources of Contamination	***On Site*** • Farming Uses; • Asbestos Roofing, 1m, W.	***Off Site*** • Farming Uses, All Directions • Buildings Off Site, 20m, E & W; • Community Centre, 20m, SE • Works, 40m, N	
Previous Investigations	No reports relating to contaminated land are known to us at the time of writing this report relating to the site.		

Human Health Risk	We would suggest that there is potential sources of contamination relating to the historical land use of the site that, may be in place within the upper subsoil which will require assessment. Potential pathways in place within the site area recorded as : - • Dermal Contact; • Inhalation of dust and fibres; • Ingestion of home grown produce; • Ingestion of dust and fibres • Ingestion of contaminated water through water main pipework; • Inhalation of vapours from soils; • Inhalation of vapours from Groundwater. • Inhalation Asbestos dust and fibres (from Asbestos within the building); • Inhalation Asbestos dust and fibres (from asbestos within the soil).
Ground Water Risk	In light of the Secondary A Aquifer within the site area there is a potential for groundwater to be in place and to be impacted on by the site area, although risks of contamination within the site area recorded as low, the follow pathways may be in place: - • Leaching, lateral migration of shallow groundwater system underlying the site and subsequent abstraction well; • Leaching, lateral migration of shallow surface water system adjacent to the site.
Surface water Risk	In light of the stream located to the south of the site, direct links between the site conditions and the stream are in place and as such, the follow pathways may be in place: - • Leaching, lateral migration of shallow surface water system adjacent to the site
Vapour Risk	Sources of contamination that may promote a vapour risk are recorded in place as such risk maybe in place. Potential pathways in place within the site area recorded as: - • Inhalation of vapours from soils - Visual and chemical tests to be completed initially;
Land Gas Risk	Landfill sites have been identified surrounding the site and as such, the potential for contamination and land gas risk is in place. Based on this, we would confirm that a minimum of six monitoring rounds should be completed over falling or low atmospheric pressures or frozen ground conditions. Appropriate reporting should be completed post site monitoring.
Recommendations	***Next Steps*** • Intrusive shallow based excavation using window sampler to assess the geological conditions and recover samples; • Initially assess soils for presence / absence of fuels and if encountered :- ○ Install standpipe for the monitoring of both groundwater and land gas / vapour risks; • Targeted sampling to assess on site source risk; • Spatial sampling for use in statistical analysis; • Consideration through the site assessment as to the presence of Asbestos product within the site and subsoil within the site; • Assess the risk to and from the groundwater - Leachate testing and groundwater sampling if required; • Visual observations of the subsoil encountered to make initial assessment of the potential risk from contamination. • Watching brief to record assess and report on unexpected contamination. Based on the above, a risk assessment should be completed when the findings of the investigation have been completed. This will result in a revised conceptual model based on actual site conditions and confirm the risks in place.

PRELIMINARY RISK ASSESSMENT – DESK TOP STUDY - PHASE 1 REPORT

1 Context and Objectives of this report

1.1 Introduction

We have been asked by [redacted] to undertake an investigation of the above site in order to assess the potential environmental impact of the existing and historical use of the site on the proposed development sufficient to document the level of risk and impact on future users and the environment.

[redacted] are proposing to develop over the existing farms field to construct three new residential houses with associated landscaping and parking areas. The standard we will use in the derivation of risk has therefore been assigned as a 'Residential Land Use with Home Grown Produce'.

1.2 Reference to the Current Planning Application Details

No planning applications area in place with Bedford Council at the time of writing.

1.3 Reference to the Historical Planning Application Details

The site has no historical applications in place.

1.4 Report Objectives

The objectives of the project were as follows:-

A review of the geological, hydrological and hydrogeological setting of the Site, and public domain environmental information to build up an understanding of the Site and its environmental setting/sensitivity;

- Review of historical land uses for the site and surroundings with a particular emphasis on identifying potential ground hazards and on-site and off-site contamination sources;
- A visual walkover inspection of the Site to review current and recent Site activities, the condition of the Site, potential ground related hazards and activities or areas that might have the potential to cause ground contamination as well as possible indicators of contamination; and
- Preparation of a Conceptual Site Model (CSM) with a view to identifying potentially significant source-pathway-receptor linkages followed by a qualitative risk assessment.

1.5 Timescales of the Assessment

The timescales for the site investigation process are based on immediate site investigation data and the assessment of the site conditions based on this report at present. The scope of this report which define the following:-

- Any immediate risks identified within the site that may promote a high risk to the immediate site conditions;
- Any current site use features that would promote a risk that required 'quick' action;
- Any construction or medium term risks within the site which may be present during the construction process within the site;
- Any long term risks within the site that may require long term assessments or interim monitoring;
- Any risks within the site that may change upon the change in use of the site to form the proposed development.

1.6 Level of Technical Confidence Expected

The scope of this report has been prepared in order to assess the historical impact of the site and any previous site uses on the existing and proposed development scheme. The level of risk will be prepared and assessed based on historical mapping and environmental information which has been gained to support the development of this report.

Whilst this is the case, gaps in map records and information will be in place that would reduce the readers confidence of the information sought. As such, this report has been prepared as a preliminary or Indicative Report with a Medium Confidence Level.

1.7 Management Constraints

The site investigation has been prepared based on a budget and time scales which has been agreed with the client. The desk top study fees have been agreed at this time which will dictate a way forward.

2 Broad Characteristics of the site

2.1 The Site

The site is located within a rural area to the Wyboston, Bedfordshire, the details of which are summarised in Table 1 with the location plan of the site shown in Appendix 2, Sheet 1.

Table 1 Site Detail

Site Address :	Site at Headings Farm, The Lane, Wyboston, Bedfordshire. MK44 3AS
Site assessed under	Site Owners Request - Aid as part of future planning
Current use of land :	Existing pasture land – laid to grass.
Previous use of site, (if known)	Arable land
Grid Reference	NGR 515800, 256880
Site Area	0.2 Hectares
Local Authority	Bedford Council
Gradient of the site	The site forms a flat level area of land with no appreciable variations in level.
Proximity of Controlled Waters, (if known)	The nearest surface water feature is recorded as 81 meters to the south of the site which is recorded as Begwary Brook from the map records which runs west to east.

2.2 Existing Site Use

The existing use of the site is identified as a vacant parcel of land which is laid to grassed landscape. No features are identified within the site.

2.3 Surrounding Land Uses

The surrounding land uses are detailed below :-

- To the north of the site area, open land is in place
- To the east of the site area, a residential estate is in place with some old buildings in place;
- To the south of the site area, some residential land is in place to the south east and open land to the south west of the site;
- To the west of the site area, Headings farmhouse is in place which includes some stable blocks.

2.4 Site Reconnaissance

The site walk over visit was undertaken in June 2019 on which the weather conditions were recorded slightly overcast, although broadly sunny.

Access

Access to the site is gained via the main road, (The Lane), which runs to the south of the site. The main access into the site is gained via metal five post gate which accesses into the center of the site. Upon gaining access into the site, free pedestrian and vehicle access was available around the site.

Site Area

The site is identified as a broadly rectangular parcel of land which is laid to grassed landscape. The only features within the site form tracks made by a mechanical excavator and likely relate to the archaeological digs which have taken place as a result of the possible development of the site and a telegraph pole is present to the eastern side of the entrance area.

The remaining evidence in the site would suggest that the site was laid to rough pasture in the form of grasses.

The boundary areas within the site include a combination of hedgerows and fencing, although, the area to the east of the site has structures beyond the boundary which form residential housing and include animals in pens, (Birds). No access was available into this area. The western boundary was bounded by existing buildings which included brick walls and cladded wooden slats. No other features were identified.

The barns to the west of the site were brick construction and cladded with wood. The roof of the southerly most building had a pitched Asbestos roof with the remaining roofing structures also pitched but slate tiled.

Vegetation

Plants and vegetation were identified across the site and all appeared in a good state of growth with no detrimental effects likely from soils.

Above or below ground fuel or oil storage tanks

By examination of the site, no above or below ground fuel tanks, oil tanks or other sources of risk were in place.

Asbestos Containing Materials

No asbestos sheeting or fragments were identified in place within the site.

Surrounding Area

To the south of the site, Headings Farmhouse and stables is identified to the east of the site with open lands, gardens and access driveways. To the north of the site, open pasture land is in place. To the east of the site residential housing is in place which also includes some animal pens

Site Levels and Ground Cover

The site has grassed landscape generally covering the site and is level and flat.

Current site activities

The current use of the site is recorded as pasture land.

Effluent, Site Drainage and Services

Drainage and services have not been reviewed as part of this assessment, although, no obvious drainage was identified within the site

2.5 Site Reconnaissance – Photos

Print 1	View from the front of the site facing west

Print 2	View from the front of the site facing east

Print 3	View from the front of the site facing south

Print 4	View from the east of the site facing west

Print 5	View from the east of the site facing south west

Print 6	View of the entrance area from inside the site

Print 7	View of the east boundary

Print 8	View of the adjacent buildings to the west

Print 9	View from the entrance facing north west

Print 10	View from the entrance area facing north east

Table 2 Walk Over Inspection Risk

Feature	*Location*	*Elevation*	*Is Risk Present?*	*Location To Target*
Farming	Site Wide	At GL.	✓	Site Wide
Asbestos Roofing	Off Site, SW	At GL	✓	South West

3 Details of Searches Undertaken

Within this report, various searches have been undertaken in order to assess the risk associated with the development of the site from the historical and current use of the site and surrounding area. These include:-

- Environmental Data Search 1:10,000;
- Environmental Data Search 1:2,500;
- Site Sensitivity Maps and Data Sheets;
- Historical Maps;
- Internet Search;
- Local Authority Search – Planning Files;
- Consultation with Site Owner / Architect.

4 Information on Historical and Current Activities on the Site and Surrounding Area

The history of the site's land-use and development from Victorian times onwards has been researched from Ordnance Survey, (O.S.) maps. Extracts of the O.S. Maps and plans are presented in Appendix 4. Reference to historical maps provides invaluable information regarding the land use/history of the site, but historical evidence may be incomplete for the period pre-dating the first edition and between successive map references.

4.1 Discussion of the Development History

A summary of the historical development of the site and surrounding area, based on the information obtained from the above sources is provided in Table 3. It should be noted that these maps are only a small section of time and represent the timescales given in each of the map records. It is highly possible that development or features may have been developed within or surrounding the site which may influence the site and this should be bourn in mind when assessing the history of the site.

Table 3 Historic Maps Assessment

Date	*On Site Feature*	*On Site Mitigation (considering all possible pathways)*	*Off Site Feature*	*Off Site Mitigation (considering all possible pathways)*
1883 Source Map Scale 1:10,560	Building On Site	Possible Soil Risk Possible Vapour Risk Possible GW Risk	Buildings East and West, 20m.	Possible Land Gas Risk Possible Vapour Risk Possible GW Risk
			Moat, 80m, E	No Source
			Manor Farm, 250m, W	Distance removes risk
1884 Source Map Scale 1:2,500				
1901 Source Map Scale 1:2,500				
1902 Source Map Scale 1:10,560				
1951 Source Map Scale 1:10,560	Building On Site Removed	Source Removed	Buildings Added, 5m, E	Possible Land Gas Risk Possible Vapour Risk Possible GW Risk
			Small Holdings, (Glasshouses), 150m, N & 250m, S	Distance removes risk
1960 Source Map Scale 1:10,560				
1968 Source Map Scale 1:10,000				
1970 Source Map Scale 1:2,500			Construction of additional buildings, 5m, NW	Possible Land Gas Risk Possible Vapour Risk Possible GW Risk

Table 3a Historic Map Assessment - Continued…….

Date	On Site Feature	On Site Mitigation (considering all possible pathways)	Off Site Feature	Off Site Mitigation (considering all possible pathways)
1974 Source Map Scale 1:10,000				
1982 Source Map Scale 1:10,000				
1983 Source Map Scale 1:2,500			Community Centre, 20m, SE	Possible Vapour Risk Possible GW Risk
1987 Source Map Scale 1:2,500			Community Centre Removed, 20m, SE	Source Removed
1989 Source Map Scale 1:10,000				
1994 Source Map Scale 1:2,500				
1995 Source Map Scale 1:10,000			Some smallholdings removed, 150m, N & 250m, S	Distance removes risk
1999 Historical Aerial Photo				
1999 Source Map Scale 1:10,000			Works, 40m, N	Possible Vapour Risk Possible GW Risk
			Depot, 250m, W (Part of Manor Farm Site)	Distance removes risk

Table 3b Historic Map Assessment - Continued…….

Date	*On Site Feature*	*On Site Mitigation (considering all possible pathways)*	*Off Site Feature*	*Off Site Mitigation (considering all possible pathways)*
2006 Source Map Scale 1:10,000				
2019 Source Map Scale 1:10,000			Hospital, 250m, W (Part of Manor Farm Site)	Distance removes risk

Table 4 Overview of Historic Map Assessment Risk

Identified Risk	Distance & Direction	Year	Is risk in place?	Considering All Pathways		Justification
				Assessment Required.	Method of Assessment	
Building	On Site	1883 - 1951	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Possible risk in place – Some Assessment required Consider soils risk, groundwater risk and vapour risk.
Open Land	On Site	1951 - Present	X			No Source
Buildings Surrounding site Possible Farm Buildings	Off Site, 20m, E and W	1883 - Present	✓	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments	Possible risk in place – Some Assessment required Consider soils risk, groundwater risk and vapour risk.
Moat	Off Site, 80m, E	1883 - Present	X			No Source
Manor Farm	Off Site, 250m, W	1883 - 1999	X			Distance Removes Risk
Small Holdings, (Glasshouses)	Off Site, 150m, N, 250m, S	1951 - 1995	X			Distance Removes Risk
Community Centre	Off Site, 20m, SE	1983 - 1987	✓	Possible GW Risk Possible Vapour Risk	Install Standpipes GW & Vapour Assessments	Possible risk in place – Some Assessment required Consider groundwater risk and vapour risk.
Works	Off Site, 40m, N	1999 - Present	✓	Possible GW Risk Possible Vapour Risk	Install Standpipes GW & Vapour Assessments	Possible risk in place – Some Assessment required Consider groundwater risk and vapour risk.

5 Details of the Intended Future Use of the Site

The proposed end use of the site has been identified as three detached private residential dwellings with garage detached from the house and associated landscaping and access routes. The main access into the site is identified from the south east corner of the site.

6 References of Planning Applications

No current planning application is in place for the site area.

From a review of the Bedford Council web site no historical or current applications are recorded for the site area.

7 Discussion with Local Authority

No discussion with the Local Authority has been completed.

8 Consultation with Environment Agency

Consultation has not been made with the Environment Agency at this time. The information gained from Envirocheck and the EA web site has provided sufficient information at this stage. The assessment of the site should take into account the groundwater regime within the site area and the possible risk from both on site and off site contamination.

Should heavy or persistent contamination be identified within any Phase 2 or intrusive investigation, consultation will be required and will be undertaken.

9 Consultation with Appropriate Bodies/Local Sources

Consultation with the Local Authority has taken place and an attempt at the Archives department made. This forms the level of assessments made. No local sources of Information where in place at the time of writing this report and completing the walk over.

Limited consultation with the Local Authority has taken place a review of the online planning files has been made. This forms the level of assessments made.

10 Previous Reporting

No previous reports are known to us at the time of writing this report.

11 Environmental Settings

11.1 Superficial Deposits and Solid Geology

The ground conditions based on geological maps and BGS information shows the site to be located within a small pocket area which is identified as River Terrace Deposits. This is seen to overlie the Peterborough Member. The Peterborough Member is identified as a brownish-grey, organic-rich mudstone.

11.2 BGS Boreholes

No BGS Boreholes are reported surrounding the site.

Table 5 Geological Information

Geological Unit	*Brief Description*	*Anticipated thickness, (m)*	*Aquifer Type*
Superficial Deposits/Drift *On Site*			
Filled/Re-worked ground	Made Ground, (Potentially Contaminated Stratum).	0.5-1.00 meters+	Not Classified
River Terrace Deposits	Sand & Gravel	3-6 meters	Secondary A Aquifer Undifferentiated
Solid Geology Deposits			
Peterborough Member	Brownish-grey, organic-rich mudstone	15m +	Unproductive Stratum

11.2 Hydrology

The nearest surface water feature is recorded as 81 meters to the south of the site which is identified as Begwary Brook

The nearest discharge consent is identified as 736 metres to the south east of the site which is identified for Agricultural Effluents into a freshwater stream or river.

The nearest Local Authority Pollution Prevention Control is identified as 810 metres to the south east of the site and is identified as a Petrol Filling Station.

The nearest pollution incident to controlled waters is recorded as 64 metres to the south of the site and is recorded as an underground leaking pipe from Chlorinated Water. This was identified as a Minor Incident.

11.3 Hydrogeology

The published Environment Agency Groundwater Vulnerability Map of the area, (Sheet 40 Thames Estuary), indicates the site to be located within an area classified as a Secondary A Aquifer. The underlying geology is recorded as an Unproductive Stratum which is formed by Peterborough Member.

The nearest abstraction well is located 271 meters to the south of the site and recorded for spray and irrigation. The nearest potable water abstraction is identified as 402 meters to the south west of the site for Other Industrial / Commercial / Public Services. A significant number of Abstractions extend around the site.

The site does not lie within a Source Protection Zone.

11.4 Implication of groundwater

In light of the underlying Secondary A Aquifer Undifferentiated, groundwater links are possible and therefore some degree of assessment will be required to classify the extent of risk to a groundwater system, as well as abstraction wells, surface water features and source protections zones surrounding the site area.

In accordance with Environment Agency guidance document: -

- Groundwater Protection: Principles and Practice (GP3) Part 5 – Remedial Targets Methodology,

The document confirms :-

- "Selecting compliance points for use in land contamination risk assessments the distance to a set compliance point should not exceed 50 metres for hazardous substances or a maximum of 250 metres for non-hazardous pollutants unless there are specific physical constraints on the ability to use the groundwater resource. Any increases above these specified distances may be justified but must be supported by a sustainability assessment that takes into account environmental, social and economic factors."

Considering the above, groundwater risk may be in place if significant contamination or a persistent source of contamination are encountered or recorded within the site area, within the information to date risk is considered possible.

11.5 Flooding

The site does not lie within an area which is susceptible to flooding. 75 metres to the south of the site the areas are defined as susceptible to flooding from seas or rivers without defences.

11.6 Landfill Sites

A historic landfill site is identified as 213 metres to the east of the site which has wastes which are identified as inert and industrial waste. A further landfill is identified as 359 meters to the south west of the site and is identified for commercial, household and special waste.

A registered landfill is identified as 273 meters to the east of the site and is recorded as a large landfill with no restrictions on waste.

No potentially infilled land is identified surrounding the site.

11.7 Environmentally Sensitive Sites

There site lies within a Nitrate Vulnerable Zones.

Table 6 Sensitivity of Environmental Receptors in the Vicinity of the Site

Receptor Type	Receptor(s)	Sensitivity	Comments
Groundwater	Secondary A Aquifer Unproductive	Moderate	Possible risk to underlying Gravel Deposits
	Unproductive Stratum	Low	Limited risk of migration to a lower groundwater system
Water Abstraction	Spray and irrigation	Medium	The nearest abstraction well is located 271 meters to the south of the site.
	Potable Water Supply	Medium	identified as 402 meters to the south west of the site for Other Industrial / Commercial / Public Services. A significant number of Abstractions extend around the site
Source Protection Zone	NONE		
Surface Water	Begwary Brook	Low	The nearest surface water feature is recorded as 81 meters to the south of the site which is identified as Begwary Brook.
Flooding	NONE		
Ecological	Nitrate Vulnerable Zones		The site is located within a Nitrate Vulnerable Zone

12 Site Drainage and Other Potential Man Made Pathways

No drainage is identified in place within the site.

13 Regulatory Data

Information relating to the potential hazards associated with environmental regulatory controls are summarised in Table 7 and 8. This information is recorded in full within the Envirocheck data provided within Appendix 5. The salient points recorded within this data are re-created below.

Table 7 Summery of Regulatory Data - Sources

Data	*On Site*	*Off Site*	*Distance from site.*	*Is potential risk in place?*
Sources				
Discharge Consents	None	None within 500 meters of the site		X
LAPPC	None	Petrol Filling Station	810m, SE	X
Pollution Incident to Controlled Waters	None	Minor Incident – Chlorinated Water – Leaking Underground Pipe	64m, S	X
Historic Landfill	None	Deposited waste including inert, commercial, industrial and household waste	213m, E	✓
		Deposited waste including inert, commercial, industrial and household waste	359m, SW	✓
Registered Landfill Sites	None	Bedfordshire Category A Waste	273m, E	✓
Licensed Waste Management Facility	None	End of Life Vehicles	676m, NE	X
BGS Recorded Mineral Site	None	Sand & Gravel Extraction	283m, E	X
Radon Potential - Radon Protection Measures	No radon protective measures are necessary in the construction of new dwellings or extensions			X

Table 8 Summary of Regulatory Data - Receptors

Data	*On Site*	*Off Site*	*Distance from site.*	*Is potential risk in place?*
Receptors				
Nearest Surface Water Feature	None	Begwary Brook	81m, S	✓
Water Abstractions	None	Spray and Irrigation Abstraction Well	271m, S	✓
		Other industrial/Commercial/Public Services	402m, SW	X
OS Water Network Lines	None	Inland River	14m, SW	✓
Source Protection Zone	None			X

Table 9 BGS Estimated Chemistry Data

BGS Estimated Soil Chemistry Pollutant	*BGS Estimated Soil Chemistry*
Arsenic	15 - 25
Cadmium	<1.8
Chromium	60 - 90
Lead	<100
Nickel	15-30

Considering the background concentrations present, Potential for human health risk is not anticipated within this area.

Table 10 Geological Hazards

Geological Hazard	*Distance & Direction*	*Feature*	*Risk Assessment Required*
Non Coal Mining Areas of Great Britain	On Site		No Hazard
Collapsible Ground	On Site		Very Low
Compressible Ground	On Site		No Hazard
Ground Dissolution Features	On Site		No Hazard
Landslide	On Site		Very Low
Running Sand	On Site		Very Low
Shrinking or Swelling Clay	On Site		No Hazard

Table 11 Summary of Contemporary Trade Entries

Trade Name	*Trade Use*	*Distance & Direction from Site*	*Is potential risk in place?*	**Comment**
D & E Filtration Ltd	Air conditioning & refrigeration contractors	Off Site, 44m, W	X	
Brice Baker Systems	Agricultural Engineers	Off Site 93m, NE	X	
Further Trades Extend Away From The Site, (See Envirocheck Data)				

**NB The above information is taken from the Envirocheck trade directories*

14 Identification of Potential Contaminants of Concern and Source Areas

Potential sources of contamination are brought forward for further risk assessment which are detailed in Table 12 :-

Table 12 Table of Source Risk

Risk Assess -ment	Source Risk	Additional Features	Source of Information	Location	Date	Considering Site Specific Pathways	
						Assessment Required.	Method of Assessment
	Features On Site						
A	Former Building On Site		Historical Maps	Site Wide	1883 - 1951	Possible Soil Risk Possible GW Risk Possible Land Gas Possible Vapour Risk	Recover Soil Samples Install Standpipes GW, Gas & Vapour Assessments
B	Buildings Off Site, (Possible Farm Buildings)			Off Site, 20m, E and W	1883 - Present	Possible GW Risk Possible Land Gas Possible Vapour Risk	Install Standpipes GW, Gas & Vapour Assessments
	Community Centre			Off Site, 20m, SE	1983 - 1987		
	Works			Off Site, 40m, N	1999 - Present		
	Walk Over Survey						
A, (See Above)	Farming		Walk Over	Site Wide	N/A	Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments
	Asbestos Roofing			Western Boundary		Possible Soil Risk Possible GW Risk Possible Vapour Risk	Recover Soil Samples Install Standpipes GW & Vapour Assessments
	Envirocheck Data						
C	Landfill Sites,		Envirocheck	Off Site, 213m, E, 359m, SW & 273m, E	N/A	Possible GW Risk Possible Land Gas Possible Vapour Risk	Install Standpipes GW, Gas & Vapour Assessments

15 Outline Conceptual Model

What must now be considered is what contamination should be identified as a potential hazard as a result of the use of the site specific areas. In order to undertake this task, the ***Contaminated Land Reports, (CLR10)***, has been used which details some trades and potential sources of contamination. In addition to this, the Department of Environment Industry Profiles have been incorporated which detail trade, and also, specific site usage of the trade and contaminant sources.

The information below incorporates a hazard assessment of the features surrounding the site that could potentially impact on the proposed development. This is based on the information below :-

Table 13 CIRIA Contaminated Land Risk Assessment Table

		Consequence			
		Severe	**Medium**	**Mild**	**Minor**
Probability	**High Likelihood**	**Very High Risk**	**High Risk**	**Moderate Risk**	**Moderate/Low Risk**
	Likely	**High Risk**	**Moderate Risk**	**Moderate/Low Risk**	**Low Risk**
	Low Likelihood	**Moderate Risk**	**Moderate/Low Risk**	**Low Risk**	**Very Low Risk**
	Unlikely	**Moderate/Low Risk**	**Low Risk**	**Very Low Risk**	**Very Low Risk**

Extracted from CIRIA Publication C552 Contaminated Land Risk Assessment

Table 14 *Risk Assessment A*

Source (Potential Contaminating Use)	Potential *Contaminants*	*Receptors*	*Pathways*	*Associated Hazard, [Severity]*	*Proposed Site Use Risk Assessment*		
					Likelihood of occurrence	*Potential Risk*	*Notes*
ON SITE ***Former Buildings On Site*** ***Farming Land*** ***OFF SITE, 1m, W*** ***Asbestos Roof***	TPH's Naphthalene, VOC's Pesticides Herbicides CO_2, CH_4.	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Likely	Moderate	Possible risk in place
			Ingestion of home grown produce	Medium	Likely	Moderate	Possible risk in place
			Ingestion of contaminated water through water main pipework	Medium	Likely	Moderate	Possible risk in place
			Inhalation of vapours	Medium	Likely	Moderate	Possible risk in place
			Inhalation of land Gases	Medium	Likely	Moderate	Possible risk in place
			Inhalation of vapours through contaminated ground waters	Medium	Likely	Moderate	Possible risk in place
		Adjoining Land Owners	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of home grown produce	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of contaminated water through water main pipework	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours through contaminated ground waters	Medium	Low Likelihood	Moderate / Low	Limited risk in place
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	Medium	Likely	Moderate	Possible risk in place
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.	Medium	Likely	Moderate	Possible risk in place
		Flora	Plant Uptake Direct Contact	Medium	Likely	Moderate	Possible risk in place
Asbestos		Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Likely	High	Possible risk in place
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Likely	High	Possible risk in place
Metals Metalloids PAH's		Site Users Construction Workers.	Direct contact; Inhalation dust and fibers; Dermal contact;	Medium	Likely	Moderate	Possible risk in place
			Ingestion of home grown produce	Medium	Likely	Moderate	Possible risk in place
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	Medium	Likely	Moderate	Possible risk in place
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.	Medium	Likely	Moderate	Possible risk in place
TPH's Naphthalene, VOC's Pesticides Herbicides CO_2, CH_4.		Buildings; Construction Materials. Services	Direct contact with contaminated soils;	Medium	Likely	Moderate	Possible risk in place
			Direct contact with contaminated groundwater	Medium	Likely	Moderate	Possible risk in place

Table 15 *Risk Assessment B*

Source (Potential Contaminating Use)	Potential *Contaminants*	*Receptors*	*Pathways*	*Associated Hazard, [Severity]*	*Proposed Site Use Risk Assessment*		
					Likelihood of occurrence	*Potential Risk*	*Notes*
OFF SITE Buildings Off Site Possible Farm Buildings), 20m, E and W Community Centre, 20m, SE Works, 40m, N	TPH's Naphthalene, VOC's Pesticides Herbicides CO_2, CH_4.	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of home grown produce	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of contaminated water through water main pipework	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours	Medium	Likely	Moderate	Possible risk in place
			Inhalation of land Gases	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Inhalation of vapours through contaminated ground waters	Medium	Likely	Moderate	Possible risk in place
		Adjoining Land Owners	Direct contact; Inhalation dust and fibers. Dermal contact	No Liability from Third Parties			
			Ingestion of home grown produce				
			Ingestion of contaminated water through water main pipework				
			Inhalation of vapours				
			Inhalation of vapours through contaminated ground waters				
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.				
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
		Flora	Plant Uptake Direct Contact	Medium	Low Likelihood	Moderate / Low	Limited risk in place
Asbestos		Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Likely	High	Possible risk in place
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Likely	High	Possible risk in place
Metals Metalloids PAH's		Site Users Construction Workers.	Direct contact; Inhalation dust and fibers; Dermal contact;	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Ingestion of home grown produce	Medium	Low Likelihood	Moderate / Low	Limited risk in place
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	No Liability from Third Parties			
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
TPH's Naphthalene, VOC's Pesticides Herbicides CO_2, CH_4.		Buildings; Construction Materials. Services	Direct contact with contaminated soils;	Medium	Low Likelihood	Moderate / Low	Limited risk in place
			Direct contact with contaminated groundwater	Medium	Likely	Moderate	Possible risk in place

Table 16 ***Risk Assessment C***

Source (Potential Contaminating Use)	**Potential *Contaminants***	***Receptors***	***Pathways***	***Associated Hazard, [Severity]***	***Proposed Site Use Risk Assessment***		
					Likelihood of occurrence	***Potential Risk***	***Notes***
OFF SITE Landfill Sites, Off Site, 213m, E, 359m, SW 273m, E	TPHs VOCs CO_2, CH_4.	Site Users Construction Workers.	Direct contact; Inhalation dust and fibers. Dermal contact	Medium	Unlikely	Low	Distance Removes Risk
			Ingestion of home grown produce	Medium	Unlikely	Low	Distance Removes Risk
			Ingestion of contaminated water through water main pipework	Medium	Unlikely	Low	Distance Removes Risk
			Inhalation of vapours	Medium	Low Likelihood	Moderate / Low	Possible risk in place
			Inhalation of land Gases	Medium	Low Likelihood	Moderate / Low	Possible risk in place
			Inhalation of vapours through contaminated ground waters	Medium	Unlikely	Low	Distance Removes Risk
		Adjoining Land Owners	Direct contact; Inhalation dust and fibers. Dermal contact	No Liability from Third Parties			
			Ingestion of home grown produce				
			Ingestion of contaminated water through water main pipework				
			Inhalation of vapours				
			Inhalation of vapours through contaminated ground waters				
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.				
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
		Flora	Plant Uptake Direct Contact	Medium	Unlikely	Low	Distance Removes Risk
Asbestos		Site Users Construction Workers.	Inhalation dust and fibers (from Asbestos within the building)	Severe	Unlikely	Moderate / Low	Distance Removes Risk
			Inhalation dust and fibers (from asbestos within the soil)	Severe	Unlikely	Moderate / Low	Distance Removes Risk
Metals Metalloids PAH's		Site Users Construction Workers.	Direct contact; Inhalation dust and fibers; Dermal contact;	Medium	Unlikely	Low	Distance Removes Risk
			Ingestion of home grown produce	Medium	Unlikely	Low	Distance Removes Risk
		Controlled Surface Water;	Leaching, lateral migration of shallow groundwater to a target receptor.	No Liability from Third Parties			
		Ground Water; Abstraction Well.	Leaching, migration through fissures / cracks which may migrate to a groundwater receptor.				
CO_2, CH_4.		Buildings; Construction Materials. Services	Direct contact with contaminated soils;	Medium	Unlikely	Low	Distance Removes Risk
			Direct contact with contaminated groundwater	Medium	Low Likelihood	Moderate / Low	Possible risk in place

Table 17 Overview of Risk Assessments - Proposed Site Use

Receptors	Pathways	A Former Buildings On Site Asbestos Roofing, 1m, W	B Buildings Off Site, 20m, E and W, Community Centre, 20m, SE, Works, 40m, N	C Landfill Sites, Off Site, 213m, E, 359m, SW 273m, E
Site Users Construction Workers	Direct Contact, Inhalation of Dust and Fibres, Dermal Contact	✓	✓	X
	Ingestion of home grown vegetation	✓	✓	X
	Ingestion of contaminated water through water main pipework	✓	✓	X
	Inhalation of vapours from soils	✓	✓	X
	Inhalation of vapour from contaminated ground waters	✓	✓	✓
	Inhalation of land gas vapours	✓	✓	✓
	Inhalation Asbestos dust and fibers (from Asbestos within the building)	✓	✓	X
	Inhalation Asbestos dust and fibers (from asbestos within the soil)	✓	✓	X
Adjoining Land Owners	Direct Contact, Inhalation of Dust and Fibres, Dermal Contact	✓	No Liability from third parties	
	Ingestion of home grown vegetation	✓		
	Ingestion of contaminated water through water main pipework	✓		
	Inhalation of vapours from soils	✓		
	Inhalation of vapours from contaminated ground waters	✓		
Flora	Plant Uptake / Direct Contact	✓	✓	X
Groundwater; Abstraction Well & Surface Water	Leaching, lateral migration of shallow groundwater to a River or surface water receptor.	✓	No Liability from third parties	
	Leaching, lateral migration of shallow groundwater system underlying the site and subsequent abstraction well or SPZ	✓		
Buildings	Direct contact with contaminated soils.	✓	✓	X
	Direct contact with contaminated groundwater	✓	✓	X

**NB : Due to Severe Consequence from Asbestos and Explosive Gases, some risk is assessed and potentially in place and therefore highlighted above.*
GW Only: Some risks have been assessed as a direct result of potential mobilisation of groundwater contamination that may influence the site. A pictorial conceptual model has been reproduced within this report to confirm the above findings

16 Discussion on Sources of Contamination

The assessments of the site have drawn conclusions of historical and ongoing land uses which may impact on the proposed development which will be further considered through location, (either on or off site) and nature of risk. These are discussed below:-

Table 18 Pollutant Risk

Risk Assessment	Land Use	Pollutant	
Risk Assessment A	***Historic Maps*** Buildings On Site Asbestos Roofing, 1m, W	***Soil, Groundwater & Vapour Risk*** Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols, Asbestos, Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene, VOC's, Pesticides, Herbicides, CO_2, CH_4. . ***Soil Sampling Groundwater & Vapour Assessment***	
Risk Assessment B	***Historical Features & Walk Over Survey*** Buildings Off Site (Possible Farm Buildings), 20m, E and W Community Centre, 20m, SE Works, 40m, N	***Groundwater & Vapour Risk*** Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols, Asbestos, Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene, VOC's, Pesticides, Herbicides, CO_2, CH_4. ***Groundwater & Vapour Assessment***	
Risk Assessment C	***Envirocheck Data*** Landfill Sites	***Groundwater & Vapour Risk*** Total Petroleum Hydrocarbons (aliphatic/ aromatic 8-Band), Naphthalene, VOC's, CO_2, CH_4. ***Groundwater & Vapour Assessment***	
Spatial Sampling, (General Assessment)		Moisture Content, pH, Electrical Conductivity, Cyanide, (Free), Cyanide, (Total), Organic Matter, Boron, Sulfate, (2:1 water soluble), Chromium, (Hexavalent), Sulfate, (Total), Arsenic, Cadmium, Chromium, Copper, Mercury, Nickel, Lead, Zinc, Speciated PAH's, (EPA Priority 16), Phenols.	25 meter Centres In accordance with BS10175: 2011+A2:2017.
		Asbestos	5-10 meter Centres In accordance with BS10175: 2011+A2:2017.

17 Next Steps

Considering the information gathered to date, we would suggest that an appropriate way forward would be to assess the condition of the subsoil within the site resulting from the historical and former uses of the site as detailed within previous sections of this report. We would suggest that the most viable way of assessing risk will be to consider the following assessment techniques.

The assessment of the site proposed in this report and the following recommendations which are detailed below have been prepared in accordance with key guidance documents as follows:-

- National Planning Policy Framework;
- British Standards 10175:2011+A2:2017
- Contaminated Land Report, (CLR11) 11, 'Model Procedures for the Management of Contaminated Land', (2004);
- DEFRA: Environmental Protection Act 1990: Part 2A Contaminated Land Statutory Guidance, (April 2012);
- Environment Agency, (EA), GP3 'Groundwater Protection: Policy and Practice'.

Based on the site area and size of the site, (approximately 200 m²), we would recommend that the site should be subjected to a sampling density of between 15-20-meter grid pattern which is broadly in line with that proposed by 10175:2011+A2:2017 and offers a greater density sampling pattern that this would indicate. As such, we can confirm that a likely 5-7 samples will be required across the site to provide a 'good' spatial density.

The investigation is proposing to undertake the following at the site :-

- Determine the ground and groundwater conditions;
- Determine if there are any obstructions such as old service and foundations, buried tanks, etc;
- Install gas, vapour and groundwater monitoring well installations and monitor the levels of groundwater, gas and vapours;
- Obtain samples of the made ground, natural soils and groundwater for contamination testing at targeted site specific designed locations. Test soil and groundwater samples for a range of contaminants, as identified in Table 18 & 19;
- Obtain samples of the made ground, natural soils and groundwater for contamination testing at site spatially designed locations. Test soil and groundwater samples for a range of contaminants, as identified in Table 18 & 20;
- Obtain samples of soil to test for vapours contaminants, as identified in Table 18 & 22;
- Install standpipes to obtain readings of vapour and gas for analysis to be tested for a range of contaminants, as identified in Table 18 & 22;
- Visually appraise soils to consider olfactoral or visual presence of contamination factors, risk, vapours or fragments.
- All laboratory testing should be completed to MCERT/UKAS accredited standard.
- All detection limits provided by chemical laboratories must fall below the set screening values

17.1 Soil Assessment

Soil sampling will be completed recovering samples in appropriate containers for analysis by the analytical chemist. All sampling will be sent directly to the chemist in cool boxes to retain the integrity of the soil sample.

Table 19 Soils Assessment - Targeted Sampling

Feature	***Contaminant***	***Method Of Investigation***
Asbestos, (Western Boundary)	Asbestos	Window Sampler Boreholes Hand Auger Boreholes Trial Pits

Table 20 Soils Assessment – Spatial Sampling

Feature	***Contaminant***	***Method Of Investigation***
Farming Uses	Metals, Semi Metals, Organic, Inorganic, Pesticides, Herbicides, Fuels, CO_2, CH_4, VOC's	Window Sampler Boreholes Hand Auger Boreholes Trial Pits
Off Site Commercial and Farming Uses		

Upon completion of on-site sampling and the associated chemical analysis, the soil data will be compared against the Generic Assessment Criteria derived by AtRisk Soils which has been purchased as a reviewing standard. This has been prepared by Atkins as Soil Screening Values, (SSV's). Additionally, values will be adopted for screening values using LQM / CIEH – Suitable 4 Use Levels in the absence of Atkins adopted values.

17.2 Groundwater Assessment

Method of Groundwater Assessment

In order to gain an understanding of the groundwater system and the level of risk in place, we can confirm that the following works should be completed:-

- The Geology within the site should be confirmed;
- The depth of the Geology within the site should be assessed and if ground water is encountered or has the potential to be in place, some assessment of the risk to groundwater and surface water features should be carried out as well as potential human health risk from vapours;
    - Considering the size and nature of the site, the groundwater elevation may be perched at locations and as such, strikes may be local to lenses or pockets of more permeable ground in order to provide surface water runoff.
    - Standpipes should be installed across the site, in order to orientate the groundwater table to identify groundwater flow direction. Three standpipes should be installed for groundwater assessment such that orientation of the groundwater table can be undertaken;
    - We would recommend that the installation of the boreholes at the site should be completed in order determine the groundwater elevation. The boreholes should be left for a minimum period of one week in order to allow the groundwater to reach equilibrium at which time, purging of the standpipe well should be completed to consist of a minimum of 3 well volumes removed from the standpipes prior to samples being recovered. Sampling of the groundwater can be completed and retained in appropriate containers dependent upon the analysis proposed. The sample should then be sent to the analytical chemist for assessment in appropriate transport conditions;
    - It is possible that groundwater assessments may require extending the standpipes through any superficial deposits suggested by the Envirocheck report. The Gravel aquifer is the Secondary A aquifer in which assessments should be completed;
    - In light of the size and nature of the site should ground water risk be recorded within the site area each borehole should be sampled and tested for the range of pollutants as identified within this report. The potential risks should be initially assessed against the UK Drinking Water standard as a Tier 1 assessment Criteria with possible further assessments required where heavy contamination or risk deemed in place. Groundwater samples should be compared against the EQS standards, (Environmental Quality Standards);
    - The assessment of groundwater will also be used to consider the risks to surface water features and whether the site may impact on surface water features which are recorded some to the south of the site;
    - Risk assessments A to B, should be tested for so the extent of pollutants can be identified within the groundwater sample.

Method of Groundwater Assessment

17.3 Land Gas Assessment

No sources of land gases are in place for the site area, should significant made ground or organic matter be encountered within the site area reassessment may be required, although for the information collect to date the risk of this is low.

Considering the potential for Land Gas risks due to the potential made ground and infilled ground potentially in place within the site area Land Gas risk assessments must be completed. These will include the potential for contamination migration from on and off site sources which may be present in concentrations where risk is recorded.

Land gas monitoring should be specifically targeting the following land uses.

Table 21 Land Gas Assessment - Response Zone

Feature	*Targeted Response Zone*	*Location to Target*	*Gas risk*
Landfill Site	Made Ground	Site Wide	Land Gases - CO_2, CH_4.
Farming Uses, (Manure)	Made Ground	Site Wide	

Considering the above, we would suggest that soil testing is undertaken to assess the infilled ground its depth and type, and a standpipe should be installed within the site with response zones placed within the upper made ground solely, and the following assessments completed as follows :-

- Install standpipes to allow vapour and Land Gas risk to be considered from the upper made ground.
- Assess vapour risk over a minimum of six monitoring rounds to comply with CIRIA C665 to consider risks to buildings, CLR 11 and R & D Publication 66;
- Monitoring should be completed over falling or low atmospheric pressures or in periods where ground conditions are frozen to provide the worst case scenario for the site, although, the site is laid to hard cover which will restrict natural ventilation of any gases.
- Reporting of land gas and vapour risk/ can be completed assessing soils in situ using a Photo Ionisation Detector for Volatile Organic Compounds, (which include BTEX). Flow rates should also be noted for reporting purposes.

17.4 Vapour Risk Assessment

Considering the potential for vapour risk to be in place from various source as noted below, the following risk are in place.

Table 22 Vapour Risk Assessment - Response Zone

Feature	*Targeted Response Zone*	*Location to Target*	*Vapour risk*
Buildings off Site	Made Ground & Granular Deposits	Site wide	Organic, Pesticides, Herbicides, Fuels, Oils, VOC's
Farm Uses			
Community Center			
Works			

Considering the above, we would suggest that soil testing is undertaken to assess whether contamination that may promote a vapour risk is in place within the site area and the groundwater.

17.5 Working Brief

It should be noted that this investigation is undertaken in order to identify the extent of contamination as a result of historic and ongoing use. Should any areas of the site be encountered within the development that appear potentially contaminated through visual or olfactory assessment outside that discussed within this report, consultation with ourselves should be undertaken in order to identify the risk associated with the material.

Table 23 ***Overview of Works***

Receptor	Scope of Investigation Works Required			Proposed Method of Assessment	Proposed Site Works to Complete
	Assessment of :				
	Soils	Vapour and Gas	Ground and Surface Water		
Human Health	✓	✓	✓	Window Sampling - Soil sampling - Install standpipe - Groundwater sampling*	Recover samples of the made ground; Assessment of the underlying natural soils to consider contamination; Vapour Risk Assessment; Analysis of soil samples for GQRA Assessment; Reporting
Surface Water	✓	X	✓	Window Sampling - Soil sampling - Install standpipe - Groundwater sampling*	Recover samples of the made ground; Assessment of the underlying natural soils to consider contamination; Leachate testing on elevated samples; Analysis of soil samples for GQRA Assessment; Reporting
Ground Water	✓	✓	✓	Window Sampling - Soil sampling - Install standpipe - Groundwater sampling*	Recover samples of the made ground; Assessment of the underlying natural soils to consider contamination; Leachate testing on elevated samples; Analysis of soil samples for GQRA Assessment; Reporting
Services & Building	✓	✓#	X	Window Sampling - Soil sampling	Recover samples of the made ground; Vapour Risk Assessment; Groundwater Assessment; Analysis of soil samples for GQRA Assessment. Reporting
Geotechnical Assessment	✓	N/A	X	Window Sampling	Recover samples of the natural soils for laboratory testing; Assessment of shallow soils for conventional foundation; Consider deeper or piled foundations; Reporting.

NB * Initial assessments of the site should be undertaken using Leachate Testing and water sampling if required.

\# Complete soils testing to assess if vaporous contamination is in place within the site area.

APPENDIX ONE

CONCEPTUAL MODEL

HERTS & ESSEX SITE INVESTIGATIONS
The Old Post Office, Wellpond Green, Standon, Ware, Herts SG11 1NJ
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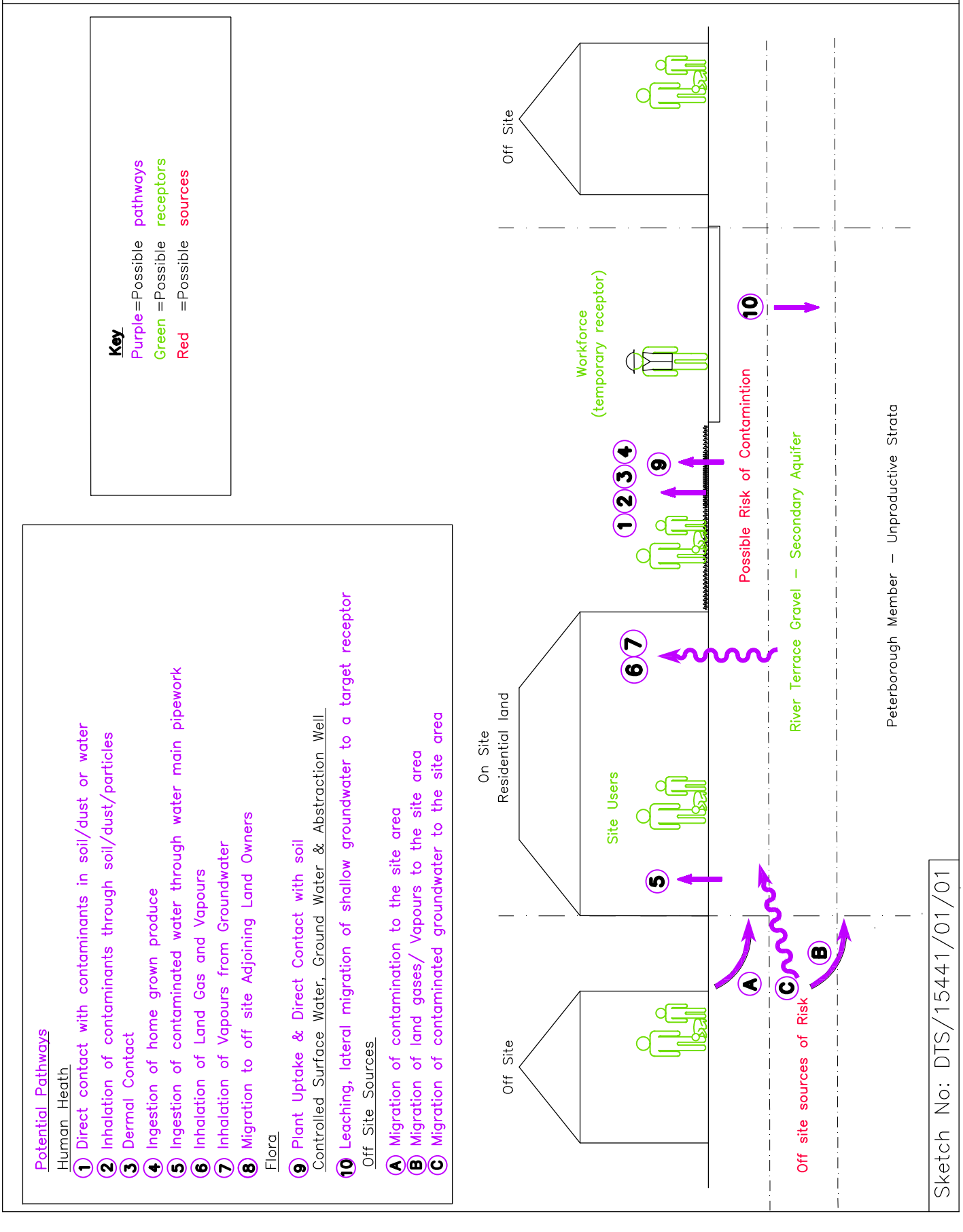
Fax: Ware (01920) 822200

Appendix No. 1
Sheet No. 1
Job No. 15441
Date June 2019

Site at Headings Farm, The Lane, Wyboston, Bedfordshire. MK44 3AS

Site Specific Source–Pathway–Receptor – Proposed Site Use



Sketch No: DTS/15441/01/01

APPENDIX TWO

SITE PLANS

HERTS & ESSEX SITE INVESTIGATIONS

THE OLD POST OFFICE', WELLPOND GREEN,
STANDON, WARE, HERTS, SG11 1NJ

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Appendix No.	2
Sheet No.	1
Job No.	15441
Date	June 2019

'Heddings Farm' The Lane, Wyboston, Bedfordshire MK44 3AS

Location Plan

N

The Site

Not To Scale
Sketch No: DTS/15441/02/01

HERTS & ESSEX SITE INVESTIGATIONS

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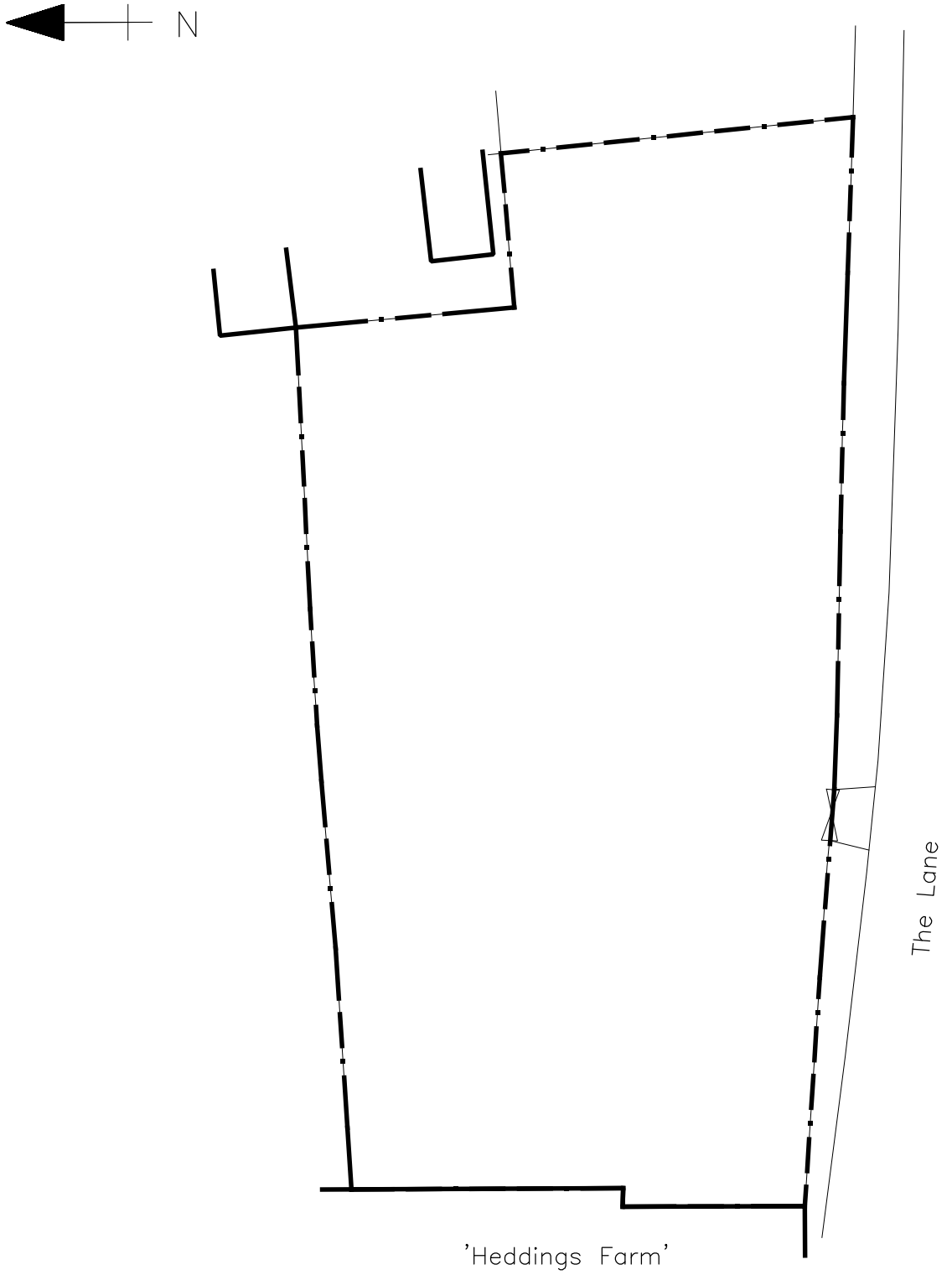
Appendix No.	2
Sheet No.	2
Job No.	15441
Date	June 2019

'Heddings Farm' The Lane, Wyboston, Bedfordshire MK44 3AS

Existing Plan



Not To Scale
Sketch No: DTS/15441/02/02

HERTS & ESSEX SITE INVESTIGATIONS

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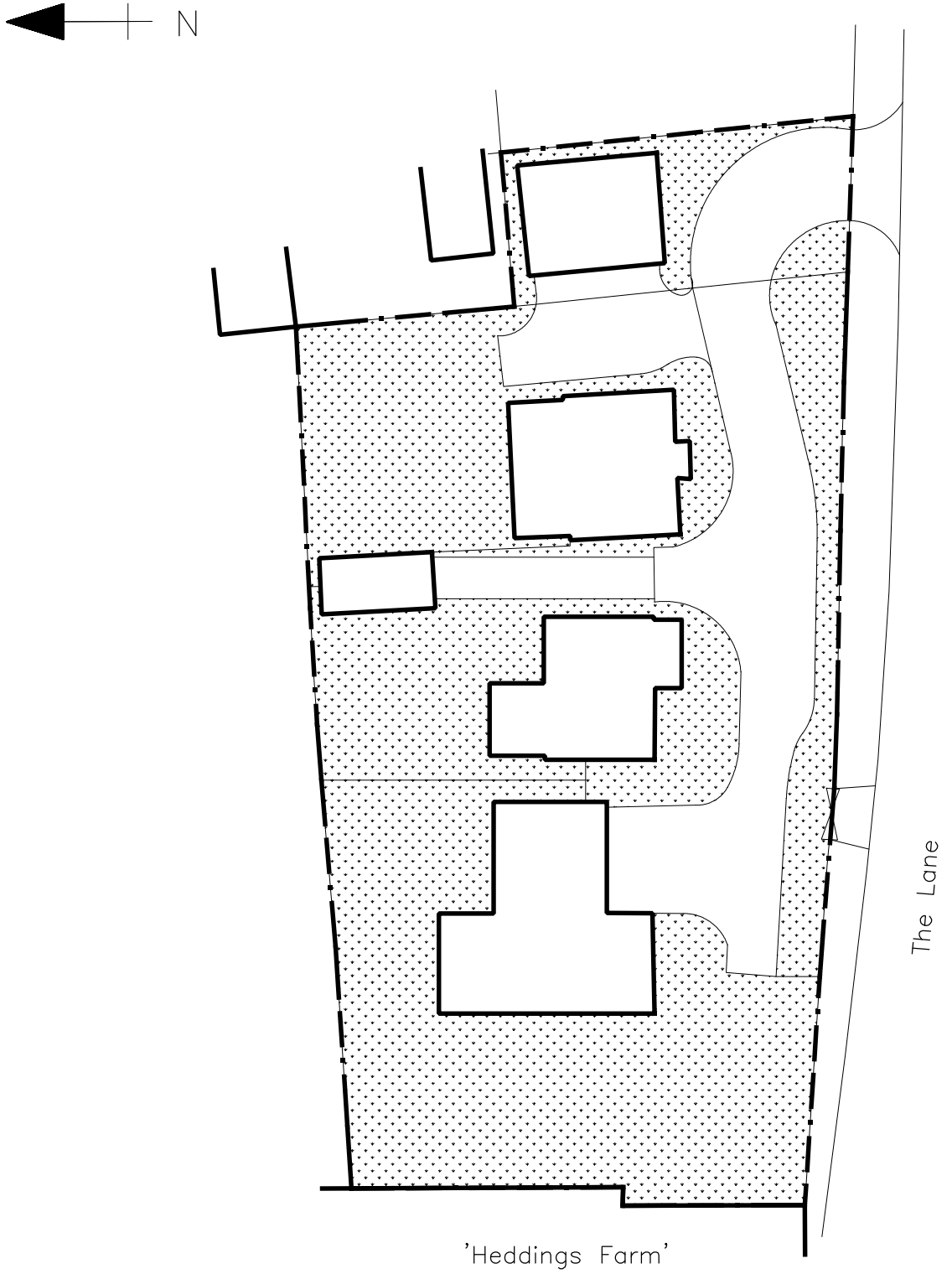
Appendix No.	2
Sheet No.	3
Job No.	15441
Date	June 2019

'Heddings Farm' The Lane, Wyboston, Bedfordshire MK44 3AS

Proposed Plan



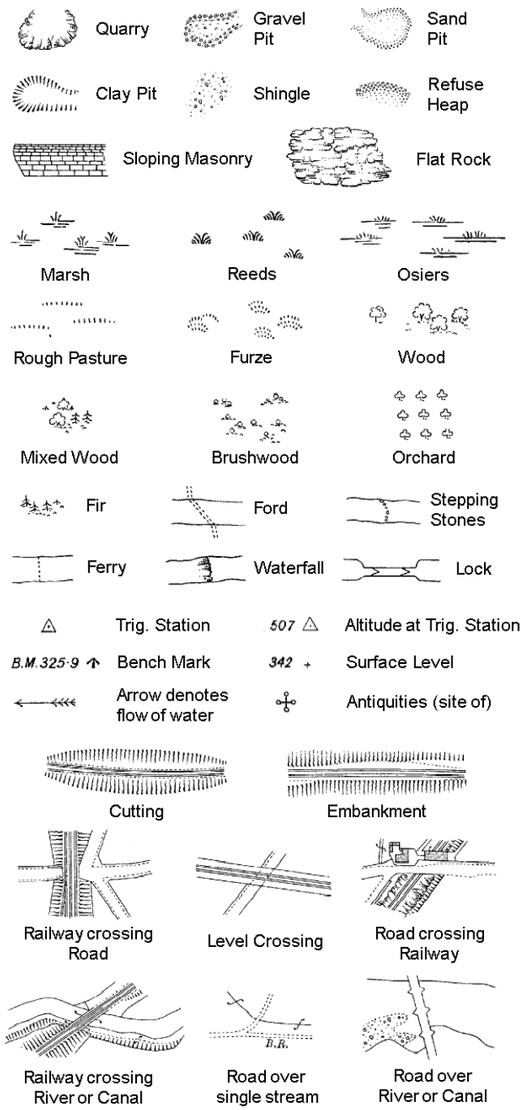
Not To Scale
Sketch No: DTS/15441/02/03

APPENDIX THREE

ORDNANCE SURVEY MAP RECORDS

Historical Mapping Legends

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



County Boundary (Geographical)

County & Civil Parish Boundary

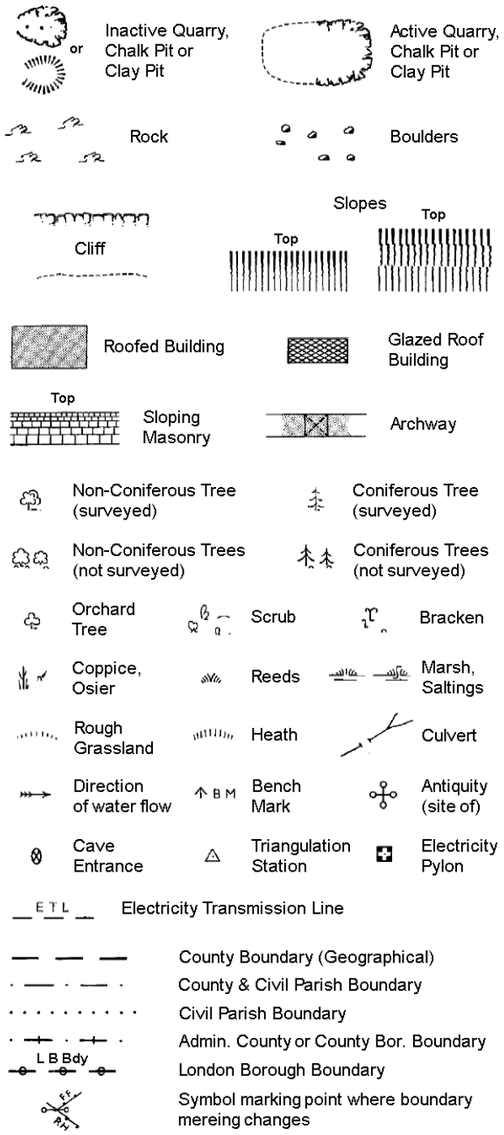
Administrative County & Civil Parish Boundary

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

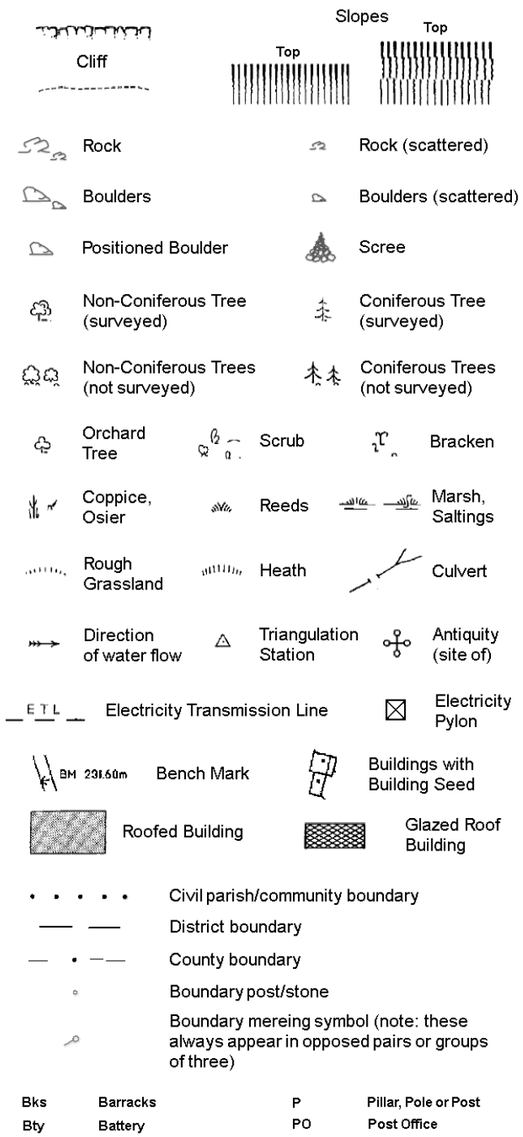
Admin. County or County Bor. Boundary

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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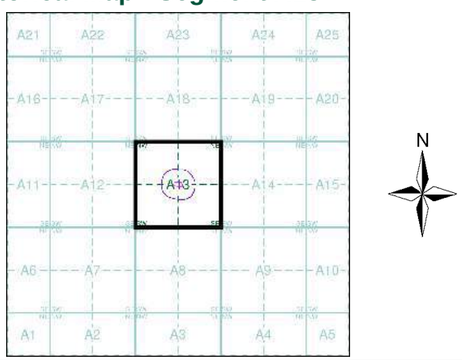
Historical Mapping & Photography included:

Historical Map - Segment A13



Order Details

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Customer Ref: 15441
National Grid Reference: 515800, 256880
Slice: A
Site Area (Ha): 0.2
Search Buffer (m): 100

Site Details

Hedding Farm, The Lane, WYBOSTON, MK44 3AS

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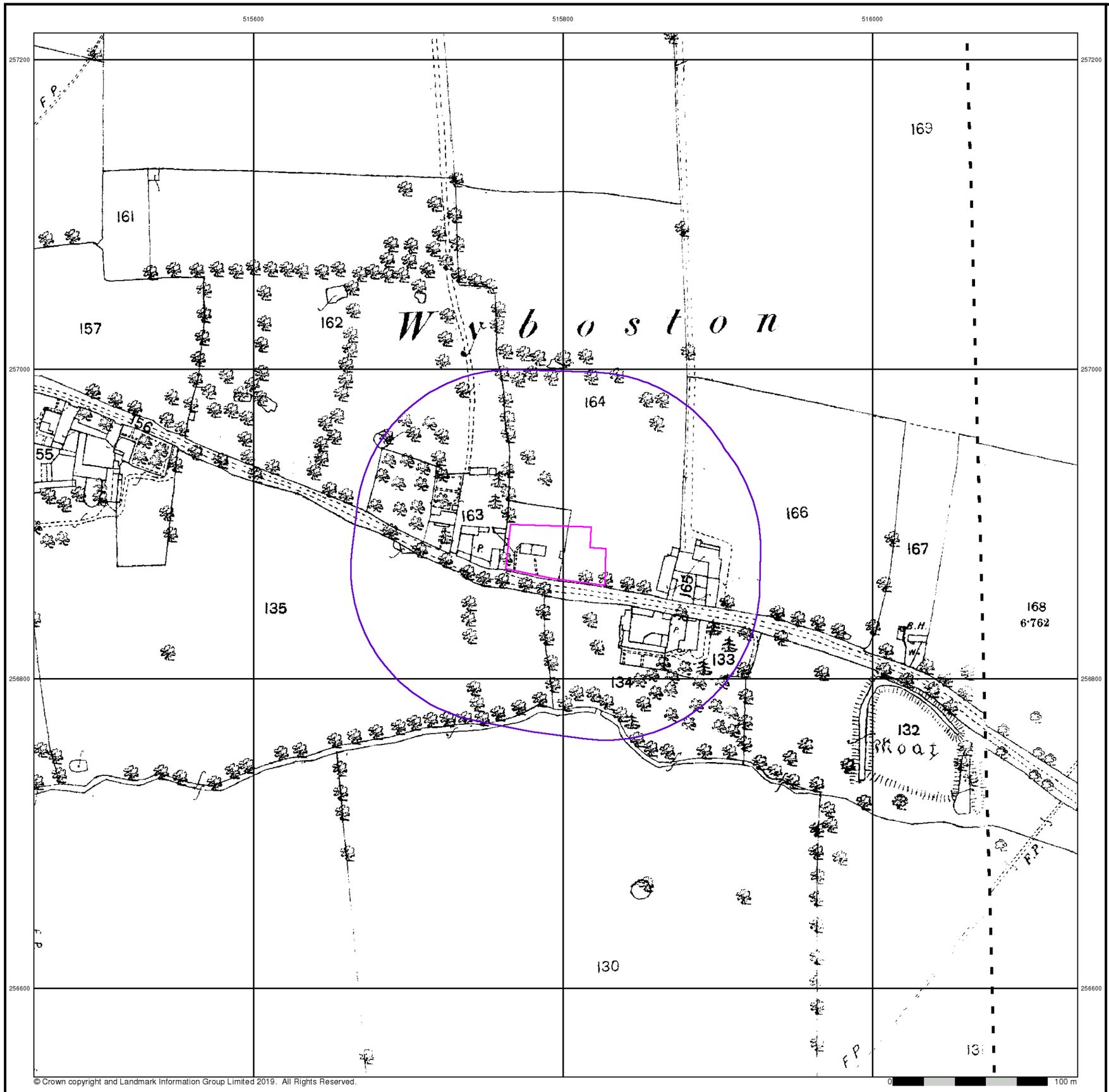

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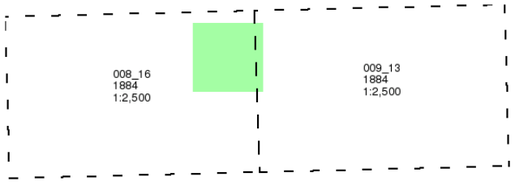
Bedfordshire

Published 1884

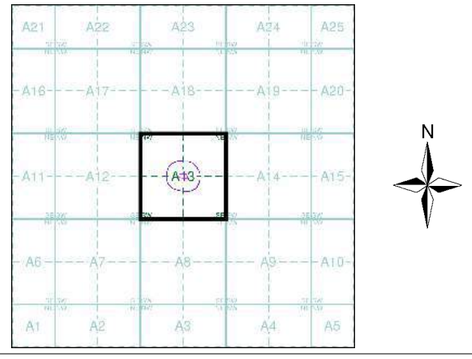
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



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Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

Hedding Farm, The Lane, WYBOSTON, MK44 3AS

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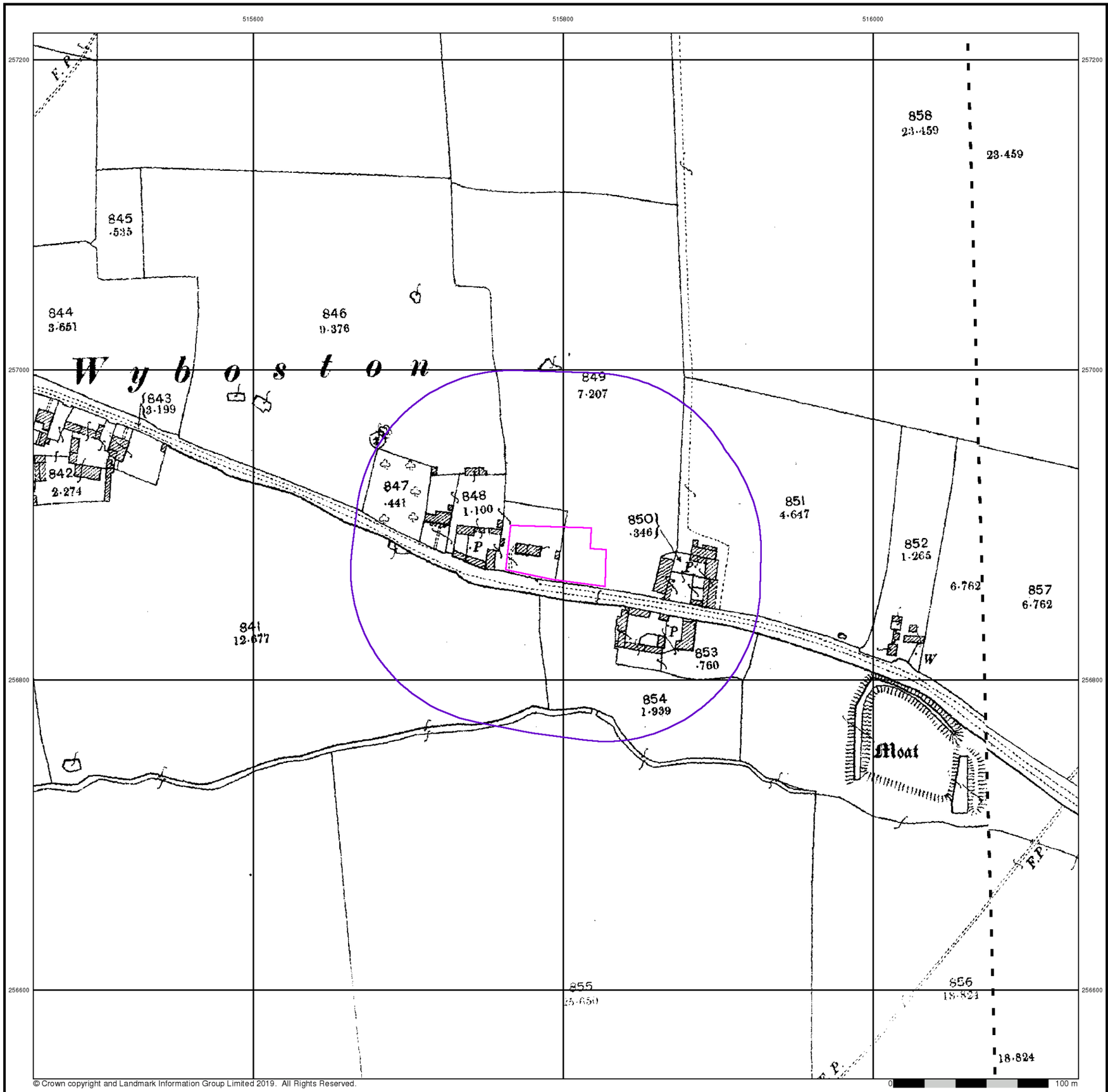

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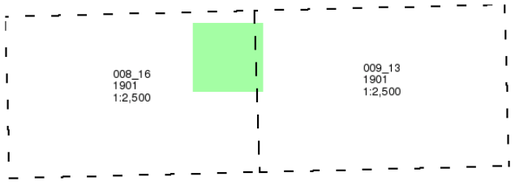
Bedfordshire

Published 1901

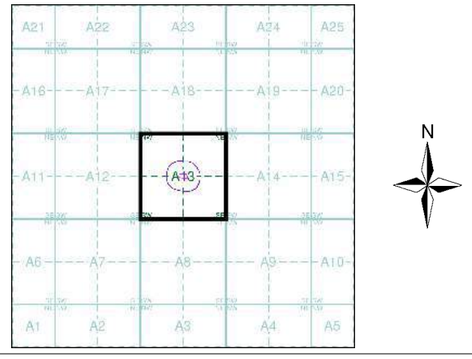
Source map scale - 1:2,500

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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National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

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Ordnance Survey Plan

Published 1970

Source map scale - 1:2,500

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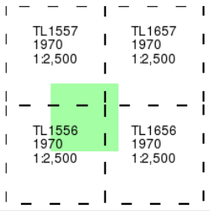
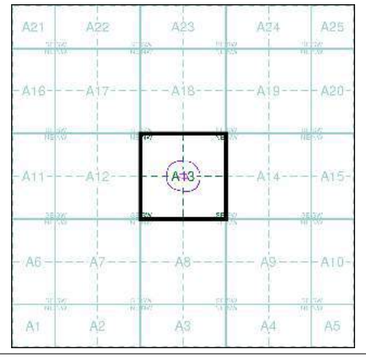
Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

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National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

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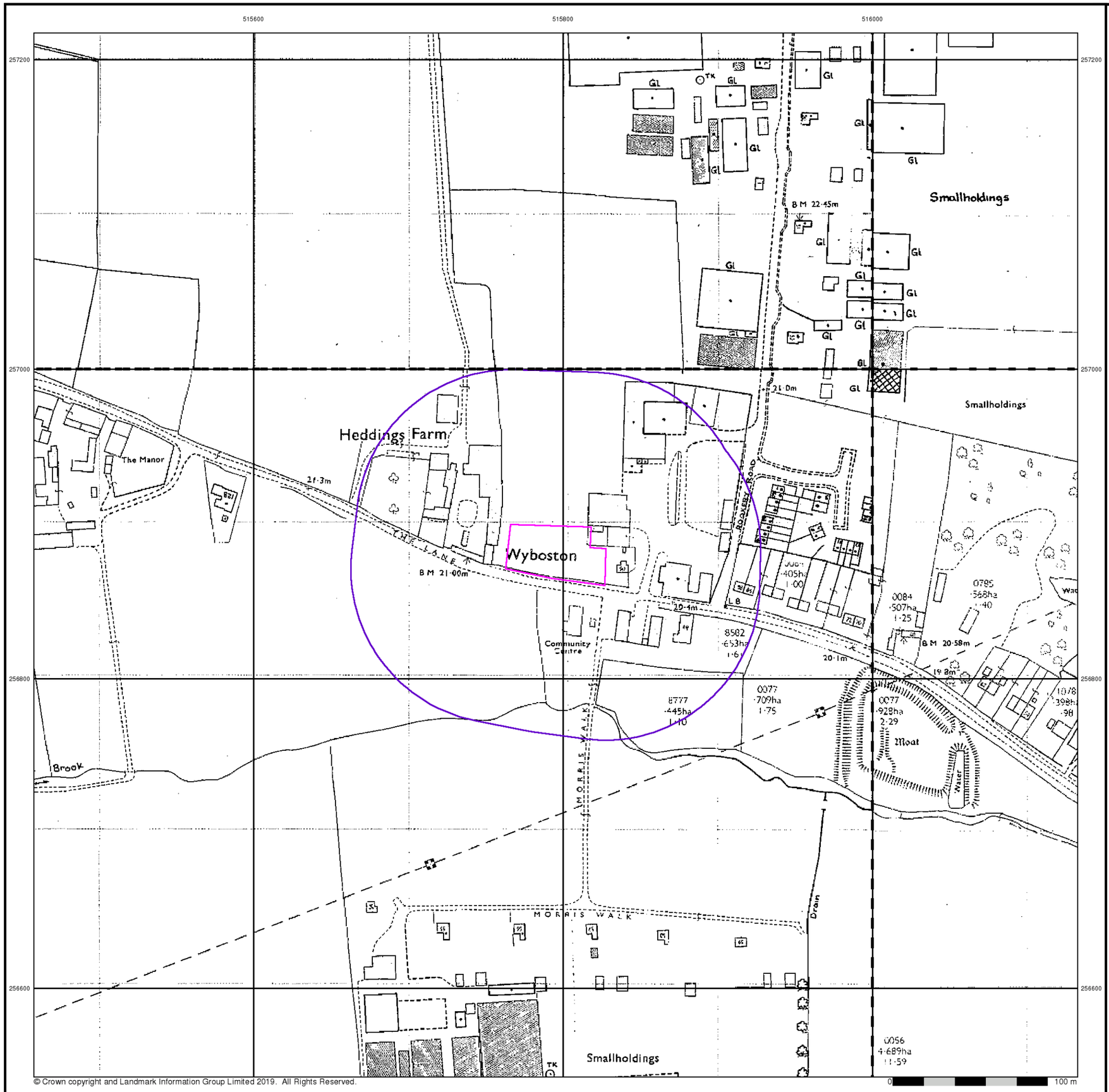

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Additional SIMs

Published 1983 - 1987

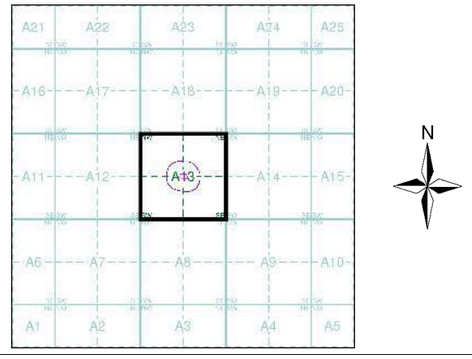
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

TL1557 1983 1:2,500	TL1657 1985 1:2,500
TL1556 1987 1:2,500	TL1656 1983 1:2,500

Historical Map - Segment A13



Order Details

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Customer Ref:	15441
National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

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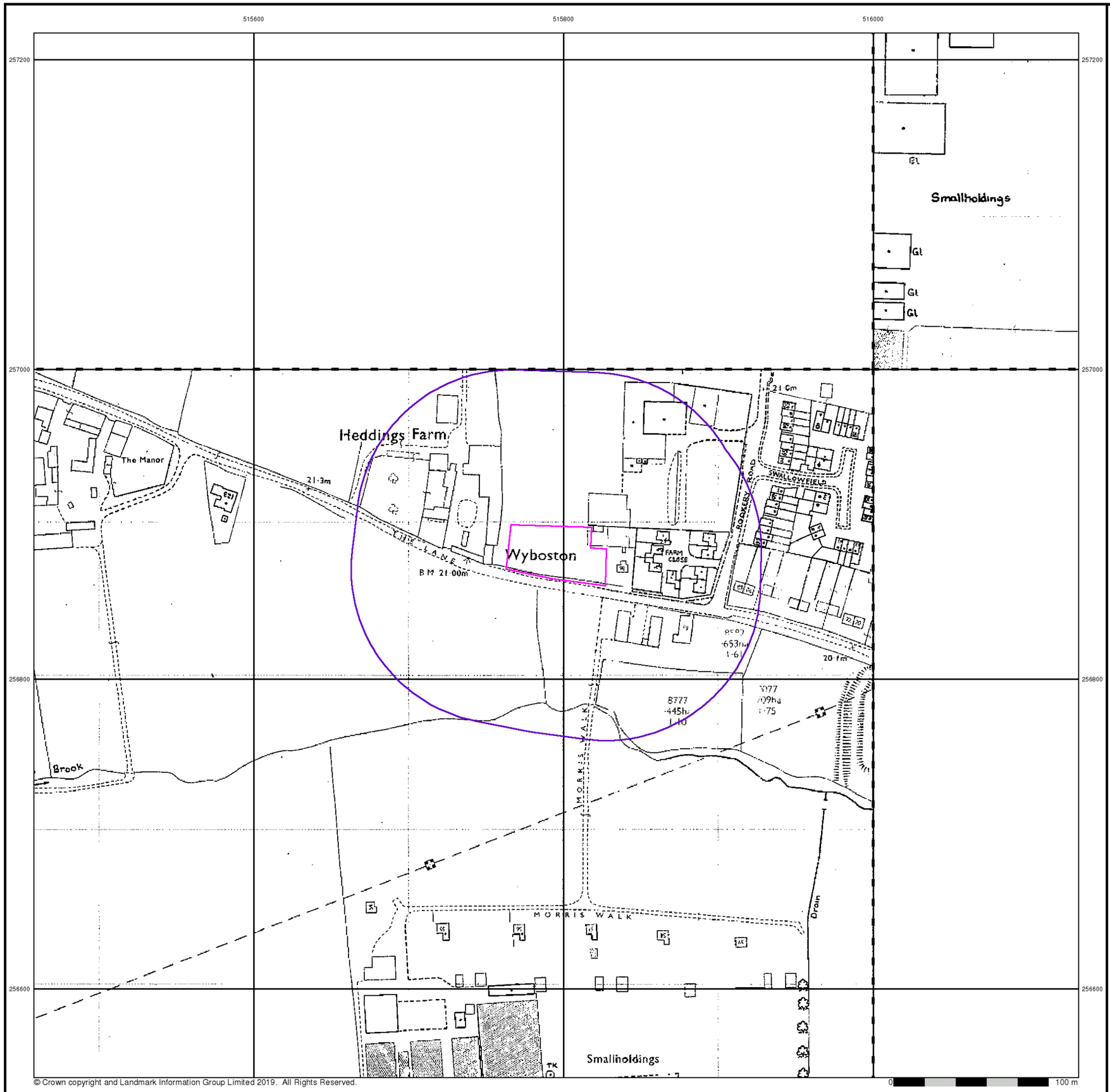

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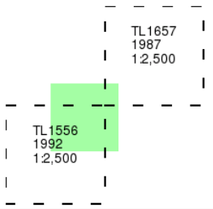
Additional SIMs

Published 1987 - 1992

Source map scale - 1:2,500

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

Map Name(s) and Date(s)



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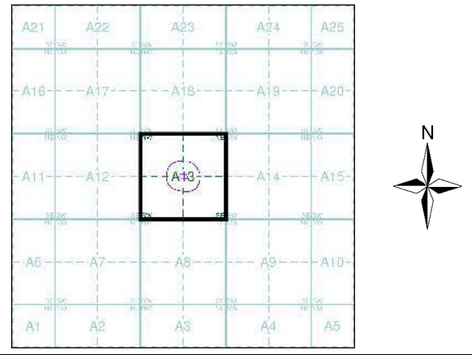

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National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

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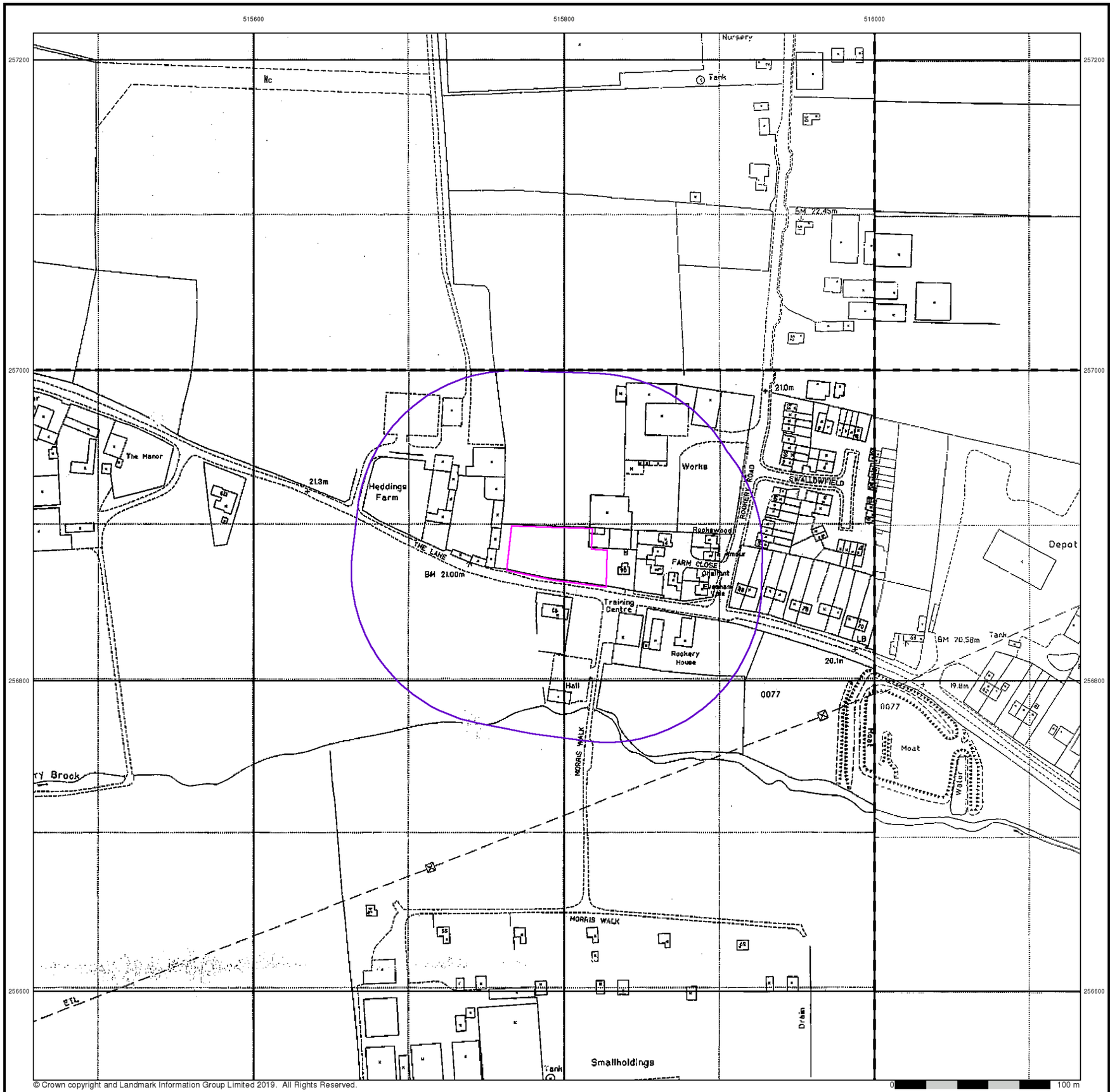

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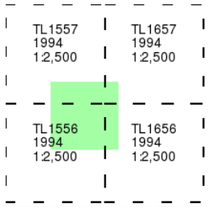
Large-Scale National Grid Data

Published 1994

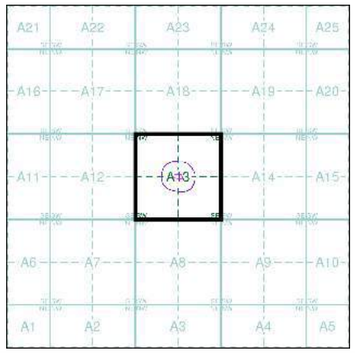
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	208881306_1_1
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Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

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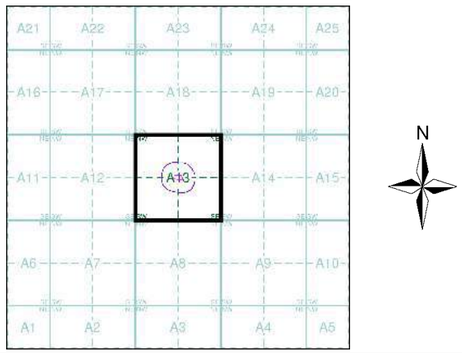
Historical Aerial Photography

Published 1999

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

Historical Aerial Photography - Segment A13



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Customer Ref:	15441
National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	100

Site Details

Hedding Farm, The Lane, WYBOSTON, MK44 3AS

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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
Electricity Transmission Line
Pylon
Sloping Masonry
Pole
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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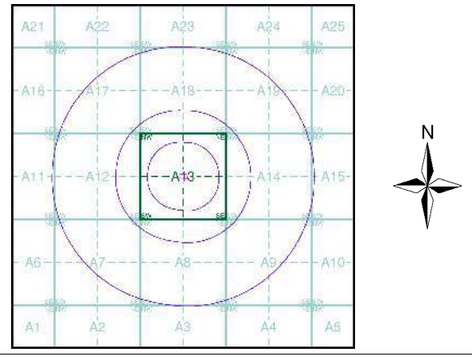
Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Bedfordshire	1:10,560	1883 - 1884	2
Huntingdonshire	1:10,560	1887	3
Bedfordshire	1:10,560	1902	4
Huntingdonshire	1:10,560	1902	5
Bedfordshire	1:10,560	1927	6
Huntingdonshire	1:10,560	1927	7
Bedfordshire	1:10,560	1951 - 1952	8
Huntingdonshire	1:10,560	1952	9
Ordnance Survey Plan	1:10,000	1960	10
Ordnance Survey Plan	1:10,000	1968	11
Ordnance Survey Plan	1:10,000	1974	12
Ordnance Survey Plan	1:10,000	1982 - 1983	13
Ordnance Survey Plan	1:10,000	1989	14
Ordnance Survey Plan	1:10,000	1995	15
10K Raster Mapping	1:10,000	1999	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2019	18

Historical Map - Slice A



Order Details

Order Number: 208881306_1_1
Customer Ref: 15441
National Grid Reference: 515800, 256880
Slice: A
Site Area (Ha): 0.2
Search Buffer (m): 1000

Site Details

Hedding Farm, The Lane, WYBOSTON, MK44 3AS

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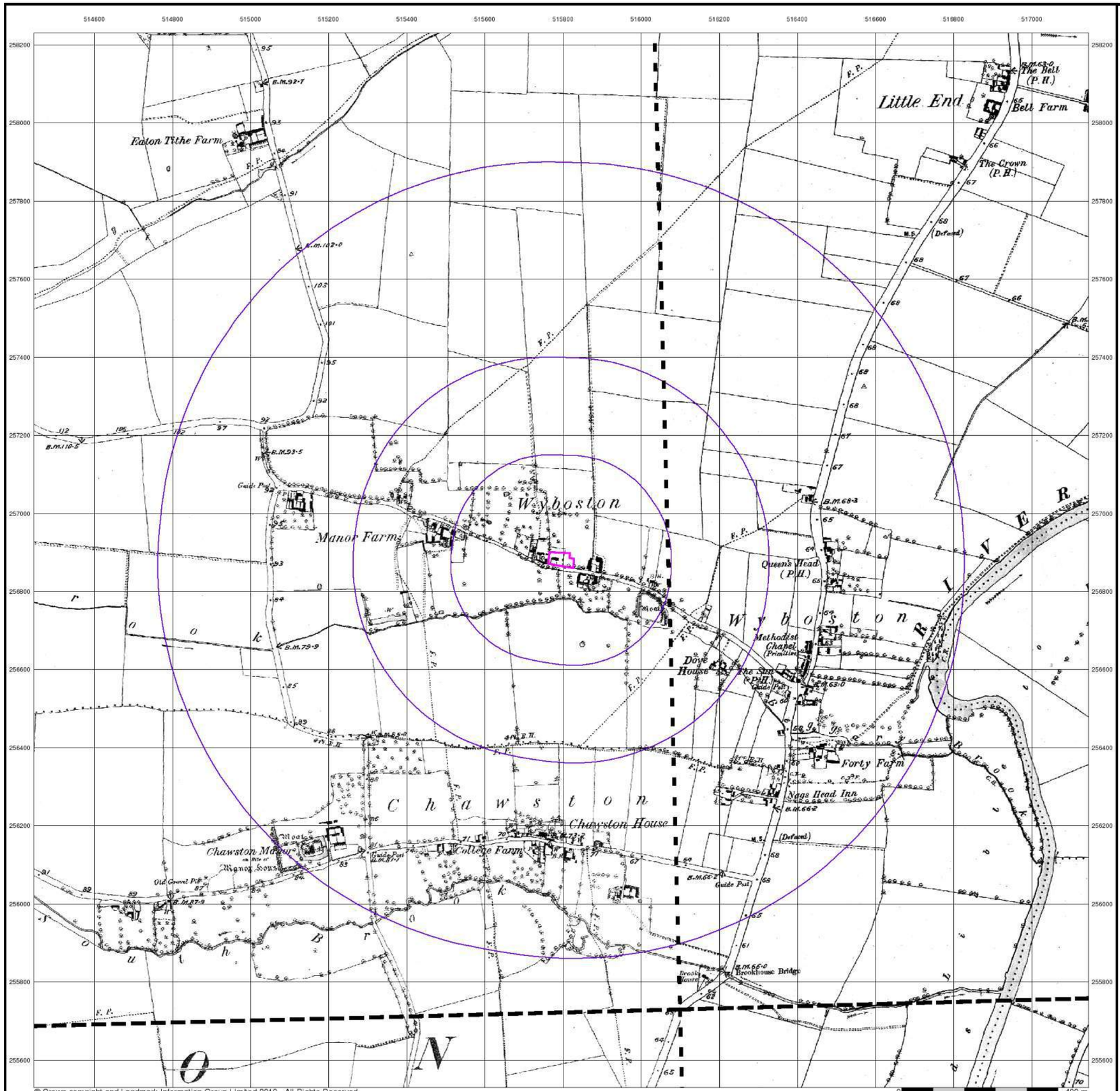

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Bedfordshire

Published 1883 - 1884

Source map scale - 1:10,560

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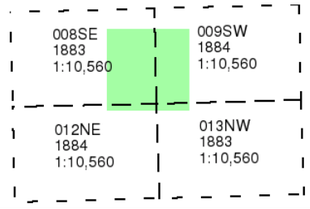
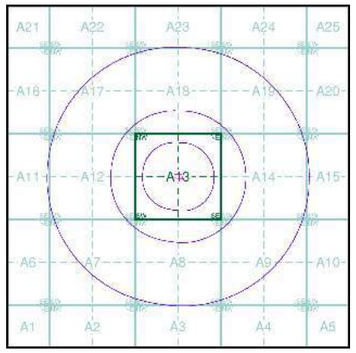
Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	208881306_1_1
Customer Ref:	15441
National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	1000

Site Details

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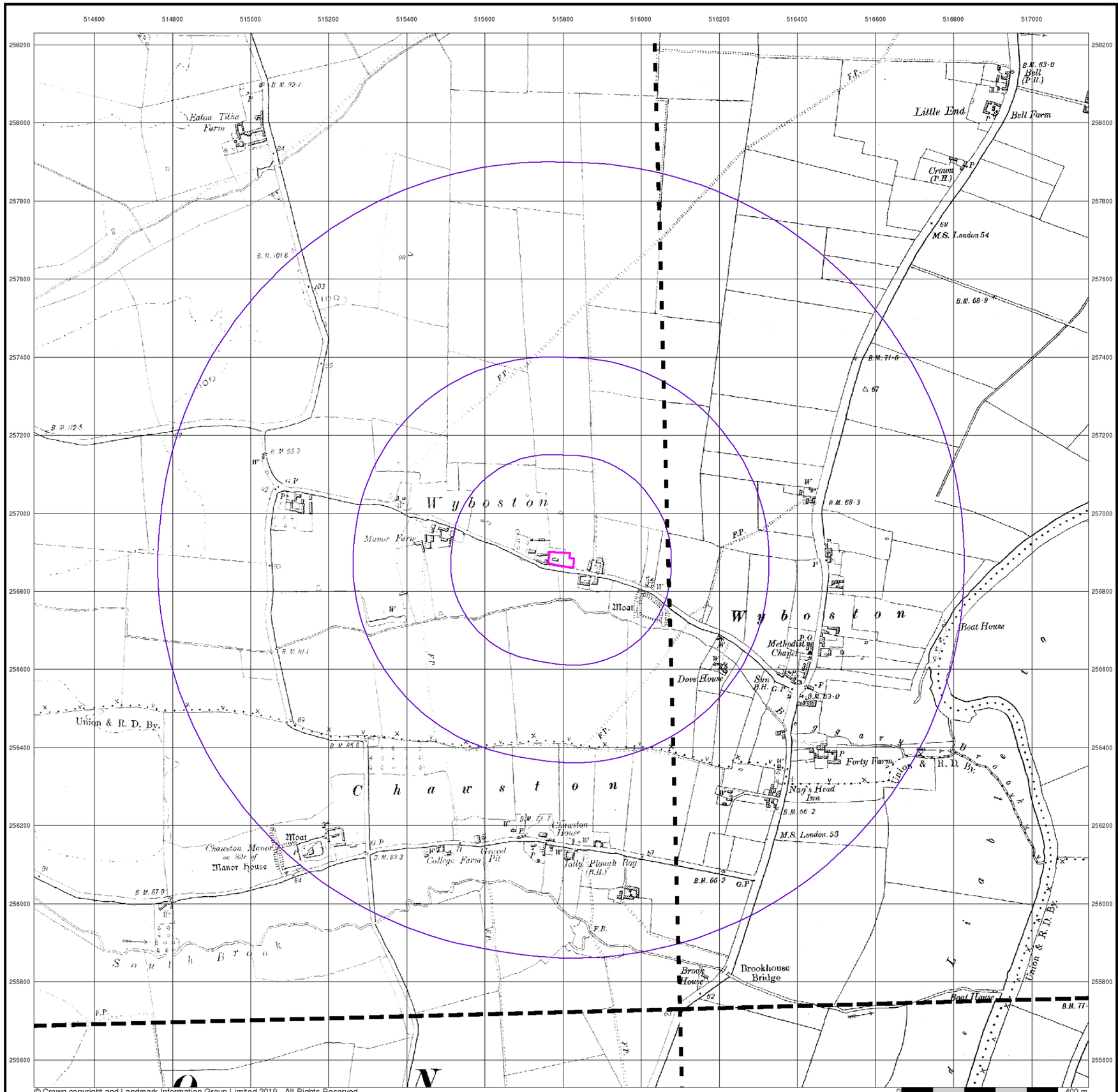

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Bedfordshire

Published 1902

Source map scale - 1:10,560

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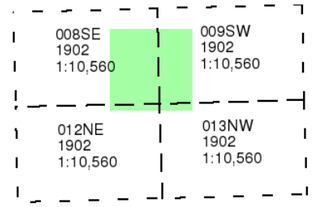
Map Name(s) and Date(s)



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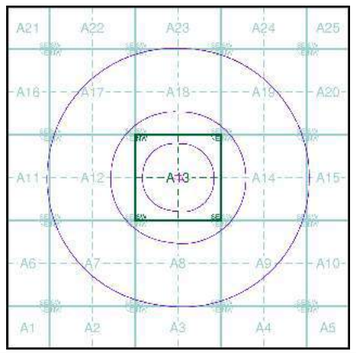

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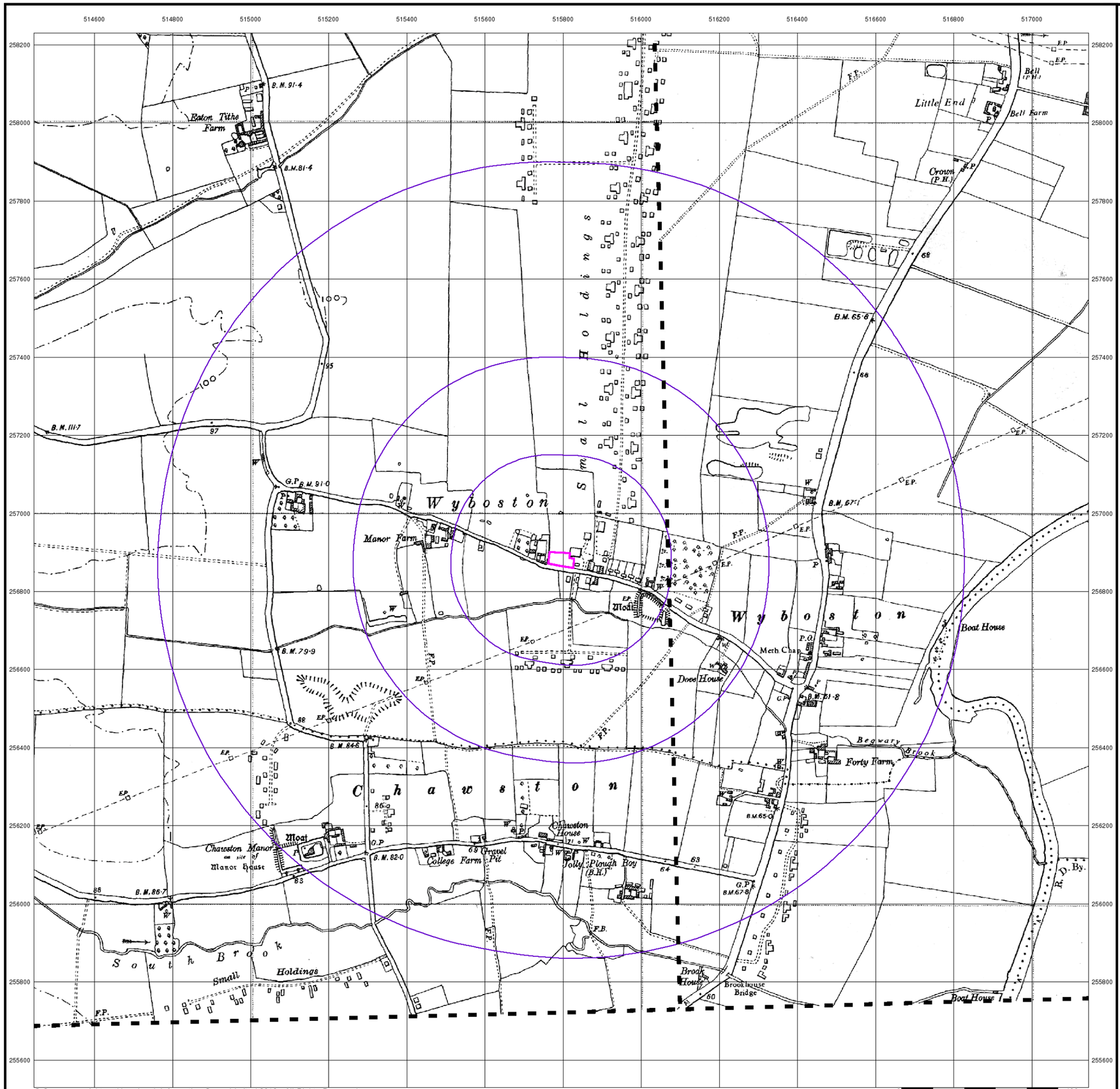

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Bedfordshire

Published 1951 - 1952

Source map scale - 1:10,560

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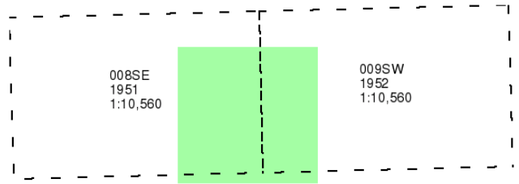
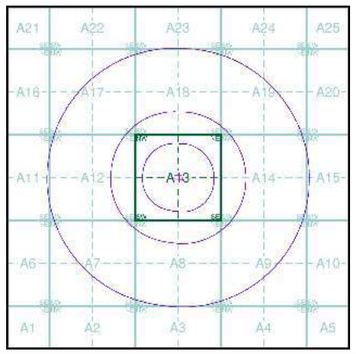


Historical Map - Slice A



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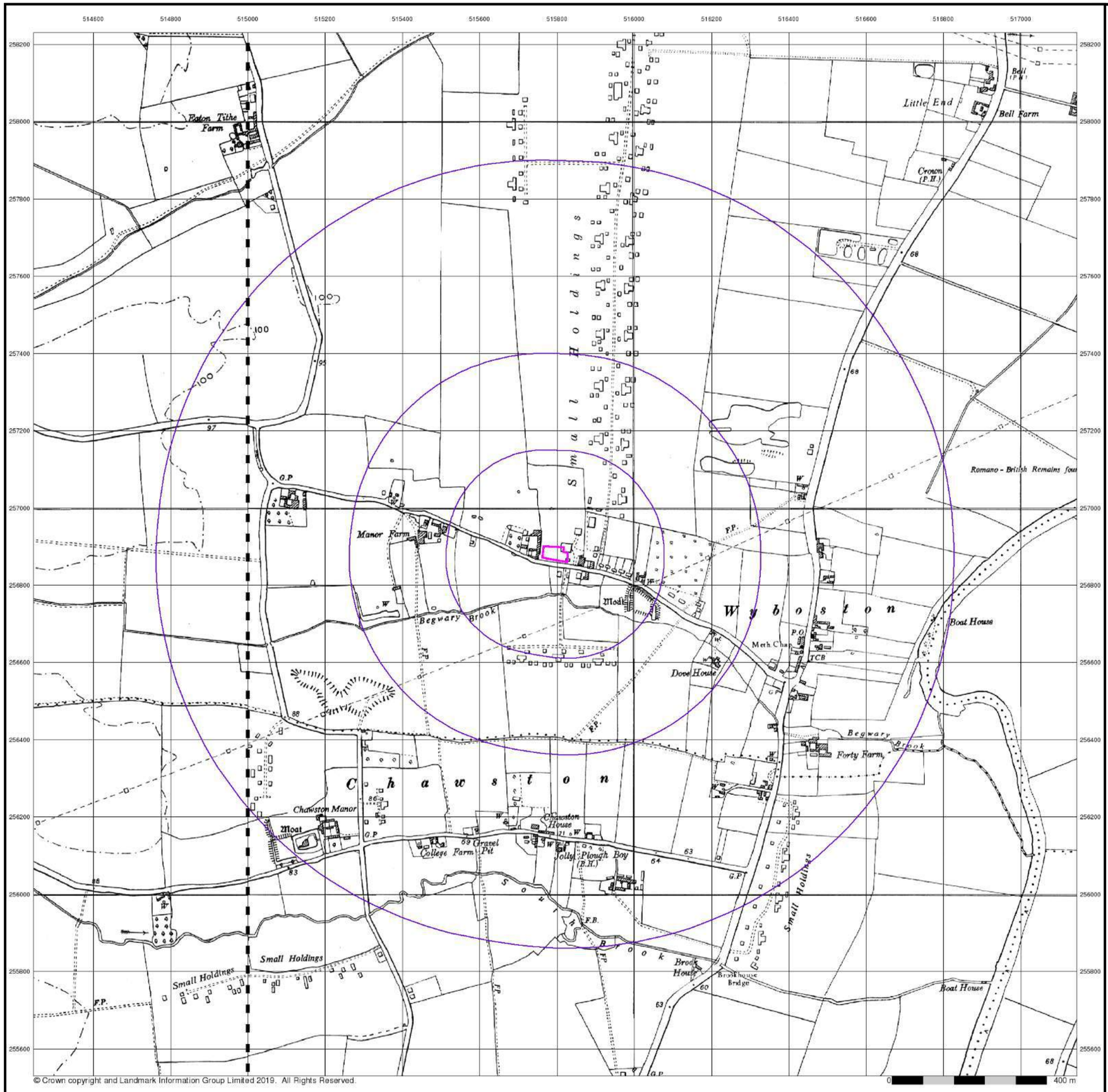

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Ordnance Survey Plan

Published 1960

Source map scale - 1:10,000

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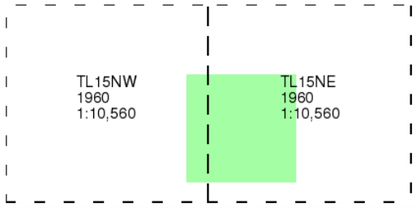
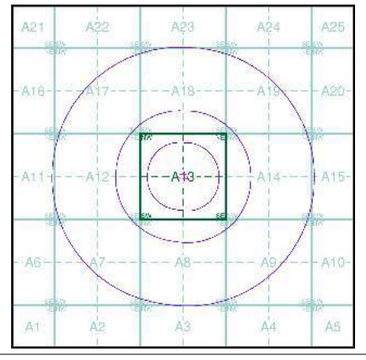


Historical Map - Slice A



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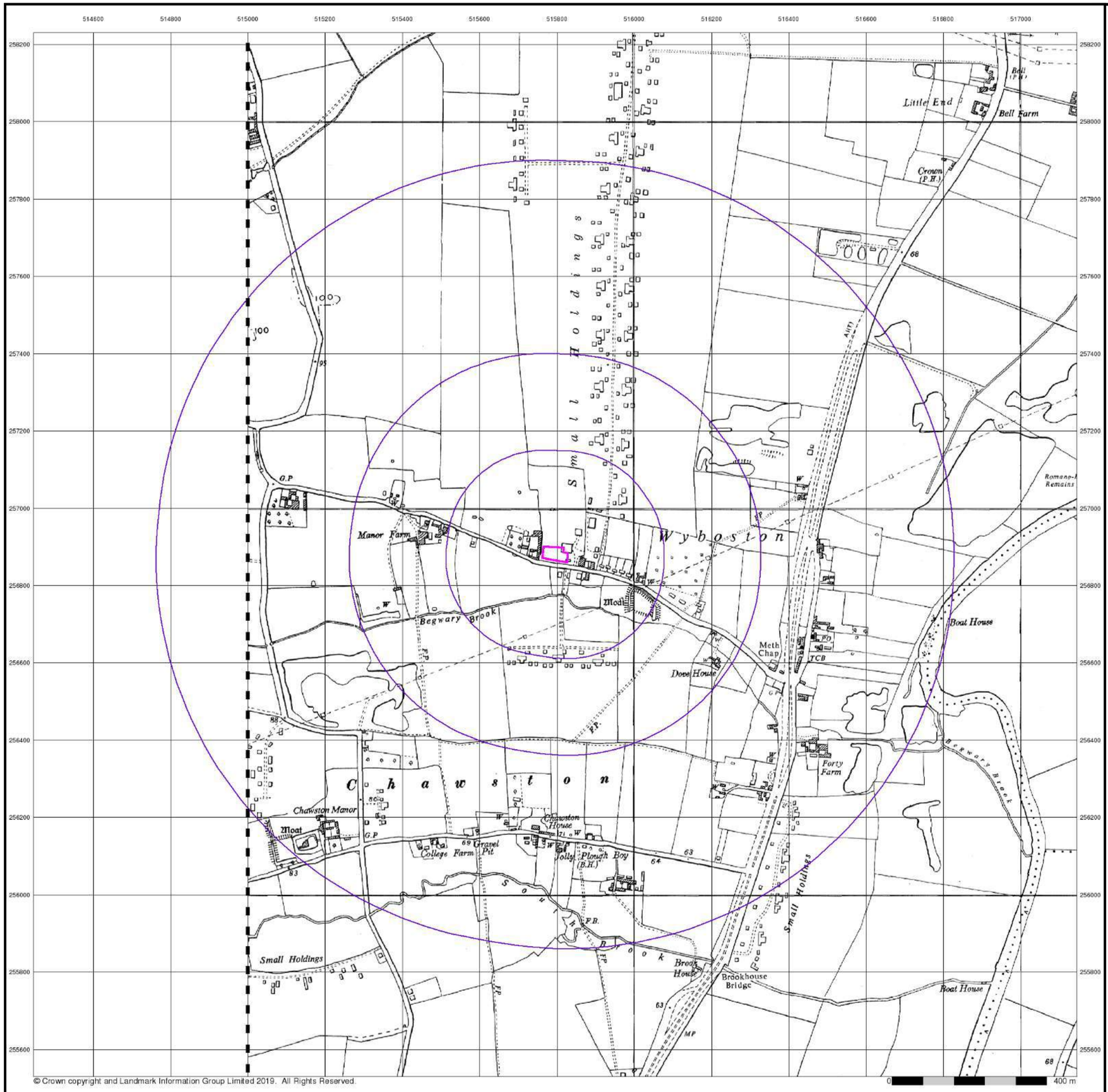

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Ordnance Survey Plan

Published 1968

Source map scale - 1:10,000

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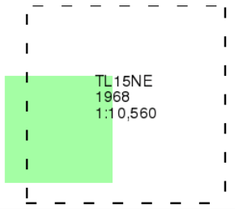
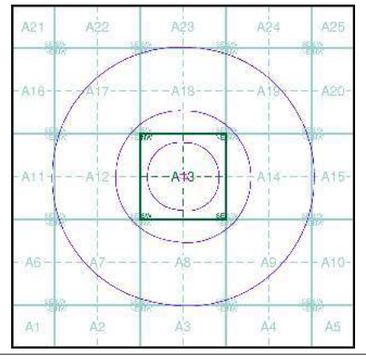


Historical Map - Slice A



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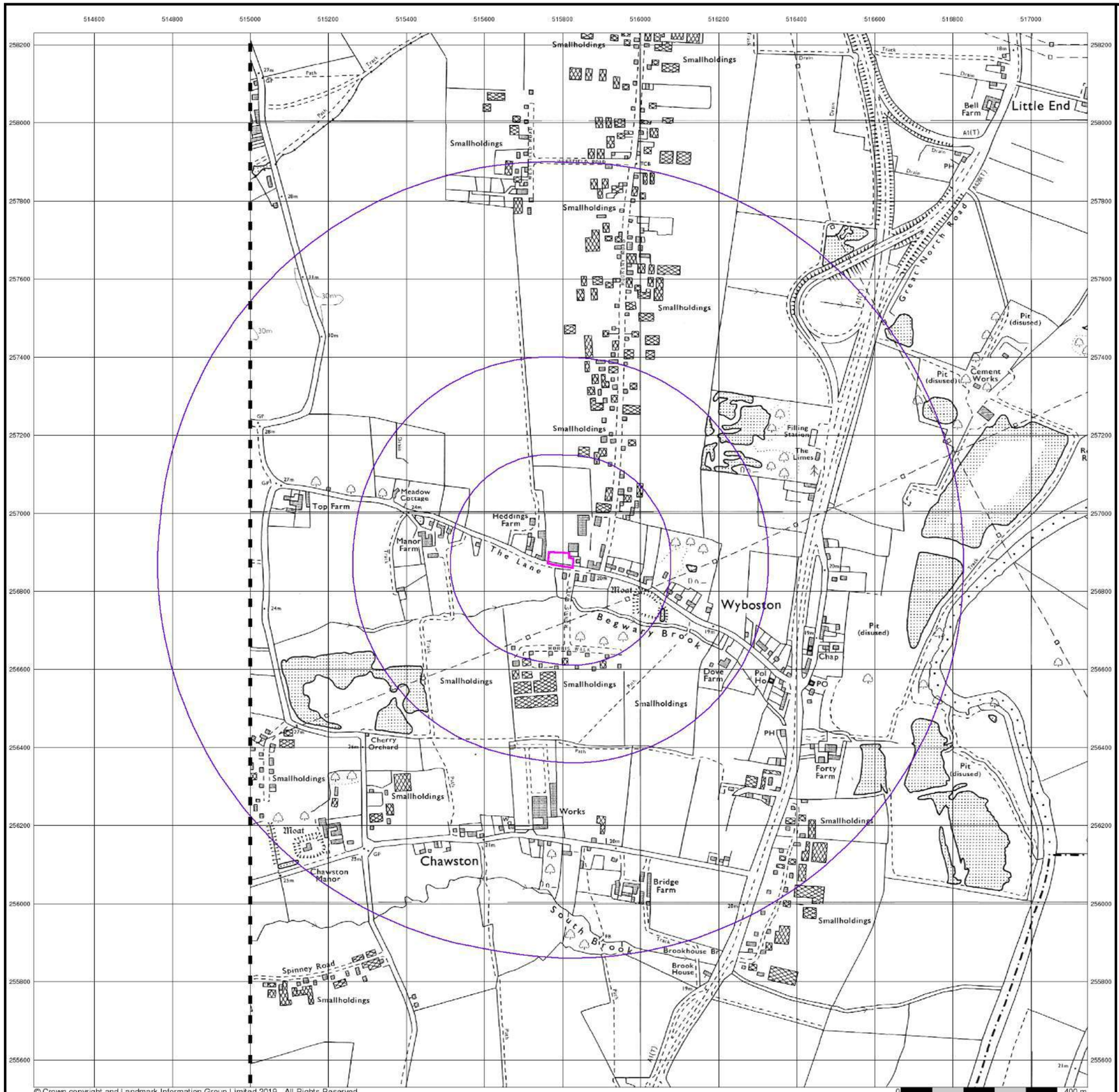

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Ordnance Survey Plan

Published 1974

Source map scale - 1:10,000

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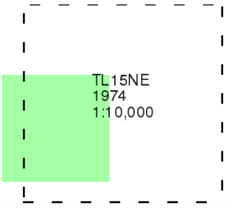
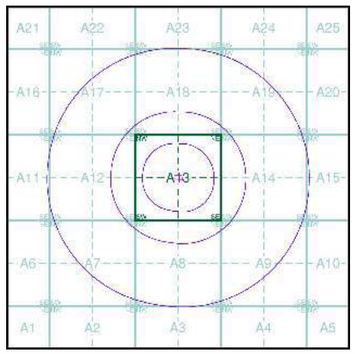


Historical Map - Slice A



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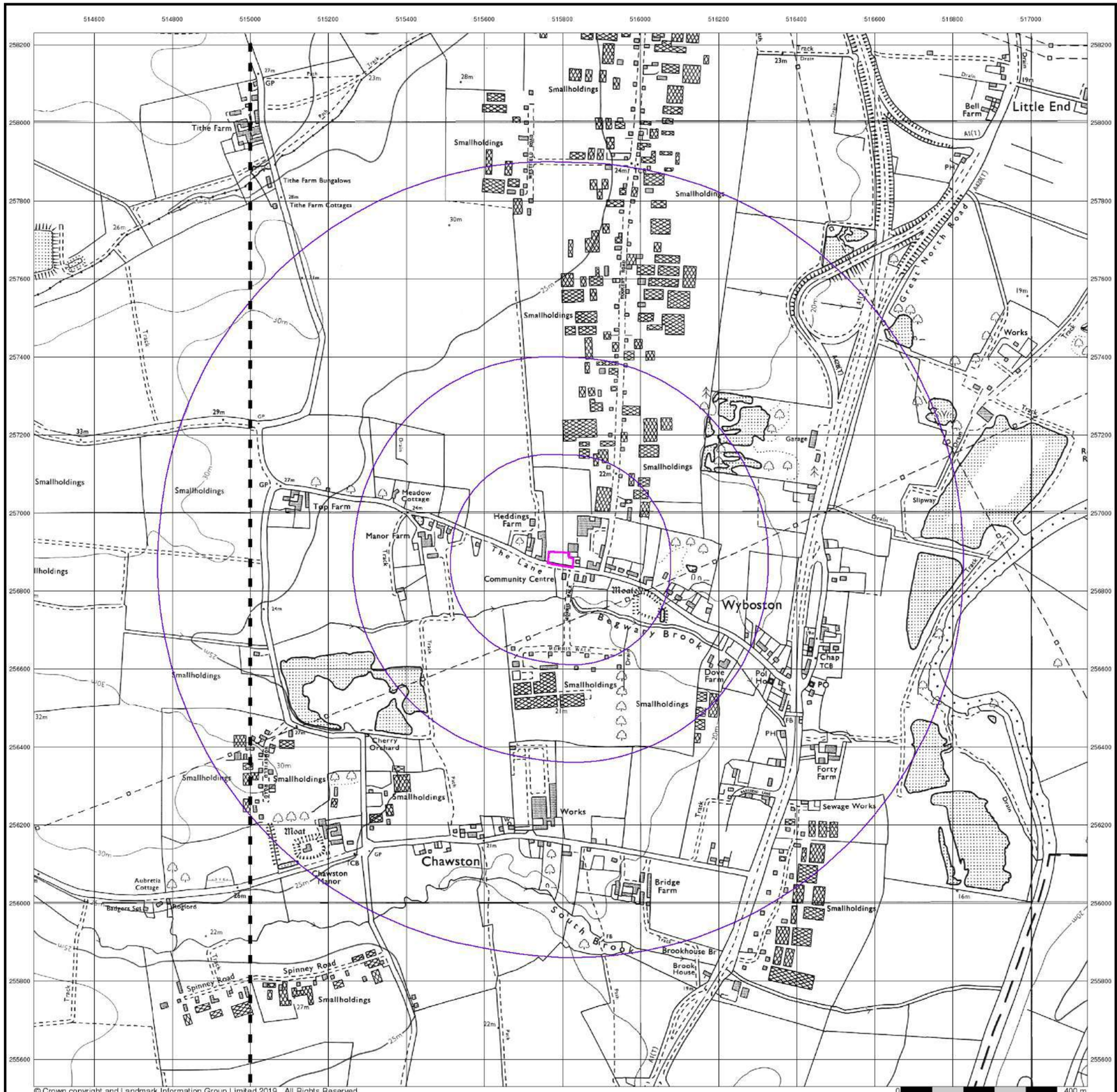

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Ordnance Survey Plan

Published 1982 - 1983

Source map scale - 1:10,000

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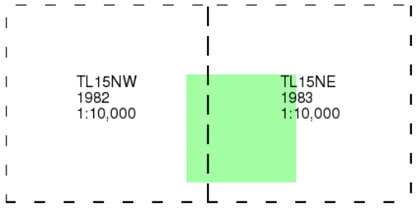
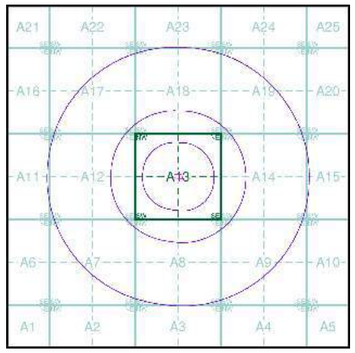


Historical Map - Slice A



Order Details

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Customer Ref:	15441
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Slice:	A
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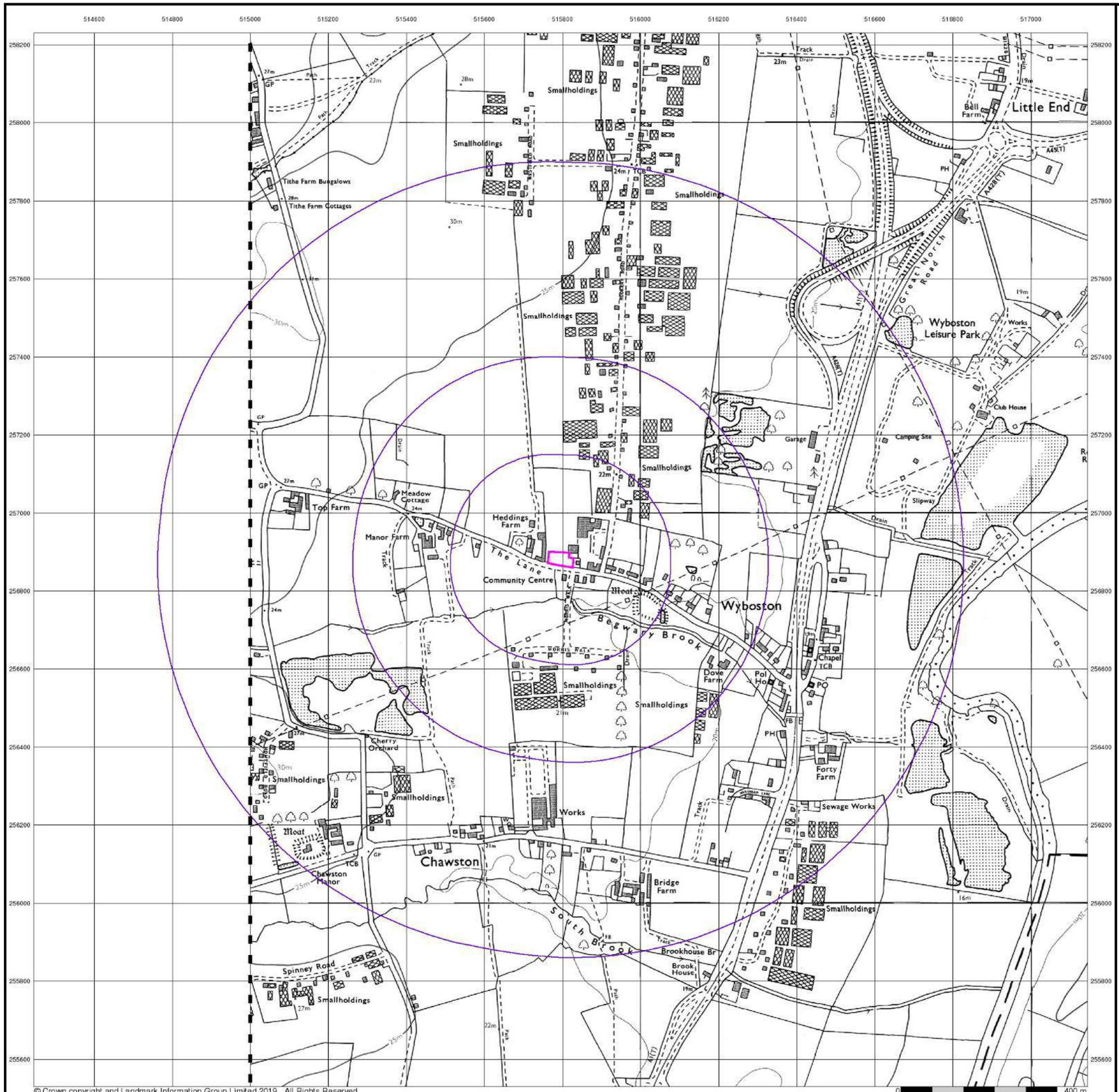

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Ordnance Survey Plan

Published 1989

Source map scale - 1:10,000

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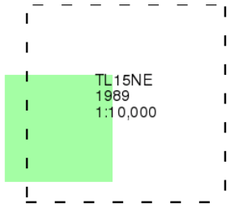
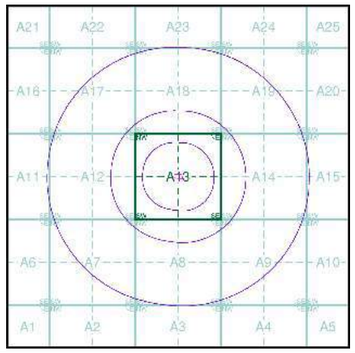


Historical Map - Slice A



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Ordnance Survey Plan

Published 1995

Source map scale - 1:10,000

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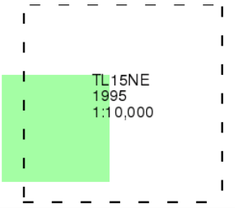
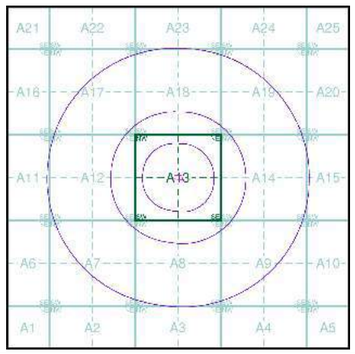


Historical Map - Slice A



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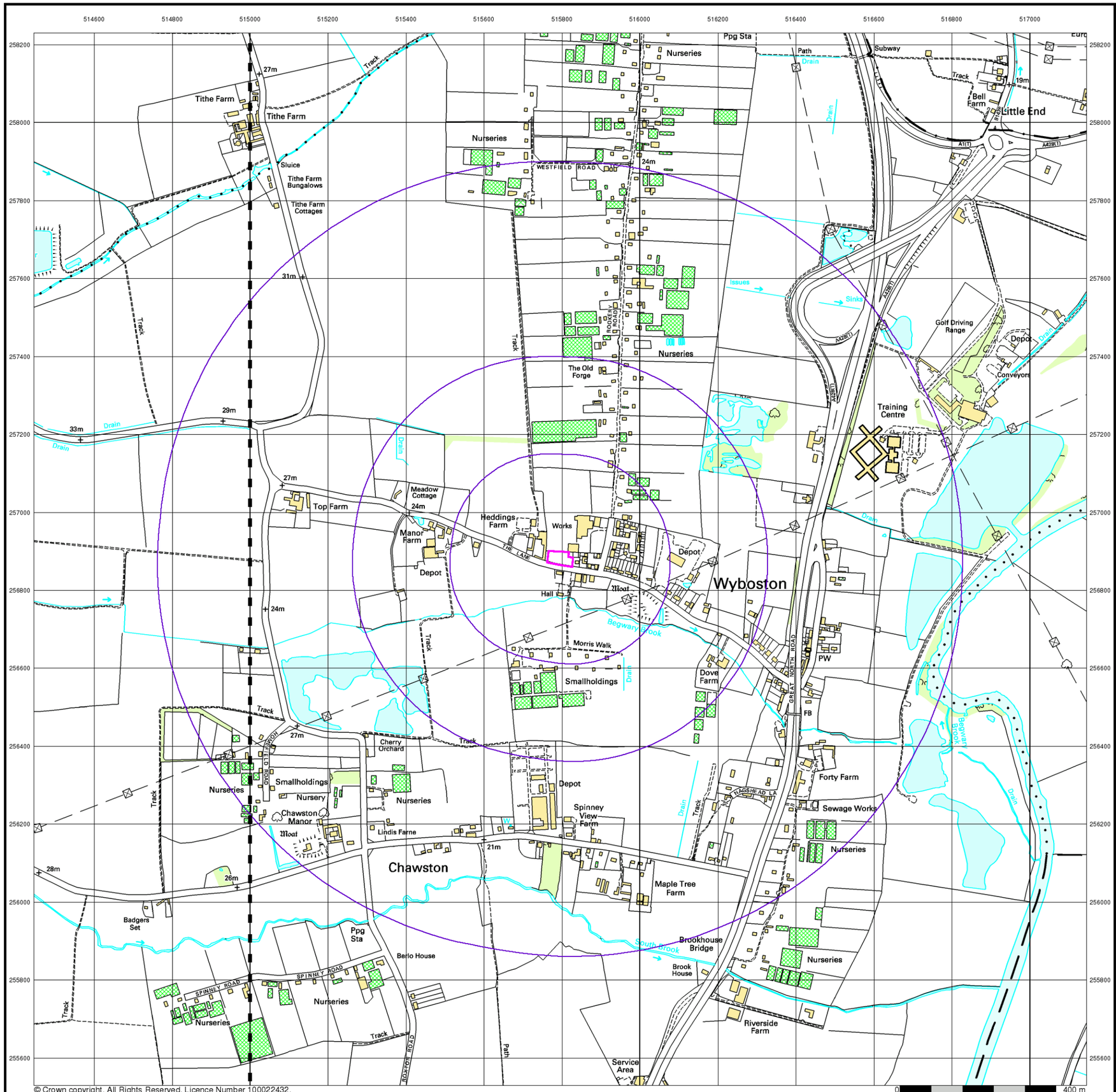

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10k Raster Mapping

Published 1999

Source map scale - 1:10,000

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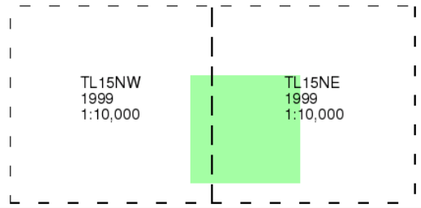
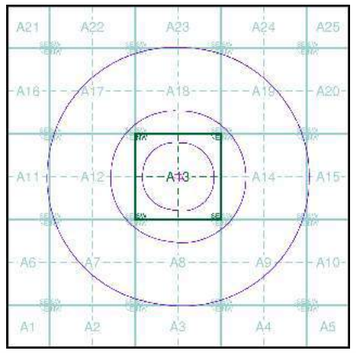
Map Name(s) and Date(s)



Historical Map - Slice A



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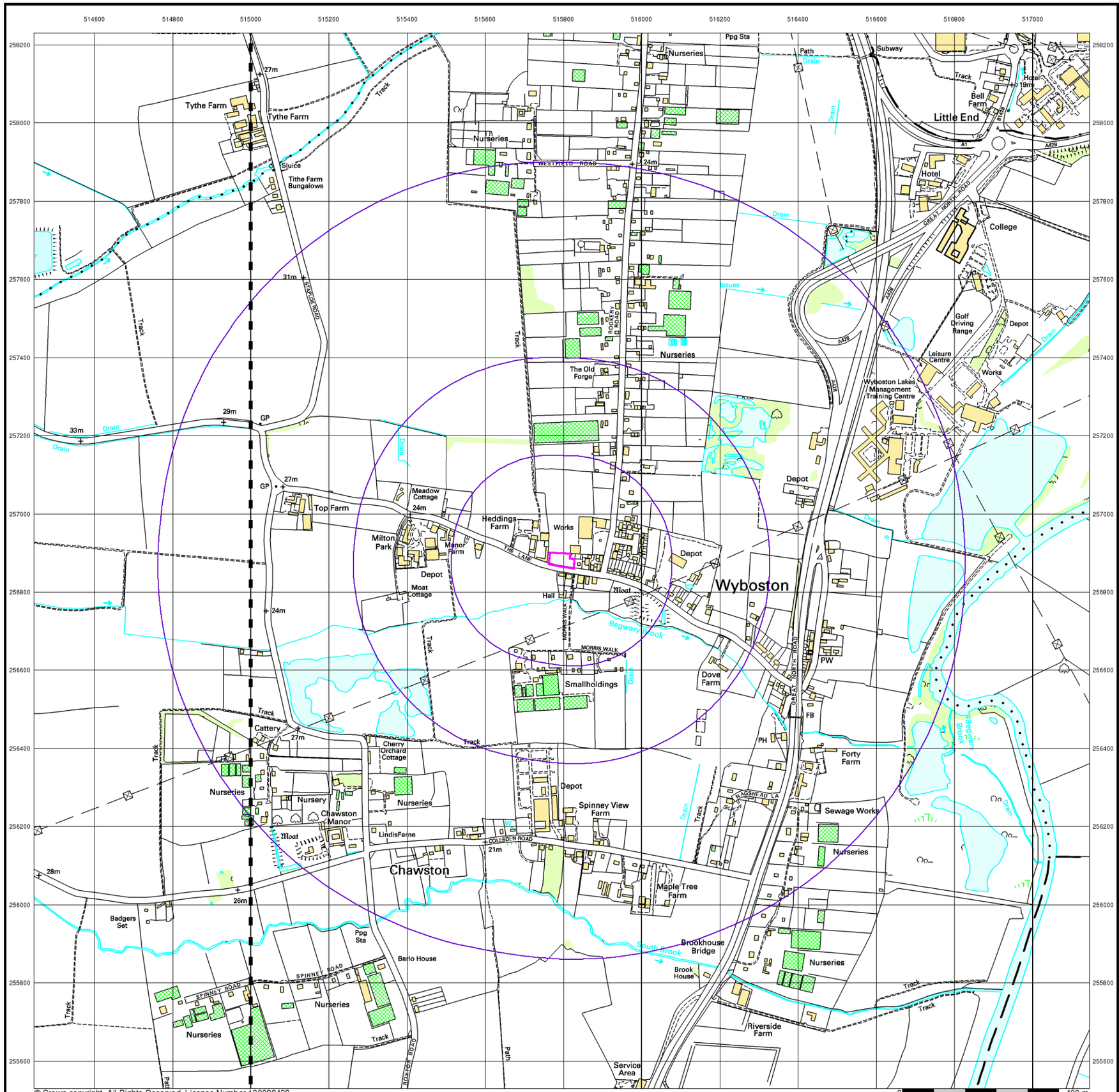

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10k Raster Mapping

Published 2006

Source map scale - 1:10,000

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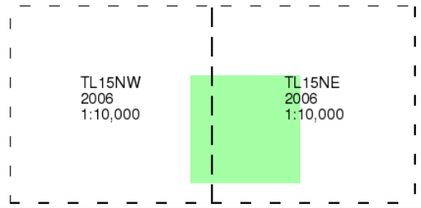

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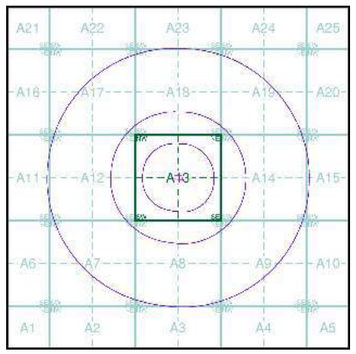

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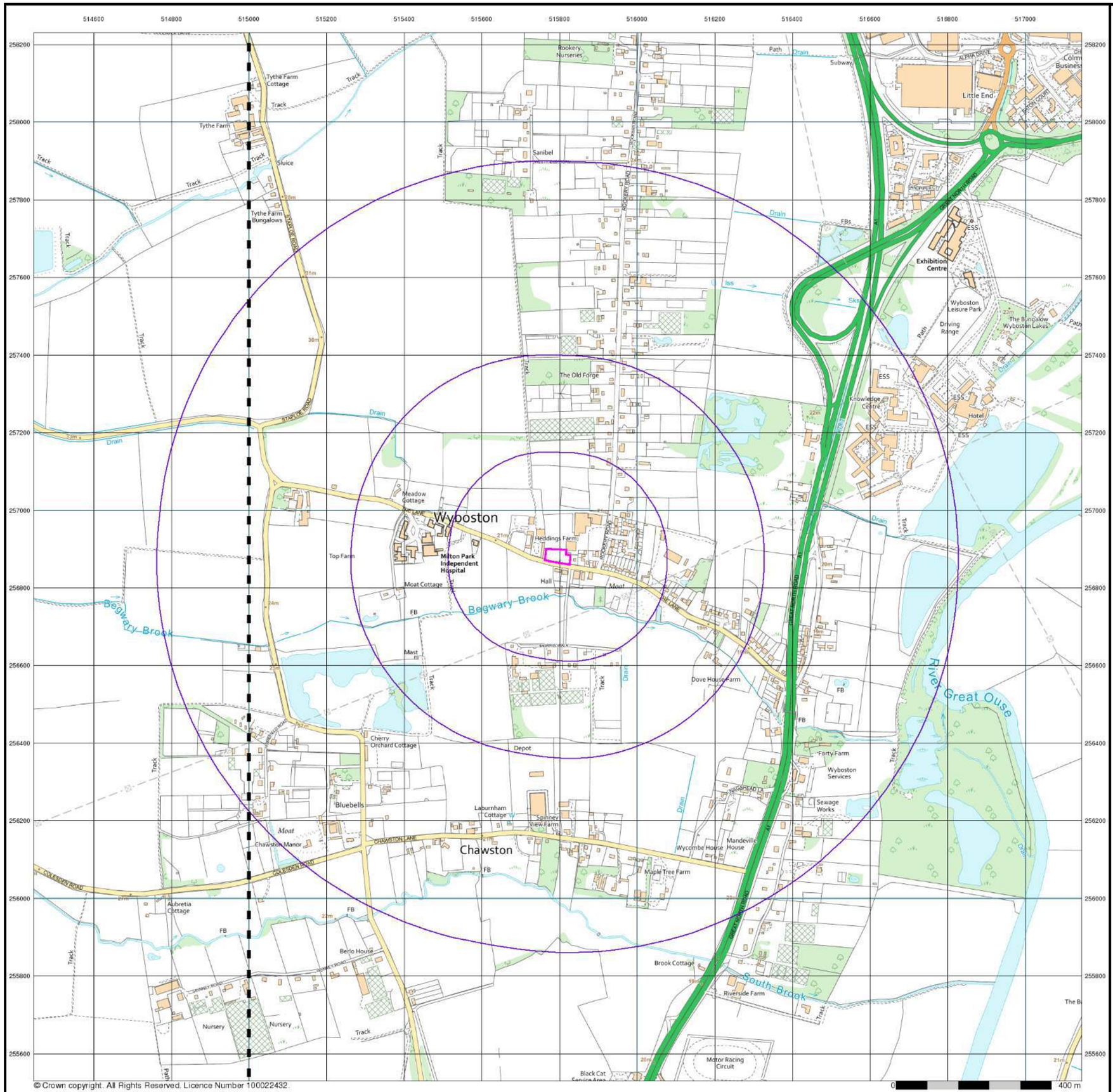

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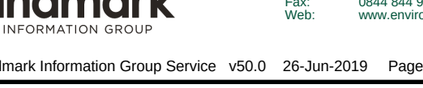
VectorMap Local

Published 2019

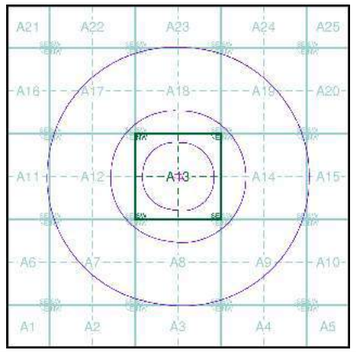
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities),1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	208881306_1_1
Customer Ref:	15441
National Grid Reference:	515800, 256880
Slice:	A
Site Area (Ha):	0.2
Search Buffer (m):	1000

Site Details

Hedding Farm, The Lane, WYBOSTON, MK44 3AS

Landmark® INFORMATION GROUP

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

APPENDIX FOUR

‘ENVIROCHECK REPORT’

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
208881306_1_1

Customer Reference:
15441

National Grid Reference:
515800, 256880

Slice:
A

Site Area (Ha):
0.2

Search Buffer (m):
1000

Site Details:

Hedding Farm, The Lane
WYBOSTON
MK44 3AS

Client Details:

[redacted]
Herts & Essex Site Investigations
The Old Post Office
Wellpond Green
Standon
Ware
Hertfordshire
SG11 1NJ

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Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.
In this datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes		n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1				16
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 4				2
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 5		Yes		
Pollution Incidents to Controlled Waters	pg 5		1		
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality	pg 5				1
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 5			11	26 (*55)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 28	Yes	n/a	n/a	n/a
Groundwater Vulnerability - Soluble Rock Risk			n/a	n/a	n/a
Groundwater Vulnerability - Local Information			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 28	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 28	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences	pg 28		Yes	n/a	n/a
Flooding from Rivers or Sea without Defences	pg 28		Yes	n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 29		5	5	27

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Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 34		2	1	1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)	pg 34				1
Local Authority Landfill Coverage	pg 35	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 35				1
Potentially Infilled Land (Water)					
Registered Landfill Sites	pg 35			1	
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					