Phase I Geo-Environmental Desk Study

19 Main Street Little Thetford Ely Cambridgeshire CB6 3HA

Prepared for:

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19 MAIN STREET, LITTLE THETFORD

NON TECHNICAL CLIENT SUMMARY

This report presents the findings of a Phase I Geo-Environmental Desk Study which was carried out to identify any potential contamination from previous or current uses of the site and surrounding area and if found, how the proposed development or surrounding environment might be affected.

- The site currently comprises a residential dwelling with two wooden sheds, and an associated garden and orchard. The site has retained a similar layout throughout its recent history.
- Geological mapping indicates the ground conditions to comprise Kimmeridge Clay Formation, which is classified as unproductive strata.
- There is a small watercourse located adjacent to the northern boundary, although the site lies within an area of relatively low environmental sensitivity.
- No plausible contamination linkages have been identified and no further environmental assessment is considered necessary.
- It is recommended that a copy of this report should be provided to the Environmental Health department of East Cambridgeshire District Council for inclusion into their land quality records.

By their very nature, the above bullet points represent a simplified summary of our work and should not be relied upon to form the basis for key decisions for the proposed development. A full picture is provided in the following report, or alternatively give us a call and we'll talk you through it.



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1 INTRODUCTION

In October 2014, Environmental Protection Strategies Ltd (EPS) was commissioned by Plansurv, on behalf of Mr and Mrs P Noton, to complete a Phase I Geo-Environmental Desk Study on land at 19 Main Street, Little Thetford, Ely, Cambridgeshire, CB6 3HA ('the site'); see Figure 1.

The work was commissioned in order to support a planning application for a new residential development to the north of the existing dwelling under planning reference number: 14/00158/FUL. The proposed development plan is included as Appendix A.

This report presents the findings, conclusions, and recommendations of the Phase I Desk Study undertaken for the site as instructed.

1.1 Background

A Desk Study comprises the first stage of any geo-environmental assessment, the purpose of which is to determine what potentially contaminative activities may have occurred at the property or the surrounding area which may pose an environmental risk to site users or the surrounding environment, either at present or in the future.

The method used in this investigation to assess the environmental risk posed is based on the concept of 'contaminant linkage', which considers the following three factors:

Source	The location from which an environmentally hazardous / contaminative substance is, (or was,) derived.		
Receptor	An environmentally sensitive object or condition e.g. person, property, controlled water, or ecological system, which may be present now or in future.		
Pathway	A route or mechanism via which a source could come into contact with a receptor to cause significant harm.		

If all three factors are identified, there is the potential for a 'contaminant linkage' to be active, which could result in significant harm being caused to the environment or human health.

1.2 Objectives

The purpose of this desk study is to evaluate the potential contaminant linkages that may be active at the site in its current condition, or could become active in future, and to determine if any action is required to investigate them further or to break them.

This is achieved by carrying out the following activities:

 Examining the site history - late 1800s to present day, through collection of historical maps of the area, site records, records held by relevant local authorities, the Environment Agency and review of other information databases.



- Characterising the sites environmental sensitivity through examination of existing geological, hydrogeological, topographical, and historical maps and aerial photographs of the area.
- Identifying Potential Areas of Concern (PAOCs) through a combination of historical map and data review and site inspection.
- Consideration of any future plans for the site and the effects any proposed changes may have on contaminant linkages over time.
- Development of a site conceptual model and contaminant linkage assessment for the site.

1.3 Limitations and Constraints

The purpose of this report is to present the findings of a Phase I Ground Investigation conducted at the location(s) specified. When examining the data collected from the investigations made during the assessment, EPS makes the following statements:

If third parties have been contracted / consulted during compilation of this report, the validity of any data they may have supplied, and which are included in the report, have been assessed as far as possible by EPS however, EPS cannot guarantee the validity of these data.

This report does not include specific investigation for the presence of either Potential Asbestos Containing Material (PACM) or Japanese Knotweed at the subject site however, if obvious evidence of either is observed during EPS site walkover, details will be provided in this report. Specialist contractors should be commissioned to make detailed assessments and recommendations if these materials are suspected.

The report has been prepared for the client(s) listed on the report title page. EPS accepts no liability or responsibility for use of, or reliance upon, this report and / or the information contained within it by third parties.

No part of this report, or references to it, may be included in published documents of any kind without approval from EPS.

This report and its contents, together with any supporting correspondence or other documentation, remain the property of Environmental Protection Strategies Ltd until paid for in full.



2 ENVIRONMENTAL SETTING

The following section provides a summary of the information collected in relation to the site location and history.

2.1 Site Description

The site is located on Main Street to the southeast of Little Thetford and around National Grid Reference 553290, 276300. It measures approximately 0.43ha in surface area and is bound to the southwest by Main Street, to the northwest and southeast by houses and to the northeast by undeveloped farmland. The area lies approximately 7m above ordnance datum (AOD) in the southwest and slopes gently down to 4m AOD in the northeast.

A walkover survey was undertaken on November 14th 2014 and the site was noted to comprise a single residential property with a large wooden shed to the east and smaller wooden shed in the centre. Both sheds were noted to be derelict and constructed of wood and corrugated iron. The site is bound to the south by Main Street, with a landscaped undeveloped area to the rear of the building and an orchard further north than this.

Surrounding land use is generally residential although it was noted that there a Fireplace Installations firm further along Main Road. Local topography slopes in most directions down from Little Thetford to the Great River Ouse, particularly to the south and east.

A plan showing the site location is provided as Figure 1, the current site layout is detailed on Figure 2 and an aerial photograph is included as Figure 3. Selected site photographs are included as Appendix B, and relevant extracts of a Landmark Envirocheck report are included as Appendix C.

2.2 Geology and Geological Hazards

Geological maps of the area (British Geological Survey 1:50,000 series, Sheet 188 - Cambridge – Solid and Drift Edition) report the site to be underlain by a bedrock of Kimmeridge Clay Formation.

The site's geological context is presented as Appendix D.

A summary of potential geological hazards is presented in the table on the following page.

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EPS Ref: UK14.1709



Hazard	On site Risk
Coal Mining	Might Not Be
	Affected
Collapsible Ground	Very Low
Compressible Ground	No Hazard
Ground Dissolution	No Hazard
Running Sand	No Hazard
Landslide	Very Low
Shrinking/Swelling Clay	Low

The BGS and Health Protection Agency, (HPA,) report entitled 'Indicative Atlas of Radon in England and Wales' (November 2007) shows the site to lie within a 1km grid section where the percentage of homes above the radon action level is between 0% and 1%.

The joint Building Research Establishment Ltd (BRE) report entitled 'Radon: Guidance on Protective Measures for New Buildings - 2007' reports that the site does not lie within an area where basic construction protection methods will need to be employed.

2.3 Regional Hydrogeology

The Environment Agency, (EA,) groundwater vulnerability map of the area (Groundwater Vulnerability of North Essex - Sheet 32 - 1:100,000) indicates that the underlying geology is classified as an unproductive aquifer. A groundwater vulnerability map for the area is included as Appendix E.

A search of the EA public database reveals that the site does not lie within a Source Protection Zone (SPZ) for groundwater abstraction and there are no source protection zones within 1km.

The Envirocheck report lists 22 groundwater abstractions within 500m. Of these, seven are within 250m, and the closest is around 65m east. All 22 relate to the use of the water for Spray Irrigation.

2.4 Regional Hydrology

The closest surface watercourse comprises a drain known as Thetford Catchwater which runs along the northeast boundary and around much of the southeast corner of Little Thetford. The Great River Ouse lies approximately 550m to the southeast.

The EA records two surface water quality measurements within 1km, both approximately 700m to the east located on the River Cam and the River Soham Lode, both in 2009. They report the quality to be as follows: (Chemistry and Biology rated on a scale of A (very good) to F (bad); Nitrates and Phosphates rated on a scale of 1 (very low levels) to 6 (very high levels):

- River Cam Chemistry (B), Biology (A), Nitrates (6), Phosphates (5)
- River Soham Lode Chemistry (D), Biology (n/a), Nitrates (6), Phosphates (4)



The Envirocheck report lists six discharge consents within 250m. These all pertain to either sewage discharges or storm / emergency overflow discharges to freshwater streams / rivers.

2.5 Flood Risk

Review of the EA flood zone map for the area indicates that the site lies within flood zone 1, which is defined within Table 1 of technical guidance to the National Planning Policy Framework (NPPF) as an area with the lowest potential risk of flooding from fluvial or tidal sources.

It should be noted that the EA maps do not take into account flooding from other potential sources of flood water, such as from poor drainage or groundwater.

2.6 Environmentally Sensitive Areas

The Envirocheck (EC) report indicates that the site lies within a nitrate vulnerable zone.

No other areas of significance including: Sites of Special Scientific Interest (SSSI), RAMSAR sites, World Heritage Sites, National Parks, Special Areas of Conservation, Special Protection Areas or Local Nature Reserves have been identified through inspection of databases within 1km.

2.7 Landfill Sites & Sources of Industrial Pollution

The Environment Agency and the Envirocheck report indicate that there are no historic or current landfills within 1km.

The Envirocheck report lists one pollution incident to controlled waters within 500m, which comprised a land run-off of oil into a freshwater stream / river (noted as: tributary Cam) 402m to the northwest. A release of diesel to a freshwater stream / river approximately 850m to the south is also noted.

2.8 Current Industrial Sites

The Envirocheck report lists six industrial land-uses within 500m. These comprise an active woodburning stoves firm roughly 72m to the south, an active stained-glass designers and producers 227m to the west, an active concrete pumping services 285m to the west, an inactive disability equipment manufacturers and suppliers 288m to the west, an inactive scaffolding and work platforms company 325m to the southeast, and an inactive catering equipment servicing and repairs property 344m to the northwest.

2.9 Site History

A summary of historical map data from 1887 to 2013 is provided below and copies of relevant historic maps and any others examined during the investigation are included in this report as Appendix F.

EPS has examined the maps provided and identified the following key features:

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- In 1887, the site comprised a building in the southwest corner with an orchard covering a
 section adjacent to the house to the north and the far north of the site. Thetford Catchwater
 can be seen as a drain passing along the northern boundary from the earliest mapping.
- By the 1926 mapping, there has been construction of two small out buildings. This layout remains more or less to this day, although in mapping of the 1970s the two small outbuildings have been reduced to only one.
- In the surrounding area in the late 1800s, a railway exists approximately 275m to the southeast, aligned NE-SW, which appears to remain presently and has been known as The Great Eastern Railway, or from the 1920s onward The London and North Eastern Railway. A farm was located approximately 100m to the southwest containing a well. A chapel, church and school could also be seen in the village around this time, all of which have remained until the present day.



3 CONCEPTUAL MODEL

The following section provides a review of the contaminant linkages that may be active at the site through examination of the potential sources that may be present as a result of historic and / or current site activities and where potential interaction between these sources and the identified human / environmental receptors may occur.

3.1 Source Characterisation

The following potential contaminant sources have been identified at the site and in the surrounding area:

Potential Source	Source Description	Principal Contaminants of Concern	
Current Surrounding Land Use	Industrial land use for Woodburning Stoves to the south east.	РАН	

Notes: PAH Polycyclic Aromatic Hydrocarbons

3.2 Potential Receptors

A framework for the assessment of risks arising from the presence of contamination in soils has been produced by the Environment Agency and the Department for the Environment, Food and Rural Affairs (DEFRA) and is presented with the report: 'Using Science to Create A Better Place: Updated Technical Background to the CLEA Model — Science Report SC050021/SR3'. This guidance document defines a series of standard land-uses, which form a basis for the development of a Conceptual Site Model.

The proposed development plan for the site includes the erection of a second property on the site, to the north of the existing property. This proposed future land use, as defined within Science Report SC050021/SR3, has been considered as:

Residential

In view of the environmental setting, current and potential future land use of the site and surrounding sites, the potential receptors for any contaminant impact are discussed below:

Receptor	Site Specific Description		
Human	Future site users, site workers involved in the site redevelopment, and those working and living in the surrounding area have the potential to be at risk from exposure to potential contaminants of concern (CoCs). As no site derived contaminants of concern have been identified these receptors are not considered to be at risk.		
Groundwater The site is reported to be underlain by Kimmeridge Clay Formation white defined by the EA as an unproductive aquifer. The site does not lie with SPZ for groundwater abstraction. As such, the potential for groundwater contamination is not considered plausible.			



Receptor	Site Specific Description
Surface Water Bodies	The closest surface water body lies on the site boundary to the northeast. However, no site derived contaminants of concern have been identified and surface water bodies are not considered to be at risk.
Flora and Fauna	No risk to flora and fauna has been established through this study.
Buildings & Infrastructure Subsurface structures are likely to be present at the site that may affected but as there is no potential presence of the identified concern it is not deemed a sensitive receptor.	
Adjacent Land	Adjacent properties are not considered a risk from onsite contaminants as there have been none discovered through this desk study.

3.3 Potential Pathways

Where contaminants may be present in soil, there are a number of potential pathways that enable human receptors to come into contact with or be exposed to them. The most direct pathways, considered under current UK legislation, can be summarised as follows:

- Direct ingestion of contaminated soil
- Ingestion of household dust
- Ingestion of contaminated vegetables
- Ingestion of soil attached to vegetables
- Dermal contact with contaminated soil
- Dermal contact with household dust
- Inhalation of fugitive soil dust
- Inhalation of fugitive household dust
- Inhalation of vapours outside
- Inhalation of vapours inside

Clearly, not all of these potential pathways apply for every standard land-use; the simplest example for exclusions being a commercial / industrial site which is covered by concrete hardstanding. The concrete precludes the direct exposure of humans working at the site to any contaminated soils.

However in addition to direct exposure pathways, a number of physical transport mechanisms / pathways may also exist at a site that allow remote or less accessible contaminants in soil or groundwater to reach human or environmental receptors both at a site and beyond the site boundary. These include the following:

- Downward and lateral movement of contaminants in soil either by gravity or through being 'leached' by percolating rainwater
- Lateral migration of contaminants dissolved in groundwater.
- Direct seepage or leaching of contaminants from soil into subsurface drains or supply pipework.
- Volatilisation of contaminants from groundwater or unsaturated soils into buildings or outdoor air.



Through examination of the standard land use and environmental setting at each site, the presence of pathways and transport mechanisms described above must be considered when assessing whether a contaminant linkage may plausibly be active, and therefore be included in the conceptual site model.

3.4 Summary of Contaminant Linkages

The following comments are made with respect to contaminant linkages which have been considered through development of the conceptual model, but have not been concluded as 'plausible' - i.e. through which a significant possibility of significant harm could occur to an identified receptor:

 Although the Envirocheck report indicated a Woodburning industrial land use 70m south; through the site visit it transpired that it is only an installations business. Also any contamination from a woodburning stove, if one were to be used 70m south, tends to be a localised event that would not migrate the significant distance.

Through the examination of the evidence available, and consideration of the possible contaminant source, receptors and pathways, this desk study has found no plausible contaminant linkages.



4 GEOTECHNICAL APPRAISAL

Geological records indicate the ground conditions to comprise Kimmeridge Clay Formation. A conceptual geotechnical ground model is provided in the table below which assesses design elements, anticipated strata and ground conditions:

Element	Anticipated Strata	Parameter(s)	Anticipated Conditions
			100kN/m ² to 150kN/m ²
Foundations	ns Kimmeridge Clay Formation	Settlement	Moderate sensitivity/ Long term consolidation under loading.
		Volume Change	High volume change potential.
Drainage	Kimmeridge Clay Formation	Permeability	Unlikely to be suitable for infiltration drainage.
Concrete Grade	Kimmeridge Clay Formation	Grade	Moderate to High risk of high sulphate levels



5 CONCLUSIONS & RECOMMENDATIONS

This Phase I Desk Study has not identified any plausible contaminant linkages which have the potential to become active as a result of the historic use of the site and its development in recent years.

In accordance with the Model Procedures for Management of Land Contamination (Contaminated Land Report 11) no further assessment is required for this site. A summary of the approach outlined in CLR11, marking the work already completed under the risk assessment phase, is presented as a flow diagram in Figure 4 of this report.

Should any palpable evidence of unexpected contamination be encountered during the redevelopment work, it should be reported to EPS so that an inspection can be made and appropriate sampling and assessment work carried out. A method statement for encountering any unexpected contamination is included as Appendix G of this report.

A copy of this report should be provided to the Environmental Health department of East Cambridgeshire District Council for inclusion into their land quality records.

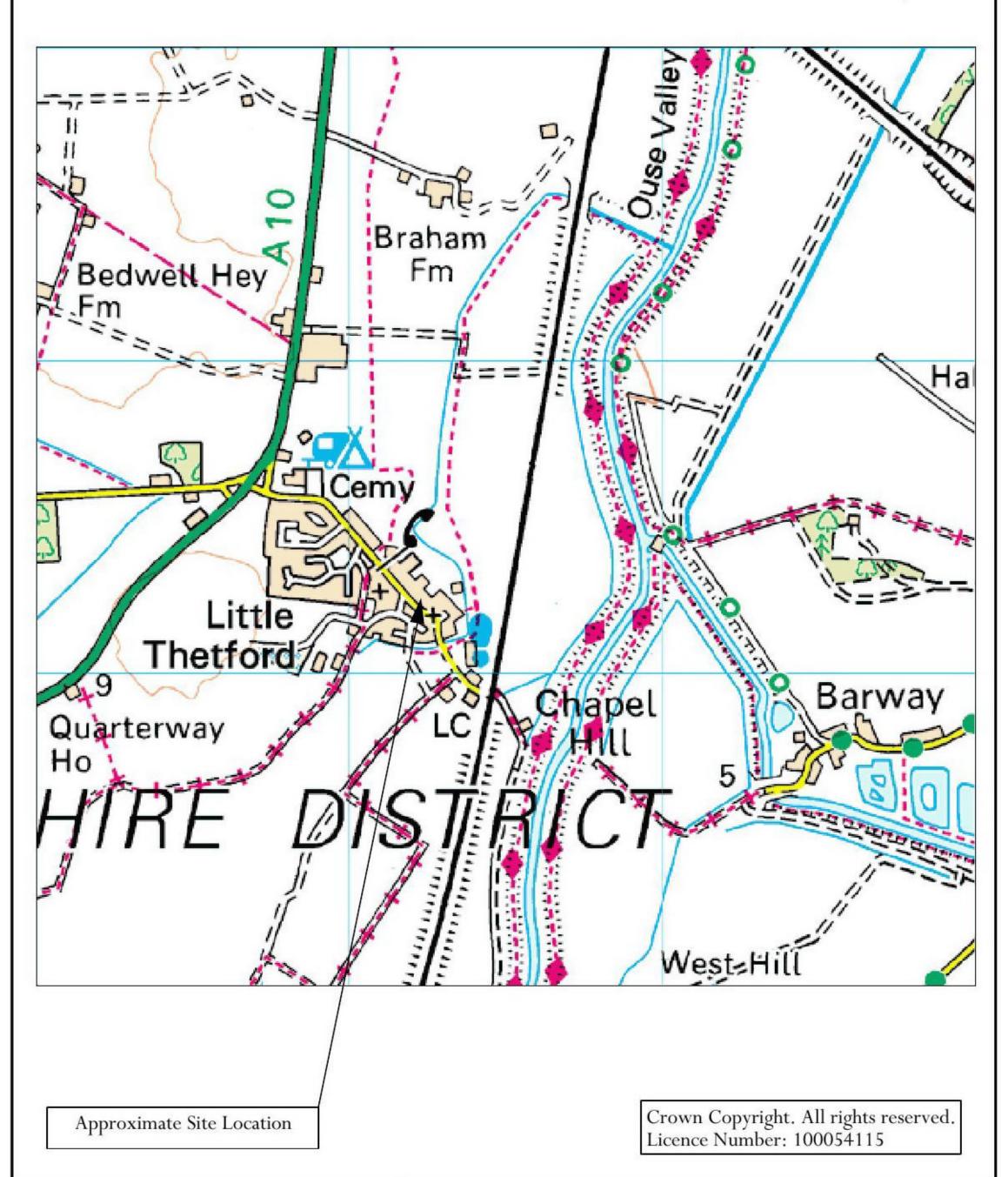
Phase I Geo-Environmental Desk Study Main Street, Little Thetford, Cambridgeshire

EPS Ref: UK14.1709



FIGURES

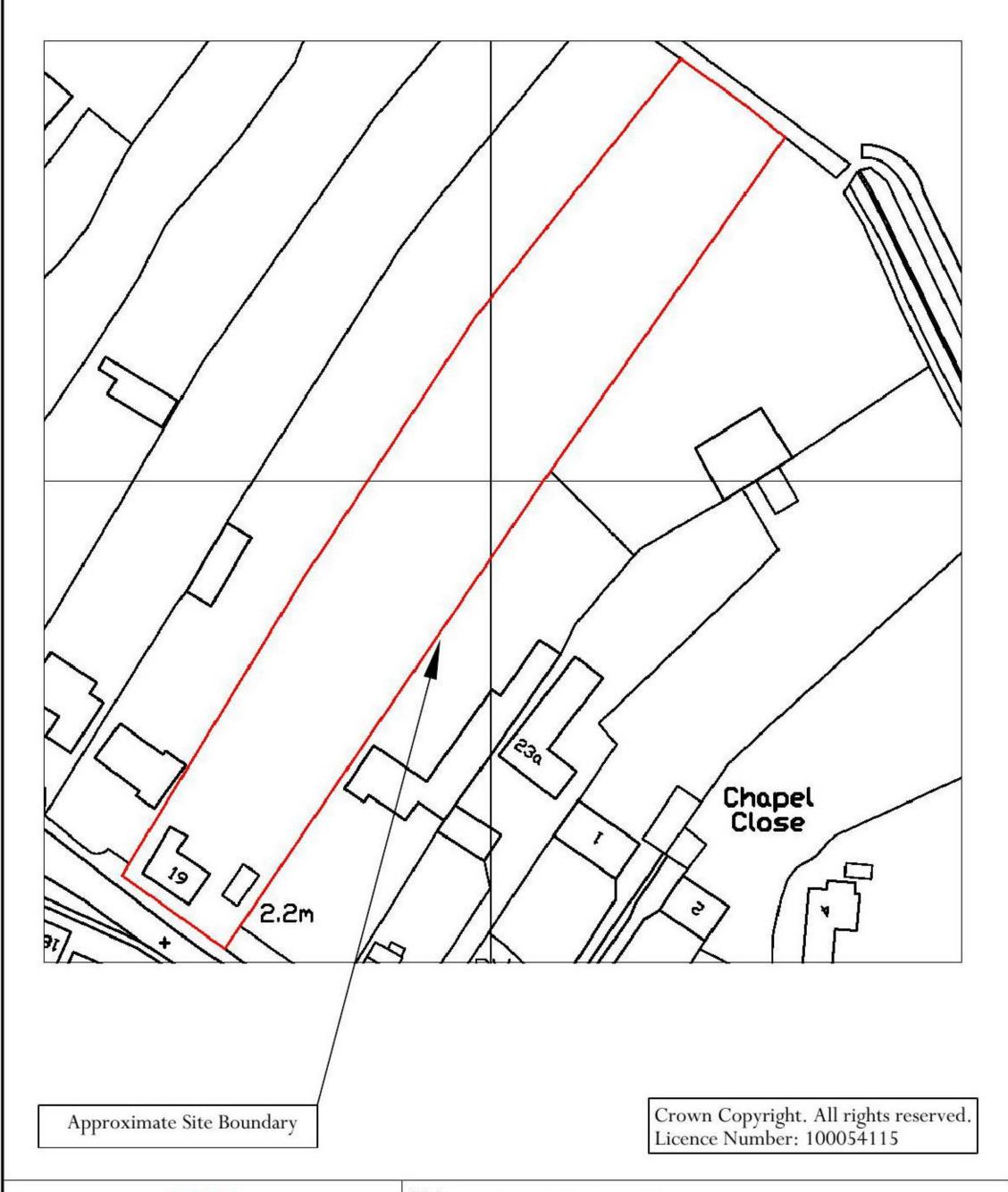






Title:	Site Location Plan			
Project:	Main Street, Little Thetford,	Scale: As Shown		own
-	CB6 3HA	Drawn By:	RG	Approved By: WE
Client:	Plansurv 1	Job No:	UK14	.1709
		Dwg No:	Plans	urv/LittleThetford/1114/01
Fig No:		Date:	Nove	mber 2014







Title: **Current Site Layout Plan** Project: Main Street, Little Thetford,

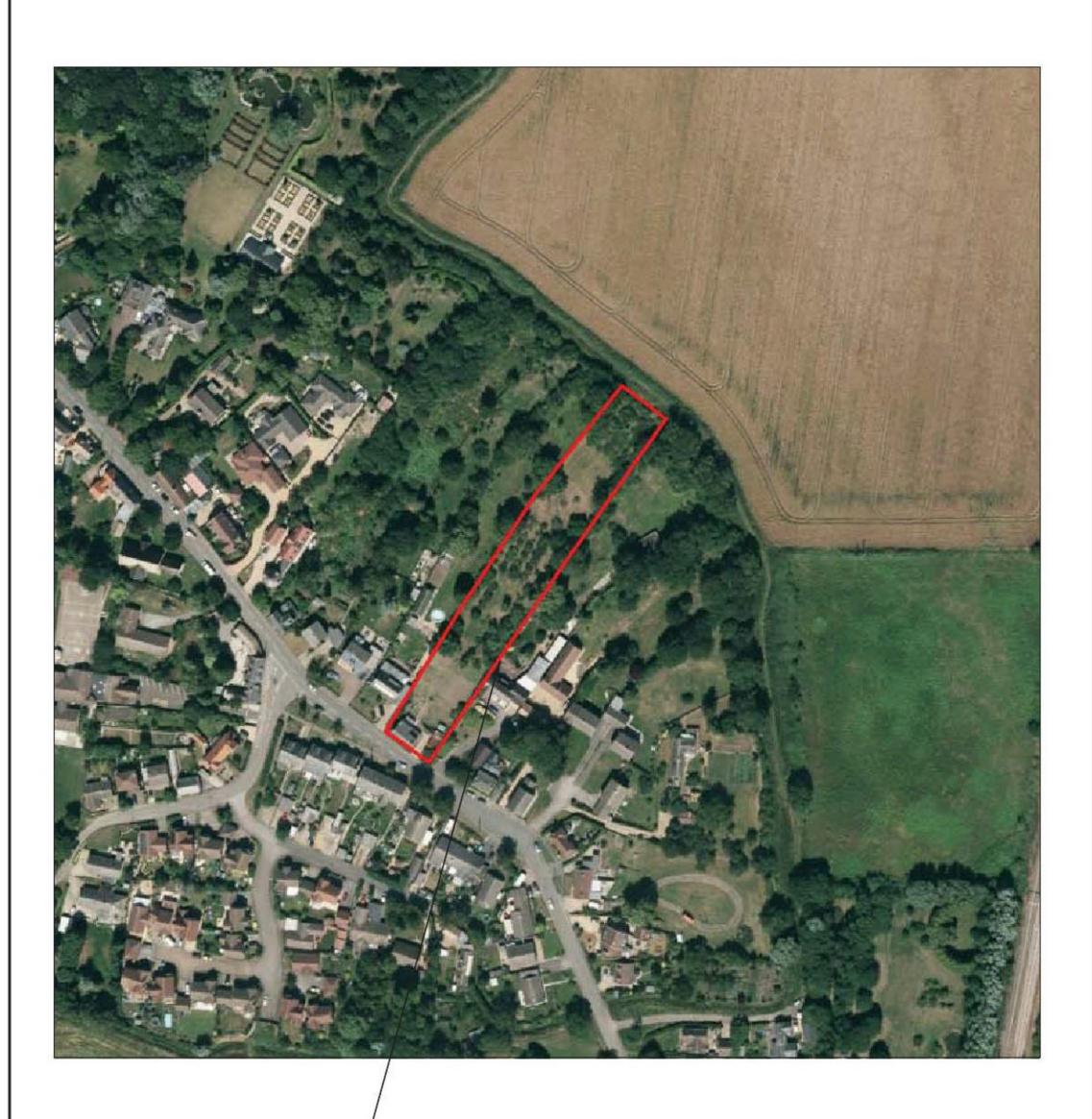
CB6 3HA

Client: Plansurv

Fig No: 2

Scale: NTS Approved By: WE Drawn By: RG UK14.1709 Job No: Dwg No: Plansurv/LittleThetford/1114/02 Date: November 2014



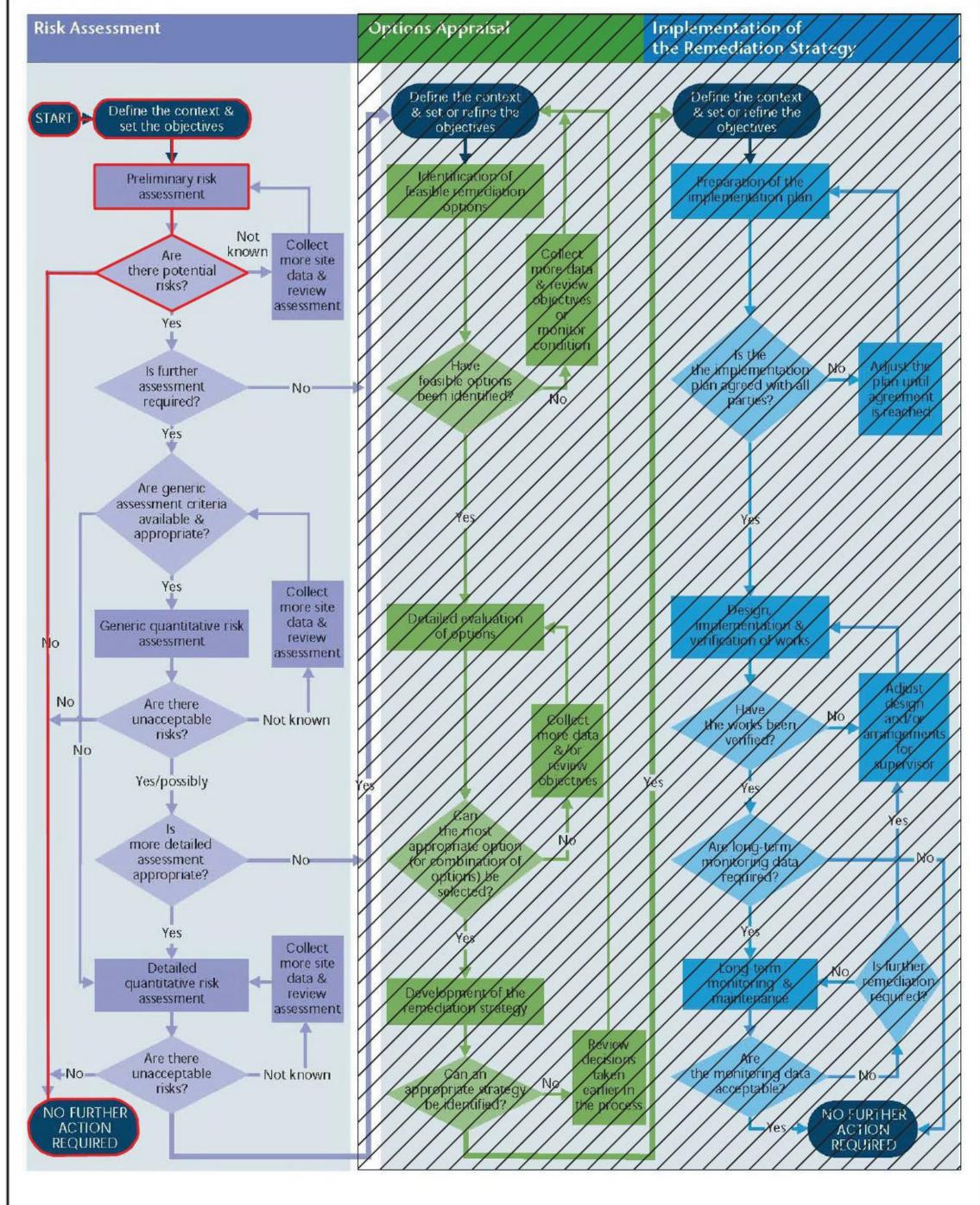


Approximate Site Boundary

Crown Copyright. All rights reserved. Licence Number: 100054115



Title:	Aerial Photograph			
Project:	Main Street, Little Thetford,	Scale:	NTS	
	CB6 3HA	Drawn By:	RG	Approved By: WE
Client:	Plansury	Job No:	UK14	.1709
Fig No: 3		Dwg No:		nrv/LittleThetford/1114/03



Assessment Pathway for Site



Title: Site Context - CLR11

Project: Main Street, Little Thetford,

CB6 3HA

Client: Plansury

Fig No: 4

Scale: n/a

Drawn By: RG Approved By: WE

Job No: UK14.1709

Revision Date: November 2014

Dwg No:

Plansury/LittleThetford/1114/04

Phase I Geo-Environmental Desk Study Main Street, Little Thetford, Cambridgeshire

EPS Ref: UK14.1709

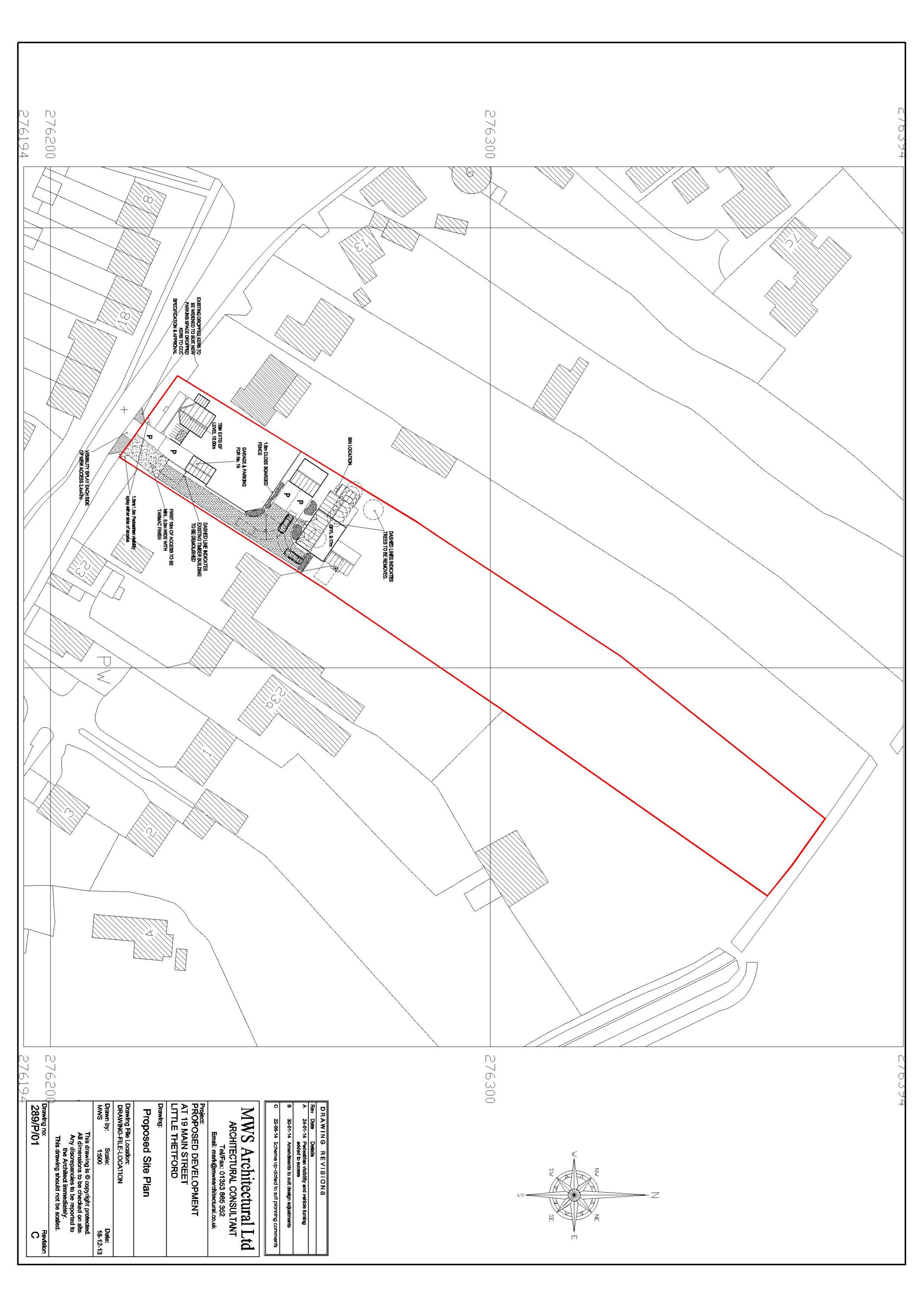


APPENDICES



APPENDIX A

Indicative Proposed Development Plan

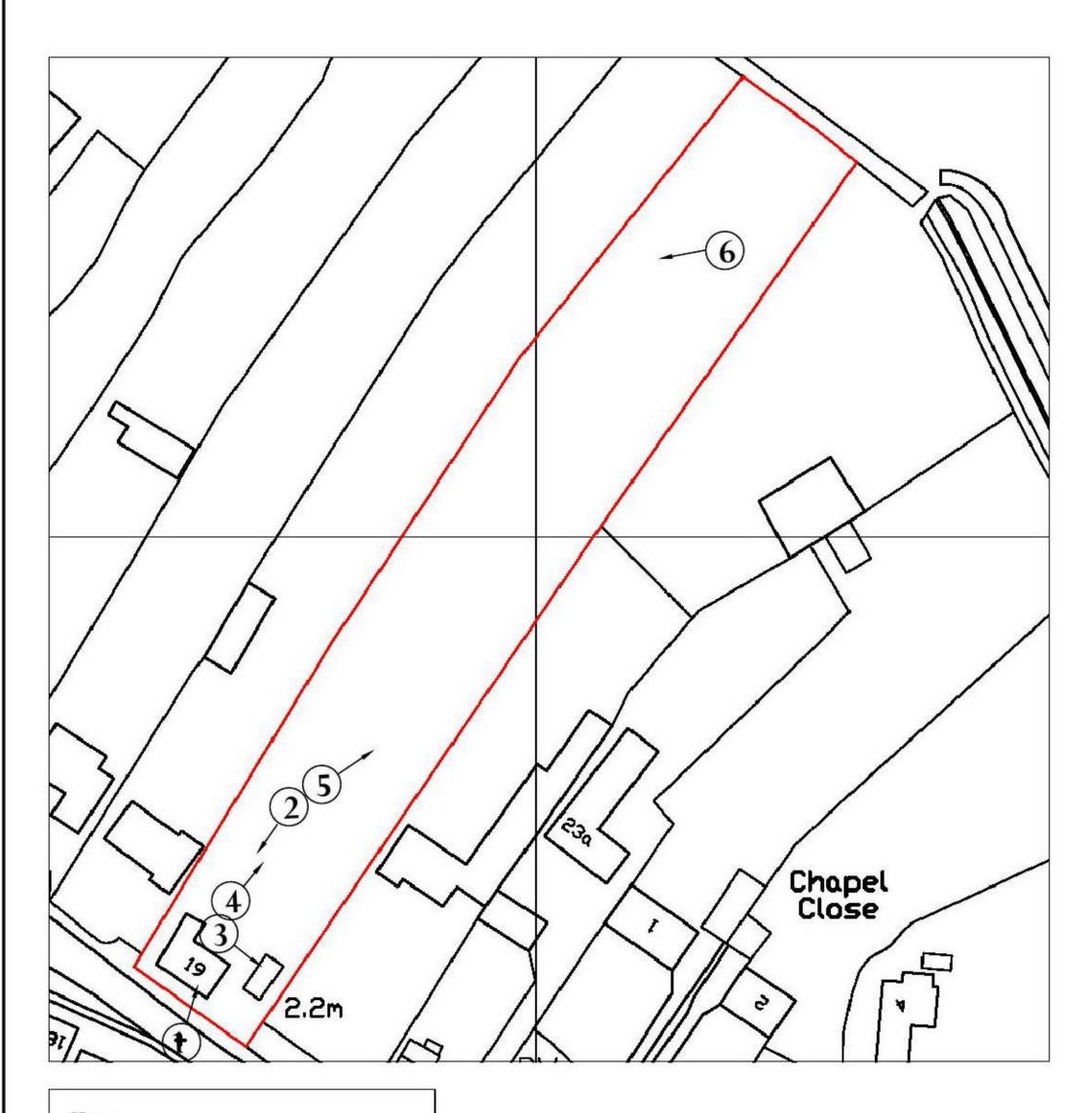




APPENDIX B

Selected Site Photographs





Key:

1

Approximate Photo Location

_____ Approximate Site Boundary

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Title:	Photograph 1	Location Plan

Project: Main Street, Little Thetford,

CB6 3HA

Client: Plansury

Appendix: B

Scale:	NTS		
Drawn By:	RG	Approved By: WE	
Job No:	UK14,1709 Plansurv/LittleThetford/1114/		
Dwg No:			
Date:	November 2014		



Photo 1: View looking at the access to site and the existing building.

Photo 2: View looking south at rear of existing building.



Photo 3: View looking east at the larger of the sheds.



Photo 4: View looking north across landscaped garden.



Photo 5: Photo of the smaller shed half way up the garden.



Photo 6: View of the orchard.

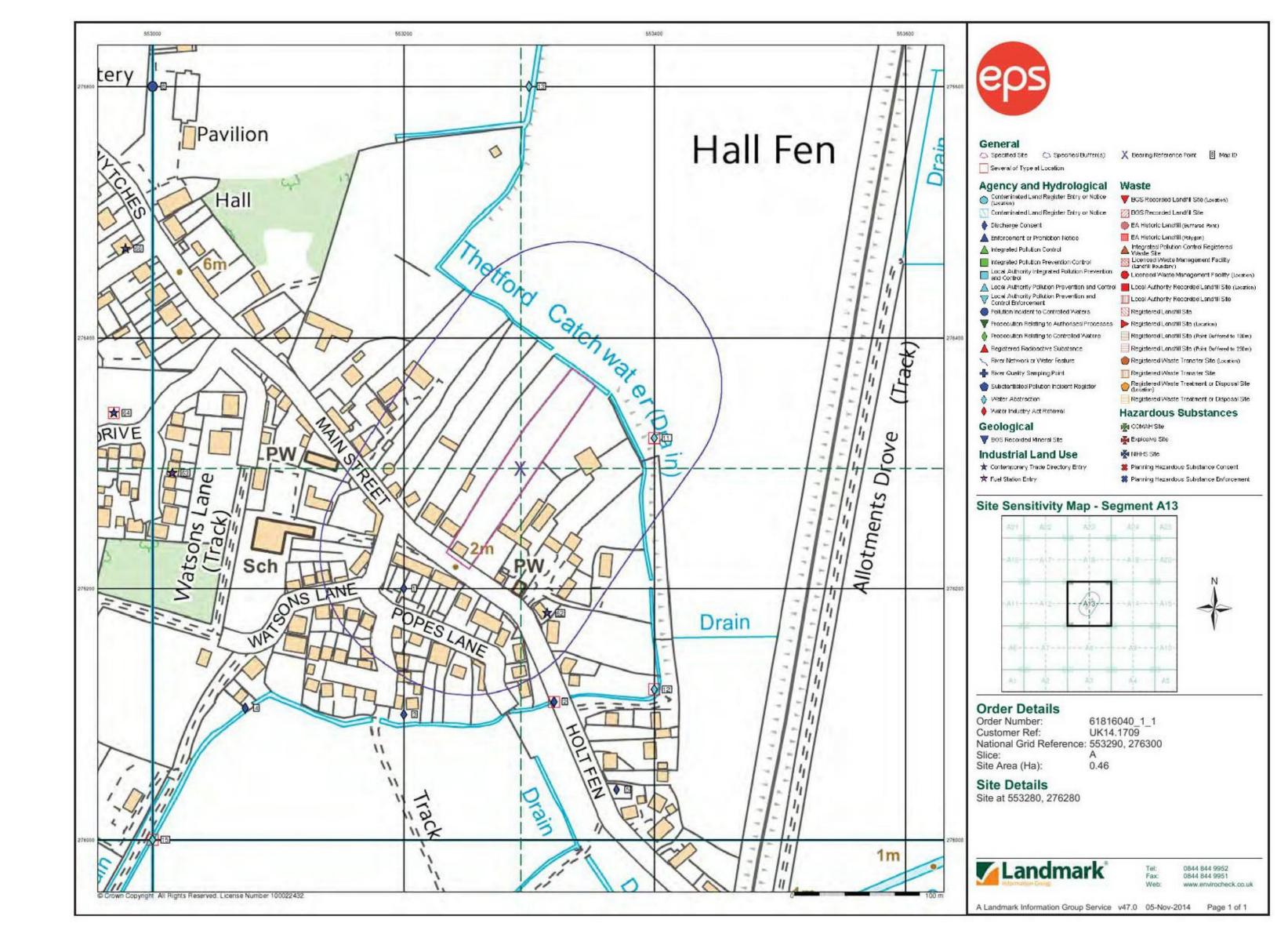


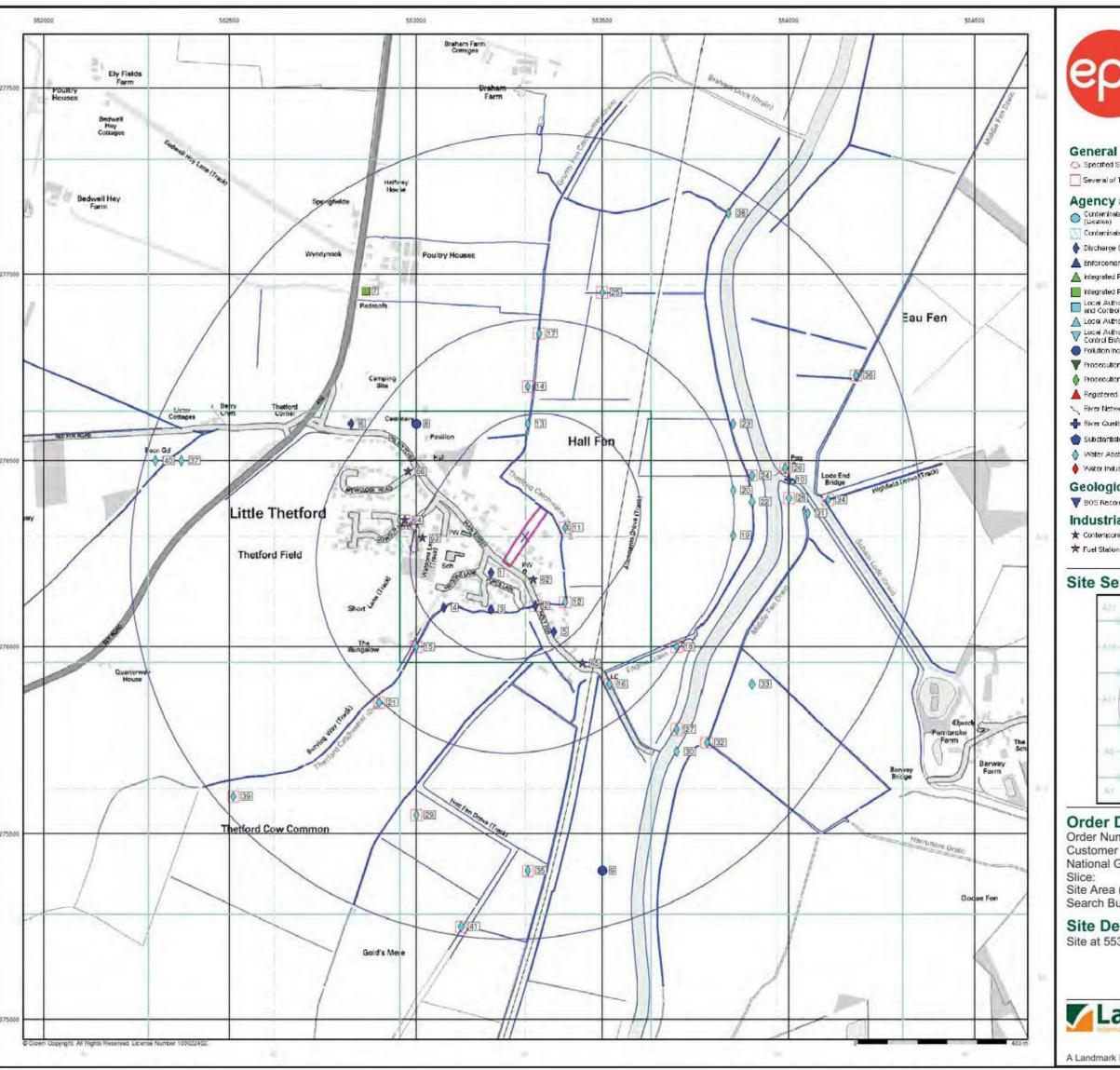




APPENDIX C

Surrounding Land Use







△ Specified Site △ Specified Buffer(s) X Bearing Reference Foint

 Mag ID Several of Type at Location

Agency and Hydrological

Contaminated Land Register Entry or Notice (Location)

Contaminated Land Register Entry or Notice

Discharge Consent A Enforcement or Prohibition Notice

A Integrated Pollution Control Integrated Pollution Prevention Control

Local Authority Integrated Pollution Prevention and Control

Local Authority Polition Prevention and Control Enforcement

Pollution incident to Controlled Waters ▼ Prosecution Relating to Authorised Processes ► Registered Length Ste (Location)

Prosecution Relating to Controlled Waters A Registered Radioactive Substance

River Network or Water Feature - River Quality Sampling Point

Substantiated Pollution Incident Register

Water Abstraction Water Industry Act Referral

Geological

W BOS Recorded Mineral Ste

Industrial Land Use ★ Contemporary Trace Directory Entry

Truel Station Entry

BGS Recorded Landfil Site (Location)

BGS Recorded Landfil Sile

BA Historic Landfill (Buffared Point) EA Historic Lancilli (Polygon)

▲ Integrated Pollution Control Registered
Visite Site Licensed Waste Management Facility (Landfill Boundary)

Licensed Waste Management Facility (Location) 🛕 Local Authority Pollution Prevention and Control 🧧 Local Authority Recorded Landtill Site (Location)

> Local Authority Recorded Landtill Site Registered Langitil Site

> > Registered Lancitti Site (Point Buffered to 100m)

Registered Lanstill Site (Point Buffered to 250m) Registered Waste Transfer Ste (Location)

Registered Waste Treatment or Disposal Site (Location)

Registered Waste Treatment or Disposal Site

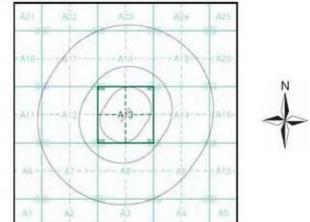
Hazardous Substances ⊚ COMAH Site

Explosive Site NHH5 Ste

🗱 Planning Hazardous Substance Consent

Rlanning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A





Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

A

Slice:

0.46 Site Area (Ha): Search Buffer (m): 1000

Site Details

Site at 553280, 276280



Tel: Fax: 0844 844 9952 0844 844 9951

A Landmark Information Group Service v47.0 05-Nov-2014 Page 1 of 4



APPENDIX D

Geological Context

Geology 1:50,000 Maps Legends

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Flandrian - Flandrian
	T1T2	River Terrace Deposits, 1 to 2	Sand and Gravel	Flandrian - Flandrian
	SLM	Shell Marl	Clay, Shell	Holocene - Holocene
	TFD	Tidal Flat Deposits	Clay and Silt	Holocene - Holocene
	ODT	Oadby Member	Diamicton	Anglian - Anglian
	PEAT	Peat	Peat [Unlithified Deposits Coding Scheme]	Quaternary - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	GLT	Gault Formation	Mudstone	Albian - Albian
	WBS	Woburn Sands Formation	Sandstone	Albian - Aptian
	кс	Kimmeridge Clay Formation	Mudstone	Kimmeridgian - Kimmeridgian
	AMC	Ampthill Clay Formation	Mudstone	Oxfordian - Oxfordian
	UPL	Upware Limestone Member	Limestone	Oxfordian - Oxfordian



Geology 1:50,000 Maps

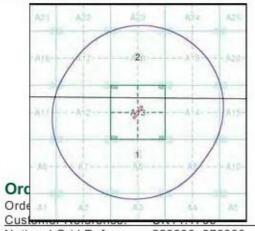
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID: Map Sheet No: Map ID: Map Sheet No: 173 Ely Map Name: Map Date: Bedrock Geology: Map Date: Bedrock Geology: 1980 Superficial Geology: Available Superficial Geology Artificial Geology: Not Available Artificial Geology Not Supplied Faults: Landslip: Not Available Landslip Rock Segments Rock Segments Not Supplied

Geology 1:50,000 Maps - Slice A





1981 Available

Available

Not Available

Not Supplied

Not Available

Not Supplied

National Grid Reference: 553290, 276300

Slice: A Site Area (Ha): 0.46 Search Buffer (m): 1000

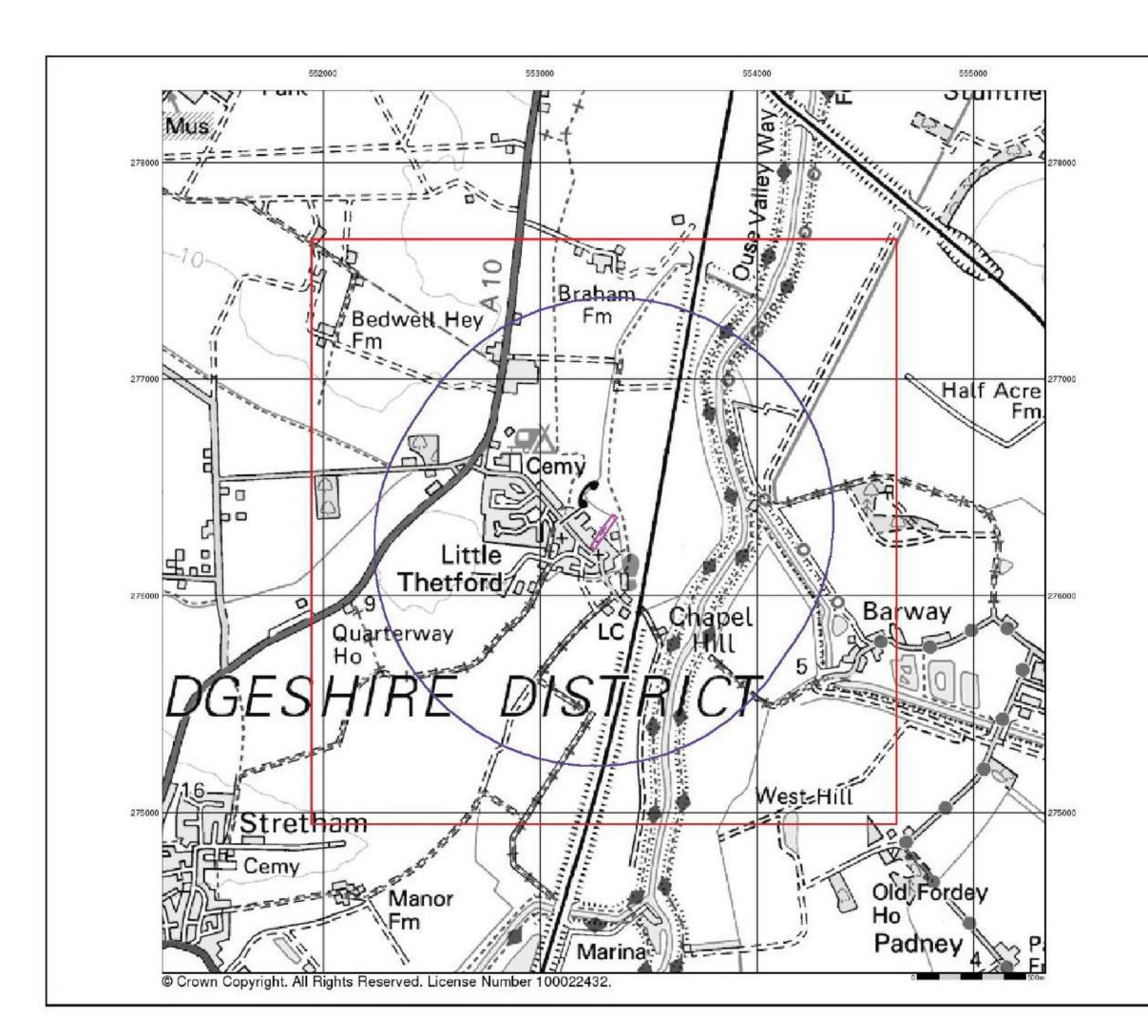
Site Details:

Site at 553280, 276280



el: 0844 844 9952 ax: 0844 844 9951 Veb: www.envirocheck.cr

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Artificial Ground and Landslip

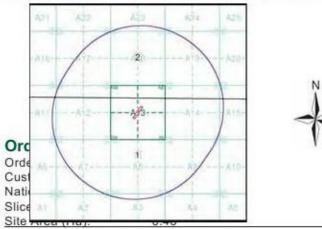
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground areas where the surface has been reshaped.
- Disturbed ground areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



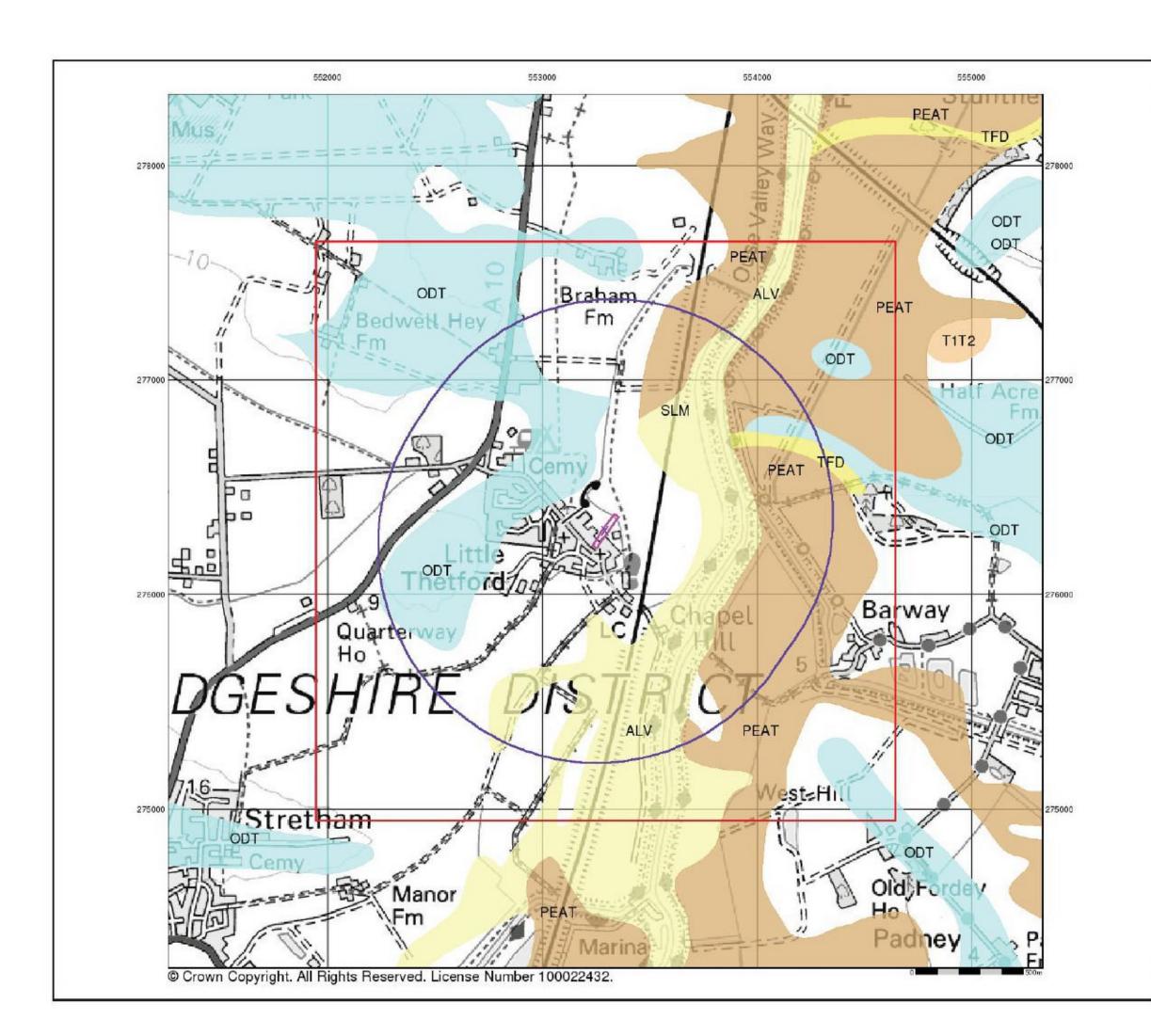
Search Buffer (m): 100

Site Details:

Site at 553280, 276280



el: 0844 844 9952 ax: 0844 844 9951 leb: www.envirocheck.c



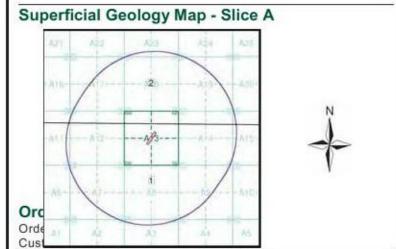


Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.



National Grid Reference: 553290, 276300

 Slice:
 A

 Site Area (Ha):
 0.46

 Search Buffer (m):
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Site Details:

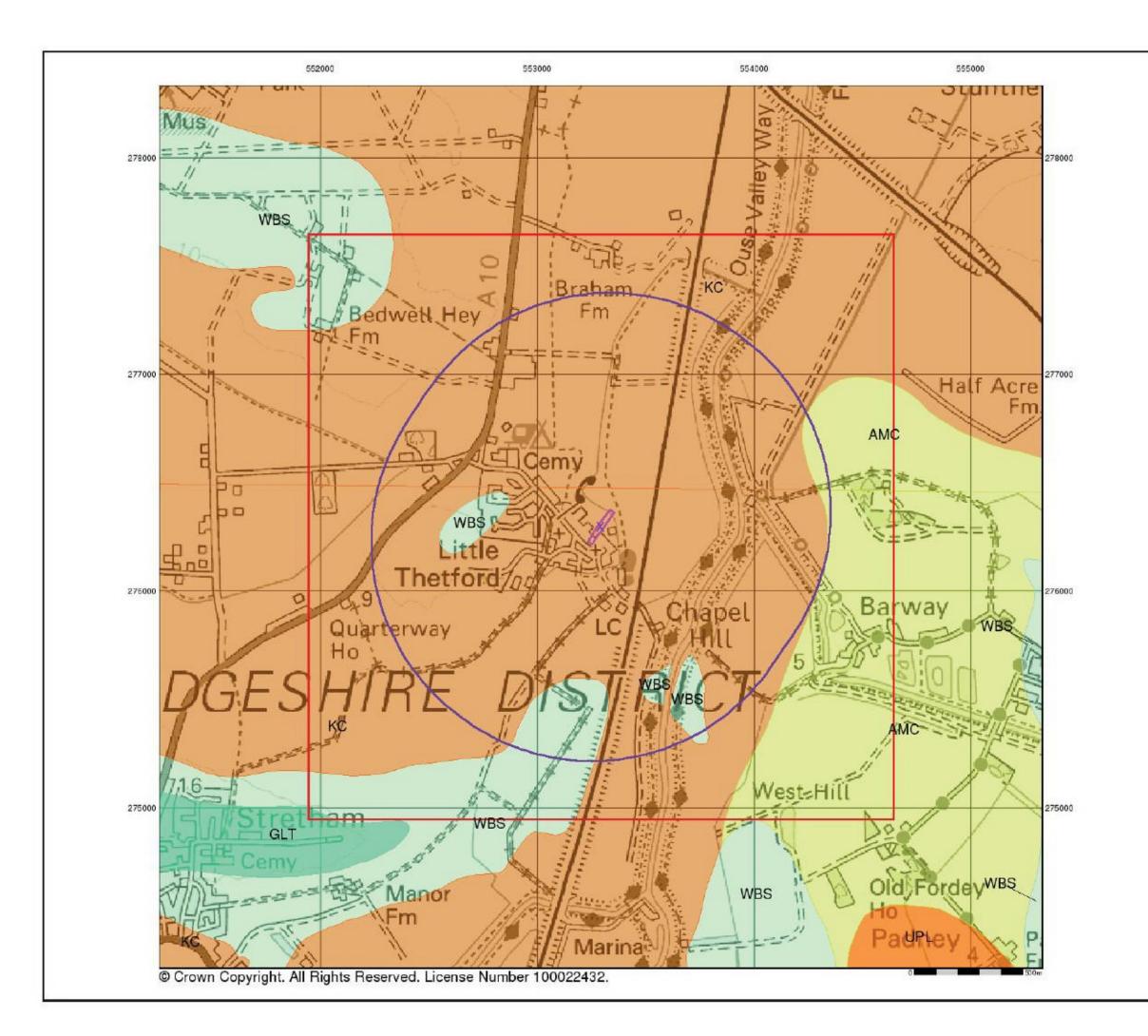
Site at 553280, 276280



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Bedrock and Faults

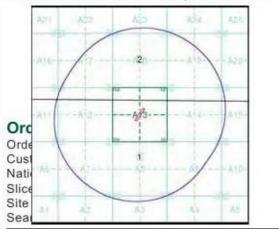
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A





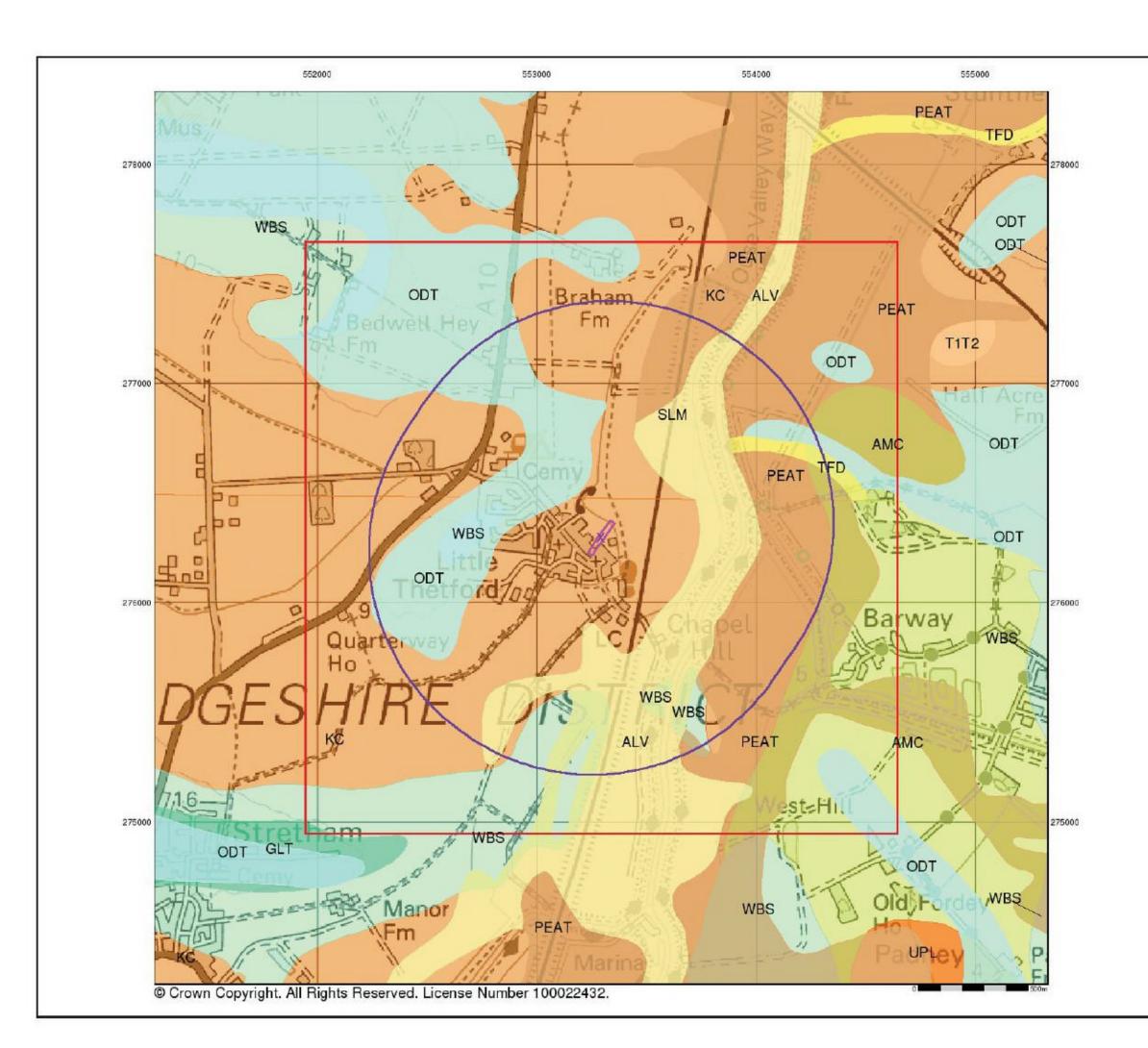
Site at 553280, 276280



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Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

Additional Information

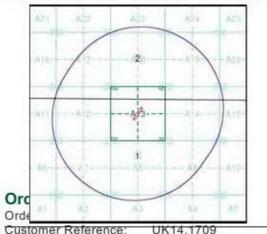
More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey Kingsley Dunham Centre Keyworth Nottingham NG12 5GG

Telephone: 0115 936 3143 Fax: 0115 936 3276 email: enquiries@bgs.ac.uk website: www.bgs.ac.uk

Combined Geology Map - Slice A



National Grid Reference: 553290, 276300

Slice: A Site Area (Ha): 0.46 Search Buffer (m): 1000

Site Details:

Site at 553280, 276280



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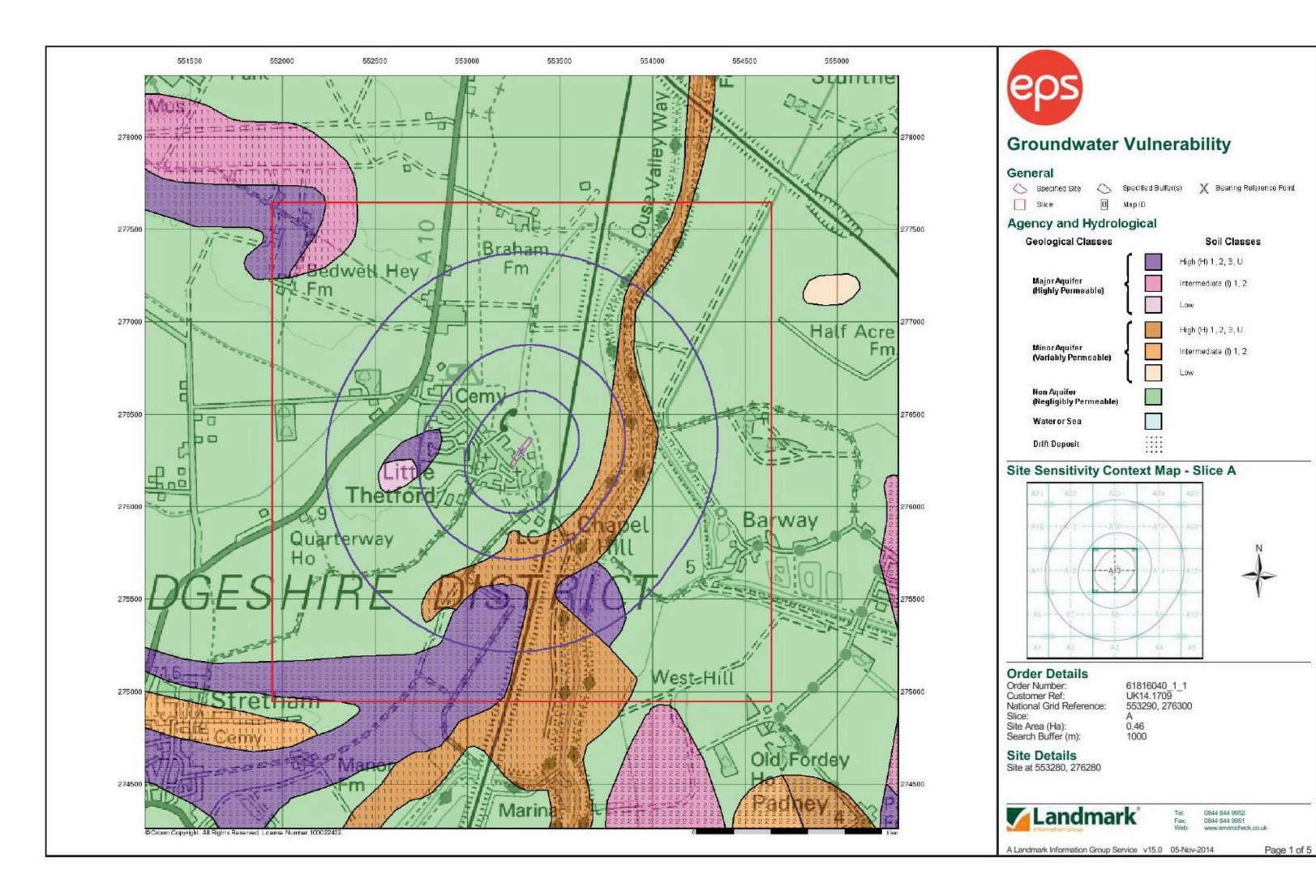
v15.0 05-Nov-2014

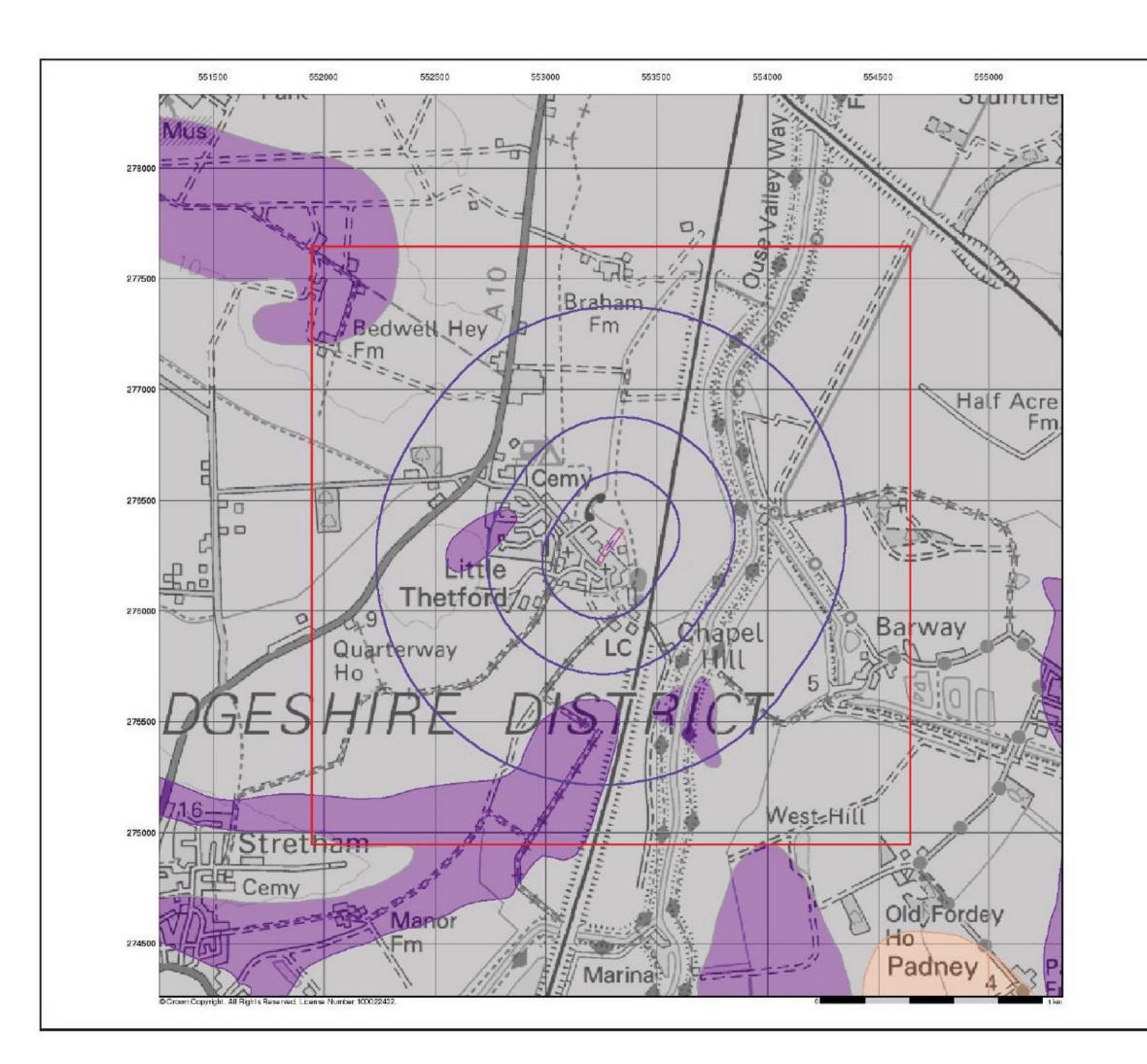
Page 5 of 5



APPENDIX E

Groundwater Vulnerability Maps







Bedrock Aquifer Designation

General

Specified Buffer(s) X Bearing Reference Point

Slice B Map ID

Agency and Hydrological

Geological Classes

Principal Aquifer

Secondary A Aquifer

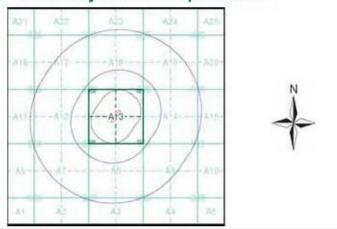
Secondary B Aquifer

Secondary Undifferentiated

Unproductive Strata

Unknown

Site Sensitivity Context Map - Slice A



Order Details

Order Number: Customer Ref: National Grid Reference: Slice:

61816040_1_1 UK14.1709 553290, 276300 A 0.46

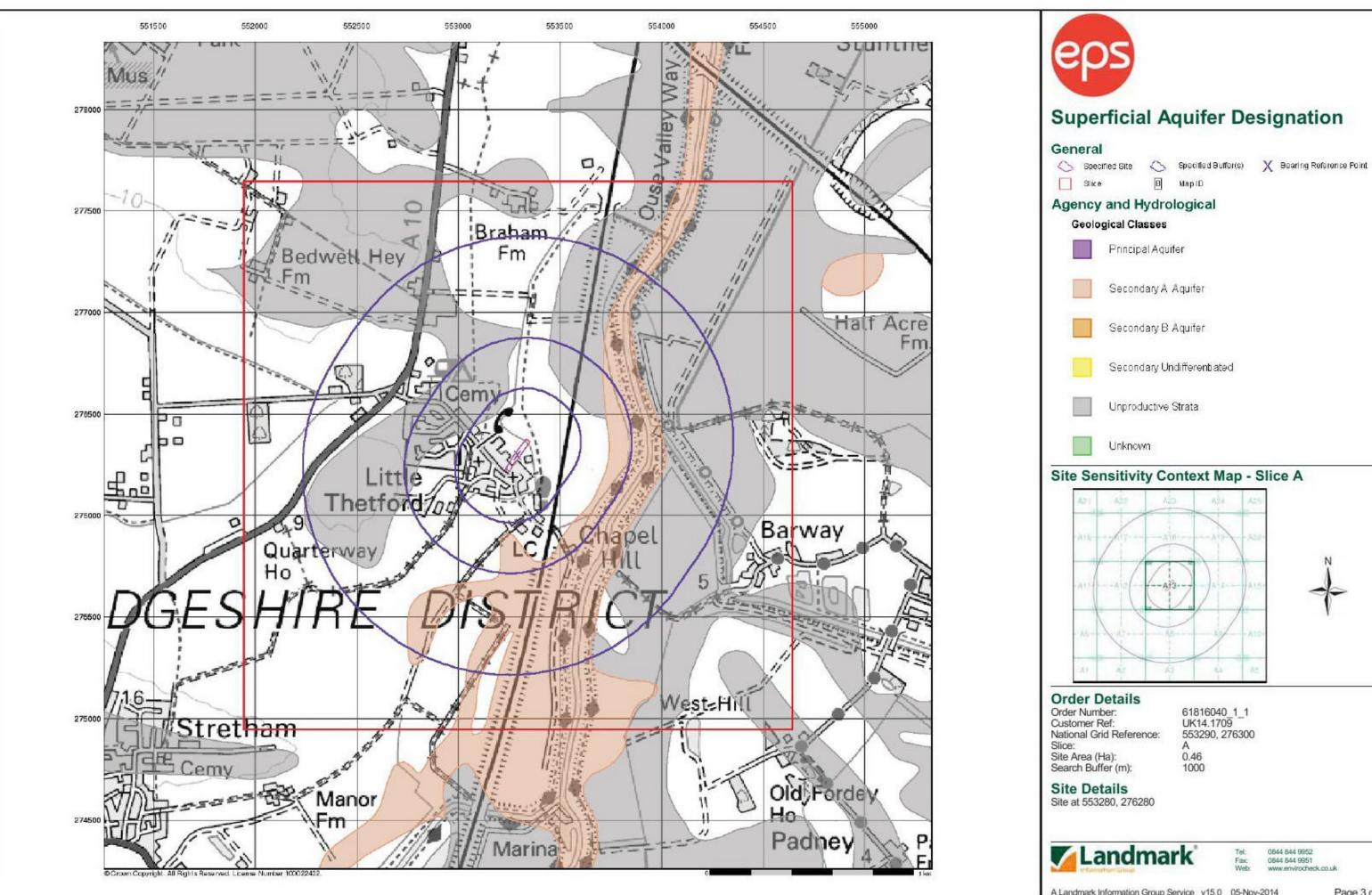
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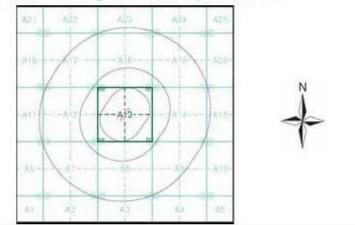
Site Details Site at 553280, 276280



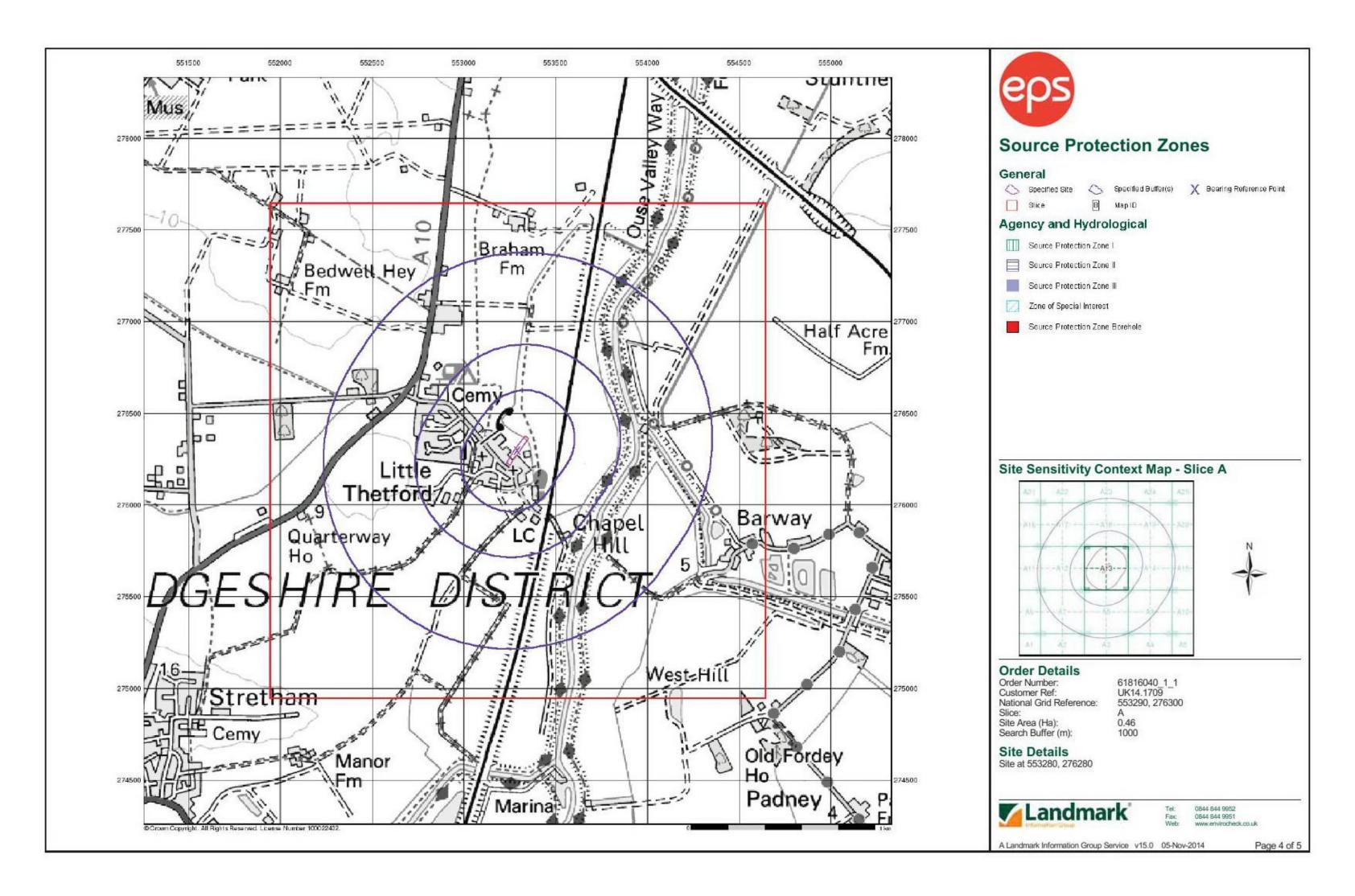
0844 844 9952 0844 844 9951

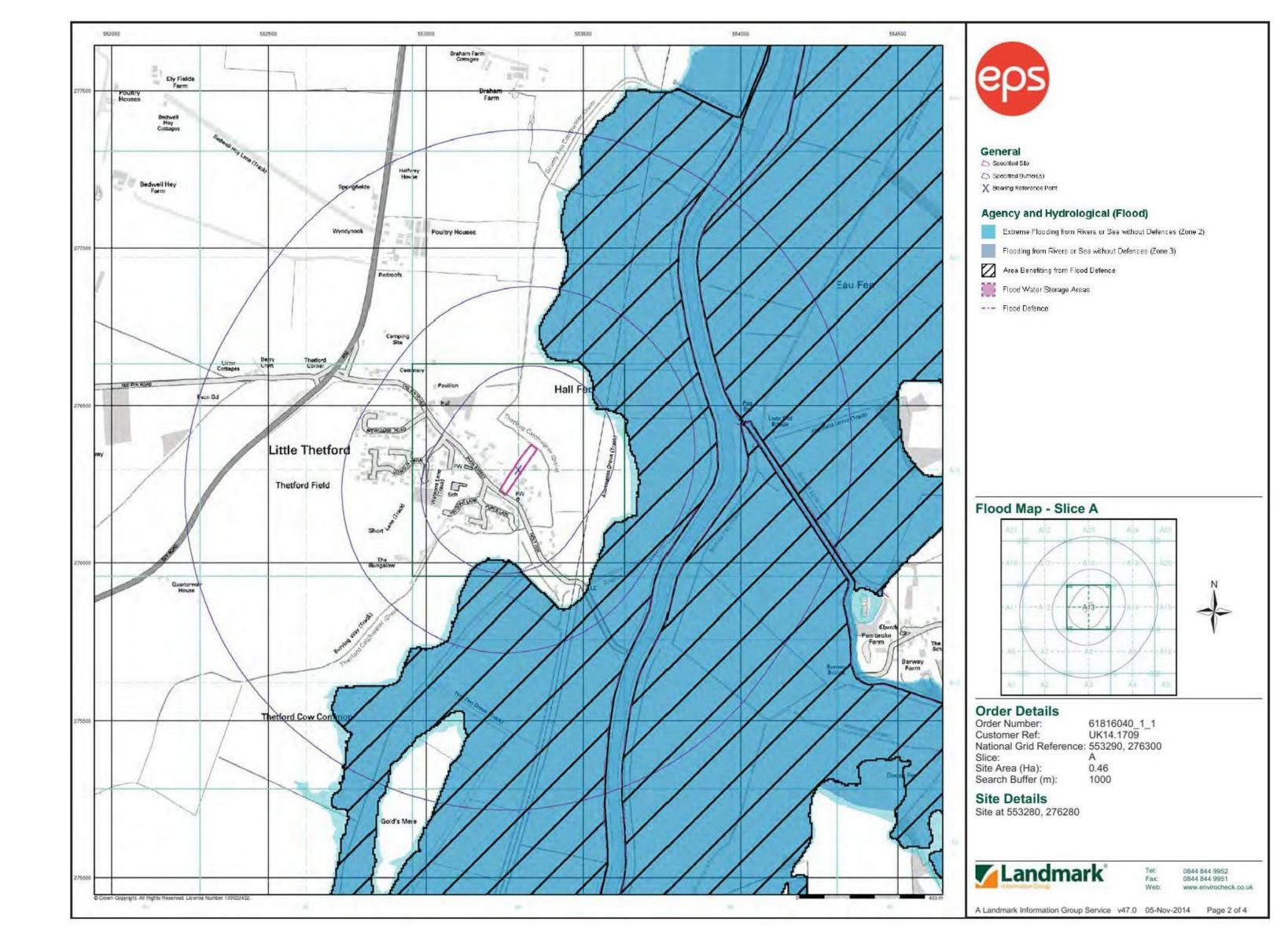


Superficial Aquifer Designation



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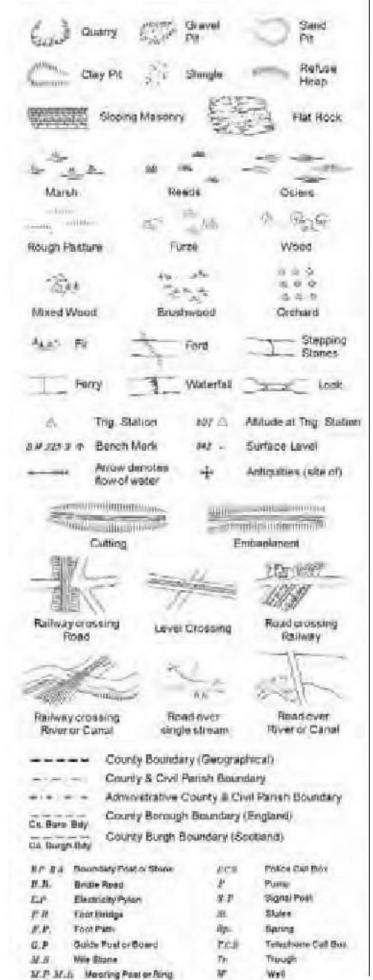


APPENDIX F

A Selection of Historic Maps

Historical Mapping Legends

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

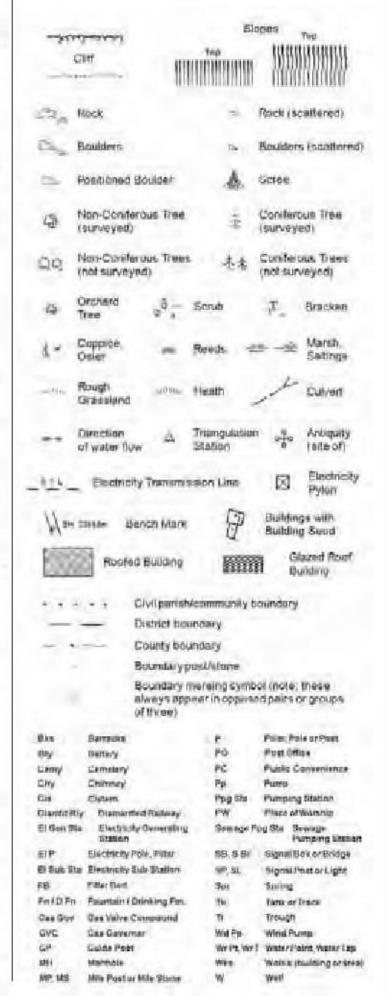


Ordnance Survey Plan, Additional SIMs and Large-Scale National Grid Data 1:2,500 and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



-	Symbol ma mareing of		where boundary
101	Marridayan	90	Polity Pale or Plast
BP.85	Besindary Folder Brans	PG	Post Uffice
Ch/C	Capster, Erens	PC .	Fulling Confessioners
City	Chimney	PH	Public House
DFn	Drinking Falantin	Pa	Pume
me	Electricity Plat or Post	UIE G Gr	Signal Beit er Endet
TAP.	Fire Atoms Prilar	SP, SL	Signal Feeter Light
FØ	Foot Bridge	Spr	Spring
GP	Guide Plast	Th	Tarris or Track
46	Hydrant or Hydraulis	TCB	Telephone Call Box
LC	Lavel Crossing	TCF	Telephone Call Press
MH	Marmole	TF	Though
1001	Mile Post of Mooring Post	WEET, WE'T	Water Point, Water Lap.
Mil	Mile Stone	W	Well
HTL	Name and Think Limit	Wiffe	Wind Fungs

1:1.250

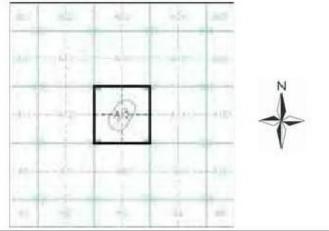




Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Cambridgeshire & Isle Of Ely	1:2,500	1887	2
Cambridgeshire & Isle Of Ely	1:2,500	1902	3
Cambridgeshire & Isle Of Ely	1:2,500	1926	4
Ordnance Survey Plan	1:2,500	1972 - 1973	5
Additional SIMs	1:2,500	1987	6
Large-Scale National Grid Data	1:2,500	1994	7
Large-Scale National Grid Data	1:2,500	1996	8

Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1 UK14.1709 Customer Ref: National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): 0.46 Search Buffer (m): 100

Site Details

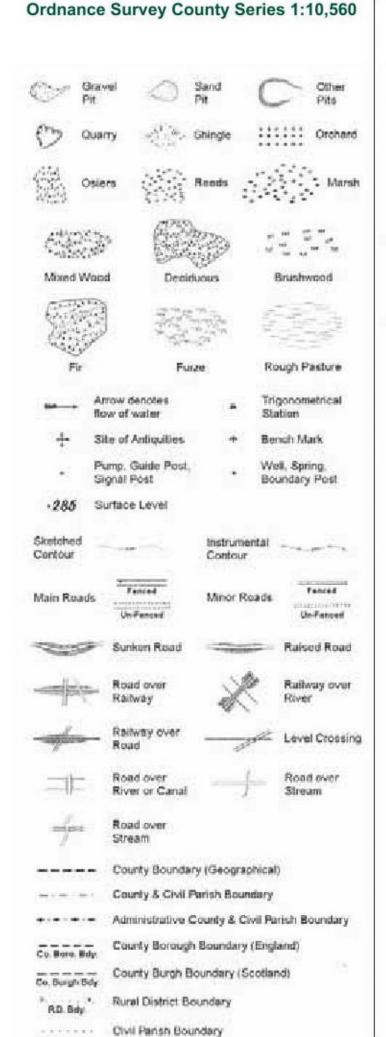
Site at 553280, 276280



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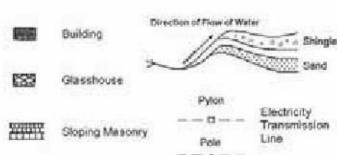
A Landmark Information Group Service v47.0 05-Nov-2014 Page 1 of 8

Historical Mapping Legends



Ordnance Survey Plan 1:10,000 Chalk Pit, Clay Pit. Gravel Pit or Quarry Disused Pit





Salva Reeds

---- Saltings

- Territoria	10000	74444	111111111111	Standard Gaug Multiple Track
Road "II" Under	Road /	Level Cressing	Foot Bridge	Standard Gaug Single Track Siding, Tramve
2.2.2				or Mineral Line

...

Marsh

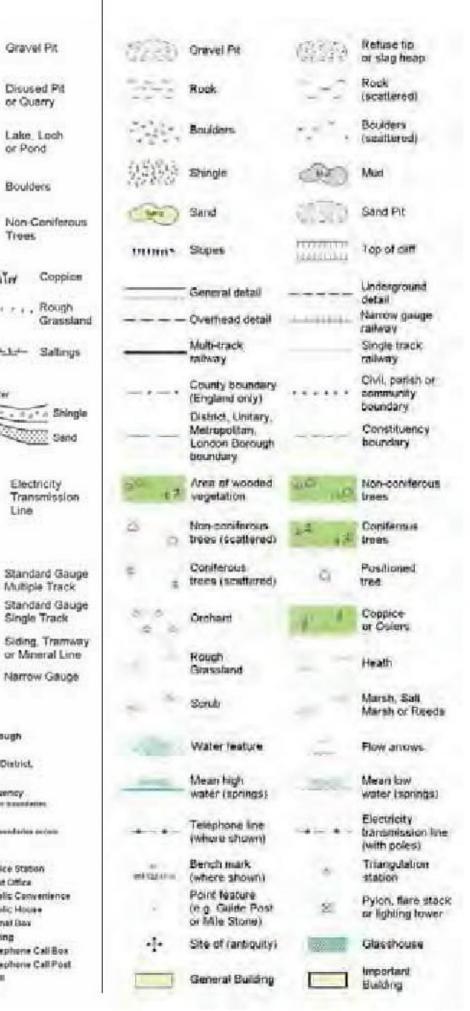
Road "Ti" Under			Road // Over			Cre	Level F Crossing Br				Single Track Siding, Tramwa	
-	+		+		+					+	or Mineral Line Narrow Gauge	
_	_	_		Gen	econt	Ne at t	South					

 Administrative County, County Berough or County of City
 Municipal Borough, Urban or Rural District, Burgh or District Council
 Borough, Burgh or County Constituency

****	Biorough, Burgh or County Constituency. Shown saly when not subcident with other boundary.
	Civil Parish Shows afternately when coincidence of boundaries o

	Spinner and Action of	AL ERBORISHMAN A	tor tomer productives.
	- Civil Parish Shows afternately	ulien colocidos	ce of boundaries occurs
BP, 65	Boundary Post or Stone	Polifits	Police Station
Ch	Church	PO	Post Office
CH.	Club House	PC	Public Convenience
FE Sta	Fire Eingine Station	PH	Public House
FB	Foot Bridge	90	Hignet Bay
fn.	Fountain	Spr	Spring
GP.	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TOP	Telephone Call Post
ACS	Mile Stone	W	Well

1:10,000 Raster Mapping

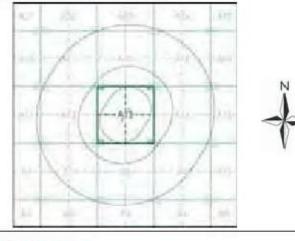




Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Cambridgeshire & Isle Of Ely	1:10,560	1887	2
Cambridgeshire & Isle Of Ely	1:10,560	1903	3
Cambridgeshire & Isle Of Ely	1:10,560	1927	4
Cambridgeshire & Isle Of Ely	1:10,560	1952	5
Ordnance Survey Plan	1:10,000	1958	6
Ordnance Survey Plan	1:10,000	1974	7
Ordnance Survey Plan	1:10,000	1980	8
Ordnance Survey Plan	1:10,000	1992	9
10K Raster Mapping	1:10,000	2006	10
VectorMap Local	1:10,000	2014	11

Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 UK14.1709 Customer Ref: National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): 0.46 Search Buffer (m): 1000

Site Details

Site at 553280, 276280



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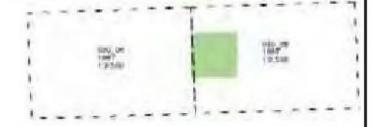


Published 1887

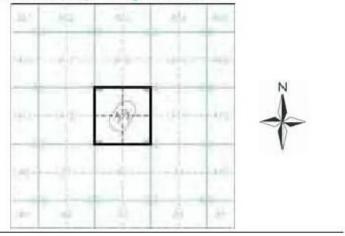
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46

Site Details

Site at 553280, 276280



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A Landmark Information Group Service v47.0 05-Nov-2014 Page 2 of 8





Published 1887

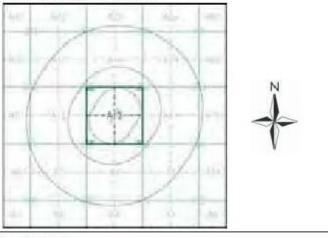
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

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Site Area (Ha): Search Buffer (m): 0.46 1000

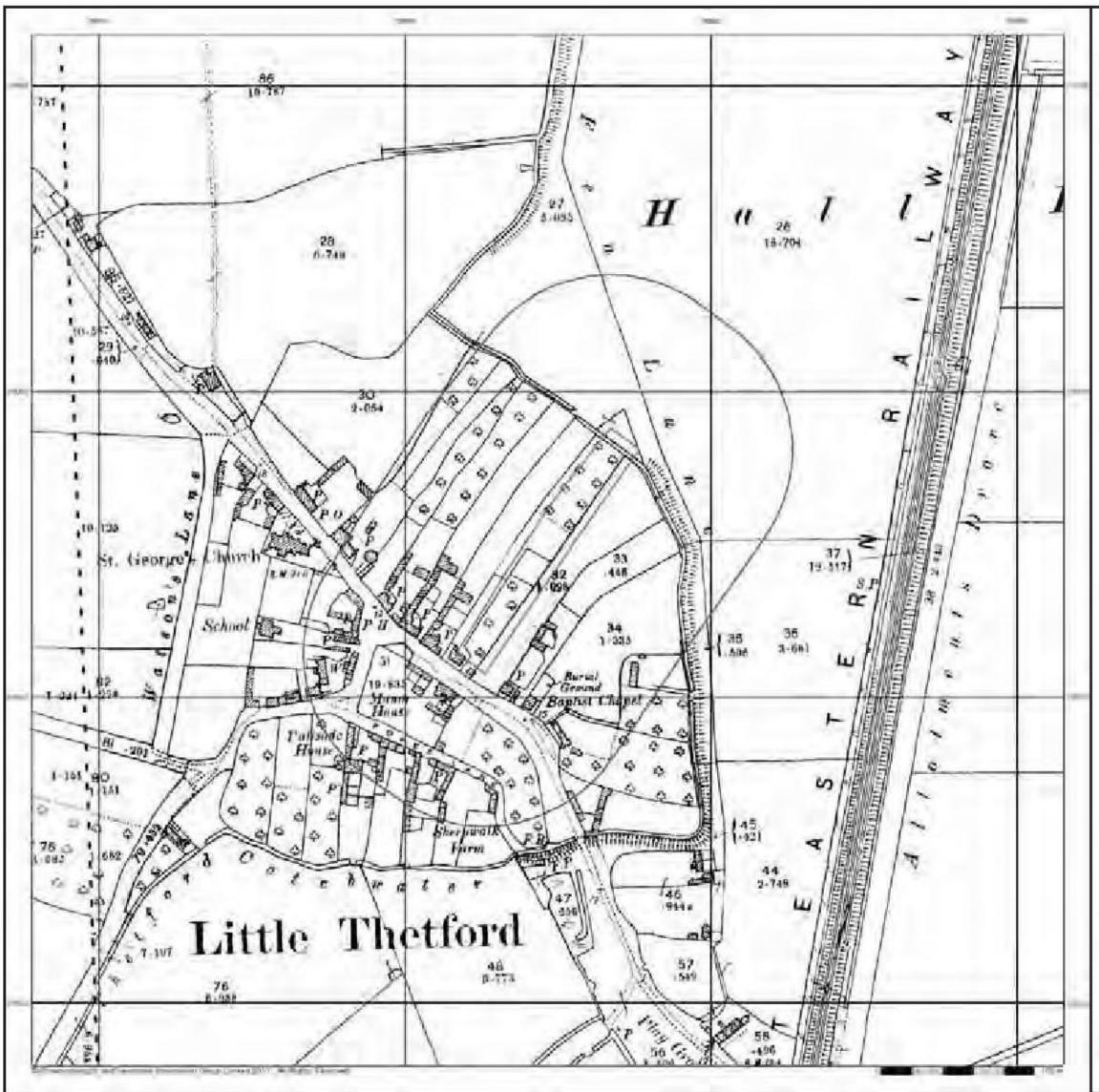
Site Details

Site at 553280, 276280



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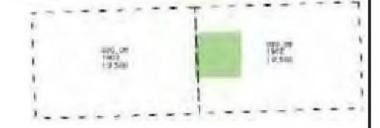


Published 1902

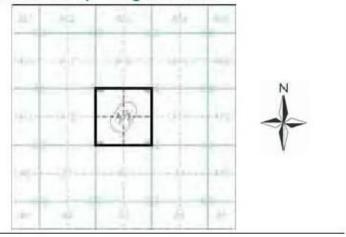
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46

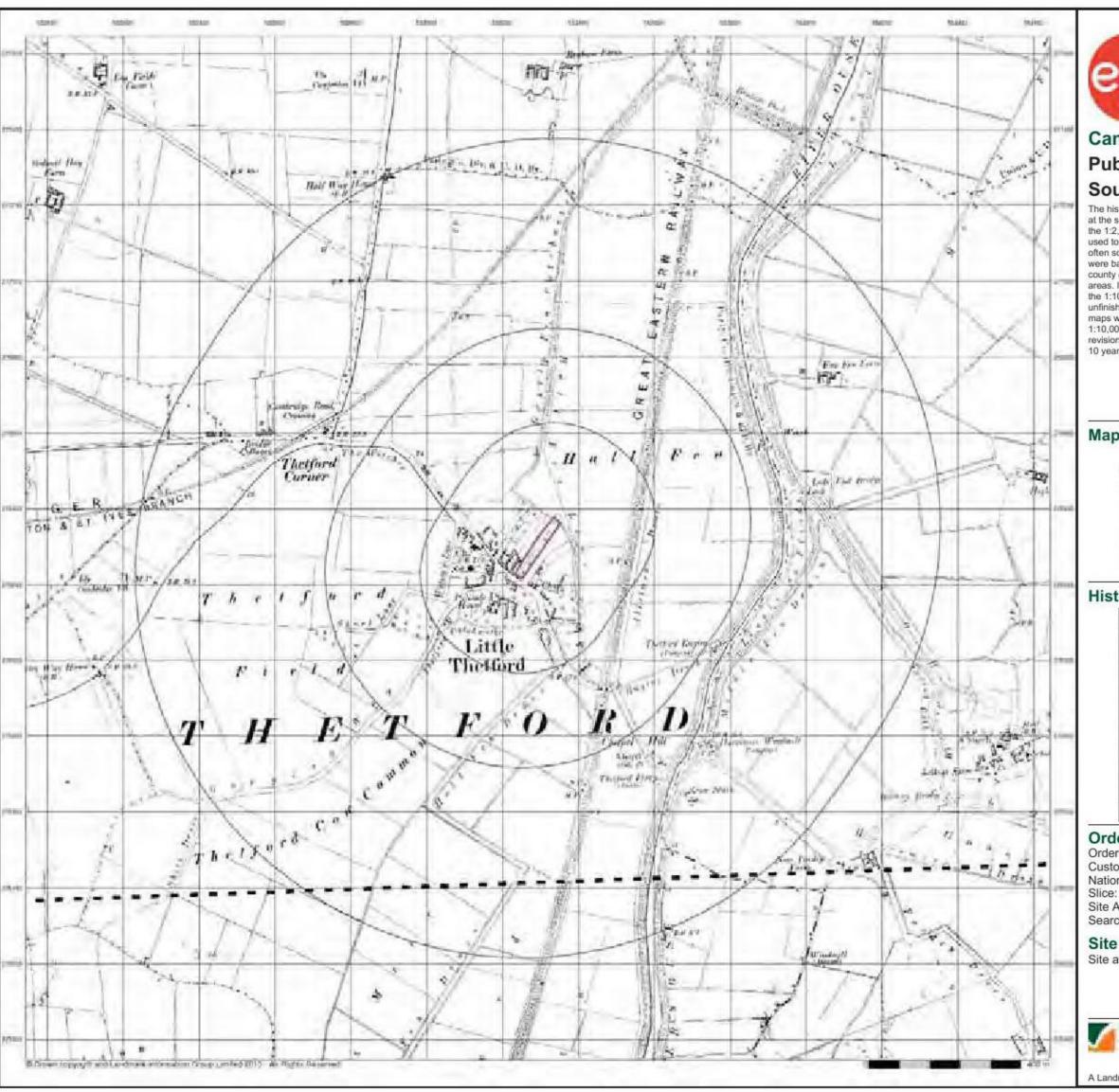
Site Details

Site at 553280, 276280



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Cambridgeshire & Isle Of Ely Published 1903

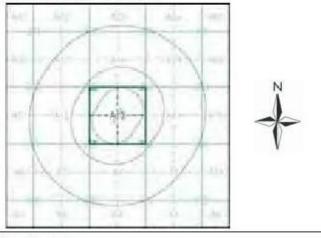
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps.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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

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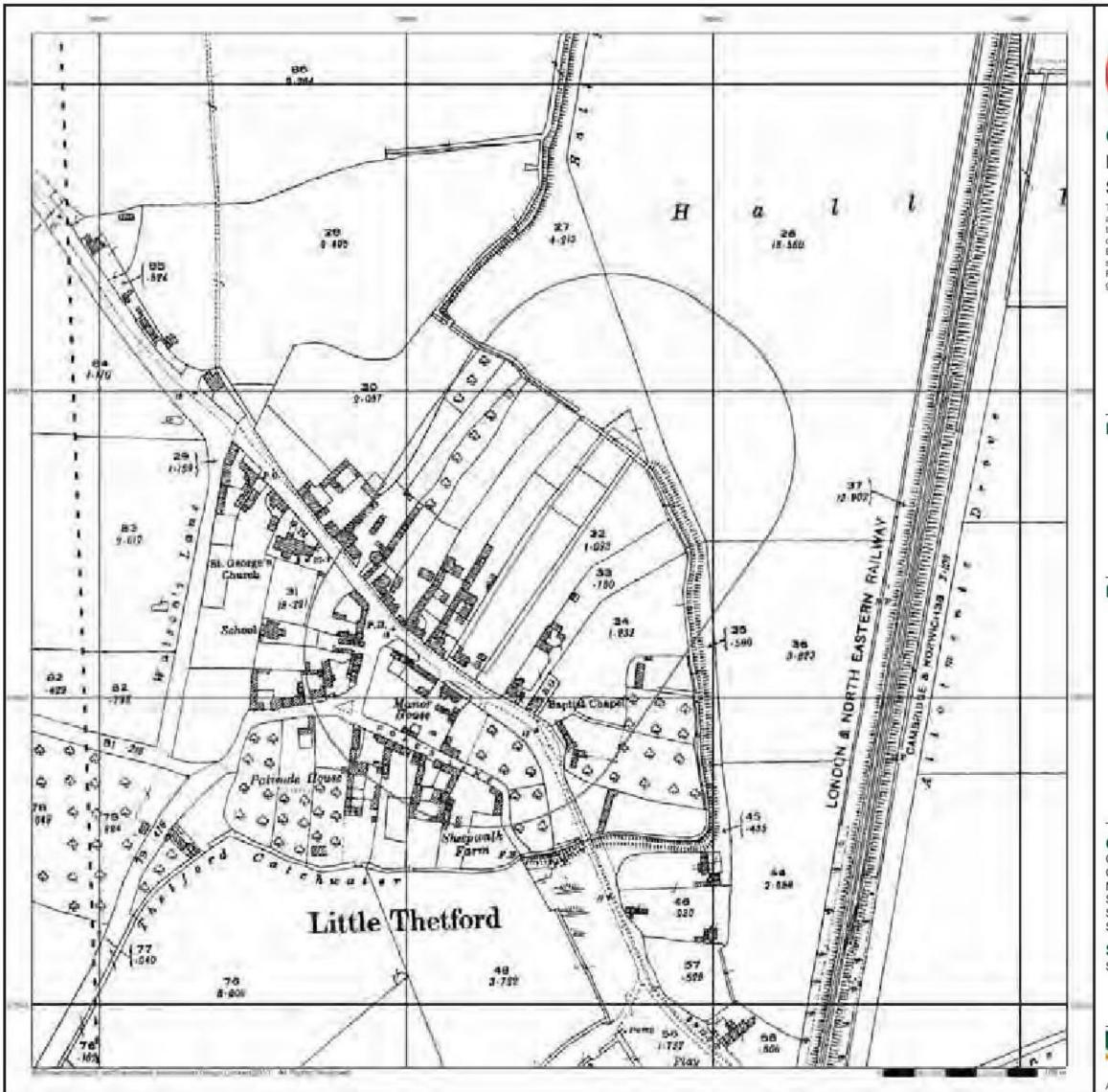
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Site at 553280, 276280



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Published 1926

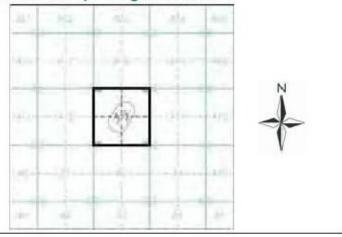
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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): 0.46 Search Buffer (m): 100

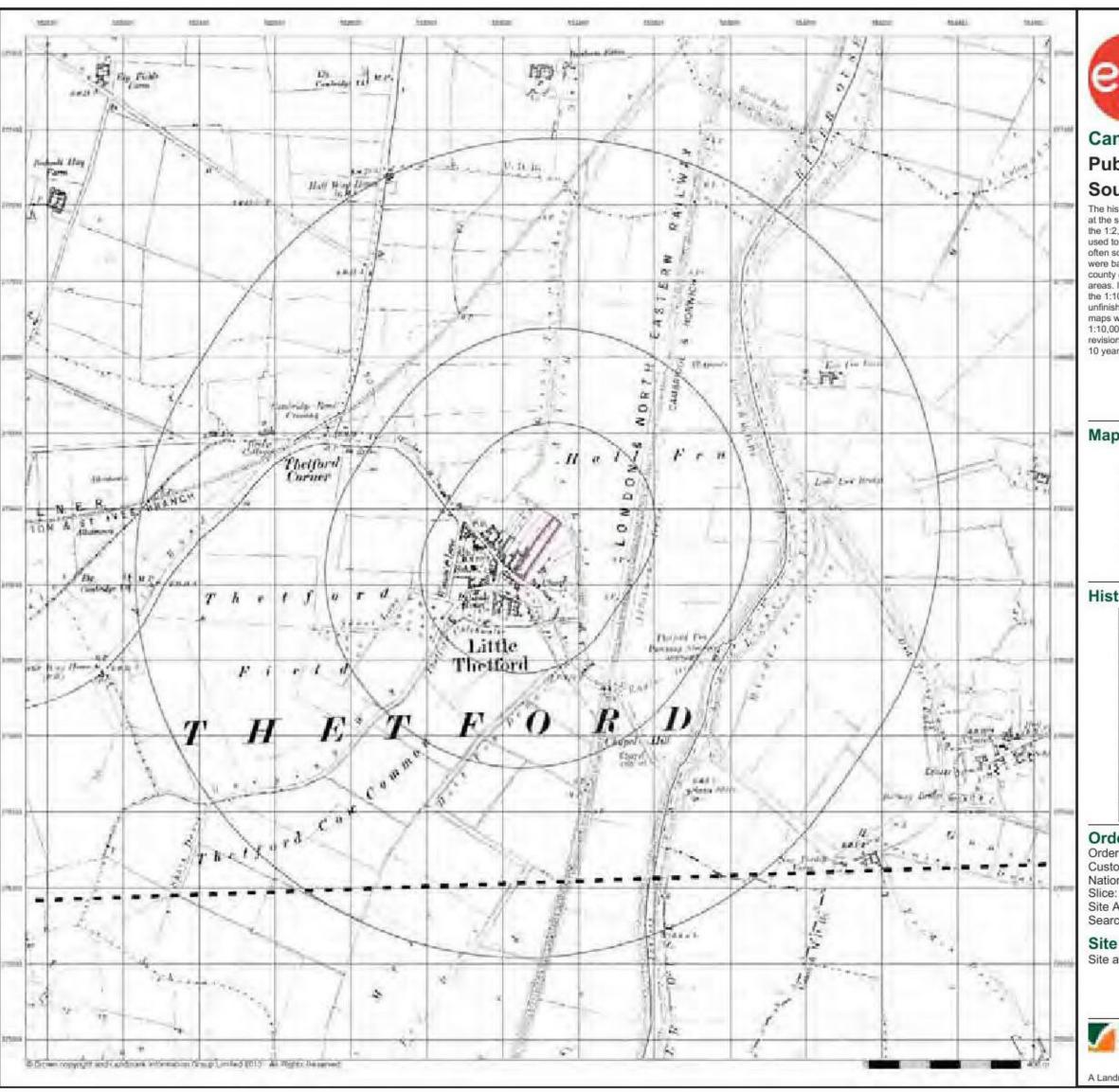
Site Details

Site at 553280, 276280



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Published 1927

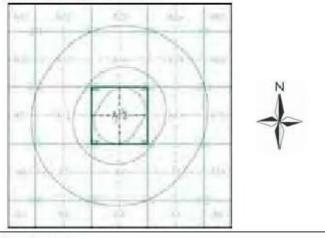
Source map scale - 1:10,560

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

0.46 Site Area (Ha): Search Buffer (m): 1000

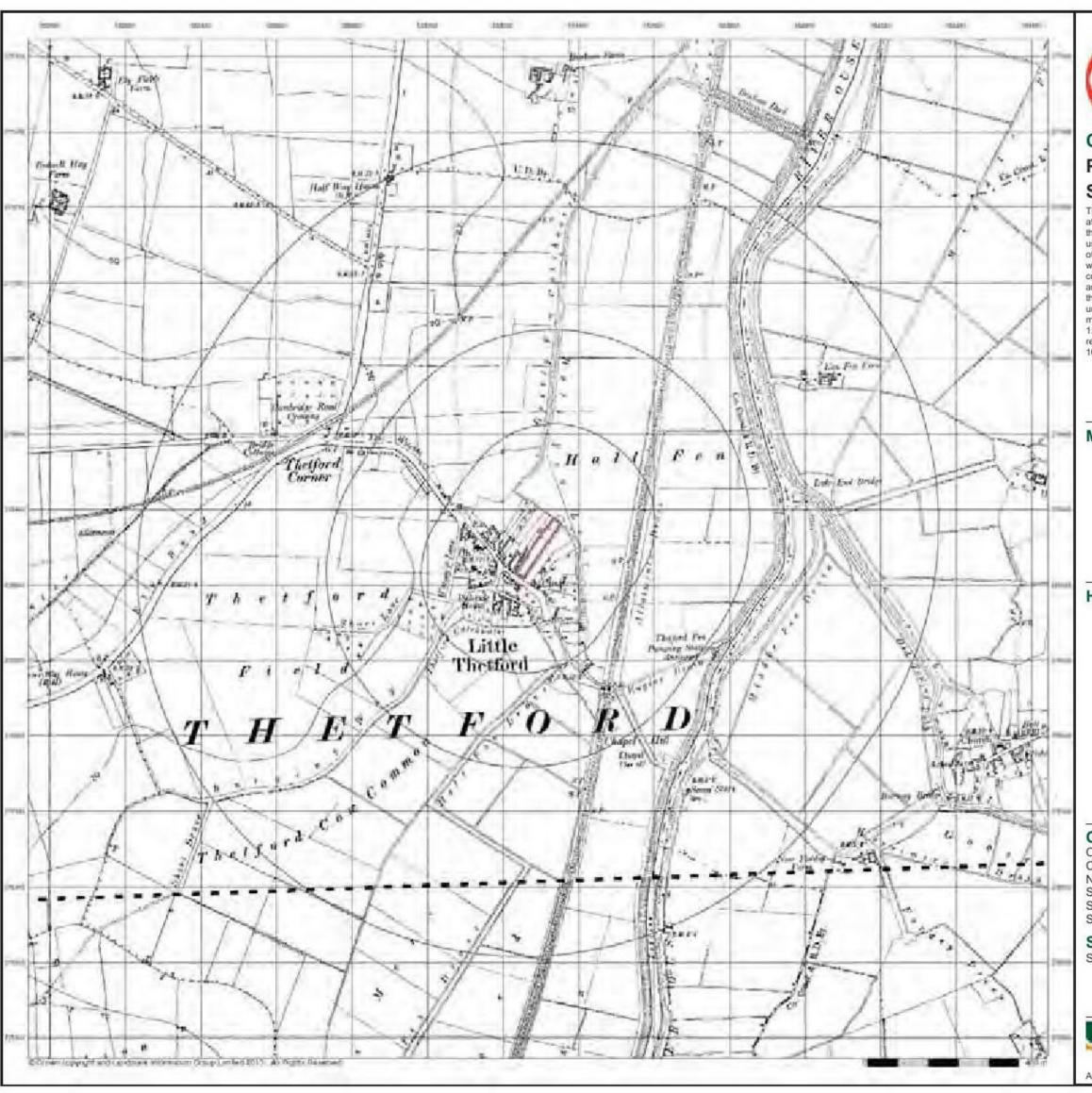
Site Details

Site at 553280, 276280



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Published 1952

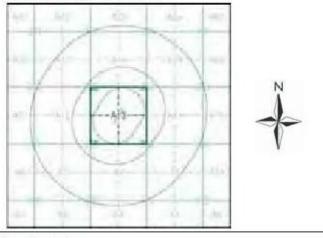
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

Slice:

0.46 Site Area (Ha): Search Buffer (m): 1000

Site Details

Site at 553280, 276280



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A Landmark Information Group Service v47.0 05-Nov-2014 Page 5 of 11





Published 1958

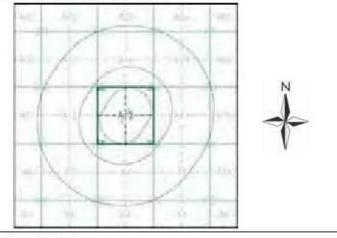
Source map scale - 1:10,000

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Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300 Slice:

Site Area (Ha): 0.46 Search Buffer (m): 1000

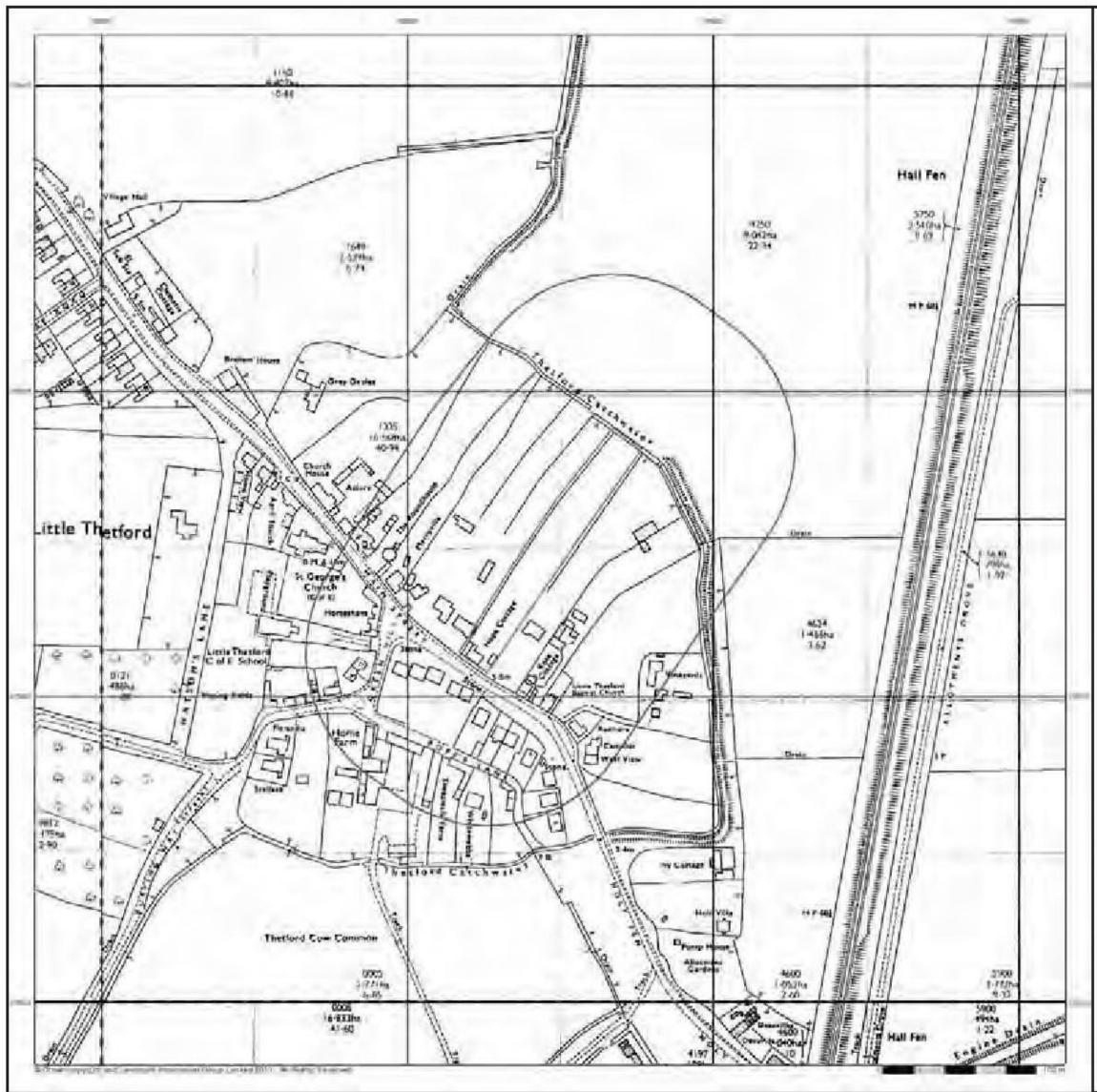
Site Details

Site at 553280, 276280



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Published 1972 - 1973

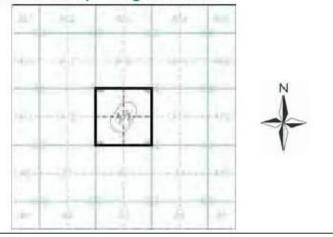
Source map scale - 1:2,500

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Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice: Site Area

Site Area (Ha): 0.46 Search Buffer (m): 100

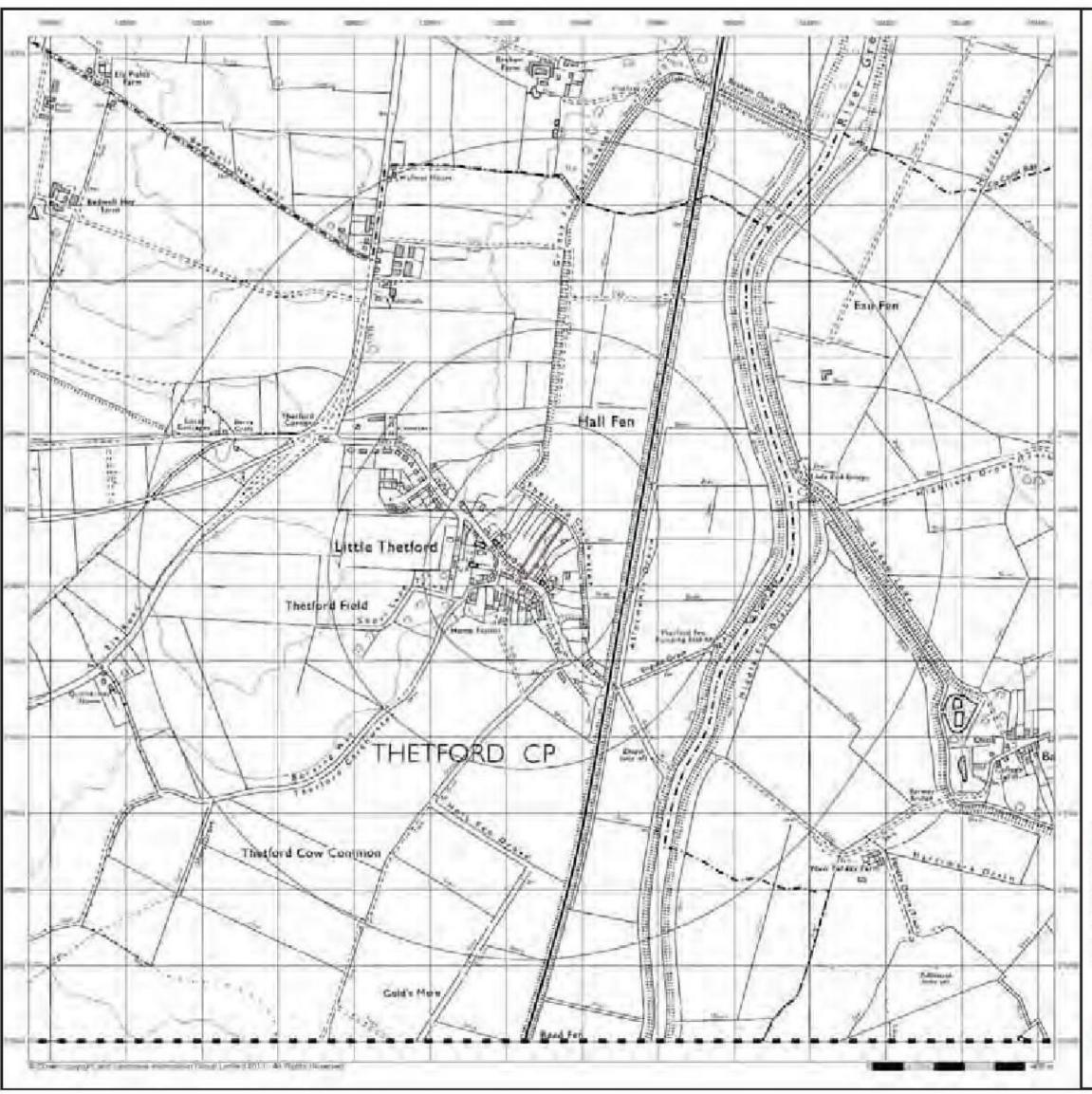
Site Details

Site at 553280, 276280



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Published 1974

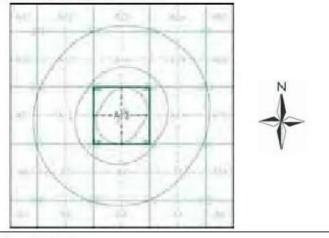
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46 1000

Site Details

Site at 553280, 276280



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Additional SIMs

Published 1987

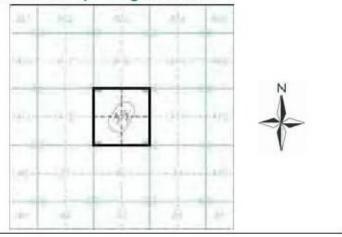
Source map scale - 1:2,500

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)



Historical Map - Segment A13



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46

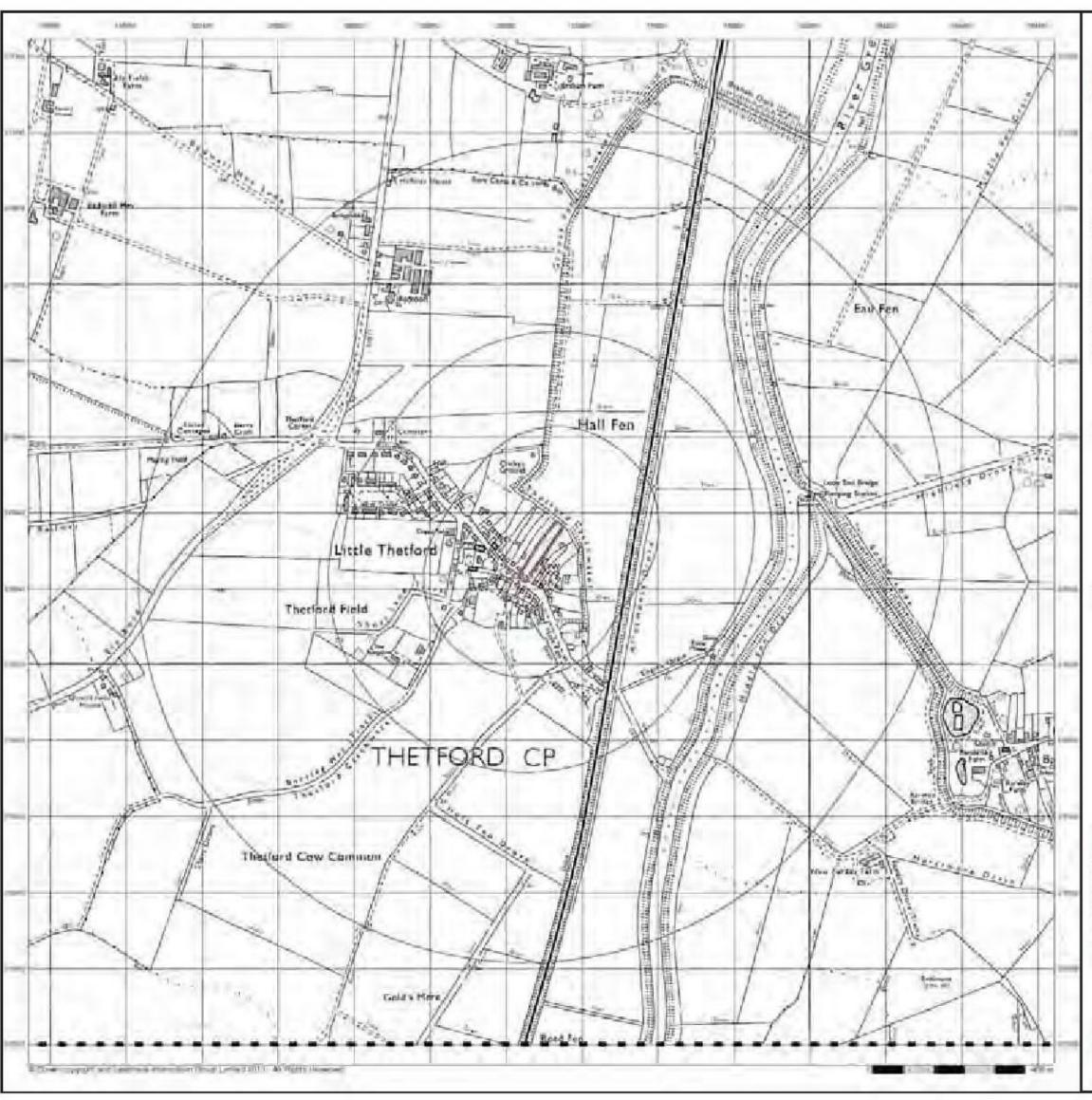
Site Details

Site at 553280, 276280



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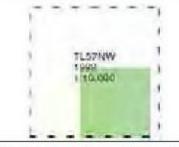


Published 1992

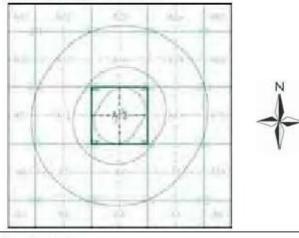
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1 Customer Ref: UK14.1709 National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46 1000

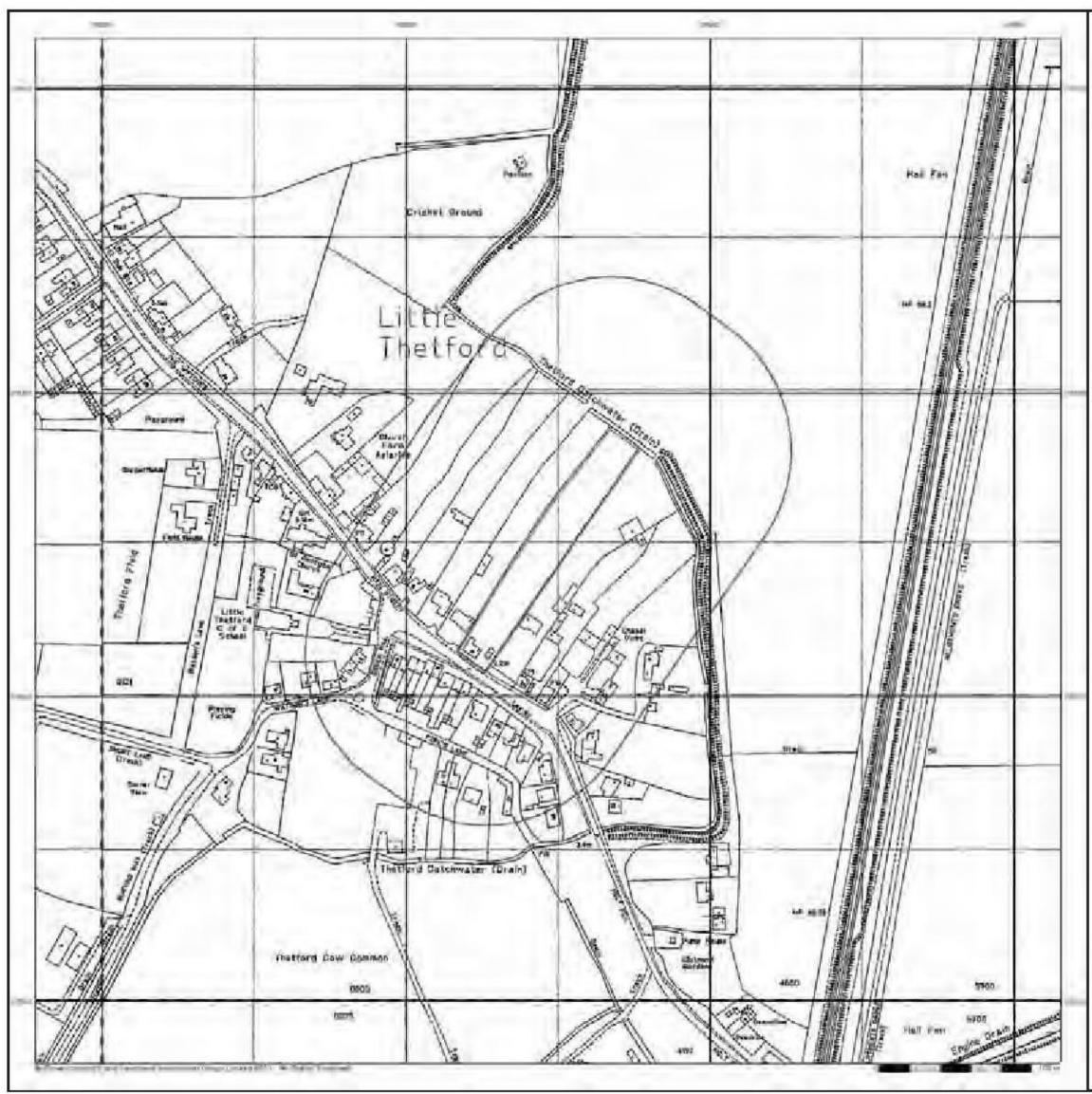
Site Details

Site at 553280, 276280



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Large-Scale National Grid Data

Published 1994

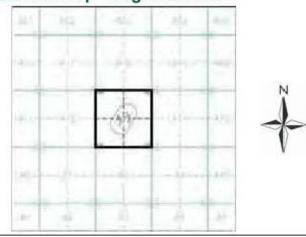
Source map scale - 1:2,500

'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 Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46

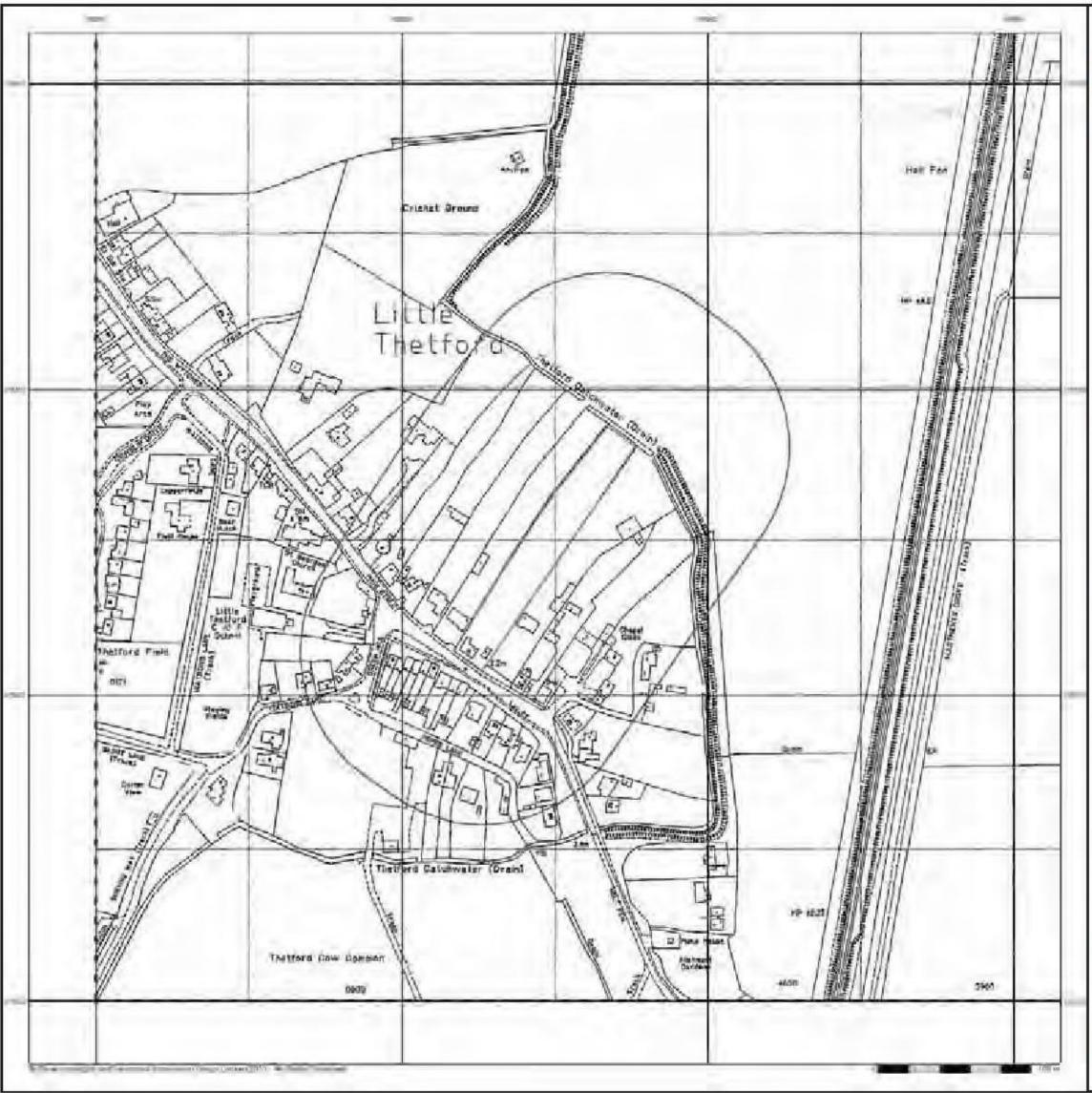
Site Details

Site at 553280, 276280



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Large-Scale National Grid Data

Published 1996

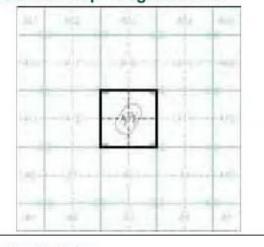
Source map scale - 1:2,500

'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: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Slice:

Site Area (Ha): Search Buffer (m): 0.46

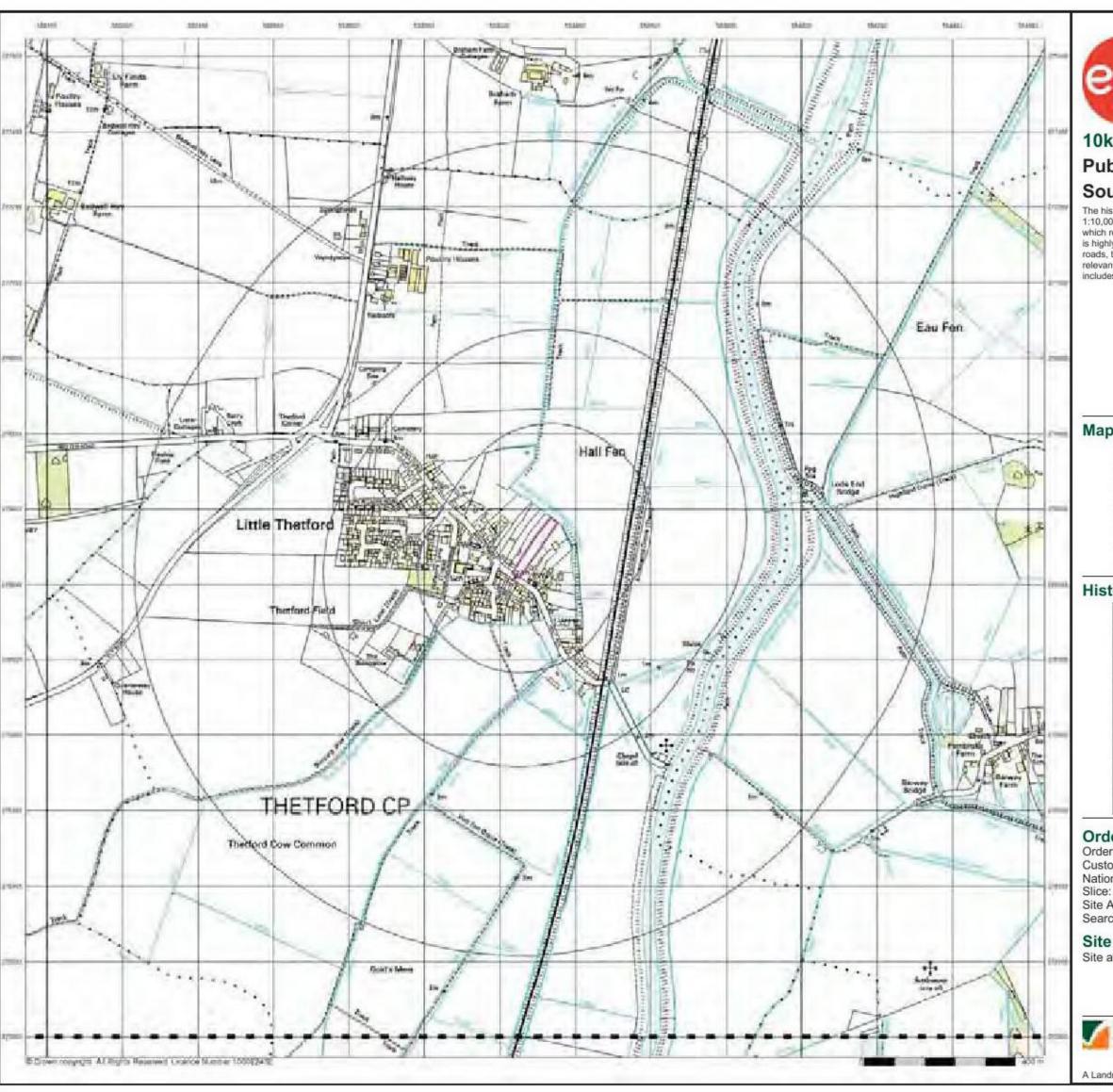
Site Details

Site at 553280, 276280



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10k Raster Mapping Published 2006

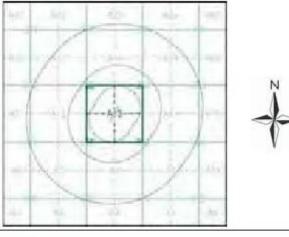
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Site Area (Ha): Search Buffer (m): 0.46 1000

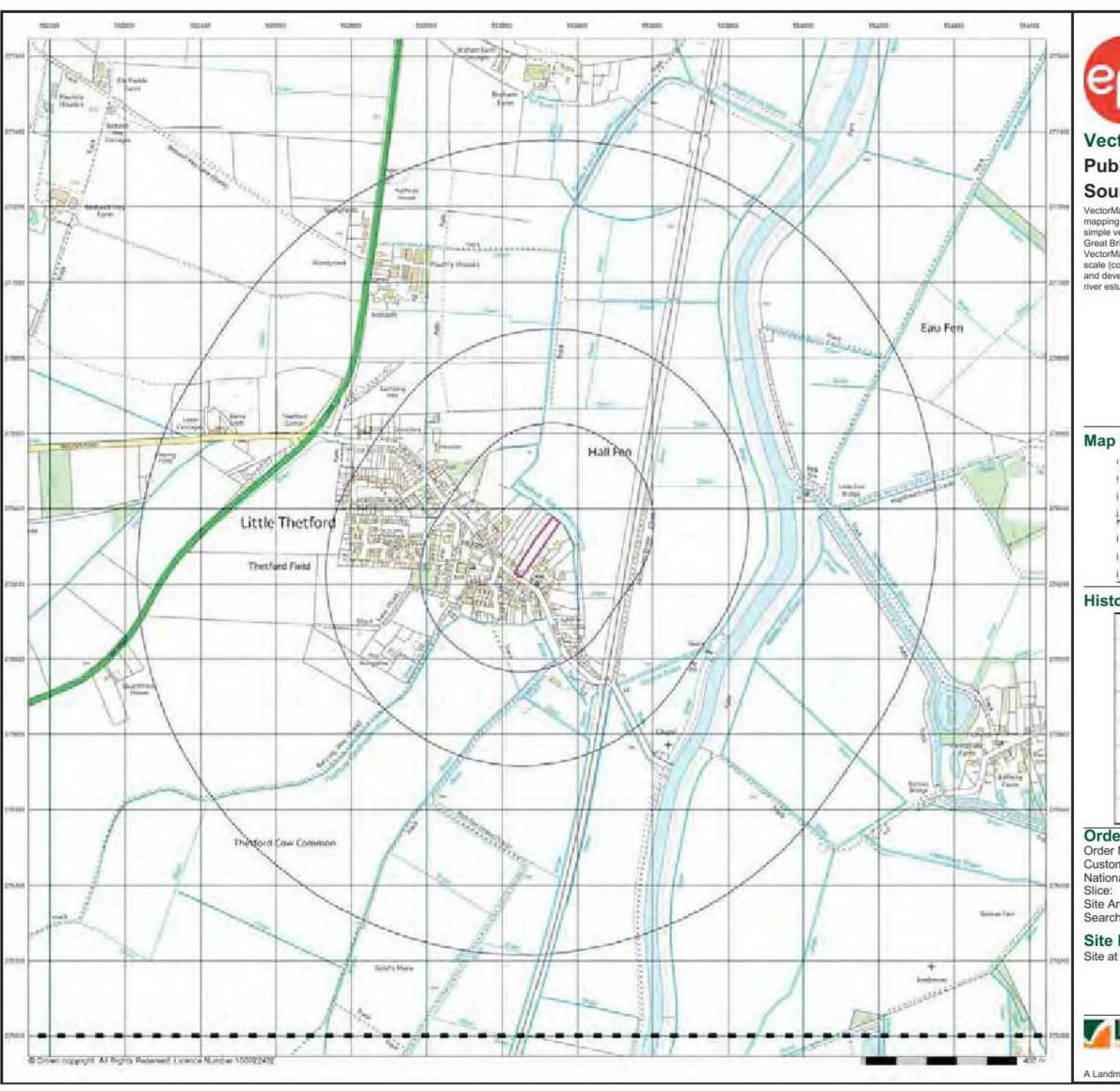
Site Details

Site at 553280, 276280



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VectorMap Local Published 2014

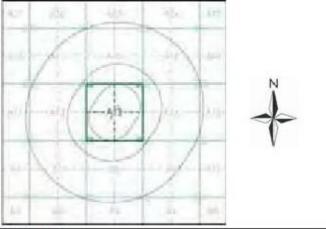
Source map scale - 1:10,000

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)

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TL57NW	1
Variable	1
	1
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TL57SW	1
2014 Variable	1
1	1

Historical Map - Slice A



Order Details

Order Number: 61816040_1_1
Customer Ref: UK14.1709
National Grid Reference: 553290, 276300

Site Area (Ha): Search Buffer (m): 0.46 1000

Site Details

Site at 553280, 276280



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APPENDIX G

Method Statement for Unexpected Contamination



MS No: 034 Page: 1 of 1 Version: 1.0

Issue Date: Nov 2013

METHOD STATEMENT

ACTIONS TO BE TAKEN IN THE EVENT OF DISCOVERING UNEXPECTED CONTAMINATION DURING INTRUSIVE GROUNDWORKS

If at any point during intrusive groundworks at a site, evidence of unforeseen contamination is encountered in the form of significant noxious odours, discolouration, or instability within soils or sheen / discolouration in groundwater, the following actions will be taken:

- Intrusive works in the immediate area of the impacted ground will be suspended and the continuation
 of work in other areas of the site will be considered within the context of the site specific health &
 safety plan.
- Environmental Protection Strategies Ltd (EPS) will be contacted and appraised of the situation so that
 arrangements can be made to characterise the impact and determine what action may be necessary in
 addition to the scheduled site works. Where possible / health & safety plan permits, digital
 photographs of the impacted ground will be taken and emailed to EPS at the address below to assist in
 the initial assessment.
- It may well be necessary for EPS to attend site to undertake visual inspection and obtain samples for field and/or laboratory analysis, although the actions taken will be dependent on the nature of what is encountered.
- In cases where EPS consider the unforeseen contamination likely to pose a significant risk of significant harm to adjacent site users or local environmental receptors, the local authority and the Environment Agency will be informed of the situation and the actions being taken.
- Once appropriate action has been agreed and undertaken a written summary will be produced by EPS
 for submission to the Local Authority (and where relevant, the Environment Agency) in accordance
 with planning requirements. The submission will include details of work undertaken, analytical
 results of investigative and validation samples obtained and conclusions and recommendations for any
 further actions considered necessary.
- Where regulatory bodies have been involved, site works should only recommence following their
 agreement and in all cases should only recommence when the site manager considers it safe to do so
 within the context of the site specific health & safety plan.

EPS Contact Details:

Principal Contact Giles Lock Director Tel: 0781 253 9656 Secondary Contact Will Evans Director Tel: 0781 253 9655

Email: <u>info@epstrategies.co.uk</u> (automatically forwarded to both of the above and office based personnel)