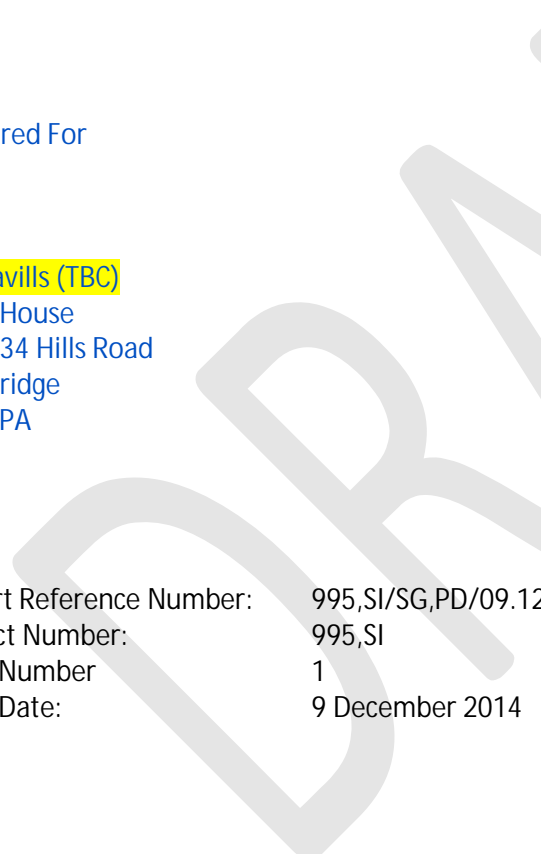


PHASE 1 AND 2 - DESK STUDY AND SITE INVESTIGATION REPORT
FOR A PROPOSED RESIDENTIAL DEVELOPMENT
ON
LAND TO THE NORTH WEST OF HAVERHILL, SUFFOLK



Prepared For

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REVISION RECORD

Revision	Date	Document	Prepared By:	Admin

AMENDMENT RECORD

Revision	Date	Amendments

EXECUTIVE SUMMARY

Desk Study Data Review	
Project Details	<p>Geosphere Environmental Ltd was commissioned by Savills to undertake a Phase 1 Desk Study and Phase 2 Site Investigation Report on land to the north west of Haverhill, Suffolk,</p> <p>It was understood that the site is to be developed to include a number of residential properties with associated gardens and parking, primary school, areas of public open space, roads and associated infrastructure.</p>
Site Location / Description	<p>The site was situated to the north west of Haverhill, adjacent and to the west of the A143 and north of Ann Suckling Road, and approximately 0.4km to the north east of Withersfield Road. The site may be located by National Grid Reference (NGR) TL 670 469.</p> <p>The site covered an area of approximately 47ha and comprised of open undeveloped agricultural land together with a number of field boundaries and drainage ditches.</p>
History	<p>A review of historical maps provided information about changes to the site and its surroundings between 1884 and 2014.</p> <p>Based on the historical information it has been concluded that the site has undergone little change from the earliest maps studied and had comprised of open undeveloped agricultural land together with a number of field boundaries and drainage ditches.</p> <p>The surrounding area had largely remained open and undeveloped from the earliest maps studied with large scale residential development occurring to the south of the site from 1971 until present day.</p>
Geology and Hydrogeology	<p>The geological records indicated the site to be underlain by the Lowestoft Formation, which was underlain by the Undifferentiated Lewes nodular and Seaford Chalk Formations.</p> <p>The hydrogeological records indicated that the site was located upon a Principal Aquifer within the bedrock chalk formations. The Lowestoft Formation is classified as an Unproductive stratum for groundwater.</p> <p>An area of the site, to the north west, was located within a 'Zone II' (Outer Zone) groundwater source protection zone (SPZ) whilst elsewhere the site is not located within an SPZ. The SPZ relates to the underlying chalk formations.</p>
Hydrology	<p>A number of surface water features were noted to be on site and relate to land drains.</p> <p>The site was not located within an area at risk of flooding by surface water, rivers or the sea and therefore was not likely to be subject to flood warnings.</p>
Basic Conceptual Model	<p>It has been assessed that the former uses of the site are likely to result in potential contamination that could pose risks to human health. However, the presence of contaminants is considered constrained in a specific area rather than being site-wide, and therefore the risk is considered to be very low.</p>

Site Investigation Data Review	
Site Works	<p>Site works were carried out between 20 October and 19 November 2014 and comprised the following:</p> <ul style="list-style-type: none"> ○ Excavation of eight boreholes extending to depths ranging from 8.4m to 10.0m bgl using light cable percussion techniques; ○ Excavation of twenty eight window sampler boreholes extending to depths ranging from 1.8m to 4.0m bgl; ○ Excavation of thirty two trial holes to depths ranging from 1.05m to 1.90m bgl using a mechanical digger; ○ Soil, logging, environmental and geotechnical sampling and in-situ testing of the soils encountered within excavations; ○ Undertaking of soil infiltration tests within a number of excavations broadly in line with the guidance of BS5930: 1999; ○ Installation of ground gas monitoring wells within eleven window sample boreholes and subsequent monitoring.
Ground Conditions	<p>The geotechnical ground conditions at the site largely comprised of Topsoil at the surface and was underlain by cohesive Lowestoft Formation soils. Head was encountered overlying the Lowestoft Formation within a number of excavations.</p> <p>Groundwater was encountered within the Head Deposits and Lowestoft Formation and was considered to be perched.</p>
Gas Monitoring	<p>Based upon the results of the ground gas monitoring visits the site has been placed in the NHBC Green category for low rise developments with ventilated underfloor voids.</p>
Laboratory Results	<p>The chemical analyses were carried out on sixteen soil samples and indicated that no contaminants considered to present a risk to human health were above the appropriate screening values.</p>
Advanced Conceptual Model	<p>Based on the results of chemical analysis it was not considered necessary to provide a conceptual model and the site may be considered low risk.</p>
Geotechnical Considerations	<p>Given the presence of high water demand trees adjacent to field boundaries, the volume change potential of the cohesive soils and the visual evidence of desiccation, it is recommended that foundations are extended in accordance with the guidance provided within NHBC Standards Chapter 4.2.</p> <p>Based on the findings of the ground investigation, it is considered that conventional spread foundations may be adopted. A Nett Allowable Bearing Pressure of 80kN/m² would be appropriate within the Head Deposits, which is increased to 120kN/m² should foundations extend into the Lowestoft Formation.</p> <p>It is recommended that fully suspended floor slabs are adopted, with a void space designed to accommodate any clay shrinkage/heave.</p> <p>A recommended CBR value of 4% should be adopted for pavements.</p> <p>The infiltration rate of the underlying soils was proven to be very poor and therefore an alternative drainage solution should be adopted.</p>

This Executive Summary only provides a summary of the site data and its assessment. It does not provide a definitive engineering analysis and is for guidance only. It is recommended that the reader reviews the reporting its entirety and any material referenced therein.

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1. INTRODUCTION

Geosphere Environmental Ltd was commissioned by Savills, to undertake a Phase 1 Desk Study and Phase 2 Ground Investigation for a proposed residential development on land to the north west of Haverhill, Suffolk.

It was understood that the site is to be developed to comprise a number of residential properties with associated gardens and parking, primary school, areas of public open space, hall roads and associated infrastructure.

1.1 Objectives of Phase 1 - Desk Study

The primary objectives of the desk study were to:

- Provide an assessment of environmental sensitivity at the site and the surrounding area in relation to any suspected or known contamination which may significantly affect the site and the proposed development;
- Indicate whether further works are required, and the nature of the works, to enable a more complete assessment of the site.

These were to be achieved by:

- Undertaking a walkover of the site;
- Researching and assessing the available information regarding the current site status, recorded geology, hydrogeology and hydrology of the site and surrounding area, and details of the history of the site.

1.2 Objectives of Phase 2 - Ground Investigation

The primary objectives of this ground investigation were to:

- Assess the ground conditions at the site;
- Assess the potential risk to human health and the environment based on the findings of the investigation.

These were to be achieved by:

- Undertaking an intrusive investigation of the site, based upon the findings of the desk study;
- Logging and sampling the soils on the site and noting any visual or olfactory evidence of contamination;
- Installing monitoring wells for groundwater sampling and monitoring and ground gas measurements Undertaking a statistical analysis of the laboratory results in accordance with CL:AIRE document (ref. R.25);
- Providing additional data to enable a Quantitative Risk Assessment of the site, if required.

A Proposed Development Plan, drawing ref. 995,SI 003/Rev0, is provided within Appendix 11.

2. SITE SETTINGS

2.1 Site Description

The subject site was situated to the north west of Haverhill, adjacent and to the west of the A143 and north of Ann Suckling Road, and approximately 0.4km to the north east of Withersfield Road. The site may be located by National Grid Reference (NGR) TL 670 469.

A Site Location Plan, drawing ref. 995,SI 001/Rev0, is included in Appendix 11 at the back of the report and in Figure 1 below.



Figure 1 – Site Location Plan



Figure 2 – Site Plan

The site undulated from an approximate level of 106mAOD to 84mAOD and was irregular in shape, with approximate maximum dimensions of 1.73km east to west by 0.65km north to south, and covered an area of approximately 47 hectares. The site comprised of open undeveloped agricultural fields with a number of drainage ditches largely crossed the site from north east to south west, whilst the topography undulated with a maximum fall of approximately 25m north east to south west.

The northern boundary was largely open across agricultural fields which extended northwards off site. Adjacent and beyond a section of boundary, towards the middle, was a water tower together with settling ponds and covered reservoir. The eastern boundary was formed by and adjacent to the A143. The southern boundary was largely open to the east, beyond which was Ann Suckling Road and the property of Boyton Hall. To the west and along the majority of the western boundary, the boundaries were largely formed by a mix of wooden panelled fencing associated with the adjacent residential properties. To the north, the western boundary extended westwards toward a roundabout with Hales Barn Road.

At the time of the walkover the site had largely been ploughed with few crop shoots beginning to grow. A section of field to the south was noted as being covered with unmanaged grassland together with a number of sycamore saplings. A number of drainage ditches were noted across the site, which had a small flow near bed level, with mixed hedgerows and trees, including sycamore, growing alongside. A small pond was noted adjacent to the northern boundary.

A Site Plan, drawing ref. 995,SI 002/Rev0, is included in Appendix 11 at the end of this report and in Figure 2 above.

2.2 Site Walkover

A walkover survey of the site was carried out on 16 October 2014. The walkover was conducted in accordance with CLR 2,(ref. R.2). Photographs taken during the site walkover are included in Appendix 12.

Relevant information from the site walkover has been described in subsection 2.1 above and in addition to the information already detailed, the following observations are considered relevant to this study:

- A number of mature trees were noted alongside a number of field boundaries and drainage ditches which have the potential to cause desiccation in the underlying cohesive soils;
- An antenna mast was noted adjacent to the southern boundary, to the rear of the property of Boyton Hall;
- No visual or olfactory evidence of contamination was noted during the site walkover.

2.3 Geological Setting

Details of the geology underlying the site have been obtained from the British Geological Survey (BGS) map, Sheet Number 205, "Saffron Walden", Solid and Drift Edition, 1:50,000 scale.

The geological map indicated the site to be underlain by superficial deposits of the Lowestoft Formation, which is a glacial deposit comprising largely of clay with varying amounts of chalk and flint gravel. The Lowestoft Formation is also known to contain rare sand and gravel pockets or lenses.

The superficial deposits were underlain by Undifferentiated Lewes nodular and Seaford Chalk Formations, which typically comprise of a white chalk with several distinct flint bands and marl seams.

A number of ground workings were noted within the desk study information and related to the pond located adjacent to the site boundary to the north. Elsewhere, ground workings relating to ponds are also noted approximately 13m south east and 50m east. A covered reservoir was noted approximately 20m north west.

Whilst the desk study information notes an occasional minor chalk mining potential for the site, it was considered to be a restricted operation and was considered unlikely to have occurred on the site.

Table 1, below, summarises the factors that may have a potential impact upon the engineering of the proposed development.

Table 1 - Geological Constraints				
Potential Hazard	Recorded Risk [m] / [Direction]			Comments
	On-site	Within 250m	Within 500m	
Shrink Swell Clay	Low	Low	Negligible/400m SW	
Collapsible Deposits	Very Low	Very Low	Very Low	
Landslides	Very Low	Low/42m N	Very Low	
Running Sands	Very Low	Very Low	Very Low	

2.4 Hydrogeological Setting

The hydrogeological data provided within the GroundSure report indicated that the site was located upon unproductive strata within the superficial Lowestoft Formation and therefore has negligible significance for groundwater supplies.

The underlying chalk bedrock was classified as a Principal Aquifer.

The Environment Agency (ref. R.7) defines a Principal Aquifer as 'these layers of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale'.

Information on the groundwater vulnerability of the site, provided within the Groundsure Report, indicated the soil to be of a medium to high leaching potential. The site was classified as being within an urban setting as designated by the Environment Agency, which therefore means that the soils are classified as having a high leaching potential.

Soils of high leaching potential are soils that readily transmit liquid discharges because they are either shallow or susceptible to rapid by-pass flow directly to rock, gravel or groundwater.

An area of the site, to the north west, was located within a 'Zone II' (Outer Zone) groundwater source protection zone, i.e. it was within the 400-day travel time of groundwater reaching the point of abstraction. Elsewhere, the site was not located within a groundwater source protection zone.

There were a number of groundwater abstraction wells noted within the Groundsure Report, however none were noted within 1km of the site.

2.5 Hydrological Setting

A number of surface water features were noted to be on site and relate to land drains, the majority of which continue off site and are connected to Stour Brook approximately 305m to the south west.

There was no available river quality classification data for the nearest watercourse.

The site was not located within an area at risk of flooding by surface water, rivers or the sea and therefore was not likely to be subject to flood warnings.

2.6 Radon

The HPA 'Indicative Atlas of Radon' 2007 (ref. R.14), indicates the site to lie within an area where there is a probability of less than 1% of present or future homes being above the action level of 200Bq/m³. As such, the site is not classified as a Radon Affected Area. This is confirmed by the Building Research Establishment, Report 211, 2007, (ref. R.16).

3. ENVIRONMENTAL SEARCHES

3.1 Environmental Searches Summary

The environmental searches are detailed fully within the GroundSure Report presented within Appendix 4. Table 2 below summarises the most relevant findings.

Table 2 - Environmental Searches Summary				
Activity	Distance From The Site			Comments [m]/[direction]
	On-site	Within 250m	250m to 500m	
1. Incidents and Registers				
Red List Discharge Consents	-	-	-	
Dangerous Substances Inventory Sites – List 1	-	-	-	
Dangerous Substances Inventory Sites – List 2	-	-	-	
Radioactive Substances	-	-	-	
COMAH and NIHHS sites	-	-	-	
Environment Agency Recorded Pollution Incidents	-	-	4	460m/S – Crude sewage: Minor 485m – 492m/SW – Crude Sewage: No Impact
IPPC	-	-	-	
Discharge Consents	-	1	7	(Historic Only) 92m/SE – Sewage discharge (treated) 306m/S – Miscellaneous (surface water) 306m/NE – Sewage discharge (storm overflow) 403m/SW - Miscellaneous (surface water) 427m/SW – Unspecified 456m/SW - Sewage discharge (storm overflow) 461m/S - Miscellaneous (surface water) 472m/SW - Miscellaneous (surface water)
Sites Determined as Contaminated Land under Part IIA EPA 1990	-	-	-	
Part A(2) and Part B Activities and Enforcements	-	-	-	

Table 2 - Environmental Searches Summary

Activity	Distance From The Site			Comments [m]/[direction]
	On-site	Within 250m	250m to 500m	
Records of Licensed Discharge consents	-	-	-	
2. Landfills and Waste Treatment / Disposal Sites				
Registered Landfill Site	-	-	1	480m/SW – Old Meldham Bridge Brickyard: Unspecified waste type.
Historical Landfills	-	-	-	
Non-operational Landfills	-	-	-	
BGS - Landfill	-	-	-	
Environmental Agency Licensed Waste Sites	-	-	-	
3. Contemporary Trade Entries of Concern				
Potentially Contaminative Sites	-	11	n/a	<p>Electrical:</p> <p>10m/SW – Pylon</p> <p>47m – 238m/S, SE and SW – Substation (5 No.)</p> <p>Commercial:</p> <p>106m – 208m/SW and S –</p> <ul style="list-style-type: none"> • Electrical and electronic engineers • Measurement and inspection equipment • Construction completion services <p>Misc:</p> <p>10m/SW – Telecommunications mast</p> <p>80m/W – Water tower</p>
Fuel Sites	-	-	1	487m/S – Mount Pleasant Service Station, Withersfield Road, Haverhill, Suffolk, CB9 7RN – Obsolete
4. Designed Environmentally Sensitive Sites				
Sites of Special Scientific Interest (SSSI)	-	-	-	
National Nature Reserves (NNR)	-	-	-	
Local Nature Reserves (LNR)	-	-	2	321m – 346m/S – Haverhill Railway Walks (Natural England)

Table 2 - Environmental Searches Summary

Activity	Distance From The Site			Comments [m]/[direction]
	On-site	Within 250m	250m to 500m	
Areas of Outstanding Natural Beauty and Scenic Areas	-	-	-	
National parks	-	-	-	
Special Protection areas	2	-	-	67m – 116m/N – Norney Plantation (Ancient Woodland)

NOTE: * The distance from the site is given in relation to the site centre on the GroundSure maps.

3.2 Nitrate Vulnerable Zone

The site was located within an area designated as a nitrate vulnerable zone.

The Nitrates Directive, (ref. R.19) defines a nitrate vulnerable zone as:

- Surface freshwater which contains or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l;
- Groundwater which contains or could contain, if preventative action is not taken, nitrate concentrations greater than 50mg/l;
- Natural freshwater lakes or other freshwater bodies, estuaries, coastal waters and marine waters, which are eutrophic or may become so in the near future if protective action is not taken.

4. SITE HISTORY

4.1 Historical Maps

A review of the history of the site has been conducted based on readily available historical maps provided by GroundSure. The most significant changes are detailed in the table below and the historical ordnance survey maps are included in Appendix 5.

Table 3 - Historical Summary		
Date	Potentially Contaminative Land Uses / Significant Changes	
	On-site [direction]	Off-site [distance/direction]
1884 - 1899	<ul style="list-style-type: none"> ○ Site was shown as largely open and undeveloped and comprised a number of field boundaries, drainage ditches and tracks. ○ A small pond was located adjacent to the boundary to the north. 	<ul style="list-style-type: none"> ○ Surrounding area shown as largely open and undeveloped, formed by a number of fields. ○ A Rising Sun Public House was located adjacent to the site to the east together with a number of wells. ○ Chapel Farm was noted adjacent to the site to the south west and comprises a number of structures and a pond. ○ Hales Barn was located approximately 250m SW. ○ The Great Eastern Railway was located approximately 400m/SE, with a number of brick works adjacent. ○ A gas works was located approximately 550m/S.
1901 - 1905	<ul style="list-style-type: none"> ○ No significant changes of note. 	<ul style="list-style-type: none"> ○ Chapel Farm renamed Boyton Hall. ○ A corn mill and brickworks was noted approximately 550m/S. ○ A Clay pit was noted approximately 350m/SW. ○ Burton Ley Plantation was noted approximately 250m/NE.
1924 -1949	<ul style="list-style-type: none"> ○ Butts Targets were noted on site to the south west, with a rifle range continuing off site to the south west. ○ No significant changes of note in larger area. 	<ul style="list-style-type: none"> ○ Norney Plantation was noted approximately 100m/N. ○ Croft Villa and allotments were noted adjacent to the site to the south east. ○ The Gables was noted approximately 250/S, with small scale residential development occurring in the surrounding area from 1938. ○ A rifle range was noted to continue from the NE of Hales Barn towards the site. ○ Single brickworks to SW no longer noted. ○ A pond was noted approximately 250m/W.
1959 - 1967	<ul style="list-style-type: none"> ○ Rifle range no longer noted, with the Butts Targets removed by 1967. ○ No significant changes of note in larger area. 	<ul style="list-style-type: none"> ○ Further small scale development in the area of The Gables, which was no longer named by 1967. ○ Gas Works no longer noted, with small scale residential development occurring in the immediate surrounding area. ○ All brickworks no longer noted. ○ A mill and works was noted approximately 500m/S.

Table 3 - Historical Summary		
Date	Potentially Contaminative Land Uses / Significant Changes	
	On-site [direction]	Off-site [distance/direction]
1971 - 1979	<ul style="list-style-type: none"> No significant changes of note. 	<ul style="list-style-type: none"> A covered reservoir was noted adjacent to the site to the north, with a further water tower added by 1979. Large scale residential development of land in the former area of The Gables. Hales Barn no longer noted by 1979, large scale residential development occurred in the immediate area. The railway to the south west was dismantled by 1971. Ground workings were noted approximately 400m/SW.
1991	<ul style="list-style-type: none"> No significant changes of note. 	<ul style="list-style-type: none"> Further large scale residential development noted to the south, adjacent to the site. Mill and works no longer noted, redeveloped as a garage.
2002	<ul style="list-style-type: none"> No significant changes of note. 	<ul style="list-style-type: none"> Expansion of water infrastructure to north. Small scale residential development to south of site. A mast was noted adjacent to the site to the south west.
2010 - 2014	<ul style="list-style-type: none"> No significant changes of note. Site remained open and undeveloped with a number of field boundaries, drainage ditches and tracks. 	<ul style="list-style-type: none"> Large scale residential development of land adjacent to the site to the south west. Surrounding area to the south east, south and south west largely developed to include residential properties, whilst to the north the land was largely undeveloped fields.
<p>Notes:</p> <p>It should be noted that the dates of the maps do not always correspond with the time of the surveys.</p>		

The review of historical maps provided information about changes to the site and its surroundings between 1884 and 2014.

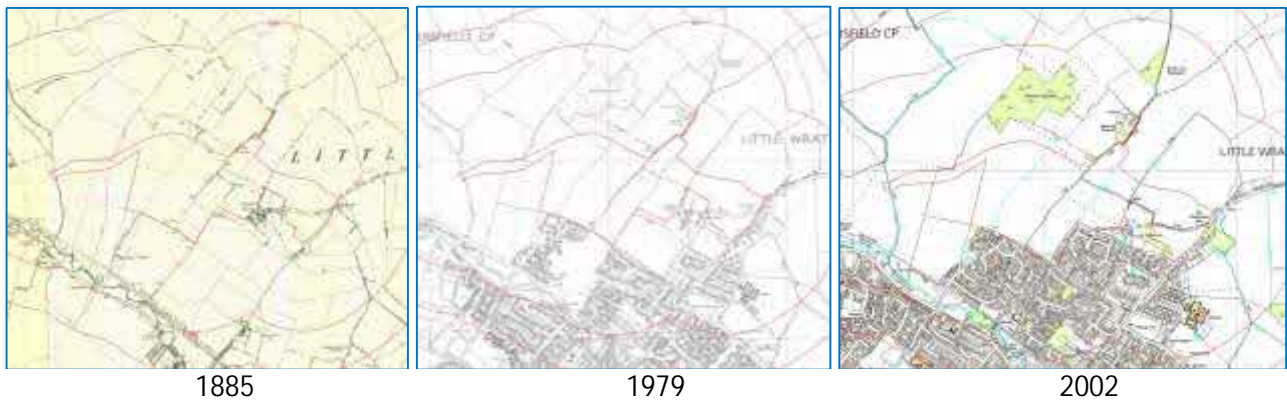


Figure 3 – Extracts from Historical Ordnance Survey Maps between 1885 and 2002

4.2 History of the Site – Summary

The review of historical maps provided information about changes to the site and its surroundings between 1884 and 2014.

Based on the historical information it has been concluded that the site has undergone little change from the earliest maps studied and has comprised of open undeveloped agricultural land together with a number of field boundaries and drainage ditches.

The surrounding area has largely remained open and undeveloped from the earliest maps studied with large scale residential development occurring to the south of the site from 1971 to present day.

5. CONCEPTUAL MODEL

The risk assessment methodology is based on current guidelines (ref. R.1, R.7 and R.5), and legislation (ref. R.20 and R.21).

The current guidance requires that a conceptual model be formulated, based upon the findings of the research. The conceptual model is limited at this stage to the identification and assessment of potential 'hazards', identified or suspected from the results of the research; the potential 'receptors' that may be affected and the anticipated 'pathways' to those receptors. The findings are summarised in the following subsections.

The guidance proposes a four-stage approach for the assessment of contamination and the associated risks. The four stages are listed below:

- Hazard Identification;
- Hazard Assessment;
- Risk Estimation;
- Risk Evaluation.

In accordance with the guidance, (ref. R.7), only the first two stages are addressed in a desk study; should hazards exist which are a potential risk then more intrusive investigation works are recommended.

5.1 Hazard Identification: On-Site

The desk based research and historical review identified the following potential hazard on the site:

- Heavy metal contamination associated with the rifle range.

5.2 Hazard Identification: Off-Site

The desk based research and historical review did not identify any potential hazards off-site that may impact upon the site.

5.3 Hazard Assessment

The desk study has identified potential sources of contamination that may pose risk to human health and the Controlled Waters. Potential pollutant linkages that require further consideration are presented in the table shown below:

Source	Pathway	Receptor
<ul style="list-style-type: none"> ○ On-site: Heavy Metals 	<ul style="list-style-type: none"> ○ Ingestion of contaminated soil by direct contact ○ Ingestion of contaminants through vegetables ○ Entry of contaminants by skin or eye contact with contaminated soils or dust ○ Inhalation of contaminated dust 	<p>Humans</p> <ul style="list-style-type: none"> ○ Future Site occupants ○ Construction workers ○ Neighbouring site users
<ul style="list-style-type: none"> ○ Off-site: None 	<ul style="list-style-type: none"> ○ Direct uptake and accumulation of contaminants 	<p>Flora and Fauna</p> <ul style="list-style-type: none"> ○ Landscaped areas

Based upon the findings of the data search as well as the site walkover, it has been assessed that the former uses of the site are likely to result in potential contamination that could pose risks to human health. However, the presence of contaminants is considered constrained in a specific area rather than being site-wide.

5.4 Constraints to Development

The following constrains to the development should be taken into consideration during redevelopment of the site:

- Potential for foundations to be extended due to soil desiccation;
- Poor infiltration rates associated with predominantly cohesive soils.

6. PHASE 2 - SITE WORKS

6.1 Methodology

This ground investigation was carried out in accordance with the practices set out in BS 10175: 2001 (ref. R.22) and BS 5930: 1999 (ref. R.23). The location of exploratory holes has been planned, where possible, in general accordance with CLR 4, (ref. R.4).

6.2 Scope

Site works were carried out between 20 October and 19 November 2014 and comprised the following:

- Excavation of eight boreholes (BH1 to BH8) extending to depths ranging from 8.4m to 10.0m bgl using light cable percussion techniques;
- Excavation of twenty eight window sampler boreholes (WS1 to WS19 and WSA to WSI) extending to depths ranging from 1.8m to 4.0m bgl;
- Excavation of thirty three trial holes (TP1 to TP33) to depths ranging from 1.05m to 1.90m bgl using a mechanical digger;
- Soil, logging, environmental and geotechnical sampling and in-situ testing of the soils encountered within excavations;
- Undertaking of soil infiltration tests within a number of excavations broadly in line with the guidance of BS5930: 1999;
- Installation of ground gas monitoring wells within eleven window sample boreholes and subsequent monitoring (WS1, WS2, WS7, WS9, WS11, WS13, WS19, WSA, WSC, WSE and WSI).

6.3 Ground Conditions Encountered

The sequence of the strata encountered during the investigation generally confirms the anticipated geology as detailed on the BGS maps and within subsection 2.3.

The sequence and indicative thickness of strata are provided below:

Table 5 - Ground Conditions				
Strata	Depth Encountered (mbgl)		Strata Thickness (m)	Composition
	From	To		
Topsoil	GL	0.1 to 0.47	0.1 to 0.47	Brown clay with varying amounts of silt, sand and gravel of flint, brick, charcoal, clinker and chalk
Head	0.2 to 0.4	0.7 to 5.2	0.4 to 5.2 (Where proven)	Encountered within: TP7, TP9, TP10, TP20, TP22, TP23, TP28, TP29, TP30, WS17, WS18, WSC, WSE, WSF, WSG, WSH, BH2 and BH8. Firm yellow/orange brown clay with varying amounts of sand, chalk and flint gravel and sandy pockets.
Lowestoft Formation	0.1 to 0.47	Unproven	Unproven	Firm to stiff clay with varying amounts of flint, chalk and occasional hard rocks/fossils (limestone, metamorphics, belemnites).

6.4 Groundwater

Groundwater was encountered within BH1, BH2, BH8, WS18, WSC, WSE, WSF, TP6, TP7, TP20, TP23 and TP26 at depths ranging from 1.0m to 4.5m bgl during the site investigation.

During subsequent gas monitoring visits, groundwater was noted in a number of boreholes, the results of which are presented on the borehole logs and gas monitoring visits within Appendices 6 and 8 respectively and are summarised within Table 8. Below.

6.5 Visual and Olfactory Evidence of Contamination

With the exception of brick and charcoal noted within the Topsoil within a number of boreholes, no visual or olfactory signs of significant contamination were noted during the intrusive works.

7. LABORATORY TESTING

7.1 Methodology

Representative disturbed and undisturbed samples were taken at the depths shown on the exploratory hole records and despatched to the laboratory. The exploratory hole logs are included in Appendix 6.

Samples were collected for environmental purposes in amber glass jars and kept in a cool box with cooling aid.

Geotechnical samples were recovered in plastic bulk bags and undisturbed U100 liners.

No field techniques were undertaken for the soil samples, all analyses of the soil samples took place in the laboratory.

7.2 Environmental Testing Suite

7.2.1 Quality Control

The environmental laboratory used (Jones Environmental Forensics Ltd) was an accredited laboratory by the United Kingdom Accreditation Service (UKAS), and at least 50% of individual parameters are from methods pending accreditation to the Environment Agency Monitoring Certification Scheme (MCERTS) for the range of analyses undertaken as part of this investigation. The MCERTS performance standard for the chemical testing of soil is an application of ISO 17025: 2000, specifically for the chemical testing of soil.

7.2.2 Environmental Testing Suite – Soils

The suite of chemical analyses has been based upon the findings of the desk study, the conceptual model and observations on site. The chemical analyses were carried out on a total of 16 samples of soil. The nature of the analyses is detailed below:

- Metals screen - arsenic, cadmium, chromium, lead, mercury, selenium, boron (water soluble), beryllium, copper, nickel, vanadium and zinc;
- Organic screen - total petroleum hydrocarbons (TPH) – with specific carbon banding; benzene, toluene, ethylbenzene and xylenes (BTEX); polyaromatic hydrocarbons (PAH);
- Inorganics screen – Hexavalent Chromium, Chromium III, sulphate (water soluble);
- Others - pH, organic matter.

A copy of the laboratory test results is included in Appendix 9 at the back of this report.

7.3 Geotechnical Testing

The geotechnical testing has been chosen based on the soils encountered during the site investigation and was undertaken in accordance with BS 1377 at a UKAS accredited laboratory.

The following tests were undertaken:

- Moisture content determination;
- Plasticity testing;
- pH and soluble sulphate testing;
- Determination of undrained shear strength;
- Determination of California Bearing Ratio;

A copy of the laboratory test results is included in Appendix 10 at the back of this report.

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8. MONITORING

8.1 Ground Gas

Ground gas monitoring was undertaken by a suitably qualified environmental consultant, using a GA2000 landfill gas analyser. The main determinants recorded were methane (CH₄), carbon dioxide (CO₂), oxygen (O₂) as well as flow and groundwater levels.

Ground gas monitoring was carried out in accordance with current guidance (ref. R.31). Three consecutive monitoring visits have been undertaken thus far, with a further three visits planned. The initial three visits were undertaken between 21 November and 5 December 2014.

The results of the initial ground gas monitoring visits are included in Appendix 8 and a summary is presented in the table below.

Location	Typical Concentration				
	Methane (CH ₄) [% v/v]	Carbon Dioxide (CO ₂) [% v/v]		Oxygen (O ₂) [% v/v]	
		(Maximum)	(Minimum)	(Maximum)	(Minimum)
WS1	<0.1	2.1	1.6	20.2	20.1
WS2	<0.1	1.2	0.2	21.8	21.3
WS7	<0.1	1.6	0.4	21.3	20.1
WS9	<0.1	2.1	2.0	19.9	18.8
WS11	<0.1	0.4	0.3	21.7	21.4
WS13	<0.1	1.2	1.1	21.0	20.5
WS19	<0.1	1.8	1.1	19.9	17.7
WSA	<0.1	1.8	0.8	21.1	18.2
WSC	<0.1	1.0	0.8	21.2	20.5
WSE	<0.1	0.8	0.3	21.4	21.2
WSI	<0.1	2.2	1.1	20.7	20.0

The results show no significant methane generation within soils, with carbon dioxide ranging from 0.2% to 2.2%. No significant gas flow was detected within the wells across the site.

On the basis of the recorded methane concentration a gas screening value of $<0.01 I_{CH_4}/hr$ has been calculated. Similarly, on the basis of the recorded carbon dioxide concentrations a gas screening value of $<0.01 I_{CO_2}/hr$ has been calculated.

8.2 Groundwater

The groundwater levels were monitored over a period of approximately 2.5 weeks.

The water levels and dates of monitoring and are presented in the table below:

Table 7 - Groundwater Monitoring Results				
Monitoring Well	Depth of Monitoring Well (mbgl)	Groundwater Encountered at (mbgl)		
		Visit 1 21/11/14	Visit 2 01/12/14	Visit 3 08/12/14
WS1	3.90	3.40	2.91	2.70
WS2	3.80	0.72	1.11	0.76
WS7	4.00	2.10	0.68	0.92
WS9	1.92	Dry	1.90	2.39
WS11	4.05	0.40	0.26	0.78
WS13	4.00	1.20	1.17	1.26
WS19	3.90	Dry	Dry	Dry
WSA	3.93	Dry	0.94	1.07
WSC	3.52	1.20	0.86	1.22
WSE	2.22	0.37	0.36	0.65
WSI	2.00	Dry	1.68	1.82

Notes:
 Dry - no groundwater encountered
 n/m – not measured
 0 - well filled with water

9. RISK ASSESSMENT

9.1 Risk to Human Health

9.1.1 Methodology

The current guidance requires that a conceptual model be formulated, based upon the findings of the research. The conceptual model is limited at this stage to the identification and assessment of potential 'hazards', identified or suspected from the results of the research; the potential 'receptors' that may be affected and the anticipated 'pathways' to those receptors. The findings are summarised in the following subsections.

The guidance proposes a four-stage approach for the assessment of contamination and the associated risks. The four stages are listed below:

- Hazard Identification;
- Hazard Assessment;
- Risk Estimation;
- Risk Evaluation.

9.1.2 Ground Contamination

The results of the soil analyses have been compared to the CLEA Soil Guideline Values (SGVs) where available, or the LQM/CIEH, EIC/AGS/CL:AIRE Generic Assessment Criteria (GAC) (ref. R.27 and ref. R.25).

Where the concentrations determined on site are at or below the respective Guidance Level, they are considered not to pose a risk and are removed from further consideration, unless otherwise stated.

The contaminants tested for were found at the level below the guidance values.

9.1.3 Ground Gas

The results of the soil gas monitoring have been compared with current guidance (ref. R.31 and R.30). A graphical representation of the gas monitoring results is included in Appendix 8 at the end of this report.

On the basis of the recorded methane concentration, a gas screening value of $<0.01 I_{CH_4}/hr$ has been calculated. Similarly, on the basis of the recorded carbon dioxide concentrations, a gas screening value of $<0.01 I_{CO_2}/hr$ has been calculated.

Comparison of the above results to the NHBC traffic light system for a Situation B, which allows for a 150mm underfloor void beneath proposed structures, at the concentrations detailed above it is considered that the site falls within the green category, which requires no special gas protection measures.

9.1.4 Asbestos

From the findings of the desk study, asbestos was not considered to pose a risk to the site and therefore testing was not required.

9.2 Risk to Controlled Waters

The risks to Controlled Waters have been assessed with respect to soil contamination only as groundwater analysis was outside the scope of this investigation.

The results of chemical analysis indicated a very low risk of contamination within the soils tested and therefore presents a very low risk to any Controlled Waters. The Lowestoft Formation is considered an unproductive strata for groundwater and whilst groundwater may exist within Head Deposits, it is unlikely that the soils would provide any appreciable groundwater storage.

The risk to the underlying principal chalk aquifer is considered negligible given the significant thicknesses of impermeable strata overlying and the very low risk of contamination within the soils.

9.2.1 Ground Contamination

Risks to humans include construction workers, site neighbours and end users of the site. Theoretically exposure to contaminant can take the form of direct contact with the skin, consumption of contaminants through transfer of contaminants to the food chain or inhalation of contaminants through wind-blown soils of vapours.

To reduce the risk of exposure and distribution of contaminants during construction it is recommended that short term mitigation measures specified in the Additional Information (Section B – page 32) section of this report should be adhered to. The exposure of contaminants is only considered to be a risk where soil is exposed, for example in garden areas of areas of soft landscaping. Where soils are covered by proposed on-site structure or areas of paving, a pathway by which contaminants can reach the end user is removed and the risk to the end user is negligible.

Results of chemical analysis did not indicate the presence of contaminants above the thresholds for human health. It is therefore considered that the risk of contamination is very low and a remediation strategy is not considered necessary for the site.

9.3 Risk to Plants

A review of the commonly occurring phytotoxic chemicals boron, copper, nickel and zinc, has been undertaken based upon the now superseded ICRC guidance. Although the ICRC trigger threshold levels have been withdrawn, there are no equivalent guidance values for phytotoxicity.

Concentrations of metals were recorded at concentrations below the thresholds considered to have phytotoxic effects.

9.4 Risk to Services

9.4.1 Pipes

A comparison has been undertaken of the recent contamination levels with the Anglian Water Standard (ref. R.29) and the WRAS standard (ref. R.28).

It is advised that the WRAS standard (ref. R.28) is adopted and consultation with the local water company is sought prior to laying any services.

9.4.2 Concrete

The results of chemical tests indicate a sulphate concentration in the soil of between <math><10\text{g/l}</math> and 408g/l as a 2:1 water/soil extract with pH values in the range of 5.1 to 7.7.

Based on the above values, and in reference to the guidelines given in the BRE Special Digest 1 (ref. R.16), a design sulphate class of DS-1 should be adopted, with an Aggressive Chemical Environment for Concrete (ACEC) classification of AC-1. Given the presence of groundwater in a number of boreholes, and in the presence of groundwater, an ACEC classification of AC-2z should be adopted.

9.5 Conceptual Model

Following the findings of the site investigation the Conceptual Model has been revisited. In the absence of any significant chemical contaminants, a Conceptual Model is no longer considered relevant and the risk to the site is considered to be very low.

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10. GEOTECHNICAL CONSIDERATIONS

The ground conditions encountered beneath the site largely comprised of Topsoil at the surface and was underlain by firm to stiff cohesive soils of the Lowestoft formation. In parts, the Topsoil was underlain by both loose to medium dense granular and soft to firm cohesive materials considered to represent Head Deposits.

The Head Deposits were found to be confined to specific locations, typically around:

- WS17, WS18, TP7, TP9 and TP10;
- BH8, and;
- BH2, WSC, WSE, WSF, WSG, TP20, TP22, TP23, TP28, TP29 and TP30.

Groundwater was encountered within a number of excavations and was considered to be perched within granular Head Deposits or confined within cohesive strata. The depth at which groundwater was encountered ranged from 1.0m to 4.5m bgl and was confined to an area consistent with the distribution of the Head Deposits.

The proposed development is understood to comprise a number of residential properties with associated gardens and parking, primary school, areas of public open space, hall roads and associated infrastructure.

10.1 Foundations

10.1.1 Ground Desiccation

Results of Atterberg Limit testing within the cohesive Head Deposits and Lowestoft Formation indicated the soils to be of low to medium plasticity and low to medium volume change potential, as defined in the NHBC Standards Chapter 4.2 Building near Trees, (Ref. R.35).

A number of high water demand trees were noted on site, largely adjacent to field boundaries and drainage ditches, including sycamore, oak and hawthorn. Furthermore, visual evidence of desiccation was noted within the soils at a number of excavation locations, typically adjacent to field boundaries and drainage ditches. The Lowestoft Formation is typically naturally desiccated with depth.

Based on the above it is recommended that foundations are extended in accordance with the guidance provided within NHBC Standards Chapter 4.2, (Ref. R.35).

10.1.2 Foundation Options

Given the findings of the ground investigation it is considered that conventional spread foundations would be appropriate for the site.

A Nett Allowable Bearing Pressure (NABP) of 80kN/m² would be considered appropriate within the Head Deposits, based on the results of in-situ testing. The above NABP is increased to 120kN/m² within the Lowestoft Formation. The NABP is the permissible strength of the soil above existing overburden pressure, which may be calculated on the basis of a soil density of 18kg/m³ (Head Deposits) and 20kg/m³ (Lowestoft Formation).

At the above NABP settlements are unlikely to exceed in the region of 25mm. Settlements in granular materials are likely to comprise of immediate settlement whereas settlements in cohesive are likely to

comprise of a small amount of immediate settlement and a larger amount of consolidation settlement, which will occur over a period of time. Where foundations cross from granular to cohesive materials, a nominal amount of reinforcement should be incorporated into the design to counter the effects of differential settlement.

A minimum foundation depth of 0.9m is considered appropriate based on the following provisos:

- Where influenced by trees, foundations will need designing in accordance with NHBC Chapter 4.2 “Building near Trees”, (Ref. R.35). A number of potentially high water demand trees exist adjacent to the boundaries of the areas mentioned previously and the soils are of medium to high volume change potential;
- Should foundations extend beyond 2.5m due to the influence of trees, an alternative foundation solution should be adopted, i.e. Piles.

Should piles be adopted, it is considered that they will terminate within the Lowestoft Formation. It is recommended that the design of piles be undertaken by an experienced and competent professional who will reflect their own experience and expertise on the design of piles.

10.1.3 Tree Planting

As mentioned previously, the soils encountered are of low to medium volume change potential, therefore it is recommended that any future tree planting that may form part of the proposed development is undertaken in accordance with the guidance laid out in the NHBC Standard Chapter 4.2 (ref. R.35) and foundations extended where appropriate.

10.1.4 Excavations, Temporary Works and Groundwater Ingress

The investigation encountered perched groundwater within the soils encountered within the area mentioned previously. It is therefore considered that a potential exists for groundwater to be encountered during foundation and service run excavations in the short term.

Side slopes within the Lowestoft Formation are likely to remain stable in the short term without support, whilst side slopes within the Head Deposits may experience some instability during excavation. It is therefore considered that some battering back to a safe slope gradient may be prudent. A detailed inspection of the side slopes should be made during excavation and a risk assessment carried out to fully assess the support measures required.

It is recommended that further guidance is obtained from CIRIA document Report 97 (Second Edition) ‘Trenching Practice’, (Ref. R.36).

10.2 Floor Slabs

Where the thickness of Made Ground is proven to exceed 0.6m or where foundations are extended beyond 1.2m depth due to the influence of trees, suspended ground floors should be adopted.

The investigation did not record any Made Ground across the site.

The investigation noted a number of potentially high water demand trees (sycamore, oak and hawthorn), located adjacent to field boundaries and drainage ditches, and the underlying soils were found to be of low to medium volume change potential.

It is therefore recommended that fully suspended floor slabs are adopted, with a void space designed to accommodate any clay shrinkage/heave.

10.3 Pavement Design

Pavements at the site are likely to be constructed on a subgrade of either Head Deposits or Lowestoft Formation, which is likely to comprise of a gravelly clay.

Laboratory analysis on samples of Head Deposits/Lowestoft Formation recorded plasticity indices ranging from 14% to 31% and therefore reference of these values to Table 5.1 of the Highways Agency's, 'Design Manual for Roads and Bridges, Volume 7, 'Interim advice note Design Guidance for Road Pavement Foundations Draft HD 25' (ref. R.33), for a thin pavement under average construction conditions and a low water table indicate an estimated CBR ranging from 3.0% to 4.5%.

A total of six samples of soil were tested in the laboratory to determine the California Bearing Ratio of the soil for use in the design and construction of roadways and pavements. Laboratory CBR testing on the soils returned values ranging from 2.1% and 7.5%, which is indicative of poor to good construction conditions.

Based on the above, a recommended CBR value of 4.0% should be adopted.

It is recommended that once the site has been graded to the appropriate pavement formation level, it is inspected and, if necessary, in-situ CBR testing be conducted on the subgrade to confirm the appropriate pavement design (i.e. to determine the sub-base and capping thickness). In addition, the formation should be proof-rolled and any soft/loose pockets encountered should be excavated and replaced with well compacted granular fill prior to pavement construction. Requirements for the design of road pavements are given in the Highways Agency, 'Design Manual for Roads and Bridges, Volume 7. Interim advice note Design Guidance for Road Pavement Foundations Draft HD 25 (ref. R.33).

10.4 Soakaway Design

Soakaway testing was undertaken at ten locations across the site, with infiltration confined within the Head Deposits or Lowestoft Formation.

Results of testing largely proved unsuccessful given the absence of any appreciable infiltration. It is therefore recommended that an alternative drainage strategy for surface water drainage should be adopted and will need to be agreed with the local water company and planning authority.

10.5 Buried Concrete

The results of chemical tests indicate a sulphate concentration in the soil of between <10g/l and 408g/l as a 2:1 water/soil extract with pH values in the range of 5.1 to 7.7.

Based on the above values, and in reference to the guidelines given in the BRE Special Digest 1 (ref. R.16), a design sulphate class of DS-1 should be adopted, with an Aggressive Chemical Environment for Concrete

(ACEC) classification of AC-1. Given the presence of groundwater in a number of boreholes, and in the presence of groundwater, an ACEC classification of AC-2z should be adopted.

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11. CONCLUSIONS

Based upon the findings of the desk study and walkover, a number of potential contaminant sources and pathways to potential receptors were identified.

The intrusive investigation encountered a nominal amount of Topsoil overlying Head Deposits and/or Lowestoft Formation soils, which were largely recorded as cohesive. Groundwater was recorded as perched within the soils at varying depths.

Results of chemical analysis indicated that none of the samples tested contained contaminants above the thresholds for human health and therefore the risk to the proposed development is very low. Furthermore the risk to Controlled Waters is also very low.

Given the presence of high water demand trees adjacent to field boundaries, the volume change potential of the cohesive soils and the visual evidence of desiccation, it is recommended that foundations are extended in accordance with the guidance provided within NHBC Standards Chapter 4.2.

Based on the findings of the ground investigation, it is considered that conventional spread foundations may be adopted. A Net Allowable Bearing Pressure of 80kN/m² would be appropriate within the Head Deposits, which is increased to 120kN/m² should foundations extend into the Lowestoft Formation.

It is recommended that fully suspended floor slabs are adopted, with a void space designed to accommodate any clay shrinkage/heave.

A recommended CBR value of 4% should be adopted for pavements.

The infiltration rate of the underlying soils was proven to be very poor and therefore an alternative drainage solution should be adopted.

ADDITIONAL INFORMATION

A. CONSULTATION

During the development of a contaminated site, consultation may be required for a number of reasons with a number of Regulatory Authorities. The following provides an indication as to the most likely Authorities with which consultation may be required. The remediation strategy would have to be agreed with the following:

- Local Authority. Consultation is likely to be required with a designated Contaminated Land Officer within the Environmental Health Department, as part of the planning process. The Local Authority is generally concerned with human health risks. Some Authorities now require 'Completion Certificates' to be signed off following remediation works.
- Environment Agency. Where a site is within a groundwater protection zone or has been designated as a special site, the Environment Agency is likely to be involved to ensure that controlled waters are protected.

In addition, the following may also be involved in the consultation process:

National House Building Council, NHBC. Section 4.1 of the NHBC Standards requires land management to be addressed.

- Water Authorities. They are likely to impose constraints on the nature of water supply pipes that are to be laid in contaminated land. Guidance on the selection of materials for water pipes is provided by the Water Regulations Advisory Scheme (ref. R.28).

Based on the results of any consultation, there may be specific remediation requirements imposed by one or more of the aforementioned Authorities.

B. SHORT-TERM MITIGATION MEASURES

During site preparatory works of any potential development/construction works, some short-term mitigation measures will be required to protect the site workers, neighbouring sites users and the environment from the potential effects of exposure to potentially contaminated materials and soils. The majority of the proposed measures represent good practice for the construction industry and include:

- Briefing all of the site workers of the identified contamination on site, and ensuring they are aware of the potential health effects from exposure.
- Where appropriate, workers who are at potentially risk due to their working in areas of identified contamination will be provided with suitable PPE.
- Ensuring good hygiene is enforced on site and washing facilities are maintained on the site. Workers are discouraged from smoking, eating or drinking without washing their hands first.
- Ensuring site personnel report any unusual complaints, such as skin rashes, nausea, light-headedness etc. which may be attributable to the contamination on the site.
- Ensuring that dust suppression measures are put into practice where contamination is becoming airborne.

- Site drainage should be prevented from entering the adjacent watercourse.
- Where necessary contamination will be prevented from dirtying adjacent highways, a wheel-wash or other method for cleaning vehicles may be required.

Where contaminated materials are being removed from the site they should be disposed of at a suitably licensed landfill, with a 'duty of care' system in place and maintained throughout the disposal operations. The classification of contaminated soils for disposal is dependent upon the individual landfill operator, which is in turn dependent upon the operator's license.

C. DISCOVERY STRATEGY

There is the possibility that other sources of contamination may be present on the site which were not detected during the investigation. Should such contamination be identified or suspected during the site clearance or ground works, these should be dealt with accordingly. A number of options are available for handling this material, which include:

- The removal from site and disposal to a suitably licensed tip of all material suspected of being contaminated.
- Short-term storage of the suspected material while undertaking verification testing for suspected contamination. The storage area should be a contained area to ensure that contamination does not migrate and affect other areas of the site. Depending upon the amounts of material under consideration, this could be either a skip or a lined area.
- Treatment of the identified contamination in accordance with the site-specific Remediation Method Statement.
- Having a suitably experienced Environmental Engineer either on-call or with a watching brief for the visual and olfactory assessment of the material, and sampling for verification purposes.

Should any anomalous materials be identified within the soils, Geosphere Environmental and Regulatory Authorities should be informed and where necessary the remedial strategy agreed.

APPENDICES

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APPENDIX 1 - ACRONYMS AND ABBREVIATIONS

Acronym / Abbreviation	Definition
ACM	Asbestos containing material
ADE	Average daily exposure
ASPT	Average score per Taxon
BAP	Biodiversity Action Plan
BOD	Biochemical oxygen demand
BH	Borehole
BRE	Building Research Establishment
BS	British Standard
BTEX	Benzene, Toluene, Ethyl benzene and Xylenes
CIRIA	Construction Industry Research and Information Association
CLEA	Contaminated Land Exposure Assessment
CLR	Contaminated Land Research reports
DEFRA	Department of the Environment, Food and Rural Affairs (formerly the DoE and DETR)
DETR	Department of the Environment, Transport and the Regions (formerly the DoE and now Defra)
DO	Dissolved oxygen
DoE	Department of the Environment (then DETR and later Defra)
DQRA	Detailed quantitative risk assessment (Tier 2)
EA	Environment Agency
EC	Equivalent Carbon
EPH	Extractable Petroleum Hydrocarbons
EQI	Environmental Quality Index
EQS	Environmental Quality Standards
FRA	Flood Risk Assessment
GQRA	Generic quantitative risk assessment (Tier 1)
IPC	Integrated Pollution Control
IPPC	Integrated Pollution Prevention Control
mAOD	Metres above ordnance datum
mbgl	Metres below ground level
NGR	National grid reference
NHBC	National House Building Council
NRA	National Rivers Authority (now the Environment Agency)
PACM	Potentially asbestos containing material

APPENDIX 2 – REPORT LIMITATIONS AND CONDITIONS

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

The comments given in this report, and the opinions expressed herein, are based upon the readily available information collated for the report and an assessment based upon the current UK guidance, primarily the Contaminated Land Research (CLR) Reports, and most importantly CLR Report 3 (ref. R.1).

This report has been prepared for the sole use of the Client for the purposes described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

This report is prepared and written for the use stated herein; it should not be used for any other purposes without reference to Geosphere Environmental Limited. The report has been prepared in relation to the proposed end-use should another end-use be intended a further re-assessment may be required. It is likely that over time practises will improve and the relevant guidance and legislation be amended or superseded, which may necessitate a re-assessment of the site.

The report is limited to those aspects of land contamination specifically reported on and is necessarily qualified accordingly, no liability shall be accepted for other aspects which may be the result of gradual or sudden pollution incidents, past or present unrecorded land uses both on- and off-site and the potential for associated contaminant migration. The opinions expressed cannot be absolute due to the limitations of time and resources imposed by the agreed brief.

The accuracy of any map extracts cannot be guaranteed. It is possible that different conditions existed on site, between and subsequent to the various map surveys appended.

Whilst the report may express an opinion on possible configurations of strata between or beyond exploratory holes discussed or on the possible presence of features based on visual, verbal or published evidence, this is for guidance only and no liability can be accepted for its accuracy.

The conceptual model is based on the information available at the time of conducting this assessment and is an interpretative assessment of the conditions at the site. It should be noted that the redevelopment and/or further investigation of the site may reveal additional information and therefore alter the conceptual model and the conclusion of this report.

APPENDIX 3 – REFERENCES

- R.1. CLR 1, 'A framework for assessing the impact of contaminated land on groundwater and surface water', Report by Aspinwall & Co., DoE 1994.
- R.2. CLR 2, 'Guidance on preliminary site inspection of contaminated land', Report by Applied Environmental, DoE 1994.
- R.3. CLR 3, 'Documentary research on industrial sites', Report by RPS Consultants Ltd, DoE 1994.
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APPENDIX 4 – GROUNDSURE DATA SEARCH REPORT

EnviroInsight Data

GeoInsight Data

DRAFT



Geosphere Environmental Ltd
BRIGHTWELL BARNES, IPSWICH ROAD,
Suffolk,
Brightwell, IP10 0BJ

GroundSure Reference: HMD-369-1706442

Your Reference: 995,SI

Report Date Oct 9, 2014

Report Delivery Method: Email - pdf

GroundSure EnviroInsight

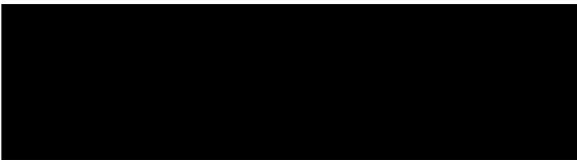
Address: Land to NW of Haverhill, CB9 0EH

Dear Sir/ Madam,

Thank you for placing your order with GroundSure. Please find enclosed the **GroundSure Enviroinsight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above GroundSure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
GroundSure EnviroInsight



GroundSure Envirolnsight

Address: Land to NW of Haverhill, CB9 0EH
Date: Oct 9, 2014
Reference: HMD-369-1706442
Client: Geosphere Environmental Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 24-May-2009
Grid Reference: 567002,246841
Site Size: 47.10ha

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Overview of Findings

For further details on each dataset, please refer to each individual section in the main report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Environmental Permits, Incidents and Registers						
	On-site	0-50m	51-250	251-500		
1.1 Industrial Sites Holding Environmental Permits and/or Authorisations						
1.1.1 Records of historic IPC Authorisations	0	0	0	0		
1.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0		
1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer)	0	0	0	0		
1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters)	0	0	0	0		
1.1.5 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0		
1.1.6 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0		
1.1.7 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0		
1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0		
1.1.9 Records of Licensed Discharge Consents	0	0	1	7		
1.1.10 Records of Planning Hazardous Substance Consents and Enforcements	0	0	0	0		
1.2 Records of COMAH and NIHHS sites	0	0	0	0		
1.3 Environment Agency Recorded Pollution Incidents						
1.3.1 National Incidents Recording System, List 2	0	0	0	4		
1.3.2 National Incidents Recording System, List 1	0	0	0	0		
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0		
Section 2: Landfill and Other Waste Sites						
	On-site	0-50m	51-250	251-500	501-1000	1000-5000
2.1 Landfill Sites						
2.1.1 Environment Agency Registered Landfill Sites	0	0	0	0	0	Not searched
2.1.2 Environment Agency Historic Landfill Sites	0	0	0	1	0	3
2.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	2
2.1.4 GroundSure Local Authority Landfill Sites Data	0	0	0	0	0	0
2.2 Landfill and Other Waste Sites Findings						
2.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
2.2.2 Environment Agency Licensed Waste Sites	0	0	0	0	0	0

Section 3: Current Land Use	On-site	0-50m	51-250	251-500
3.1 Current Industrial Sites Data	0	3	8	Not searched
3.2 Records of Petrol and Fuel Sites	0	0	0	1
3.3 Underground High Pressure Oil and Gas Pipelines	0	0	0	0

Section 4: Geology

4.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
4.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
4.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 5: Hydrogeology and Hydrology

	0-500m
5.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes
5.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
5.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	26
5.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
5.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	3
5.6 Source Protection Zones (within 500m of the study site)	2	0	1	0	Not searched	Not searched
5.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
5.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	2	0	0	0	Not searched	Not searched
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
5.9 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	Yes
5.10 Detailed River Network entries within 500m of the site	13	1	9	19	Not searched	Not searched
5.11 Surface water features within 250m of the study site	Yes	Yes	Yes	Not searched	Not searched	Not searched

Section 6: Flooding

6.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No
6.2 Are there any Environment Agency Zone 3 floodplains within 250m of the study site?	No
6.3 Are there any Flood Defences within 250m of the study site?	No
6.4 Are there any areas benefiting from Flood Defences within 250m of the study site?	No
6.5 Are there any areas used for Flood Storage within 250m of the study site?	No
6.6 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Limited potential
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High

Section 7: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
7.1 Records of Sites of Special Scientific Interest (SSSI)	0	0	0	0	0	0
7.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
7.3 Records of Special Areas of Conservation (SAC)	0	0	0	0	0	0
7.4 Records of Special Protection Areas (SPA)	0	0	0	0	0	0
7.5 Records of Ramsar sites	0	0	0	0	0	0
7.6 Records of Ancient Woodlands	0	0	2	0	0	3
7.7 Records of Local Nature Reserves (LNR)	0	0	0	2	2	4
7.8 Records of World Heritage Sites	0	0	0	0	0	0
7.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0
7.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
7.11 Records of National Parks	0	0	0	0	0	0
7.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
7.13 Records of Nitrate Vulnerable Zones	1	0	0	0	0	0

Section 8: Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?	Low
8.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Low
8.1.2 What is the maximum Landslides hazard rating identified on the study site?	Low
8.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Very Low
8.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
8.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
8.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Very Low

Section 9: Mining

9.1 Are there any coal mining areas within 75m of the study site?	No
9.2 What is the risk of subsidence relating to shallow mining within 150m of the study site?	Negligible
9.3 Are there any brine affected areas within 75m of the study site?	No

Using this report

The following report is designed by Environmental Consultants for Environmental Professionals bringing together the most up-to-date market leading environmental data. This report is provided under and subject to the Terms & Conditions agreed between GroundSure and the Client. The document contains the following sections:

1. Environmental Permits, Incidents and Registers

Provides information on Regulated Industrial Activities and Pollution Incidents as recorded by Regulatory Authorities, and sites determined as Contaminated Land. This search is conducted using radii up to 500m.

2. Landfills and Other Waste Sites

Provides information on landfills and other waste sites that may pose a risk to the study site. This search is conducted using radii up to 1500m.

3. Current Land Uses

Provides information on current land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. These searches are conducted using radii of up to 500m. This includes information on potentially contaminative industrial sites, petrol stations and fuel sites as well as high pressure underground oil and gas pipelines.

4. Geology

Provides information on artificial and superficial deposits and bedrock beneath the study site.

5. Hydrogeology and Hydrology

Provides information on productive strata within the bedrock and superficial geological layers, abstraction licenses, Source Protection Zones (SPZs) and river quality. These searches are conducted using radii of up to 2000m.

6. Flooding

Provides information on surface water flooding, flood defences, flood storage areas and groundwater flood areas. This search is conducted using radii of up to 250m.

7. Designated Environmentally Sensitive Sites

Provides information on the Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Ramsar sites, Local Nature Reserves (LNR), Areas of Outstanding Natural Beauty (AONB), National Parks (NP), Environmentally Sensitive Areas, Nitrate Sensitive Areas, Nitrate Vulnerable Zones and World Heritage Sites and Scheduled Ancient Woodland. These searches are conducted using radii of up to 2000m.

8. Natural Hazards

Provides information on a range of natural hazards that may pose a risk to the study site. These factors include natural ground subsidence.

9. Mining

Provides information on areas of coal and shallow mining.

10. Contacts

This section of the report provides contact points for statutory bodies and data providers that may be able to provide further information on issues raised within this report. Alternatively, GroundSure provide a free Technical Helpline (08444 159000) for further information and guidance.

Note: Maps

Only certain features are placed on the maps within the report. All features represented on maps found within this search are given an identification number. This number identifies the feature on the mapping and correlates it to the additional information provided below. This identification number precedes all other information and takes the following format -Id: 1, Id: 2, etc. Where numerous features on the same map are in such close proximity that the numbers would obscure each other a letter identifier is used instead to represent the features. (e.g. Three features which overlap may be given the identifier "A" on the map and would be identified separately as features 1A, 3A, 10A on the data tables provided).

Where a feature is reported in the data tables to a distance greater than the map area, it is noted in the data table as "Not Shown".

All distances given in this report are in Metres (m). Directions are given as compass headings such as N: North, E: East, NE: North East from the nearest point of the study site boundary.















1. Environmental Permits, Incidents and Registers Map



Environmental Permits, Incidents and Registers Legend

Mapping sourced from 

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- | | | | | | |
|---|--------------------|---|-------------------------------|---|--|
|  | Site Outline |  | Recorded Pollution Incident |  | RAS 3 & 4 Authorisations |
|  | Search Buffers (m) |  | Dangerous Substances (List 1) |  | Part A(1) Authorised Processes and Historic IPC Authorisations |
| | |  | Dangerous Substances (List 2) |  | Part A(2) and Part B Authorised Processes |
| | |  | Water Industry Referrals |  | COMAH / NIHS Sites |
| | |  | Licenced Discharge Consents |  | Sites Determined as Contaminated Land |
| | |  | Red List Discharge Consents |  | Hazardous Substance Consents and Enforcements |



1. Environmental Permits, Incidents and Registers

1.1 Industrial Sites Holding Licences and/or Authorisations

Searches of information provided by the Environment Agency and Local Authorities reveal the following information:

1.1.1 Records of historic IPC Authorisations within 500m of the study site:

0

Database searched and no data found.

1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:

0

Database searched and no data found.

1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:

0

Database searched and no data found.

1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:

0

Database searched and no data found.

1.1.5 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.6 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:

0

Database searched and no data found.

1.1.7 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site:

0

Database searched and no data found.

1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

1.1.9 Records of Licensed Discharge Consents within 500m of the study site:

8

The following Licensed Discharge Consents records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
5	92.0	SE	567840 246550	Address: The Oakes, Haverhill Road, Little Wrattling, Haverhill, Suffolk, CB9 7UD Effluent Type: Sewage Discharges - Final/treated Effluent - Not Water Company Permit Number: PRENF11024 Permit Version: 1	Receiving Water: Tributary River Stour Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 26/8/1997 Effective Date: 26/8/1997 Revocation Date: -
6	306.0	S	566100 246600	Address: Parkway Extension, Withersfield Road, Haverhill, Suffolk Effluent Type: Miscellaneous Discharges - Surface Water Permit Number: PR2NFE01471 Permit Version: 1	Receiving Water: Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 19/3/1971 Effective Date: 19/3/1971 Revocation Date: 7/3/1994
7	306.0	NE	568190 246930	Address: Little Wrattling Ps, Haverhill Road, Little Wrattling, Haverhill, Suffolk, CB9 7UD Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: AW2NFE02280 Permit Version: 1	Receiving Water: Trib Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 22/6/1983 Effective Date: 22/6/1983 Revocation Date: -
8	403.0	SW	565900 246600	Address: Withersfield Road, Haverhill, Suffolk, CB9 7RR Effluent Type: Miscellaneous Discharges - Surface Water Permit Number: PR2NFE04176 Permit Version: 1	Receiving Water: Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 1/7/1976 Effective Date: 1/7/1976 Revocation Date: 15/3/1994
9	427.0	SW	566750 246200	Address: Ann Suckling's Ln, Haverhill, Suff CB9 7TA Effluent Type: Unspecified Permit Number: AW2NFE01573 Permit Version: 1	Receiving Water: Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 16/2/1973 Effective Date: 16/2/1973 Revocation Date: 5/11/2001

ID	Distance	Direction	NGR	Details	
10	456.0	SW	566700 246200	Address: Eastern Av/withersfld Rd, Haverhill. Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: AW2NFE07659 Permit Version: 1	Receiving Water: Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 18/1/1960 Effective Date: 18/1/1960 Revocation Date: -
11 A	461.0	S	566450 246290	Address: Hales Barn Farm, Withersfield Road, Haverhill, Suffolk Effluent Type: Miscellaneous Discharges - Surface Water Permit Number: PR2NFE11773 Permit Version: 1	Receiving Water: Unknown Trib. Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 10/8/1973 Effective Date: 10/8/1973 Revocation Date: 4/3/1993
12	472.0	SW	566400 246300	Address: Withersfield Road, Haverhill, Suffolk Effluent Type: Miscellaneous Discharges - Surface Water Permit Number: PR2NFE16864 Permit Version: 1	Receiving Water: Stour Brook Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: - Effective Date: - Revocation Date: -

1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:

0

Database searched and no data found.

1.2 Dangerous or Hazardous Sites

Records of COMAH & NIHHS sites within 500m of the study site:

0

Database searched and no data found.

1.3 Environment Agency Recorded Pollution Incidents

1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:

4

The following NIRS List 2 records are represented as points on the Environmental Permits, Incidents and Registers Map:

ID	Distance	Direction	NGR	Details	
1A	460.0	S	566446 246293	Incident Date: 03/01/2003 Incident Identification: 129058 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2A	460.0	S	566446 246293	Incident Date: 03/01/2003 Incident Identification: 129058 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3B	485.0	SW	566714 246154	Incident Date: 30/12/2002 Incident Identification: 128033 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Distance	Direction	NGR	Details	
4B	492.0	SW	566720 246141	Incident Date: 13/03/2003 Incident Identification: 142752 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

1.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:

0

Database searched and no data found.

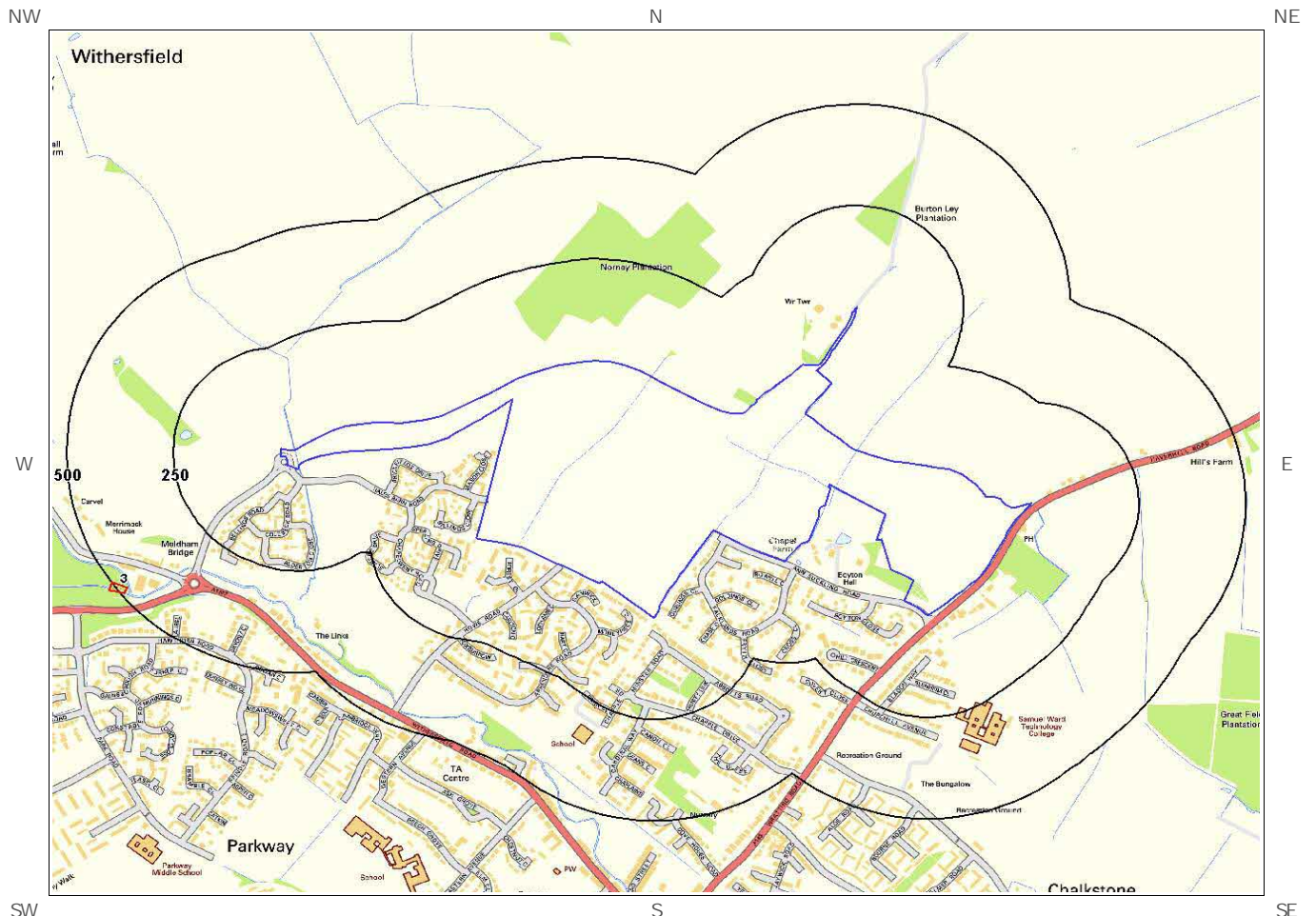
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990

How many records of sites determined as contaminated land under Section 78R of the Environmental Protection Act 1990 are there within 500m of the study site?

0

Database searched and no data found.

2. Landfill and Other Waste Sites Map



Landfill and Other Waste Sites Legend



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- | | | | | | |
|---|--------------------------|---|---------------------------|---|----------------------------------|
|  | Site Outline |  | E.A. Active Landfill |  | Historic and Planned Waste Sites |
|  | E.A. Historic Landfill |  | E.A. Licensed Waste Site | | |
|  | Local Authority Landfill |  | BGS / DoE Survey Landfill | | |



2. Landfill and Other Waste Sites

2.1 Landfill Sites

2.1.1 Records from Environment Agency landfill data within 1000m of the study site:

0

Database searched and no data found.

2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site:

4

The following landfill records are represented as either points or polygons on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
3	480.0	SW	565700 246500	Site Address: Old Meldham Bridge Brickyard, Old Meldham Bridge Brickyard, Withersfield Waste Licence: - Site Reference: SE22 Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: -
Not shown	1205.0	S	568000 245200	Site Address: Junction Hole, Relief Road, Haverhill, Suffolk Waste Licence: - Site Reference: - Waste Type: - Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: Haverhill Urban District Council
Not shown	1344.0	S	567900 245100	Site Address: Railway Cutting, Relief Road, Haverhill, Suffolk Waste Licence: - Site Reference: - Waste Type: Commercial, Household, Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: Haverhill Urban District Council
Not shown	1344.0	S	568100 245100	Site Address: Millfields Way, Millfields Way, Haverhill Waste Licence: - Site Reference: SE08 Waste Type: Household, Environmental Permitting Regulations (Waste) Reference: - Licence Issue: Licence Surrendered: Licence Hold Address: - Operator: St Edmondsbury Borough Council

2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:

2

The following landfill records are represented as points on the Landfill and Other Waste Sites map:

ID	Distance (m)	Direction	NGR	Details
Not shown	1372.0	S	56800 0.0 24520 0.0	Address: Junction Hole, Relief Rd, Haverhill, Suffolk BGS Number: 2413.0 Risk: Risk to major aquifer Waste Type: N/A
Not shown	1400.0	S	56810 0.0 24520 0.0	Address: Junction Hole, Relief Rd, Haverhill, Suffolk BGS Number: 2414.0 Risk: Risk to major aquifer Waste Type: N/A

2.1.4 Records of Local Authority landfill sites within 1500m of the study site:

0

Database searched and no data found.

2.2 Other Waste Sites

2.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site:

0

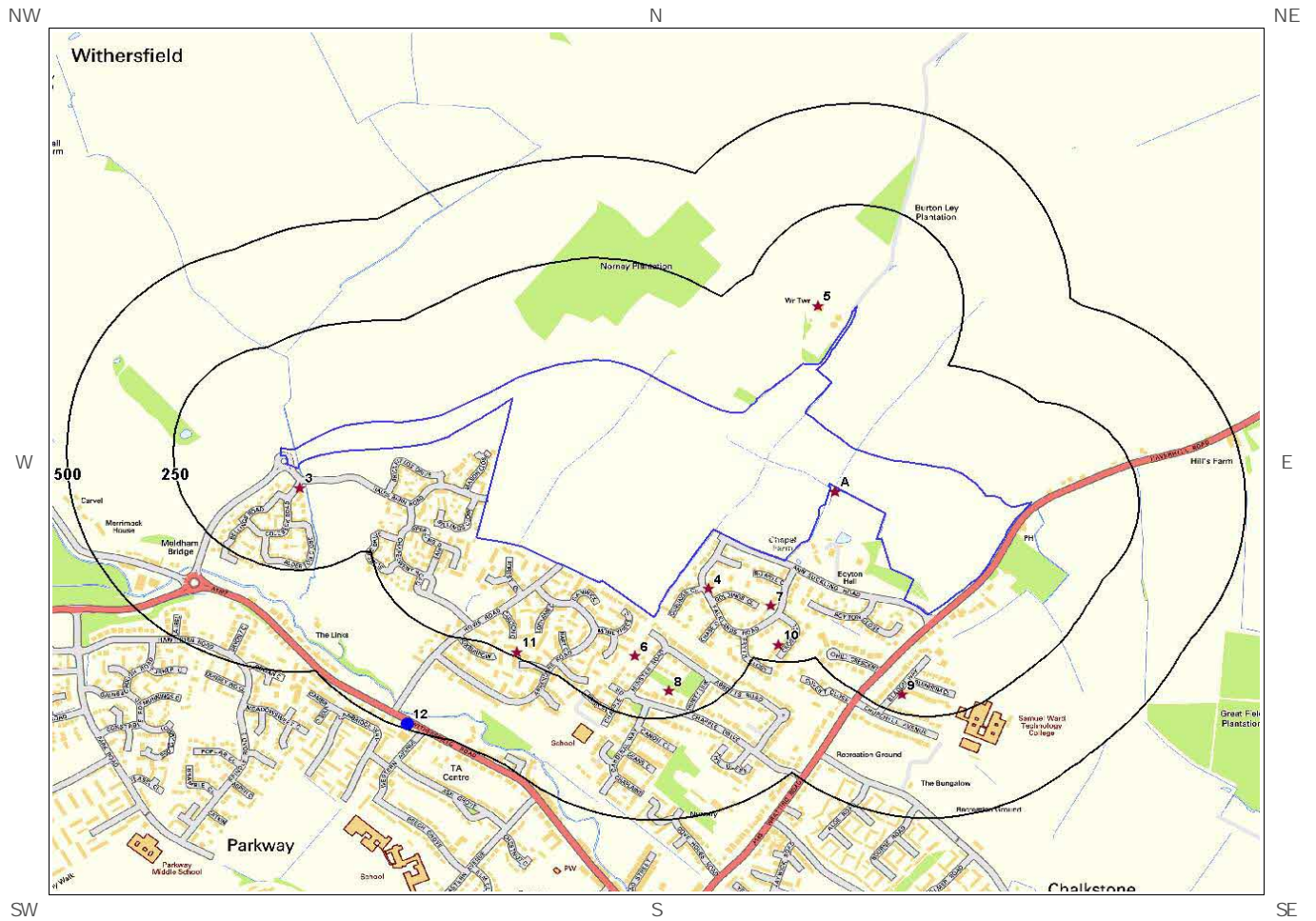
Database searched and no data found.

2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

3. Current Land Use Map



Current Land Use Legend



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Site Outline



Current Industrial Sites



Search Buffers (m)



Petrol & Fuel Sites



Underground High Pressure Oil & Fuel Pipelines



3. Current Land Uses

3.1 Current Industrial Data

Records of potentially contaminative industrial sites within 250m of the study site:

11

The following records are represented as points on the Current Land Uses map.

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1A	10.0	SW	Pylon	567449 246835	CB9	Electrical Features	Infrastructure and Facilities
2A	10.0	SW	Communications Mast	567449 246834	CB9	Telecommunications Features	Infrastructure and Facilities
3	47.0	S	Electricity Sub Station	566198 246844	CB9	Electrical Features	Infrastructure and Facilities
4	75.0	SE	Electricity Sub Station	567153 246596	CB9	Electrical Features	Infrastructure and Facilities
5	80.0	W	Water Tower	567410 247292	CB9	Water Pumping Stations	Industrial Features
6	106.0	SW	Teletherm Ltd	566981 246430	25, Minster Road, Haverhill, CB9 0DR	Electrical and Electronic Engineers	Engineering Services
7	117.0	S	Test Plugs Ltd	567298 246553	12, Falklands Road, Haverhill, CB9 0EA	Measurement and Inspection Equipment	Industrial Products
8	185.0	S	Electricity Sub Station	567061 246344	CB9	Electrical Features	Infrastructure and Facilities
9	205.0	S	Electricity Sub Station	567605 246335	CB9	Electrical Features	Infrastructure and Facilities
10	208.0	S	Style Carpets	567316 246457	20, Cross Close, Haverhill, CB9 0EB	Construction Completion Services	Construction Services
11	238.0	SW	Electricity Sub Station	566705 246440	CB9	Electrical Features	Infrastructure and Facilities

3.2 Petrol and Fuel Sites

Records of petrol or fuel sites within 500m of the study site:

1

The following petrol or fuel site records provided by Catalist are represented as points on the Current Land Use map:

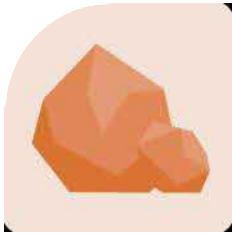
ID	Distance (m)	Direction	NGR	Company	Address	LPG	Status
12	487.0	S	566449 246263	Obsolete	Mount Pleasant Service Station, Withersfield Road, Withersfield Road, Haverhill, Suffolk, CB9 7RN	Not Applicable	Obsolete

3.3 Underground High Pressure Oil and Gas Pipelines

Records of high pressure underground pipelines within 500m of the study site:

0

Database searched and no data found.



4. Geology

4.1 Artificial Ground and Made Ground

Database searched and no data found.

The database has been searched on site, including a 50m buffer.

4.2 Superficial Ground and Drift Geology

The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LOFT-DMTN	LOWESTOFT FORMATION	DIAMICTON

4.3 Bedrock and Solid Geology

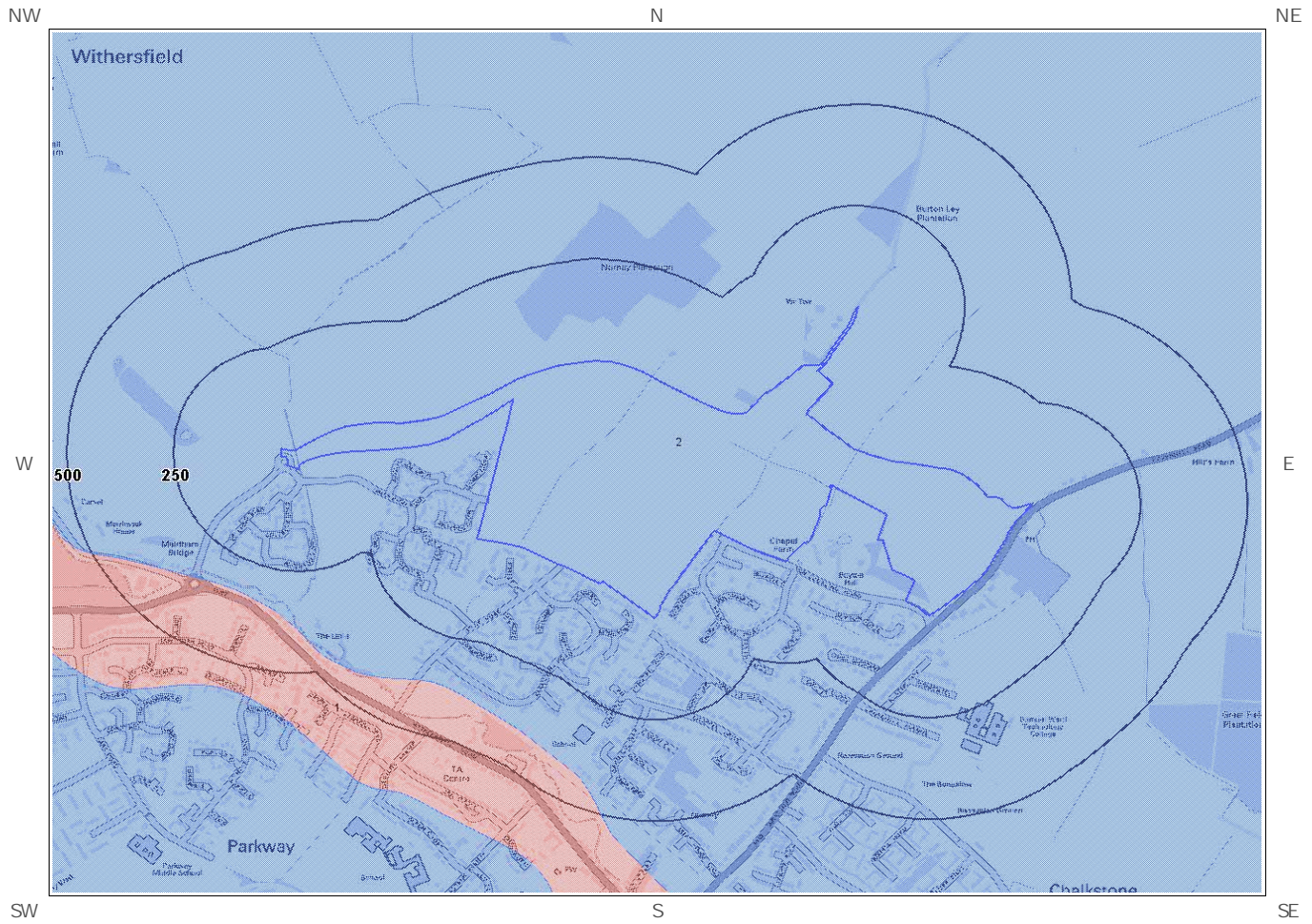
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
LESE-CHLK	LEWES NODULAR CHALK FORMATION AND SEAFORD CHALK FORMATION (UNDIFFERENTIATED)	CHALK

(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

5. Hydrogeology and Hydrology

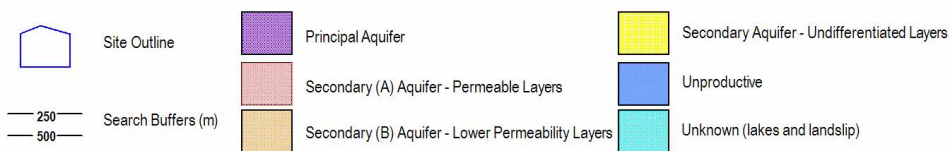
5a. Aquifer Within Superficial Geology



Aquifer Within Superficial Geology



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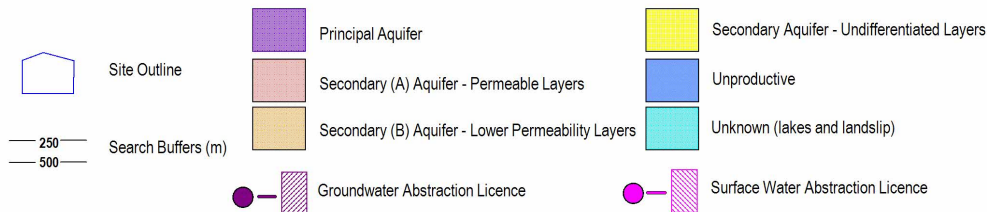
5b. Aquifer Within Bedrock Geology and Abstraction Licenses



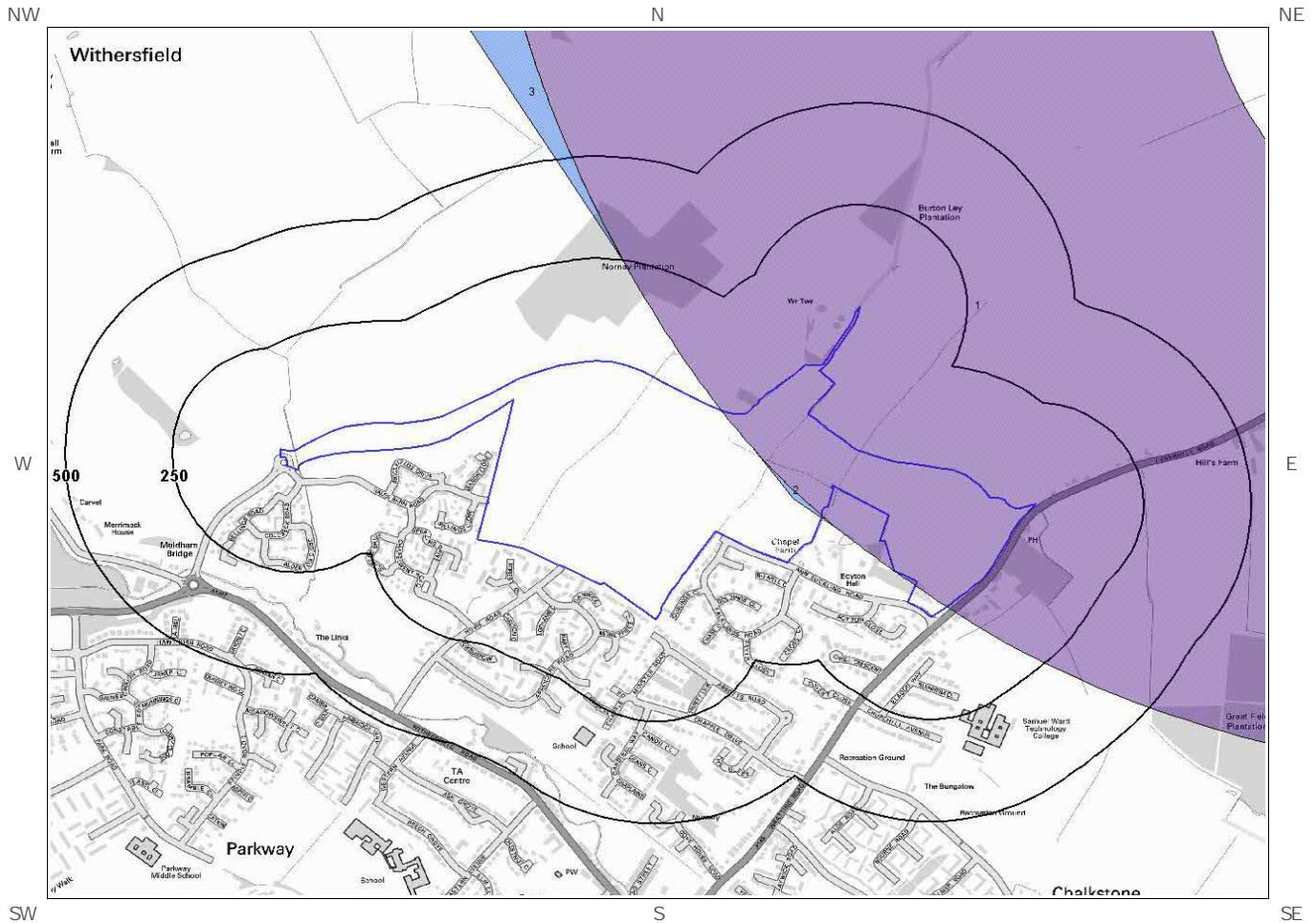
Aquifer Within Bedrock Geology and Abstraction Licenses



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

5c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



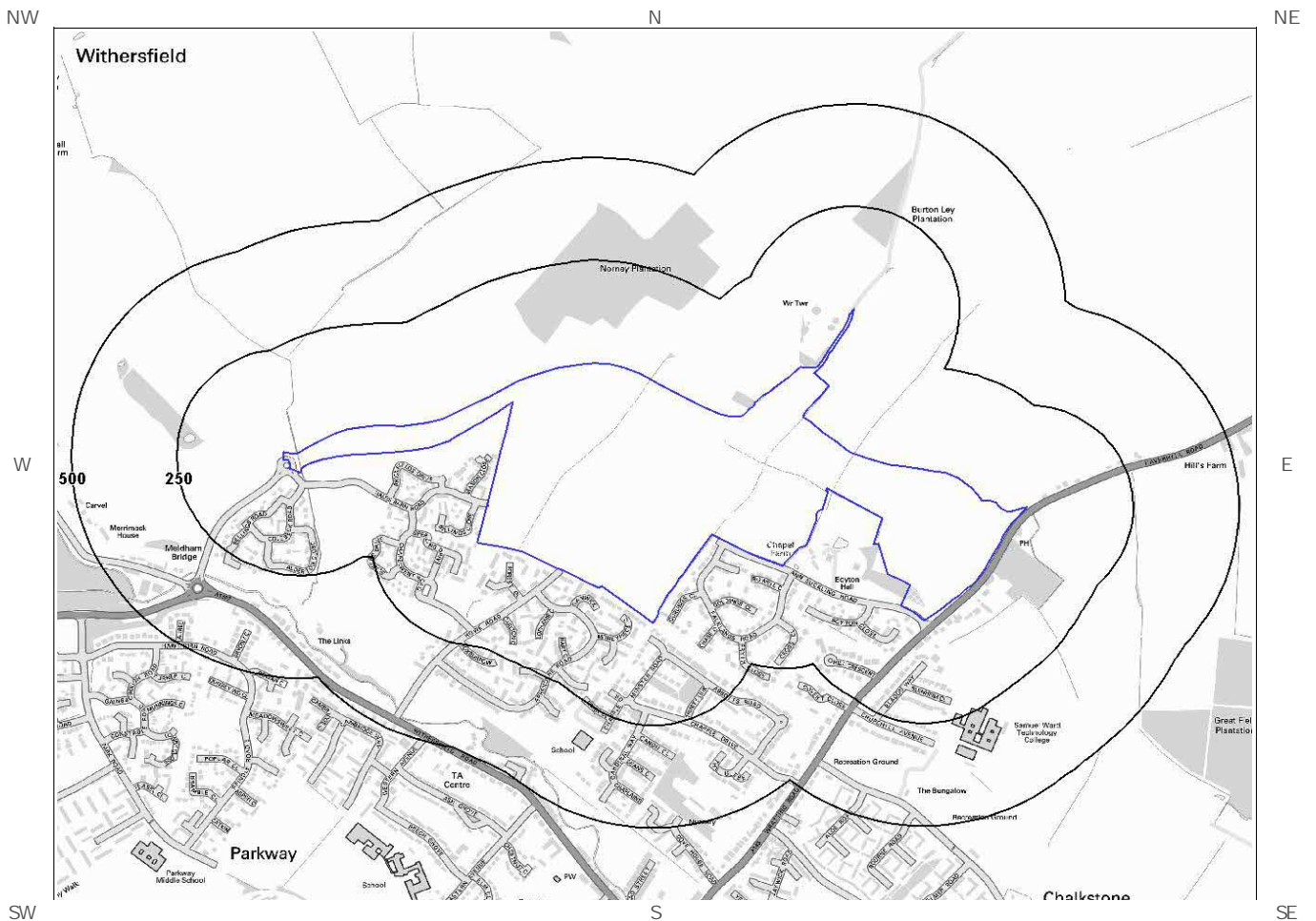
Map Legend Source Protection Zones and Potable Water Abstraction Licenses



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-  Site Outline
-  Source Protection Zone 1 - Inner Catchment
-  Source Protection Zone 2 - Outer Catchment
-  Source Protection Zone 3 - Total Catchment
-  Source Protection Zone 4 - Zone of Special Interest
-  Search Buffers (m)
-  Potable Water Abstraction Licence







5d. Hydrology Source Protection Zones within confined aquifer



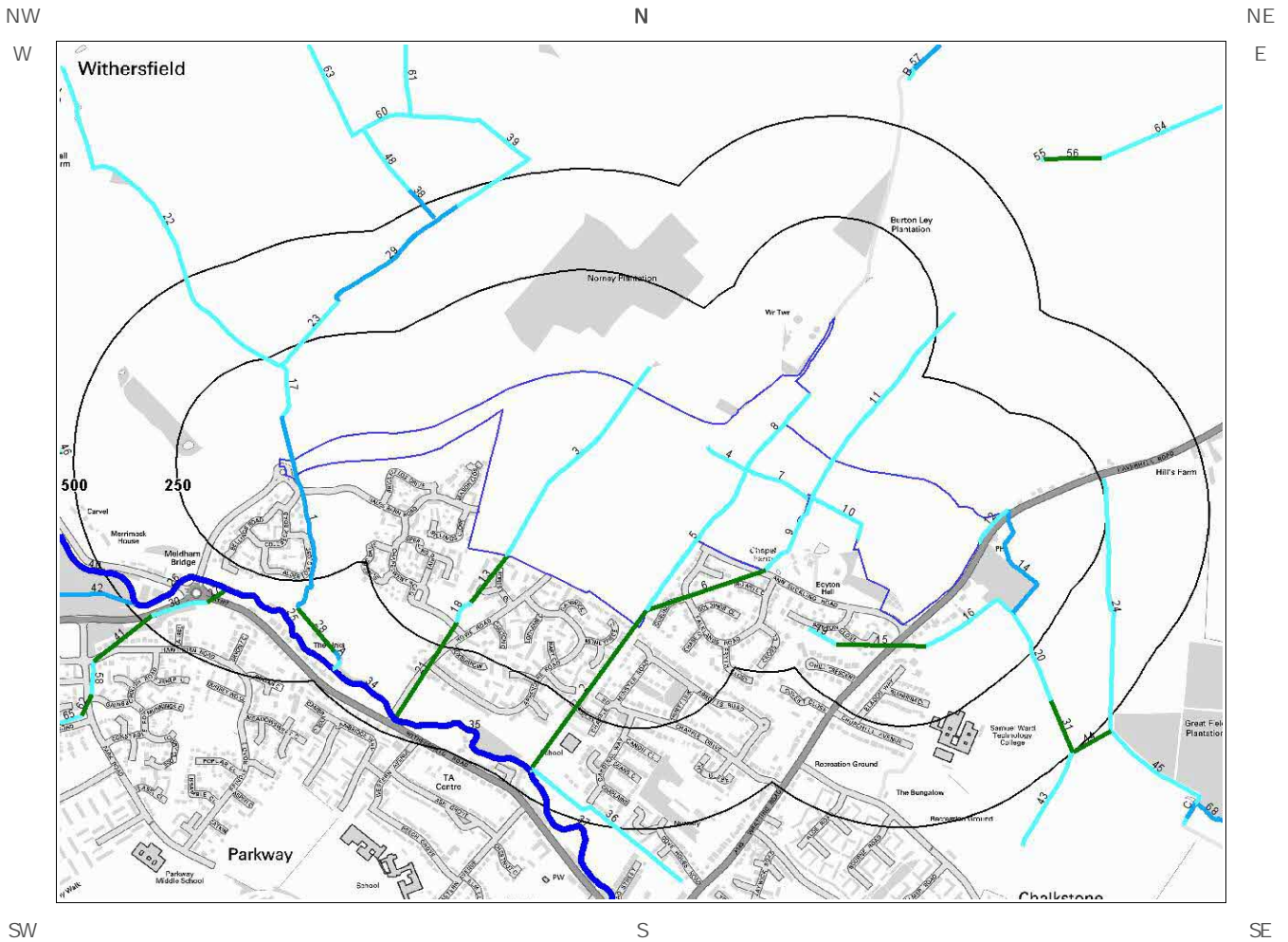
Hydrology Source Protection Zones



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-  Site Outline
-  Search Buffers (m)
-  Source Protection Zone 1C - Inner Catchment within Confined Aquifer
-  Source Protection Zone 2C - Outer Catchment within Confined Aquifer
-  Source Protection Zone 3C - Total Catchment within Confined Aquifer
-  Potable Water Abstraction Licence











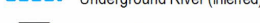
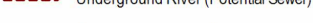
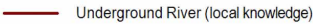
5 e. Hydrology – Detailed River Network and River Quality

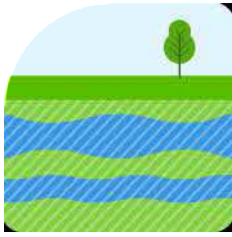


Hydrology – Detailed River Network and River Quality



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- | | | | | | |
|---|--------------------|---|---------------------------------------|--|-------------------------------------|
|  | Site Outline |  | Primary River |  | Canal |
|  | 250 |  | Secondary River |  | Canal Tunnel |
|  | 500 |  | Tertiary River |  | Culvert |
| | Search Buffers (m) |  | Lake/Reservoir |  | Multiple Channel Culvert |
| | |  | Underground River (inferred) |  | Underground River (Potential Sewer) |
| | |  | General Quality Assessment: Biology |  | Underground River (local knowledge) |
| | |  | General Quality Assessment: Chemistry | | |



5. Hydrogeology and Hydrology

5.1 Aquifer within Superficial Deposits

Are there records of strata classification within the superficial geology at or in proximity to the property? **Yes**

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (5a):

ID	Distance (m)	Direction	Designation	Description
2	0.0	On Site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
1	329.0	SW	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

5.2 Aquifer within Bedrock Deposits

Are there records of strata classification within the bedrock geology at or in proximity to the property? **Yes**

From 1 April 2010, the Environment Agency's Groundwater Protection Policy has been using aquifer designations consistent with the Water Framework Directive. For further details on the designation and interpretation of this information, please refer to the GroundSure Enviroinsight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	Designation	Description
1	0.0	On Site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers

5.3 Groundwater Abstraction Licences

Are there any Groundwater Abstraction Licences within 2000m of the study site?

Yes

The following Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1026.0	S	567000 245500	Licence No: 8/36/11/*G/0002 Details: General use relating to Secondary Category (Medium Loss) Direct Source: Ground Water Source Of Supply Point: Borehole At Haverhill Data Type: Point Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/6/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/1/1997 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Process Water Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1705.0	S	566850 244830	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 1 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:
Not shown	1741.0	S	566800 244800	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 2, Haverhill Data Type: Point Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1741.0	S	566800 244800	Licence No: 8/36/11/*G/0001 Details: Process water Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 2, Haverhill Data Type: Point Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1741.0	S	566800 244800	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 2, Haverhill Data Type: Point Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1741.0	S	566800 244800	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 2, Haverhill Data Type: Point Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point	Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point	Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV1968 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 101 Version Start Date: 1/1/2005 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point	Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1821.0	S	566790 244720	Licence No: 8/36/11/*G/0001 Details: Process Water Direct Source: Ground Water Source Of Supply Point: Borehole 2 Duddery Hill Haverhill Data Type: Point	Annual Volume (m ³): 180000 Max Daily Volume (m ³): 720 Original Application No: EV2472 Original Start Date: 20/4/1966 Expiry Date: - Issue No: 102 Version Start Date: 17/12/2008 Version End Date:
Not shown	1826.0	NE	569200 248100	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Chalk Bore 1 - Gt Wrattling Data Type: Point	Annual Volume (m ³): 6314500 Max Daily Volume (m ³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: 1/4/2010 Version End Date:
Not shown	1826.0	NE	569200 248100	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Chalk Bore 2 - Gt Wrattling Data Type: Point	Annual Volume (m ³): 6314500 Max Daily Volume (m ³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: 1/4/2010 Version End Date:
Not shown	1840.0	S	566800 244700	Licence No: 8/36/11/*G/0001 Details: Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 1, Haverhill Data Type: Point	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1840.0	S	566800 244700	Licence No: 8/36/11/*G/0001 Details: Boiler Feed Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 1, Haverhill Data Type: Point	Annual Volume (m ³): - Max Daily Volume (m ³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1840.0	S	566800 244700	Licence No: 8/36/11/*G/0001 Details: Non-Evaporative Cooling Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 1, Haverhill Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1840.0	S	566800 244700	Licence No: 8/36/11/*G/0001 Details: Process water Direct Source: Ground Water Source Of Supply Point: I.f.f. Bore 1, Haverhill Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1994 Version End Date:
Not shown	1849.0	E	569640 247460	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Borehole At Kedington Suffolk Data Type: Point Annual Volume (m³): 6314500 Max Daily Volume (m³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: 1/4/2010 Version End Date:

5.4 Surface Water Abstraction Licences

Are there any Surface Water Abstraction Licences within 2000m of the study site? Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (5b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1973.0	NE	569400 248100	Licence No: 8/36/11/*S/0080 Details: Make-Up Or Top Up Water Direct Source: Surface Water Source Of Supply Point: Trib Of R Stour At Great Wratting Data Type: Point Annual Volume (m³): 5000 Max Daily Volume (m³): 20 Application No: - Original Start Date: 1/7/1998 Expiry Date: - Issue No: 103 Version Start Date: 1/5/2000 Version End Date:
Not shown	1973.0	NE	569400 248100	Licence No: 8/36/11/*S/0080 Details: Make-Up or Top Up Water Direct Source: Surface Water Source Of Supply Point: River Stour At Great Wratting Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 1/7/1998 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2000 Version End Date:

5.5 Potable Water Abstraction Licences

Are there any Potable Water Abstraction Licences within 2000m of the study site? Yes

The following Potable Water Abstraction Licences records are represented as points, lines and regions on the SPZ and Potable Water Abstraction Licences Map (5c):

ID	Distance (m)	Direction	NGR	Details	
Not shown	1826.0	NE	569200 248100	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Chalk Bore 1 - Gt Wratting Data Type: Point	Annual Volume (m ³): 6314500 Max Daily Volume (m ³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: Version End Date:
Not shown	1826.0	NE	569200 248100	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Chalk Bore 2 - Gt Wratting Data Type: Point	Annual Volume (m ³): 6314500 Max Daily Volume (m ³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: Version End Date:
Not shown	1849.0	E	569640 247460	Licence No: 8/36/11/*G/0070 Details: Potable Water Supply - Direct Direct Source: Ground Water Source Of Supply Point: Borehole At Kedington Suffolk Data Type: Point	Annual Volume (m ³): 6314500 Max Daily Volume (m ³): 17300 Original Application No: - Original Start Date: 1/1/1989 Expiry Date: - Issue No: 103 Version Start Date: Version End Date:

5.6 Source Protection Zones

Are there any Source Protection Zones within 500m of the study site? Yes

The following Source Protection Zones records are represented on the SPZ and Potable Water Abstraction Map (5c):

ID	Distance (m)	Direction	Type	Description
1	0.0	On Site	2	Outer Catchment
2	0.0	On Site	3	Total Catchment
3	236.0	N	3	Total Catchment

5.7 Source Protection Zones within Confined Aquifer

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site?

No

Historically, Source Protection Zone maps have been focused on regulation of activities which occur at or near the ground surface, such as prevention of point source pollution and bacterial contamination of water supplies. Sources in confined aquifers were often considered to be protected from these surface pressures due to the presence of a low permeability confining layer (e.g. glacial till, clay). The increased interest in subsurface activities such as onshore oil and gas exploration, ground source heating and cooling requires protection zones for confined sources to be marked on SPZ maps where this has not already been done.

Database searched and no data found.

5.8 Groundwater Vulnerability and Soil Leaching Potential

Is there any Environment Agency information on groundwater vulnerability and soil leaching potential within 500m of the study site?

Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	Major Aquifer/Intermediate Leaching Potential	I1	Soils which can possibly transmit a wide range of pollutants.
0	On Site	Major Aquifer/High Leaching Potential	HU	Soil information for urban areas and restored mineral workings. These soils are therefore assumed to be highly permeable in the absence of site-specific information.

5.9 River Quality

Is there any Environment Agency information on river quality within 1500m of the study site?

Yes

5.9.1 Biological Quality:

Biological Quality data describes water quality in terms of 83 groups of macroinvertebrates, some of which are pollution sensitive. The results are graded from A ('Very Good') to F ('Bad').

The following Biological Quality records are shown on the Hydrology Map (5d):

ID	Distance (m)	Direction	NGR	River Quality Grade	Biological Quality Grade				
					2005	2006	2007	2008	2009
Not shown	1282.0	NW	565200 247800	River Name: Stour Brook Reach: Withersfield...haverhill Stw End/Start of Stretch: Start of Stretch NGR	C	B	B	B	C

5.9.2 Chemical Quality:

Database searched and no data found.

5.10 Detailed River Network

Are there any Detailed River Network entries within 500m of the study site?

Yes

The following Detailed River Network records are represented on the Hydrology Map (5d):

ID	Distance (m)	Direction	Details
1	0.0	On Site	River Name: - Welsh River Name: - Alternative Name: - River Type: Secondary River Main River Status: Currently Undefined
2	0.0	On Site	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined
3	0.0	On Site	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
4	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
5	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
6	0.0	On Site	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined
7	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
8	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
9	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
10	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
11	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
12	0.0	On Site	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
13	0.0	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined
14	13.0	E	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Secondary River Main River Status: Currently Undefined
15	51.0	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined
16	76.0	SE	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
17	105.0	N	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
18	130.0	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
19	135.0	SW	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
20	157.0	SE	River Name: Drain Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
21	184.0	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
22	216.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
23	216.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
24	251.0	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
25	305.0	S	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
26	316.0	SW	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
27	316.0	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
28	318.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
29	332.0	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
30	368.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
31	370.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
32 A	414.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
33 A	418.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
34	424.0	SW	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
35	426.0	SW	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
36	436.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
37	443.0	SW	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
38	459.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
39	466.0	N	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
40	466.0	SW	River Name: Stour Brook Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
41	476.0	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
42	484.0	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

5.11 Surface Water Features

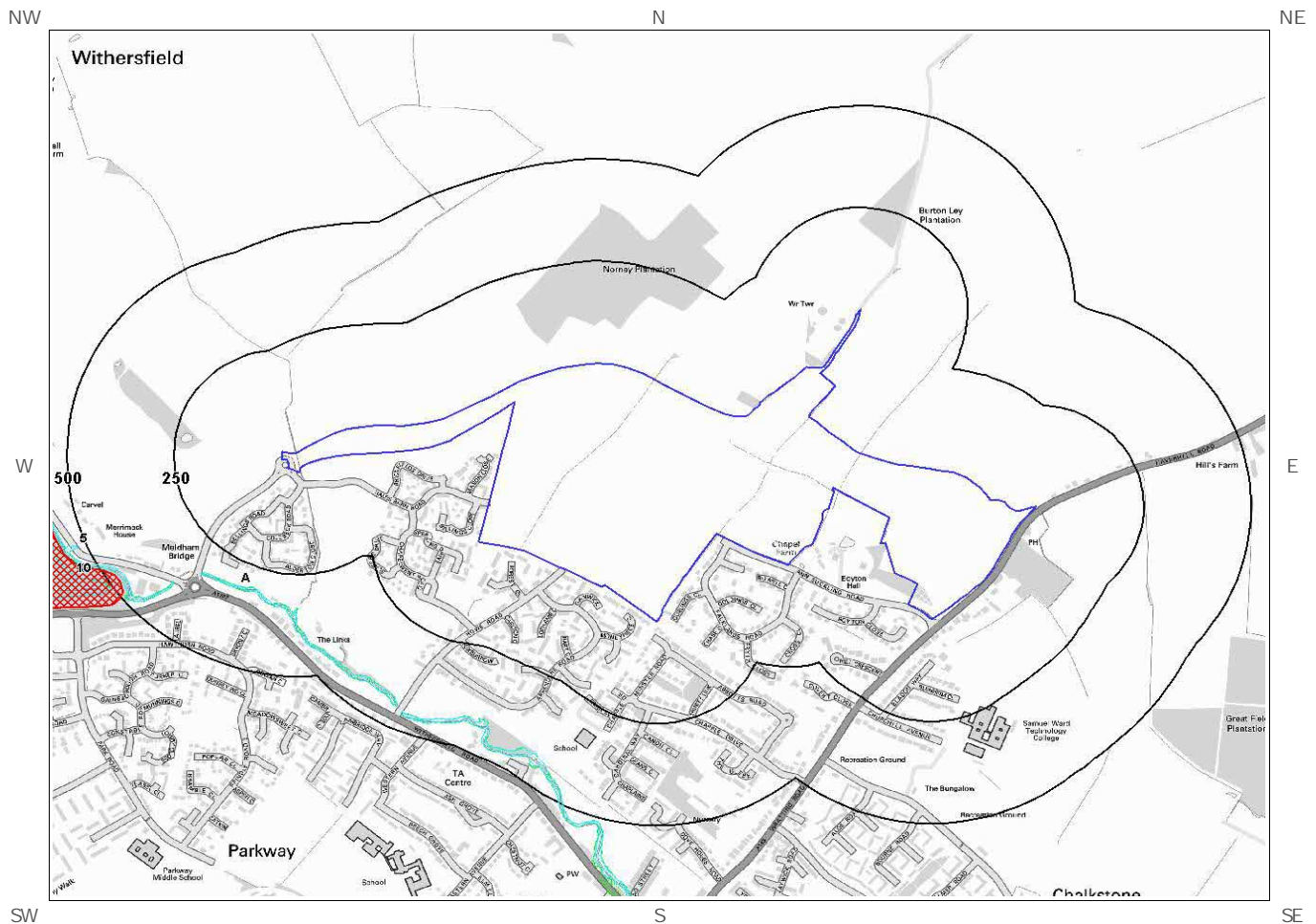
Are there any surface water features within 250m of the study site?

Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
0.0	On Site
35.0	SE
74.0	N
76.0	SE
105.0	N
130.0	S
135.0	SW
158.0	SE
224.0	NW
224.0	NW
248.0	SE








6. Environment Agency Flood Map for planning (from rivers and the sea)



Environment Agency Flood Map for planning (from rivers and the sea)



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-  Site Outline
-  Search Buffers (m)
-  Zone 2 Floodplain
-  Zone 3 Floodplain
-  Flood Storage Area
-  Area Benefiting from Flood Defences
-  Flood Defences



6. Flooding

6.1 Zone 2 Flooding

Environment Agency Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 1 –Environment Agency Flood Map for Planning:

Is the site within 250m of an Environment Agency Zone 2 floodplain? No

Database searched and no data found.

6.2 Zone 3 Flooding

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 1 –Environment Agency Flood Map for Planning.

Is the site within 250m of an Environment Agency Zone 3 floodplain? No

Database searched and no data found.

6.3 Flood Defences

Are there any Flood Defences within 250m of the study site? No

Database searched and no data found.

6.4 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site? No

6.5 Areas benefiting from Flood Storage

Are there any areas used for Flood Storage within 250m of the study site? No

6.6 Groundwater Flooding Susceptibility Areas

6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?

Yes

Does this relate to Clearwater Flooding or Superficial Deposits Flooding?

Clearwater Flooding

Notes: Groundwater flooding may either be associated with shallow unconsolidated sedimentary aquifers which overlie unproductive aquifers (Superficial Deposits Flooding), or with unconfined aquifers (Clearwater Flooding).

6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?

Limited potential

Where limited potential for groundwater flooding to occur is indicated, this means that although given the geological conditions there may be a groundwater flooding hazard, unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area, you need take no further action in relation to groundwater flooding hazard.

6.7 Groundwater Flooding Confidence Areas

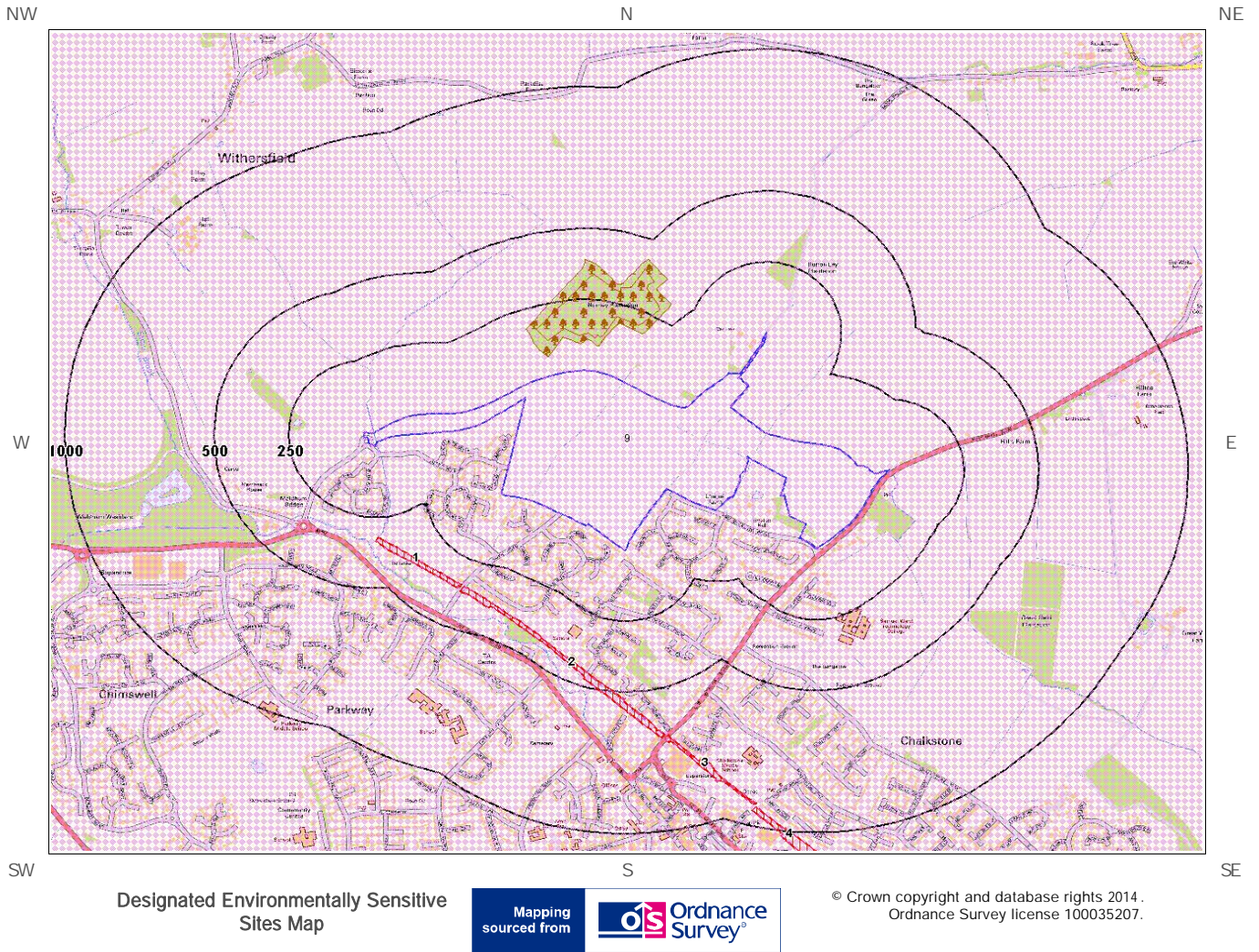
What is the British Geological Survey confidence rating in this result?















High

Notes: Groundwater flooding is defined as the emergence of groundwater at the ground surface or the rising of groundwater into man-made ground under conditions where the normal range of groundwater levels is exceeded.

The confidence rating is on a threefold scale - Low, Moderate and High. This provides a relative indication of the BGS confidence in the accuracy of the susceptibility result for groundwater flooding. This is based on the amount and precision of the information used in the assessment. In areas with a relatively lower level of confidence the susceptibility result should be treated with more caution. In other areas with higher levels of confidence the susceptibility result can be used with more confidence.

7. Designated Environmentally Sensitive Sites Map



- | | | | | |
|---|--|---|--|---|
|  Site Outline |  SAC |  SSSI |  NNR |  World Heritage Sites |
|  Areas of Outstanding Natural Beauty |  SPA |  Ramsar |  LNR |  Environmentally Sensitive Areas |
| |  Nitrate Vulnerable Zones |  Nitrate Sensitive Areas |  National Parks |  Ancient Woodlands |



7. Designated Environmentally Sensitive Sites

Presence of Designated Environmentally Sensitive Sites within 2000m of the study site? Yes

7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site: 0

Database searched and no data found.

7.2 Records of National Nature Reserves (NNR) within 2000m of the study site: 0

Database searched and no data found.

7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site: 0

Database searched and no data found.

7.4 Records of Special Protection Areas (SPA) within 2000m of the study site: 0

Database searched and no data found.

7.5 Records of Ramsar sites within 2000m of the study site: 0

Database searched and no data found.

7.6 Records of Ancient Woodland within 2000m of the study site:

5

The following Ancient Woodland records are supplied by English Nature/Scottish Natural Heritage/Countryside Council for Wales and are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
10A	67.0	N	NORNEY PLANTATION	Ancient and Semi-Natural Woodland
11A	116.0	N	NORNEY PLANTATION	Ancient Replanted Woodland
Not shown	1101.0	W	HOWE WOOD	Ancient and Semi-Natural Woodland
Not shown	1404.0	NW	UNKNOWN	Ancient and Semi-Natural Woodland
Not shown	1943.0	NW	LITTLELY WOOD	Ancient Replanted Woodland

7.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:

8

The following Local Nature Reserve (LNR) records provided by Natural England/Countryside Council for Wales and Scottish Natural Heritage are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	LNR Name	Data Source
1	321.0	S	Haverhill Railway Walks	Natural England
2	346.0	S	Haverhill Railway Walks	Natural England
3	667.0	S	Haverhill Railway Walks	Natural England
4	932.0	S	Haverhill Railway Walks	Natural England
Not shown	1311.0	S	Haverhill Railway Walks	Natural England
Not shown	1783.0	S	Haverhill Railway Walks	Natural England
Not shown	1811.0	S	Haverhill Railway Walks	Natural England
Not shown	1912.0	S	Haverhill Railway Walks	Natural England

7.8 Records of World Heritage Sites within 2000m of the study site:

0

Database searched and no data found.

7.9 Records of Environmentally Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:

0

Database searched and no data found.

7.11 Records of National Parks (NP) within 2000m of the study site:

0

Database searched and no data found.

7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:

0

Database searched and no data found.

7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:

1

The following Nitrate Vulnerable Zone records produced by DEFRA are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	NVZ Name	Data Source
9	0.0	On Site	NVZ Area	DEFRA



8. Natural Hazards Findings

8.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **GroundSure GeoInsight**, available from [our website](#). The following information has been found:

8.1.1 Shrink Swell

What is the maximum Shrink-Swell* hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

8.1.2 Landslides

What is the maximum Landslide* hazard rating identified on the study site? Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

* This indicates an automatically generated 50m buffer and site.

8.1.3 Soluble Rocks

What is the maximum Soluble Rocks* hazard rating identified on the study site?

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

8.1.4 Compressible Ground

What is the maximum Compressible Ground* hazard rating identified on the study site?

Negligible

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

8.1.5 Collapsible Rocks

What is the maximum Collapsible Rocks* hazard rating identified on the study site?

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

8.1.6 Running Sand

What is the maximum Running Sand** hazard rating identified on the study site?

Very Low

The following natural subsidence information provided by the British Geological Survey is not represented on mapping:

Hazard

Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.

* This indicates an automatically generated 50m buffer and site.



9. Mining

9.1 Coal Mining

Are there any coal mining areas within 75m of the study site?

No

Database searched and no data found.

9.2 Shallow Mining

What is the subsidence hazard relating to shallow mining on-site*?

Negligible

*Please note this data is searched with a 150m buffer.

9.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site?

No

Guidance: No Guidance Required.

Contact Details

GroundSure Helpline
Telephone: 08444 159 000
Info@groundsure.com



British Geological Survey Enquiries

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Keyworth, Nottingham NG12 5GG
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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries



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Email: enquiries@environment-agency.gov.uk



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Local Authority

Authority: St Edmundsbury Borough Council
Phone: 01284 763 233
Web: www.stedmundsbury.gov.uk
Address: Borough Offices, Angel Hill, Bury St Edmunds, Suffolk, IP33 1XB

Gemapping PLC

Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, English Nature who retain the Copyright and Intellectual Property Rights for the data. PointX © Database Right/Copyright, Thomson Directories Limited © Copyright Link Interchange Network Limited © Database Right/Copyright and Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028]. This report has been prepared in accordance with the GroundSure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

“Beneficiary” means the person or entity for whose benefit the Client has obtained the Services.

“Client” means the party or parties entering into a Contract with GroundSure.

“Commercial” means any building or property which is not Residential.

“Confidential Information” means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

“Support Services” means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

“Contract” means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

“Third Party Data Provider” means any third party providing Third Party Content to GroundSure.

“Data Reports” means reports comprising factual data with no accompanying interpretation.

“Fees” has the meaning set out in clause 5.1.

“GroundSure” means GroundSure Limited, a company registered in England and Wales under number 03421028.

“GroundSure Materials” means all materials prepared by GroundSure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

“Intellectual Property” means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

“Mapping” means a map, map data or a combination of historical maps of various ages, time periods and scales.

“Order” means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

“Ordnance Survey” means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

“Order Website” means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

“Report” means a Risk Screening Report or Data Report for Commercial or Residential property.

“Residential” means any building or property used as or intended to be used as a single dwelling.

“Risk Screening Report” means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

“Services” means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

“Site” means the area of land in respect of which the Client has requested GroundSure to provide the Services.

“Third Party Content” means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

“User Guide” means the user guide, as amended from time to time, available upon request from GroundSure and on the website (www.GroundSure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on a Client's order form, printed stationery or other communication, or any terms or conditions

implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition, the Client and Beneficiary acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure's acceptance of an Order shall be binding only when made in writing and signed by GroundSure's authorised representative or when accepted through the Order Website.

3 The Client's obligations

3.1 The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client's approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the GroundSure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

4 Reliance

4.1 The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents:

(i) the Beneficiary,

(ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),

(iv) the first purchaser or first tenant of the Site, and

(v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1 GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together “Fees”).

5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to

(i) full payment of all relevant Fees and
(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7. Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death

or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for

(i) loss of profits;

(ii) loss of business;

(iii) depletion of goodwill and/or similar losses;

(iv) loss of anticipated savings;

(v) loss of goods;

(vi) loss of contract;

(vii) loss of use;

(viii) loss or corruption of data or information;

(ix) business interruption;

(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;

(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;

(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;

(xiii) loss or damage to a computer, software, modem, telephone or other property; and

(xiv) loss or damage caused by a delay or loss of us GroundSure's internet ordering service.

7.5 GroundSure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

8 GroundSure's right to suspend or terminate

8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to GroundSure within 30 days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure's acceptance of the Order; and

(ii) the Reports and/or Mapping provided under this Contract are

(a) supplied to the Client's specification(s) and in any event

(b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficia

GroundSure's possession or control; and

(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract.

11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of GroundSure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.

12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No failure on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

- (i) the Client or Beneficiary's failure to provide facilities, access or information;
- (ii) fire, storm, flood, tempest or epidemic;
- (iii) Acts of God or the public enemy;
- (iv) riot, civil commotion or war;
- (v) strikes, labour disputes or industrial action;
- (vi) acts or regulations of any governmental or other agency;
- (vii) suspension or delay of services at public registries by Third Party Data Providers;
- (viii) changes in law; or
- (ix) any other reason beyond GroundSure's reasonable control.

In the event that GroundSure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then GroundSure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English

law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law. © GroundSure Limited June 2013



Geosphere Environmental Ltd
BRIGHTWELL BARNES, IPSWICH ROAD,
Suffolk,
Brightwell, IP10 0BJ

GroundSure Reference: HMD-369-1706443
Your Reference: 995,SI
Report Date: Oct 9, 2014
Report Delivery Method: Email - pdf

GroundSure Geoinsight

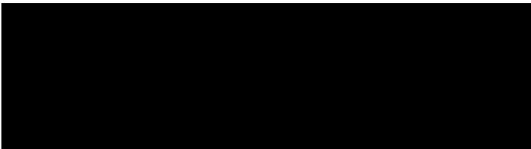
Address: Land to NW of Haverhill, CB9 0EH

Dear Sir/ Madam,

Thank you for placing your order with GroundSure. Please find enclosed the **GroundSure GeoInsight** as requested.

If you need any further assistance, please do not hesitate to contact our helpline on 08444 159000 quoting the above GroundSure reference number.

Yours faithfully,



Managing Director
Groundsure Limited

Enc.
GroundSure GeoInsight



GroundSure GeoInsight

Address: Land to NW of Haverhill, CB9 0EH
Date: Oct 9, 2014
Reference: HMD-369-1706443
Client: Geosphere Environmental Ltd

NW N NE



SW S SE

Aerial Photograph Capture date: 24-May-2009
Grid Reference: 567002,246841
Site Size: 47.10ha

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Overview of Findings

The GroundSure GeoInsight provides high quality geo-environmental information that allows geo-environmental professionals and their clients to make informed decisions and be forewarned of potential ground instability problems that may affect the ground investigation, foundation design and possibly remediation options that could lead to possible additional costs.

The report is based on the BGS 1:50,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Shallow Mining data and Borehole Records, Coal Authority data including brine extraction areas, PBA non-coal mining and natural cavities database, Johnson Poole and Bloomer mining data and GroundSure's unique database including historical surface ground and underground workings.

For further details on each dataset, please refer to each individual section in the report as listed. Where the database has been searched a numerical result will be recorded. Where the database has not been searched '-' will be recorded.

Section 1: Geology

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	Yes
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	Yes
	1.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	1.2.4 Are there any records relating to permeability of landslips within the study site boundary?	No
1.3 Bedrock, Solid Geology & Faults	1.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.	
	1.3.2 Are there any records relating to permeability of bedrock within the study site boundary?	Yes
	1.3.3 Are there any records of faults within 500m of the study site boundary?	No
1.4 Radon data	1.4.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level
	1.4.2 Is the property in an area where Radon Protection Measures are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary

Section 2: Ground Workings

	On-site	0-50m	51-250	251-500	501-1000
2.1 Historical Surface Ground Working Features from Small Scale Mapping	2	10	1	Not Searched	Not Searched
2.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
2.3 Current Ground Workings	0	0	0	3	2

Section 3: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0

Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	1	0	0	0	0
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7 Brine Extraction	0	0	0	0	0
3.8 Gypsum Extraction	0	0	0	0	0
3.9 Tin Mining	0	0	0	0	0
3.10 Clay Mining	0	0	0	0	0

Section 4: Natural Ground Subsidence	On-site
4.1 Shrink Swell Clay	Low
4.2 Landslides	Low
4.3 Ground Dissolution of Soluble Rocks	Very Low
4.4 Compressible Deposits	Negligible
4.5 Collapsible Deposits	Very Low
4.6 Running Sand	Very Low

Section 5: Borehole Records	On-site	0-50m	51-250
5 BGS Recorded Boreholes	0	1	3

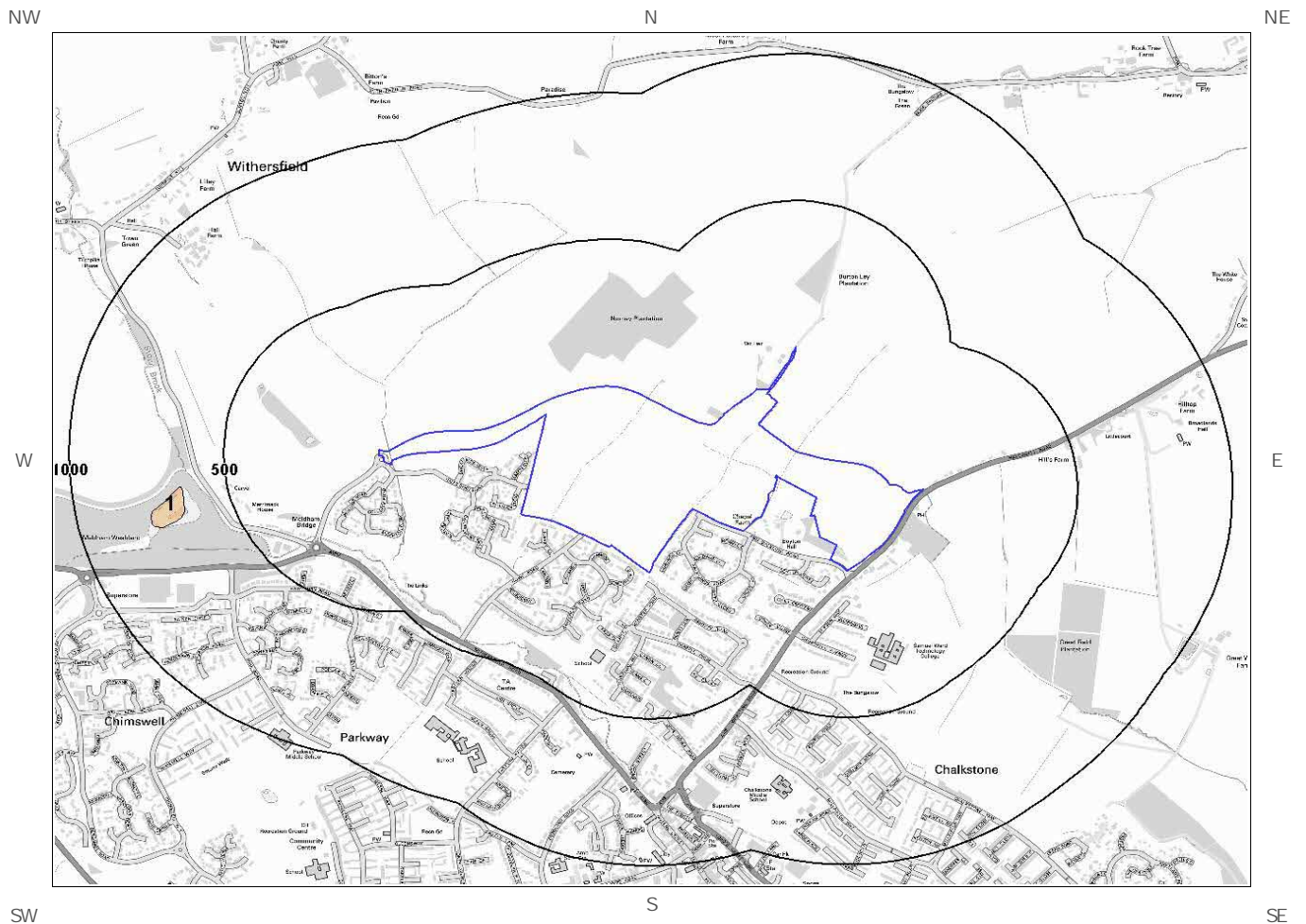
Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	4	0	4

Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500
7.1 Tunnels	0	0	0	Not Searched
7.2 Historical Railway and Tunnel Features	0	0	0	Not Searched
7.3 Historical Railways	0	0	0	Not Searched
7.4 Active Railways	0	0	0	Not Searched

Section 7: Railways and Tunnels	On-site	0-50m	51-250	251-500
7.5 Railway Projects	0	0	0	0

1 Geology

1.1 Artificial Ground Map



Artificial Ground Legend



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1 Geology

1.1 Artificial Ground

1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:205

Are there any records of Artificial/Made Ground within 500m of the study site boundary? No

Database searched and no data found.

1.1.2 Permeability of Artificial Ground

Are there any records relating to permeability of artificial ground within the study site boundary? No

Database searched and no data found.

1.2 Superficial Deposits and Landslips

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	0.0	On Site	LOFT-DMTN	LOWESTOFT FORMATION	DIAMICTON
2	329.0	SW	RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL

1.2.2 Permeability of Superficial Ground

Are there any records relating to permeability of superficial ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Mixed	Moderate	Low

1.2.3 Landslip

Are there any records of Landslip within 500m of the study site boundary? No

Database searched and no data found.

This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

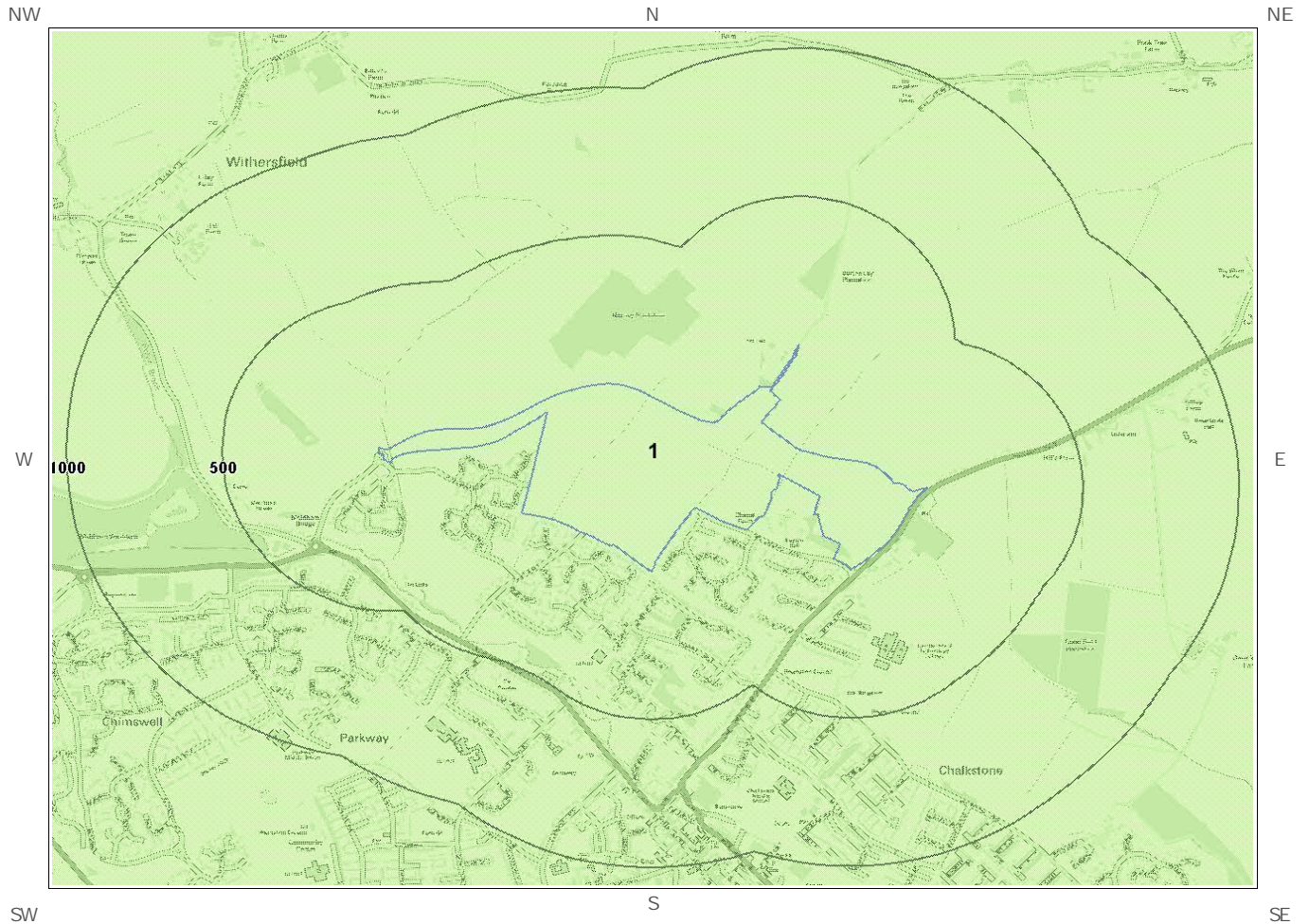
1.2.4 Landslip Permeability

Are there any records relating to permeability of landslips within the study site* boundary? No

Database searched and no data found.

* This includes an automatically generated 50m buffer zone around the site

1.3 Bedrock and Faults Map



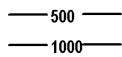
Bedrock and Faults Legend



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Site Outline



Search Buffers (m)

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:205

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/ Solid Geology within 500m of the study site boundary:

ID	Distance (m)	Direction	LEX Code	Description	Rock Age
1	0.0	On Site	LESE-CHLK	Lewes Nodular Chalk Formation And Seaford Chalk Formation (undifferentiated) - Chalk	Santonian / Turonian

1.3.2 Permeability of Bedrock Ground

Are there any records relating to permeability of bedrock ground within the study site boundary? Yes

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Very High	Very High

1.3.3 Faults

Are there any records of Faults within 500m of the study site boundary? No

Database searched and no data found.

The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of Great Britain at 1:50,000 scale.

This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as Faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

* This includes an automatically generated 50m buffer zone around the site

1.4 Radon Data

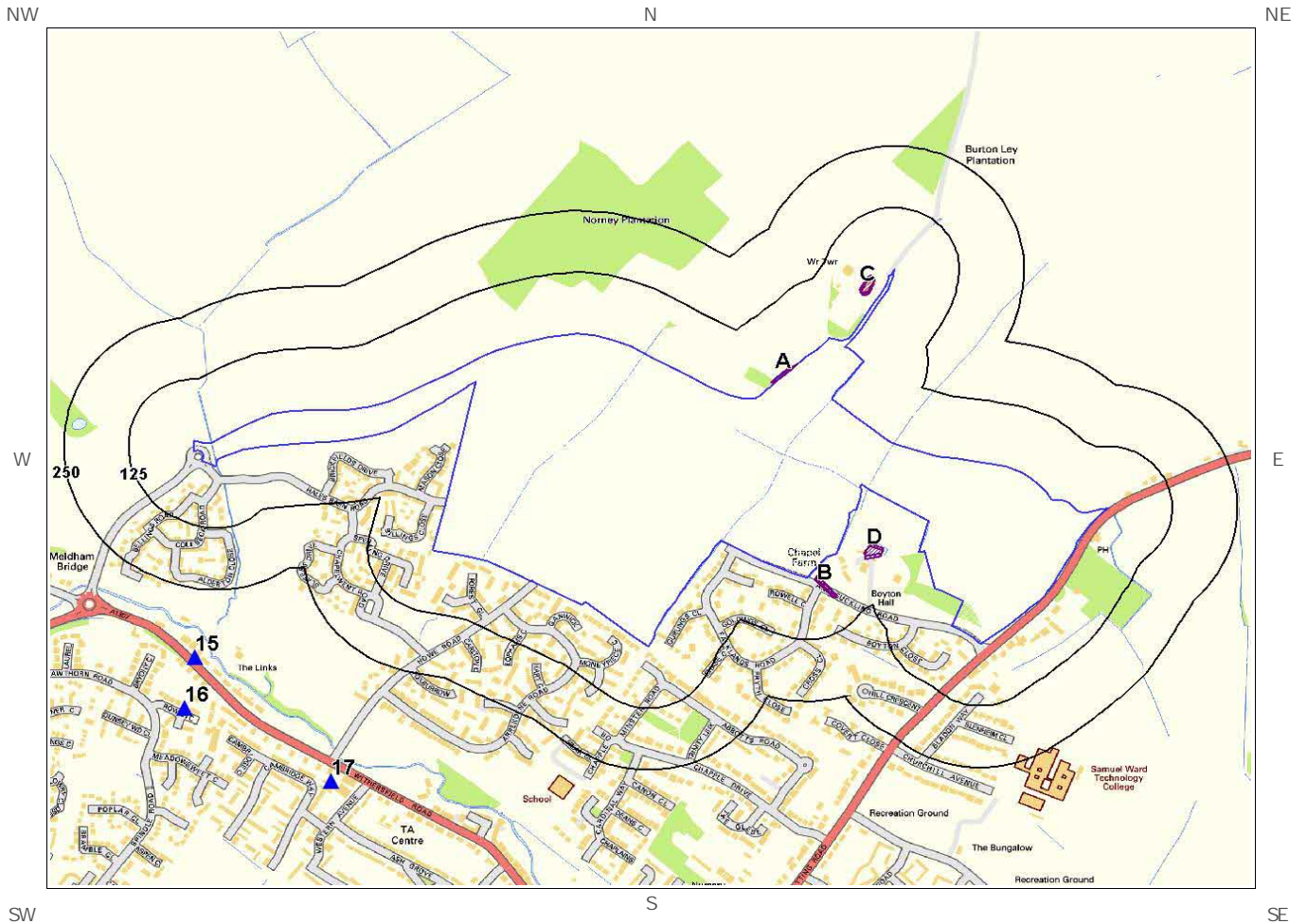
1.4.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level

1.4.2 Radon Protection

Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary


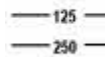



2 Ground Workings Map



Ground Workings Legend



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-  Site Outline
-  Search Buffers (m)
-  Historic Surface Ground Workings
-  Historic Underground Workings
-  Current Ground Workings



2 Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

This dataset is based on GroundSure's unique Historical Land Use Database derived from 1:10,560 and 1:10,000 scale historical mapping.

Are there any Historical Surface Ground Working Features within 250m of the study site boundary? Yes

The following Historical Surface Ground Working Features are provided by GroundSure:

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	567289 247079	Pond	1924
2A	0.0	On Site	567289 247080	Pond	1885
3B	13.0	SE	567367 246647	Ponds	1924
4B	13.0	SE	567367 246647	Ponds	1876
5B	14.0	SE	567369 246648	Ponds	1896
6C	20.0	NW	567448 247255	Covered Reservoir	1971
7C	21.0	NW	567449 247258	Covered Reservoir	1979
8C	22.0	NW	567449 247261	Covered Reservoir	1991
9D	49.0	E	567460 246722	Pond	1967
10D	49.0	E	567460 246722	Pond	1979
11D	49.0	E	567460 246722	Pond	1971
12D	49.0	E	567460 246722	Pond	1991
13D	51.0	E	567461 246717	Pond	1896

2.2 Historical Underground Working Features derived from Historical Mapping

This data is derived from the GroundSure unique Historical Land Use Database. It contains data derived from 1:10,000 and 1:10,560 historical Ordnance Survey Mapping and includes some natural topographical features (Shake Holes for example) as well as manmade features that may have implications for ground stability. Underground and mining features have been identified from surface features such as shafts. The distance that these extend underground is not shown.

Are there any Historical Underground Working Features within 1000m of the study site boundary? No

Database searched and no data found.

2.3 Current Ground Workings

This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? Yes

The following Current Ground Workings information is provided by British Geological Survey:

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
Not shown	359.0	SW	565867 246705	Clay & Shale	Hanchett End Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
15	389.0	S	566154 246504	Clay & Shale	Mount Pleasant Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
16	494.0	S	566133 246401	Clay & Shale	Mount Pleasant Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
17	510.0	SW	566415 246252	Clay & Shale	Mount Pleasant Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	519.0	W	565639 246853	Clay & Shale	Hanchett End Brick Works	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased



3 Mining, Extraction & Natural Cavities

3.1 Historical Mining

This dataset is derived from GroundSure unique Historical Land-use Database that are indicative of mining or extraction activities.

Are there any Historical Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.2 Coal Mining

This dataset provides information as to whether the study site lies within a known coal mining affected area as defined by the coal authority.

Are there any Coal Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.3 Johnson Poole and Bloomer

This dataset provides information as to whether the study site lies within an area where JPB hold information relating to mining.

Are there any JPB Mining areas within 1000m of the study site boundary? No

The following information provided by JPB is not represented on mapping: Database searched and no data found.

3.4 Non-Coal Mining

This dataset provides information as to whether the study site lies within an area which may have been subject to non-coal historic mining.

Are there any Non-Coal Mining areas within 1000m of the study site boundary? Yes

The following non-coal mining information is provided by the BGS:

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Chalk	Occasional minor mining may have occurred but of restricted extent.

3.5 Non-Coal Mining Cavities

This dataset provides information from the Peter Brett Associates (PBA) mining cavities database (compiled for the national study entitled "Review of mining instability in Great Britain, 1990" PBA has also continued adding to this database) on mineral extraction by mining.

Are there any Non-Coal Mining cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.6 Natural Cavities

This dataset provides information based on Peter Brett Associates natural cavities database.

Are there any Natural Cavities within 1000m of the study site boundary? No

Database searched and no data found.

3.7 Brine Extraction

This data provides information from the Coal Authority issued on behalf of the Cheshire Brine Subsidence Compensation Board.

Are there any Brine Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.8 Gypsum Extraction

This dataset provides information on Gypsum extraction from British Gypsum records.

Are there any Gypsum Extraction areas within 1000m of the study site boundary? No

Database searched and no data found.

3.9 Tin Mining

This dataset provides information on tin mining areas and is derived from tin mining records. This search is based upon postcode information to a sector level.

Are there any Tin Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

3.10 Clay Mining

This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

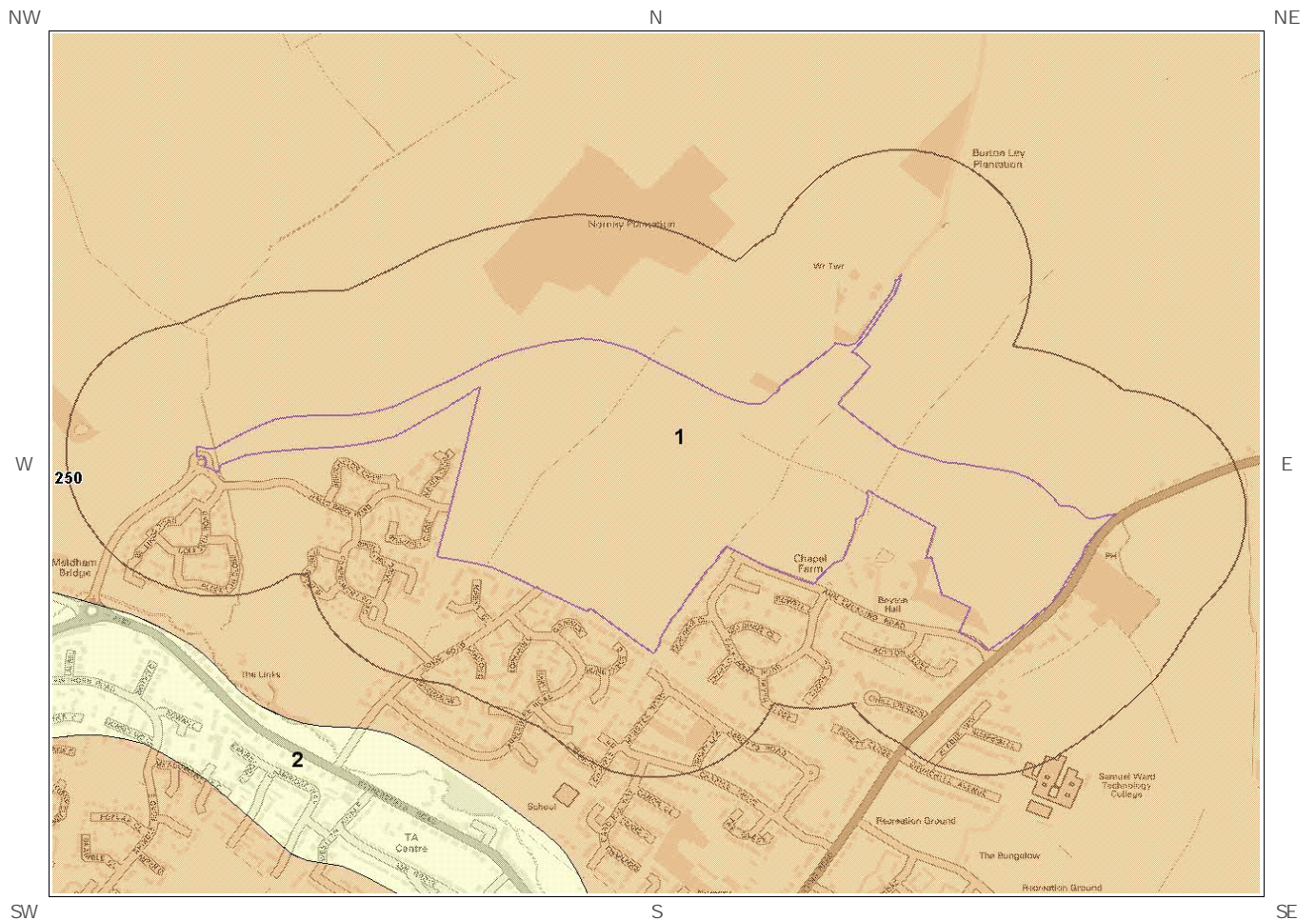
Are there any Clay Mining areas within 1000m of the study site boundary?

No

Database searched and no data found.

4 Natural Ground Subsidence

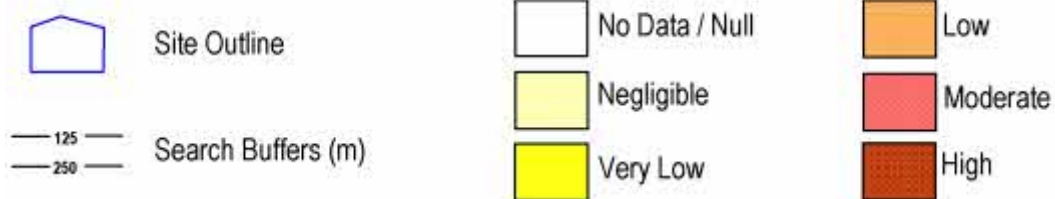
4.1 Shrink-Swell Clay Map



Shrink Swell Clay Legend



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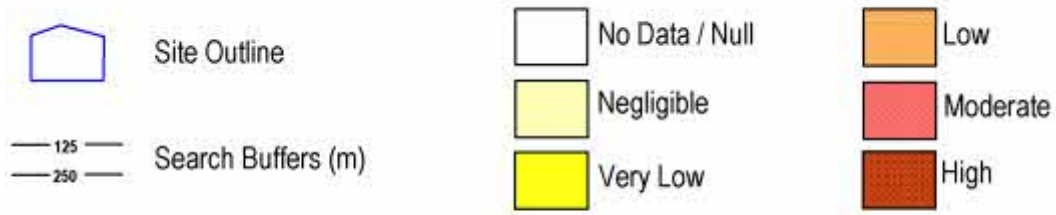
4.2 Landslides Map



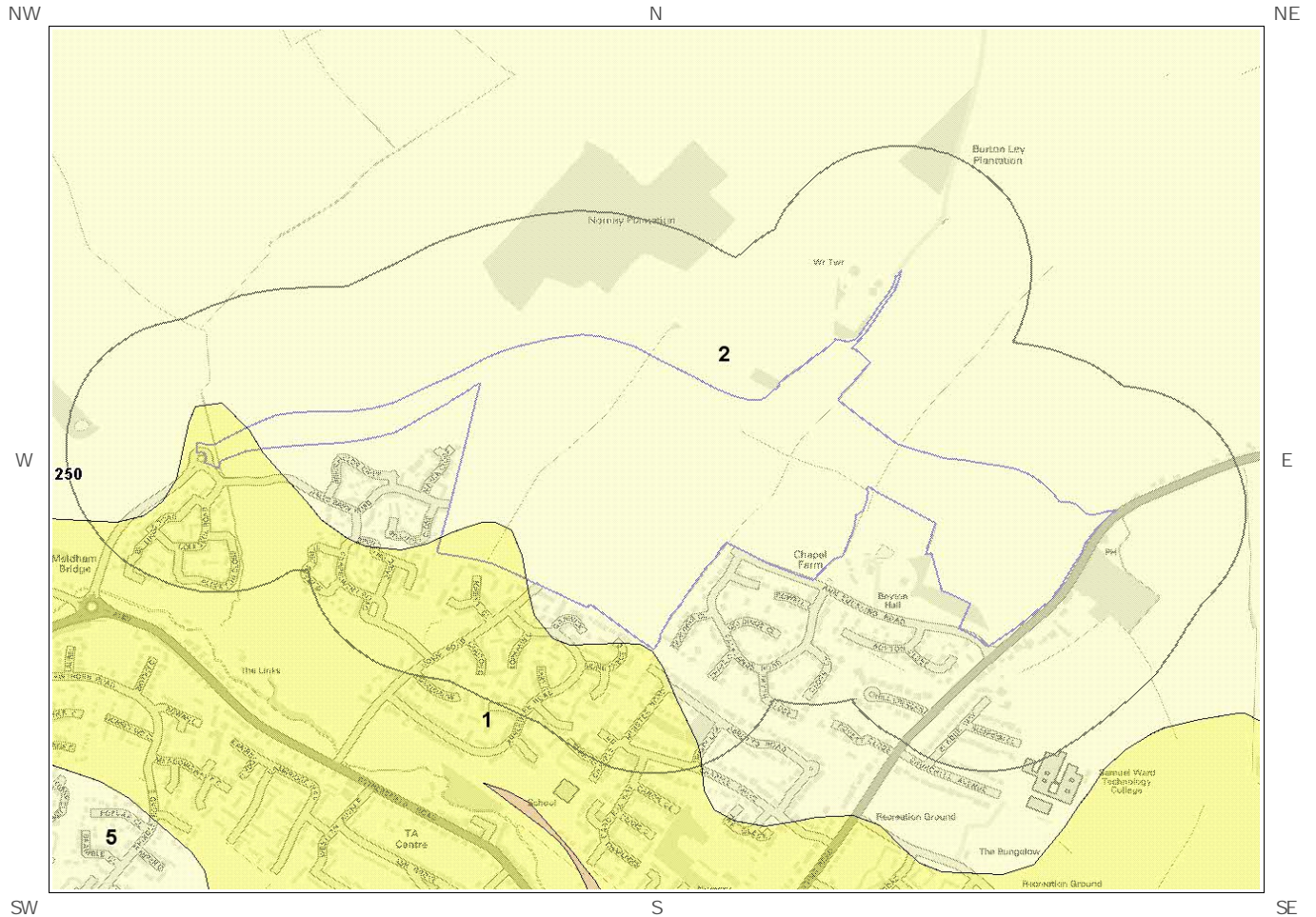
Landslides Legend



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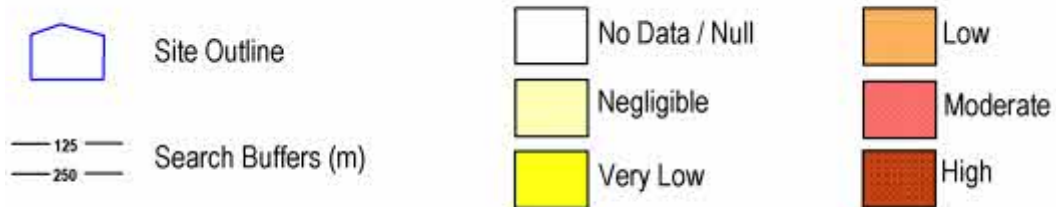
4.3 Ground Dissolution Soluble Rocks Map



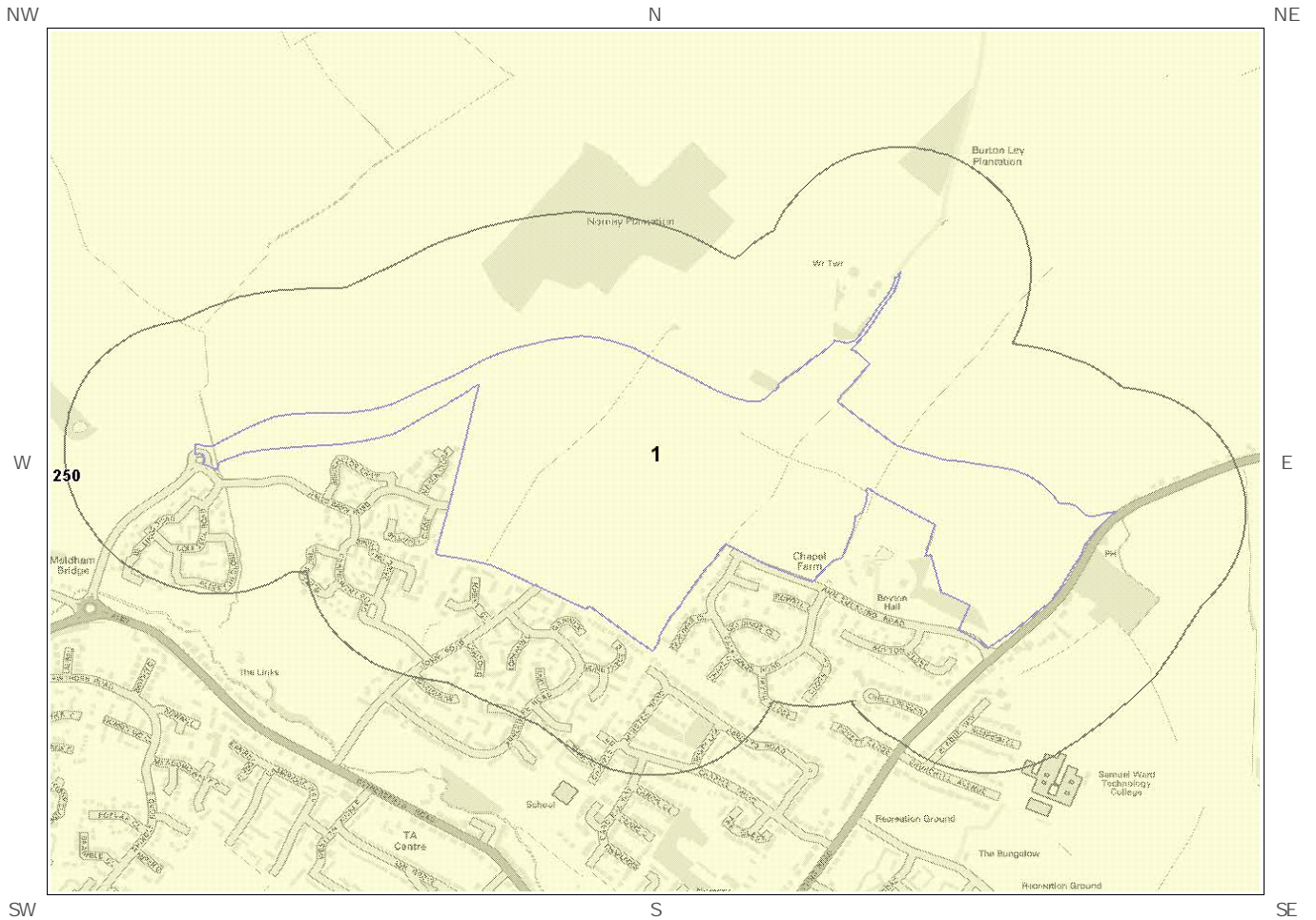
Ground Dissolution Soluble Rocks Legend



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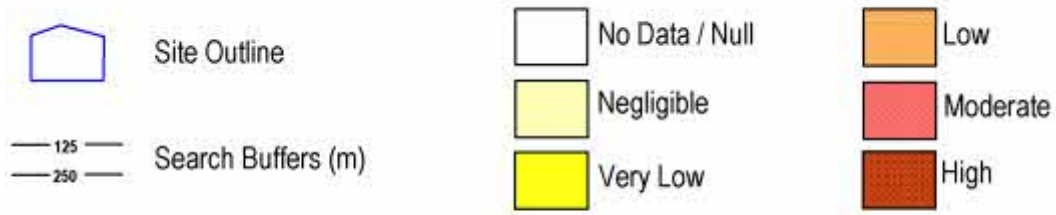
4.4 Compressible Deposits Map



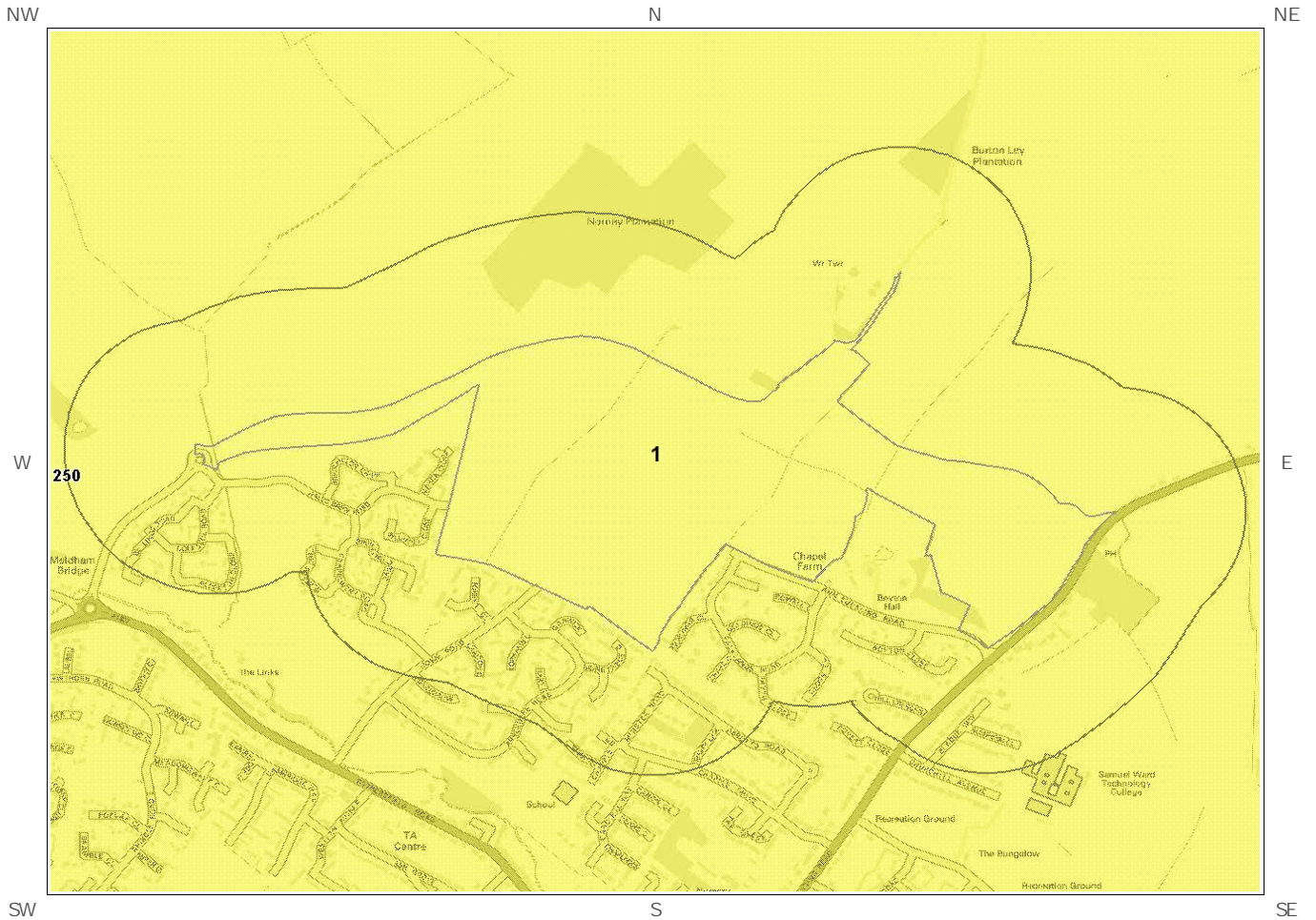
Compressible Deposits Legend



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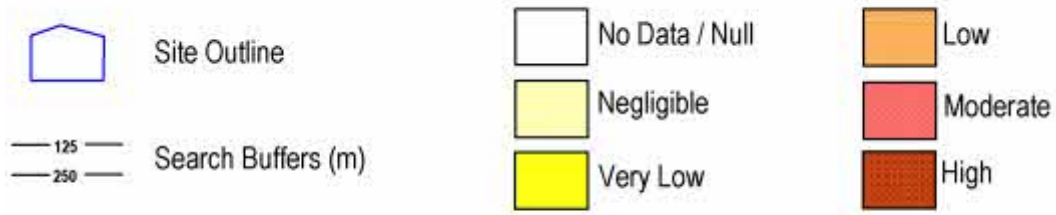
4.5 Collapsible Deposits Map



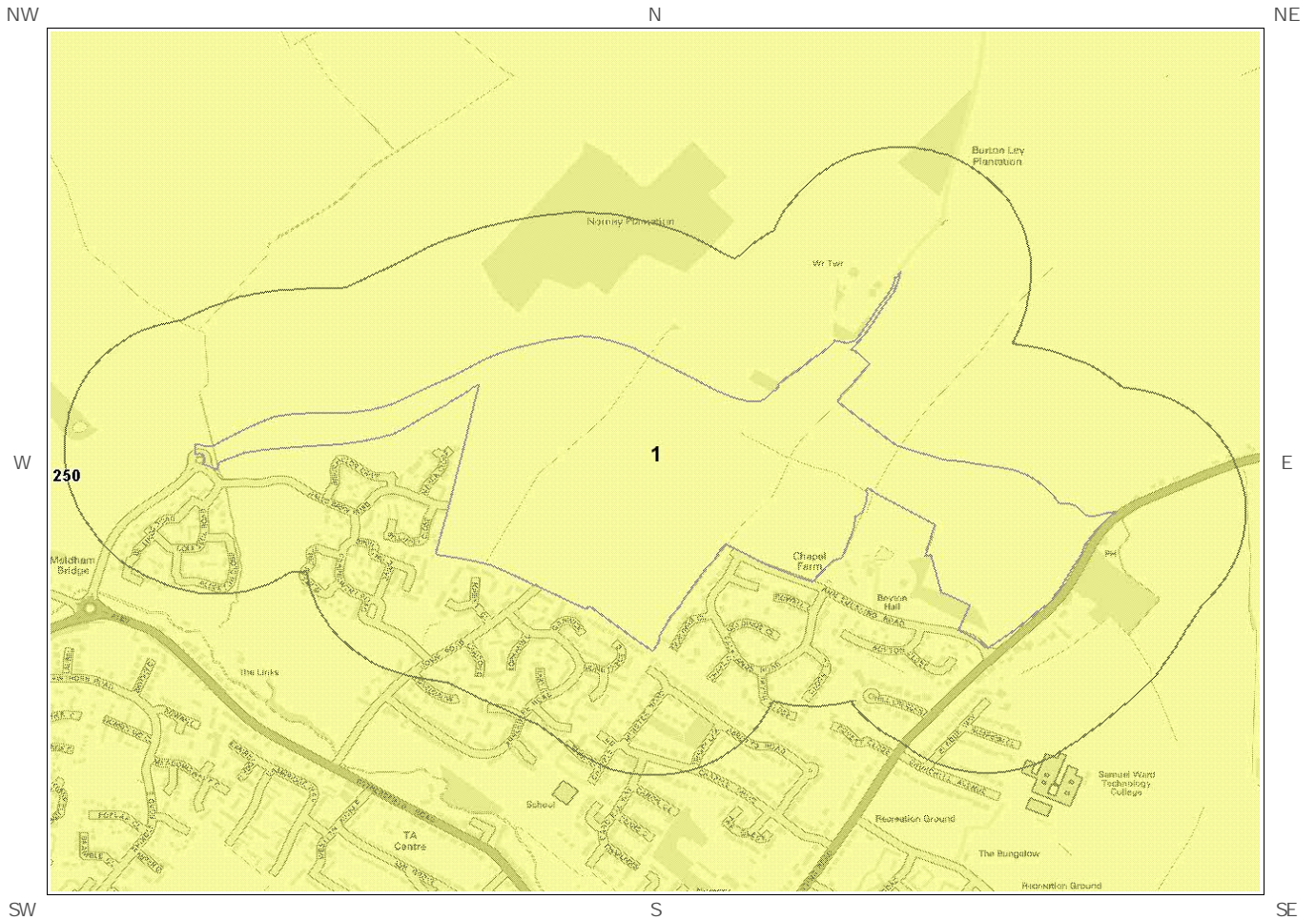
Collapsible Deposits Legend



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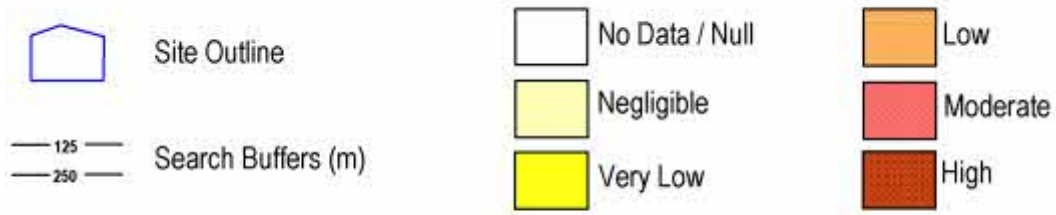
4.6 Running Sand Map



Running Sand Legend



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4 Natural Ground Subsidence

The National Ground Subsidence rating is obtained through the 6 natural ground stability hazard datasets, which are supplied by the British Geological Survey (BGS).

The following GeoSure data represented on the mapping is derived from the BGS Digital Geological map of Great Britain at 1:50,000 scale.

What is the maximum hazard rating of natural subsidence within the study site* boundary? Low

4.1 Shrink-Swell Clays

The following Shrink Swell information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.

4.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Slope instability problems are unlikely to be present. No special actions required to avoid problems due to landslides. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with landslides.
2	42.0	N	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

4.3 Ground Dissolution of Soluble Rocks

The following Ground Dissolution information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Significant soluble rocks are present. Problems unlikely except with considerable surface or subsurface water flow. No special actions required to avoid problems due to soluble rocks. No special ground investigation required or increased construction costs are likely. An increase in financial risk due to potential problems with soluble rocks is unlikely.

* This includes an automatically generated 50m buffer zone around the site

ID	Distance (m)	Direction	Hazard Rating	Details
2	0.0	On Site	Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

4.4 Compressible Deposits

The following Compressible Deposits information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for compressible deposits identified. No special actions required to avoid problems due to compressible deposits. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with compressible deposits.

4.5 Collapsible Deposits

The following Collapsible Rocks information provided by the British Geological Survey:

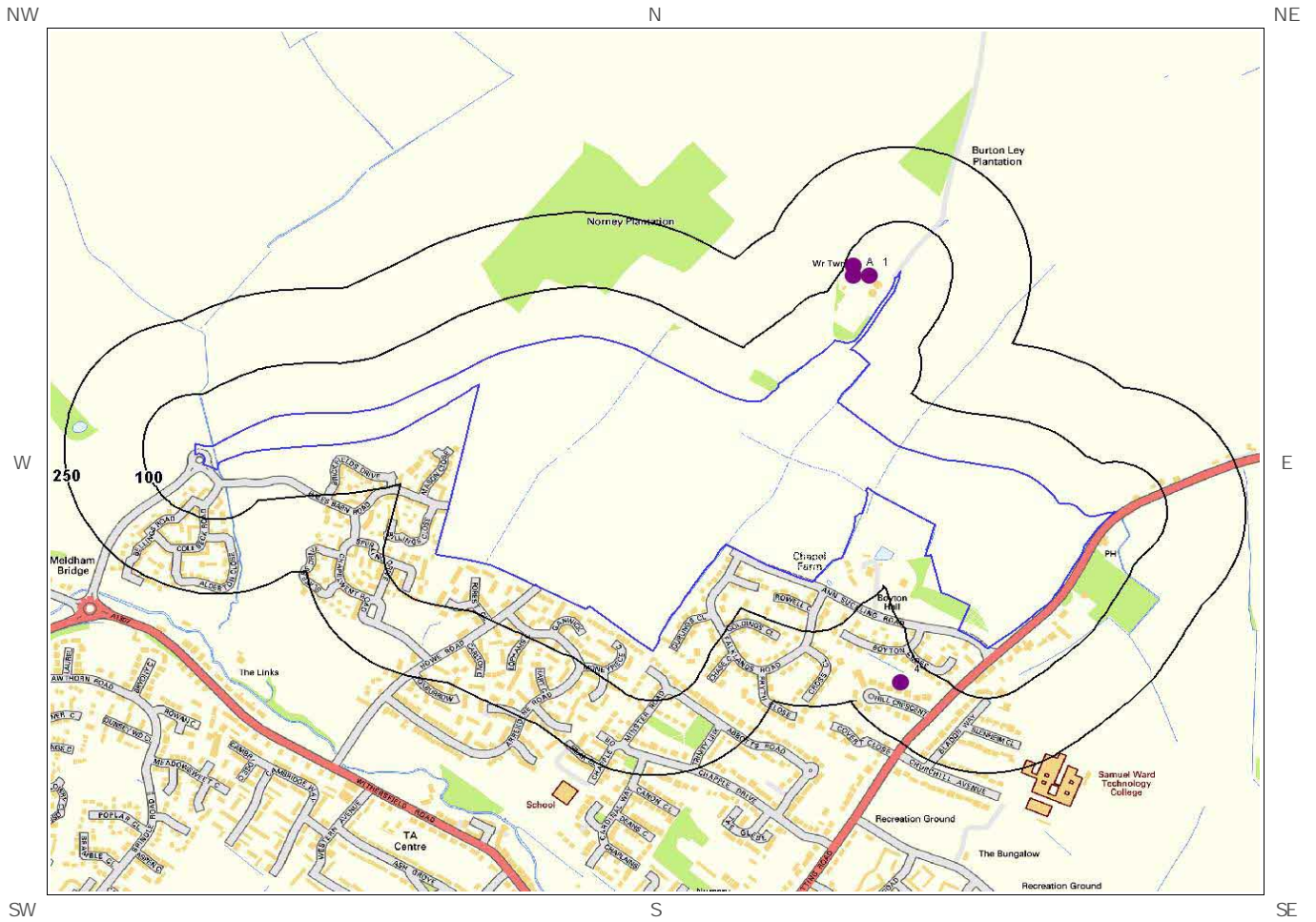
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

4.6 Running Sands

The following Running Sands information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Very low potential for running sand problems if water table rises or if sandy strata are exposed to water. No special actions required, to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.



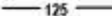

5 Borehole Records Map



Borehole Records Legend



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-  Site Outline
-  Borehole Locations
-  125
-  250
- Search Buffers (m)



5 Borehole Records

The systematic analysis of data extracted from the BGS Borehole Records database provides the following information.

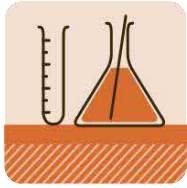
Records of boreholes within 250m of the study site boundary:

4

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	49.0	NW	567440 247280	TL64NE36	9.15	BOYTON HALL C
2A	75.0	NW	567410 247280	TL64NE34	9.15	BOYTON HALL A
3A	82.0	W	567410 247300	TL64NE35	9.15	BOYTON HALL B
4	153.0	SW	567500 246462	TL64NE37	14.8	EHRINGHAUSEN WAY HAVERHILL 1

Additional online information is available for the following boreholes listed above:

- #1: scans.bgs.ac.uk/sobi_scans/boreholes/12832511
- #2A: scans.bgs.ac.uk/sobi_scans/boreholes/12832505
- #3A: scans.bgs.ac.uk/sobi_scans/boreholes/12832509
- #4: scans.bgs.ac.uk/sobi_scans/boreholes/18393264



6 Estimated Background Soil Chemistry

Records of background estimated soil chemistry within 250m of the study site boundary:

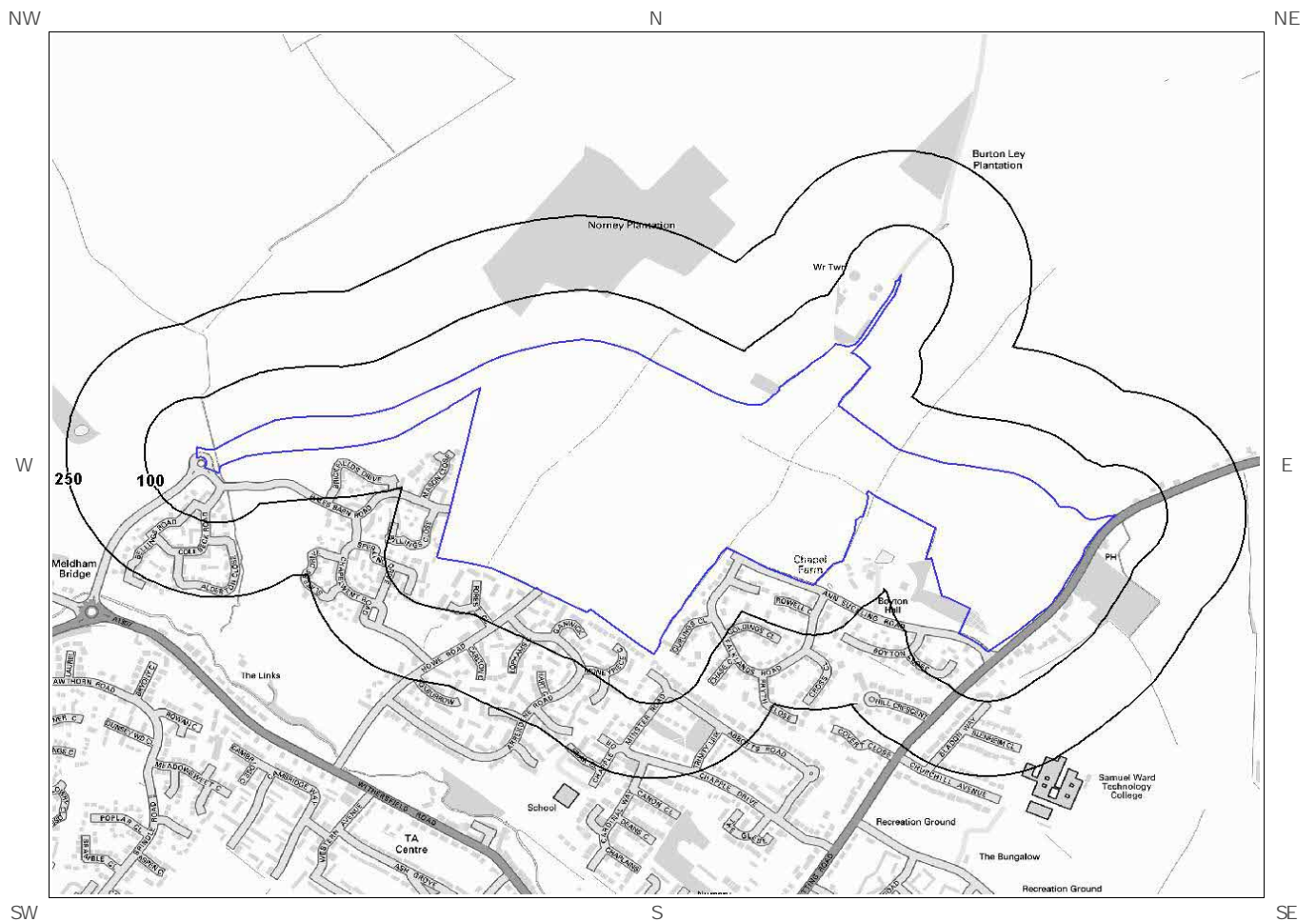
8

For further information on how this data is calculated and limitations upon its use, please see the GroundSure Geolnsight User Guide, available on request.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
90.0	E	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
153.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
163.0	W	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
213.0	NE	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg

*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.











7 Railways and Tunnels Map



Railways and Tunnels Legend



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- | | | | |
|---|--|--|---|
|  | Underground or Partially Underground Railway / Subway System |  | Railway Track (OpenStreetMap) |
|  | Site Outline |  | High Speed 2 |
|  | 250 Search Buffers (m) |  | Abandoned or Dismantled Railway (OpenStreetMap) |
|  | 500 Search Buffers (m) |  | Railway Track (OS Mapping) |
| | |  | Crossrail |
| | |  | Railway and/or Tunnel Feature from Historical Mapping |



7 Railways and Tunnels

7.1 Tunnels

This data is derived from OpenStreetMap and provides information on the possible locations of underground railway systems in the UK - the London Underground, the Tyne & Wear Metro and the Glasgow Subway.

Have any underground railway lines been identified within the study site boundary? No

Have any underground railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

This data is derived from Ordnance Survey mapping and provides information on the possible locations of railway tunnels forming part of the UK overground railway network.

Have any other railway tunnels been identified within the site boundary? No

Have any other railway tunnels been identified within 250m of the site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.2 Historical Railway and Tunnel Features

This data is derived from GroundSure's unique Historical Land-use Database and contains features relating to tunnels, railway tracks or associated works that have been identified from historical Ordnance Survey mapping.

Have any historical railway or tunnel features been identified within the study site boundary? No

Have any historical railway or tunnel features been identified within 250m of the study site boundary? No

Database searched and no data found.

Any records that have been identified are represented on the Railways and Tunnels Map.

7.3 Historical Railways

This data is derived from OpenStreetMap and provides information on the possible alignments of abandoned or dismantled railway lines in proximity to the study site.

Have any historical railway lines been identified within the study site boundary? No

Have any historical railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above

Any records that have been identified are represented on the Railways and Tunnels Map.

7.4 Active Railways

These datasets are derived from Ordnance Survey mapping and OpenStreetMap and provide information on the possible locations of active railway lines in proximity to the study site.

Have any active railway lines been identified within the study site boundary? No

Have any active railway lines been identified within 250m of the study site boundary? No

Database searched and no data found.

Note: multiple sections of the same track may be listed in the detail above
Any records that have been identified are represented on the Railways and Tunnels Map.

7.5 Railway Projects

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail.

Is the study site within 5km of the route of the High Speed 2 rail project? No

Is the study site within 500m of the route of the Crossrail rail project? No

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a GroundSure HS2 and Crossrail Report.

Contact Details



GroundSure Helpline
Telephone: 08444 159 000
info@groundsure.com



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Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
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BGS Geological Hazards Reports and general geological enquiries



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Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



The Coal
Authority

Public Health England

Public information access office
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133-155 Waterloo Road, London, SE1 8UG
<https://www.gov.uk/government/organisations/public-health-england>
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



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Website: <http://www.peterbrett.com/home>



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Report Reference: HMD-369-1706443

Client Reference: 995,SI

Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

“Beneficiary” means the person or entity for whose benefit the Client has obtained the Services.

“Client” means the party or parties entering into a Contract with GroundSure.

“Commercial” means any building or property which is not Residential.

“Confidential Information” means the contents of this Contract and all information received from the Client as a result of, or in connection with, this Contract other than

(i) information which the Client can prove was rightfully in its possession prior to disclosure by GroundSure and

(ii) any information which is in the public domain (other than by virtue of a breach of this Contract).

“Support Services” means Support Services provided by GroundSure including, without limitation, interpreting third party and in-house environmental data, providing environmental support advice, undertaking environmental audits and assessments, Site investigation, Site monitoring and related items.

“Contract” means the contract between GroundSure and the Client for the provision of the Services, and which shall incorporate these terms and conditions, the Order, and the relevant User Guide.

“Third Party Data Provider” means any third party providing Third Party Content to GroundSure.

“Data Reports” means reports comprising factual data with no accompanying interpretation.

“Fees” has the meaning set out in clause 5.1.

“GroundSure” means GroundSure Limited, a company registered in England and Wales under number 03421028.

“GroundSure Materials” means all materials prepared by GroundSure and provided as part of the Services, including but not limited to Third Party Content, Data Reports, Mapping, and Risk Screening Reports.

“Intellectual Property” means any patent, copyright, design rights, trade or service mark, moral rights, data protection rights, know-how or trade mark in each case whether registered or not and including applications for the same or any other rights of a similar nature anywhere in the world.

“Mapping” means a map, map data or a combination of historical maps of various ages, time periods and scales.

“Order” means an electronic, written or other order form submitted by the Client requesting Services from GroundSure in respect of a specified Site.

“Ordnance Survey” means the Secretary of State for Business, Innovation and Skills, acting through Ordnance Survey, Adanac Drive, Southampton, SO16 0AS, UK.

“Order Website” means the online platform through which Orders may be placed by the Client and accepted by GroundSure.

“Report” means a Risk Screening Report or Data Report for Commercial or Residential property.

“Residential” means any building or property used as or intended to be used as a single dwelling.

“Risk Screening Report” means a risk screening report comprising factual data with an accompanying interpretation by GroundSure.

“Services” means any Report, Mapping and/or Support Services which GroundSure has agreed to provide by accepting an Order pursuant to clause 2.6.

“Site” means the area of land in respect of which the Client has requested GroundSure to provide the Services.

“Third Party Content” means data, database information or other information which is provided to GroundSure by a Third Party Data Provider.

“User Guide” means the user guide, as amended from time to time, available upon request from GroundSure and on the website (www.GroundSure.com) and forming part of this Contract.

2 Scope of Services, terms and conditions, requests for insurance and quotations

2.1 GroundSure agrees to provide the Services in accordance with the Contract.

2.2 GroundSure shall exercise reasonable skill and care in the provision of the Services.

2.3 Subject to clause 7.3 the Client acknowledges that it has not relied on any statement or representation made by or on behalf of GroundSure which is not set out and expressly agreed in writing in the Contract and all such statements and representations are hereby excluded to the fullest extent permitted by law.

2.4 The Client acknowledges that terms and conditions appearing on a Client's order form, printed stationery or other communication, or any terms or conditions implied by custom, practice or course of dealing shall be of no effect, and that this Contract shall prevail over all others in relation to the Order.

2.5 If the Client or Beneficiary requests insurance in conjunction with or as a result of the Services, GroundSure shall use reasonable endeavours to recommend such insurance, but makes no warranty that such insurance shall be available from insurers or that it will be offered on reasonable terms. Any insurance purchased by the Client or Beneficiary shall be subject solely to the terms of the policy issued by insurers and GroundSure will have no liability therefor. In addition you acknowledge and agree that GroundSure does not act as an agent or broker for any insurance providers. The Client should take (and ensure that the Beneficiary takes) independent advice to ensure that the insurance policy requested or offered is suitable for its requirements.

2.6 GroundSure's quotations or proposals are valid for a period of 30 days only unless an alternative period of time is explicitly stipulated by GroundSure. GroundSure reserves the right to withdraw any quotation or proposal at any time before an Order is accepted by GroundSure. GroundSure's acceptance of an Order

shall be binding only when made in writing and signed by GroundSure's authorised representative or when accepted through the Order Website.

3 The Client's obligations

3.1 The Client shall comply with the terms of this Contract and

(i) procure that the Beneficiary or any third party relying on the Services complies with and acts as if it is bound by the Contract and

(ii) be liable to GroundSure for the acts and omissions of the Beneficiary or any third party relying on the Services as if such acts and omissions were those of the Client.

3.2 The Client shall be solely responsible for ensuring that the Services are appropriate and suitable for its and/or the Beneficiary's needs.

3.3 The Client shall supply to GroundSure as soon as practicable and without charge all requisite information (and the Client warrants that such information is accurate, complete and appropriate), including without limitation any environmental information relating to the Site and shall give such assistance as GroundSure shall reasonably require in the provision of the Services including, without limitation, access to the Site, facilities and equipment.

3.4 Where the Client's approval or decision is required to enable GroundSure to carry out work in order to provide the Services, such approval or decision shall be given or procured in reasonable time and so as not to delay or disrupt performance of the Services.

3.5 Save as expressly permitted by this Contract the Client shall not, and shall procure that the Beneficiary shall not, re-sell, alter, add to, or amend GroundSure Materials, or use the GroundSure Materials in a manner for which they were not intended. The Client may make the GroundSure Materials available to a third party who is considering acquiring some or all of, or providing funding in relation to, the Site, but such third party cannot rely on the same unless expressly permitted under clause 4.

3.6 The Client is responsible for maintaining the confidentiality of its user name and password if using the Order Website and the Client acknowledges that GroundSure accepts no liability of any kind for any loss or damage suffered by the Client as a consequence of using the Order Website.

4 Reliance

4.1 The Client acknowledges that the Services provided by GroundSure consist of the presentation and analysis of Third Party Content and other content and that information obtained from a Third Party Data Provider cannot be guaranteed or warranted by GroundSure to be reliable.

4.2 In respect of Data Reports, Mapping and Risk Screening Reports, the following classes of person and no other are entitled to rely on their contents;

(i) the Beneficiary,

(ii) the Beneficiary's professional advisers, (iii) any person providing funding to the Beneficiary in relation to the Site (whether directly or as part of a lending syndicate),

(iv) the first purchaser or first tenant of the Site, and

(v) the professional advisers and lenders of the first purchaser or tenant of the Site.

4.3 In respect of Support Services, only the Client, Beneficiary and parties expressly named in a Report and no other parties are entitled to rely on its contents.

4.4 Save as set out in clauses 4.2 and 4.3 and unless otherwise expressly agreed in writing, no other person or entity of any kind is entitled to rely on any Services or Report issued or provided by GroundSure. Any party considering such Reports and Services does so at their own risk.

5 Fees and Disbursements

5.1 GroundSure shall charge and the Client shall pay fees at the rate and frequency specified in the written proposal, Order Website or Order acknowledgement form, plus (in the case of Support Services) all proper disbursements incurred by GroundSure. The Client shall in addition pay all value added tax or other tax payable on such fees and disbursements in relation to the provision of the Services (together "Fees").

5.2 The Client shall pay all outstanding Fees to GroundSure in full without deduction, counterclaim or set off within 30 days of the date of GroundSure's invoice or such other period as may be agreed in writing between GroundSure and the Client ("Payment Date"). Interest on late payments will accrue on a daily basis from the Payment Date until the date of payment (whether before or after judgment) at the rate of 8% per annum.

5.3 The Client shall be deemed to have agreed the amount of any invoice unless an objection is made in writing within 28 days of the date of the invoice. As soon as reasonably practicable after being notified of an objection, without prejudice to clause 5.2 a member of GroundSure's management team will contact the Client and the parties shall then use all reasonable endeavours to resolve the dispute within 15 days.

6 Intellectual Property and Confidentiality

6.1 Subject to

(i) full payment of all relevant Fees and

(ii) compliance with this Contract, the Client is granted (and is permitted to sub-licence to the Beneficiary) a royalty-free, worldwide, non-assignable and (save to the extent set out in this Contract) non-transferable licence to make use of the GroundSure Materials.

6.2 All Intellectual Property in the GroundSure Materials are and shall remain owned by GroundSure or GroundSure's licensors (including without limitation the Third Party Data Providers) the Client acknowledges, and shall procure acknowledgement by the Beneficiary of, such ownership. Nothing in this Contract purports to transfer or assign any rights to the Client or the Beneficiary in respect of such Intellectual Property.

6.3 Third Party Data Providers may enforce any breach of clauses 6.1 and 6.2 against the Client or Beneficiary.

6.4 The Client shall, and shall procure that any recipients of the GroundSure Materials shall:

(i) not remove, suppress or modify any trade mark, copyright or other proprietary marking belonging to GroundSure or any third party from the Services;

(ii) use the information obtained as part of the Services in respect of the subject Site only, and shall not store or reuse any information obtained as part of the Services provided in respect of adjacent or nearby sites;

(iii) not create any product or report which is derived directly or indirectly from the Services (save that those acting in a professional capacity to the Beneficiary may provide advice based upon the Services);

(iv) not combine the Services with or incorporate such Services into any other information data or service;

(v) not reformat or otherwise change (whether by modification, addition or enhancement), the Services (save that those acting for the Beneficiary in a professional capacity shall not be in breach of this clause 6.4(v) where such reformatting is in the normal course of providing advice based upon the Services);

(vi) where a Report and/or Mapping contains material belonging to Ordnance Survey, acknowledge and agree that such content is protected by Crown Copyright and shall not use such content for any purpose outside of receiving the Services; and

(vii) not copy in whole or in part by any means any map prints or run-on copies containing content belonging to Ordnance Survey (other than that contained within Ordnance Survey's OS Street Map) without first being in possession of a valid Paper Map Copying Licence from Ordnance Survey,

6.5 Notwithstanding clause 6.4, the Client may make reasonable use of the GroundSure Materials in order to advise the Beneficiary in a professional capacity. However, GroundSure shall have no liability in respect of any advice, opinion or report given or provided to Beneficiaries by the Client.

6.6 The Client shall procure that any person to whom the Services are made available shall notify GroundSure of any request or requirement to disclose, publish or disseminate any information contained in the Services in accordance with the Freedom of Information Act 2000, the Environmental Information Regulations 2004 or any associated legislation or regulations in force from time to time.

7. Liability: Particular Attention Should Be Paid To This Clause

7.1 This Clause 7 sets out the entire liability of GroundSure, including any liability for the acts or omissions of its employees, agents, consultants, subcontractors and Third Party Content, in respect of:

(i) any breach of contract, including any deliberate breach of the Contract by GroundSure or its employees, agents or subcontractors;

(ii) any use made of the Reports, Services, Materials or any part of them; and

(iii) any representation, statement or tortious act or omission (including negligence) arising under or in connection with the Contract.

7.2 All warranties, conditions and other terms implied by statute or common law are, to the fullest extent permitted by law, excluded from the Contract.

7.3 Nothing in the Contract limits or excludes the liability of the Supplier for death or personal injury resulting from negligence, or for any damage or liability incurred by the Client or Beneficiary as a result of fraud or fraudulent misrepresentation.

7.4 GroundSure shall not be liable for

(i) loss of profits;

(ii) loss of business;

(iii) depletion of goodwill and/or similar losses;

(iv) loss of anticipated savings;

(v) loss of goods;

(vi) loss of contract;

(vii) loss of use;

(viii) loss or corruption of data or information;

(ix) business interruption;

(x) any kind of special, indirect, consequential or pure economic loss, costs, damages, charges or expenses;

(xi) loss or damage that arise as a result of the use of all or part of the GroundSure Materials in breach of the Contract;

(xii) loss or damage arising as a result of any error, omission or inaccuracy in any part of the GroundSure Materials where such error, omission or inaccuracy is caused by any Third Party Content or any reasonable interpretation of Third Party Content;

(xiii) loss or damage to a computer, software, modem, telephone or other property; and

(xiv) loss or damage caused by a delay or loss of use of GroundSure's internet ordering service.

7.5 GroundSure's total liability in relation to or under the Contract shall be limited to £10 million for any claim or claims.

7.6 GroundSure shall procure that the Beneficiary shall be bound by limitations and exclusions of liability in favour of GroundSure which accord with those detailed in clauses 7.4 and 7.5 (subject to clause 7.3) in respect of all claims which the Beneficiary may bring against GroundSure in relation to the Services or other matters arising pursuant to the Contract.

8 GroundSure's right to suspend or terminate

8.1 If GroundSure reasonably believes that the Client or Beneficiary has not provided the information or assistance required to enable the proper provision of the Services, GroundSure shall be entitled to suspend all further performance of the Services until such time as any such deficiency has been made good.

8.2 GroundSure shall be entitled to terminate the Contract immediately on written notice in the event that:

(i) the Client fails to pay any sum due to GroundSure within 30

days of the Payment Date; or

(ii) the Client (being an individual) has a bankruptcy order made against him or (being a company) shall enter into liquidation whether compulsory or voluntary or have an administration order made against it or if a receiver shall be appointed over the whole or any part of its property assets or undertaking or if the Client is struck off the Register of Companies or dissolved; or

(iii) the Client being a company is unable to pay its debts within the meaning of Section 123 of the Insolvency Act 1986 or being an individual appears unable to pay his debts within the meaning of Section 268 of the Insolvency Act 1986 or if the Client shall enter into a composition or arrangement with the Client's creditors or shall suffer distress or execution to be levied on his goods; or

(iv) the Client or the Beneficiary breaches any term of the Contract (including, but not limited to, the obligations in clause 4) which is incapable of remedy or if remediable, is not remedied within five days of notice of the breach.

9. Client's Right to Terminate and Suspend

9.1 Subject to clause 10.1, the Client may at any time upon written notice terminate or suspend the provision of all or any of the Services.

9.2 In any event, where the Client is a consumer (and not a business) he/she hereby expressly acknowledges and agrees that:

(i) the supply of Services under this Contract (and therefore the performance of this Contract) commences immediately upon GroundSure's acceptance of the Order; and

(ii) the Reports and/or Mapping provided under this Contract are

(a) supplied to the Client's specification(s) and in any event

(b) by their nature cannot be returned.

10 Consequences of Withdrawal, Termination or Suspension

10.1 Upon termination of the Contract:

(i) GroundSure shall take steps to bring to an end the Services in an orderly manner, vacate any Site with all reasonable speed and shall deliver to the Client and/or Beneficiary any property of the Client and/or Beneficiary in GroundSure's possession or control; and

(ii) the Client shall pay to GroundSure all and any Fees payable in respect of the performance of the Services up to the date of termination or suspension. In respect of any Support Services provided, the Client shall also pay GroundSure any additional costs incurred in relation to the termination or suspension of the Contract.

11 Anti-Bribery

11.1 The Client warrants that it shall:

(i) comply with all applicable laws, statutes and regulations relating to anti-bribery and anti-corruption including but not limited to the Bribery Act 2010;

(ii) comply with such of GroundSure's anti-bribery and anti-corruption policies as are notified to the Client from time to time; and

(iii) promptly report to GroundSure any request or demand for any undue financial or other advantage of any kind received by or on behalf of the Client in connection with the performance of this Contract.

11.2 Breach of this Clause 11 shall be deemed a material breach of this Contract.

12 General

12.1 The Mapping contained in the Services is protected by Crown Copyright and must not be used for any purpose other than as part of the Services or as specifically provided in the Contract.

12.2 The Client shall be permitted to make one copy only of each Report or Mapping Order. Thereafter the Client shall be entitled to make unlimited copies of the Report or Mapping Order only in accordance with an Ordnance Survey paper map copy license available through GroundSure.

12.3 GroundSure reserves the right to amend or vary this Contract. No amendment or variation to this Contract shall be valid unless signed by an authorised representative of GroundSure.

12.4 No failure on the part of GroundSure to exercise, and no delay in exercising, any right, power or provision under this Contract shall operate as a waiver thereof.

12.5 Save as expressly provided in this Contract, no person other than the persons set out therein shall have any right under the Contract (Rights of Third Parties) Act 1999 to enforce any terms of the Contract.

12.6 The Secretary of State for Business, Innovation and Skills ("BIS") or BIS' successor body, as the case may be, acting through Ordnance Survey may enforce a breach of clause 6.4(vi) and clause 6.4(vii) of these terms and conditions against the Client in accordance with the provisions of the Contracts (Rights of Third Parties) Act 1999.

12.7 GroundSure shall not be liable to the Client if the provision of the Services is delayed or prevented by one or more of the following circumstances:

(i) the Client or Beneficiary's failure to provide facilities, access or information;

(ii) fire, storm, flood, tempest or epidemic;

(iii) Acts of God or the public enemy;

(iv) riot, civil commotion or war;

(v) strikes, labour disputes or industrial action;

(vi) acts or regulations of any governmental or other agency;

(vii) suspension or delay of services at public registries by Third

Party Data Providers;

(viii) changes in law; or

(ix) any other reason beyond GroundSure's reasonable control.

In the event that GroundSure is prevented from performing the Services (or any part thereof) in accordance with this clause 12.6 for a period of not less than 30 days then GroundSure shall be entitled to terminate this Contract immediately on written notice to the Client.

12.8 Any notice provided shall be in writing and shall be deemed to be properly

given if delivered by hand or sent by first class post, facsimile or by email to the address, facsimile number or email address of the relevant party as may have been notified by each party to the other for such purpose or in the absence of such notification the last known address.

12.9 Such notice shall be deemed to have been received on the day of delivery if delivered by hand, facsimile or email (save to the extent such day is not a working day where it shall be deemed to have been delivered on the next working day) and on the second working day after the day of posting if sent by first class post.

12.10 The Contract constitutes the entire agreement between the parties and shall supersede all previous arrangements between the parties relating to the subject matter hereof.

12.11 Each of the provisions of the Contract is severable and distinct from the others and if one or more provisions is or should become invalid, illegal or unenforceable, the validity and enforceability of the remaining provisions shall not in any way be tainted or impaired.

12.12 This Contract shall be governed by and construed in accordance with English law and any proceedings arising out of or connected with this Contract shall be subject to the exclusive jurisdiction of the English courts.

12.13 GroundSure is an executive member of the Council of Property Search Organisation (CoPSO) and has signed up to the Search Code administered by the Property Codes Compliance Board (PCCB). All Risk Screening Reports shall be supplied in accordance with the provisions of the Search Code.

12.14 If the Client or Beneficiary has a complaint about the Services, written notice should be given to the Compliance Officer at GroundSure who will respond in a timely manner.

12.15 The Client agrees that it shall, and shall procure that each Beneficiary shall, treat in confidence all Confidential Information and shall not, and shall procure that each Beneficiary shall not (i) disclose any Confidential Information to any third party other than in accordance with the terms of this Contract; and (ii) use Confidential Information for a purpose other than the exercise of its rights and obligations under this Contract. Subject to clause 6.6, nothing shall prevent the Client or any Beneficiary from disclosing Confidential Information to the extent required by law

APPENDIX 5 – GROUNDSURE HISTORICAL MAPS

Large scale Ordnance Survey Map Extracts at:

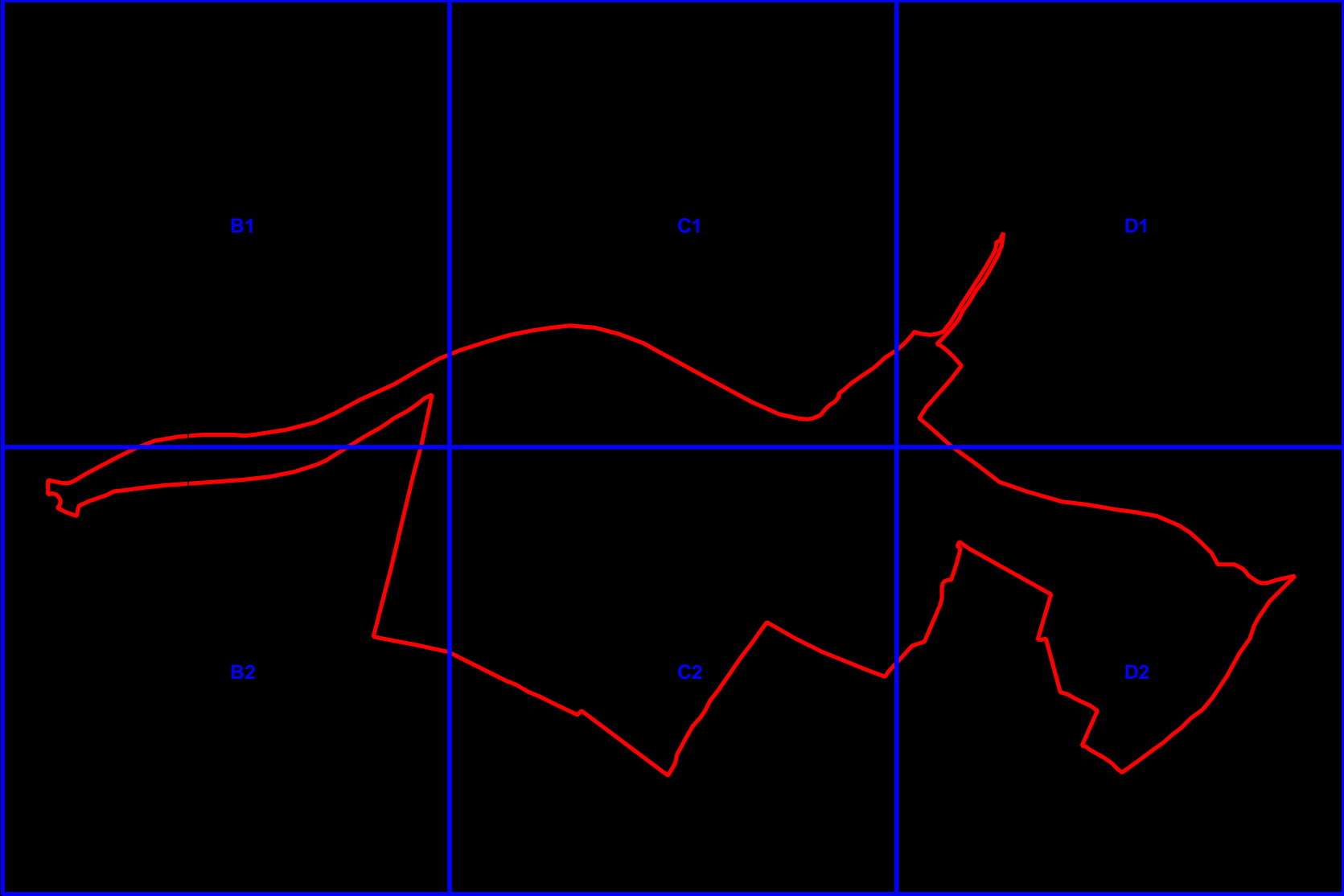
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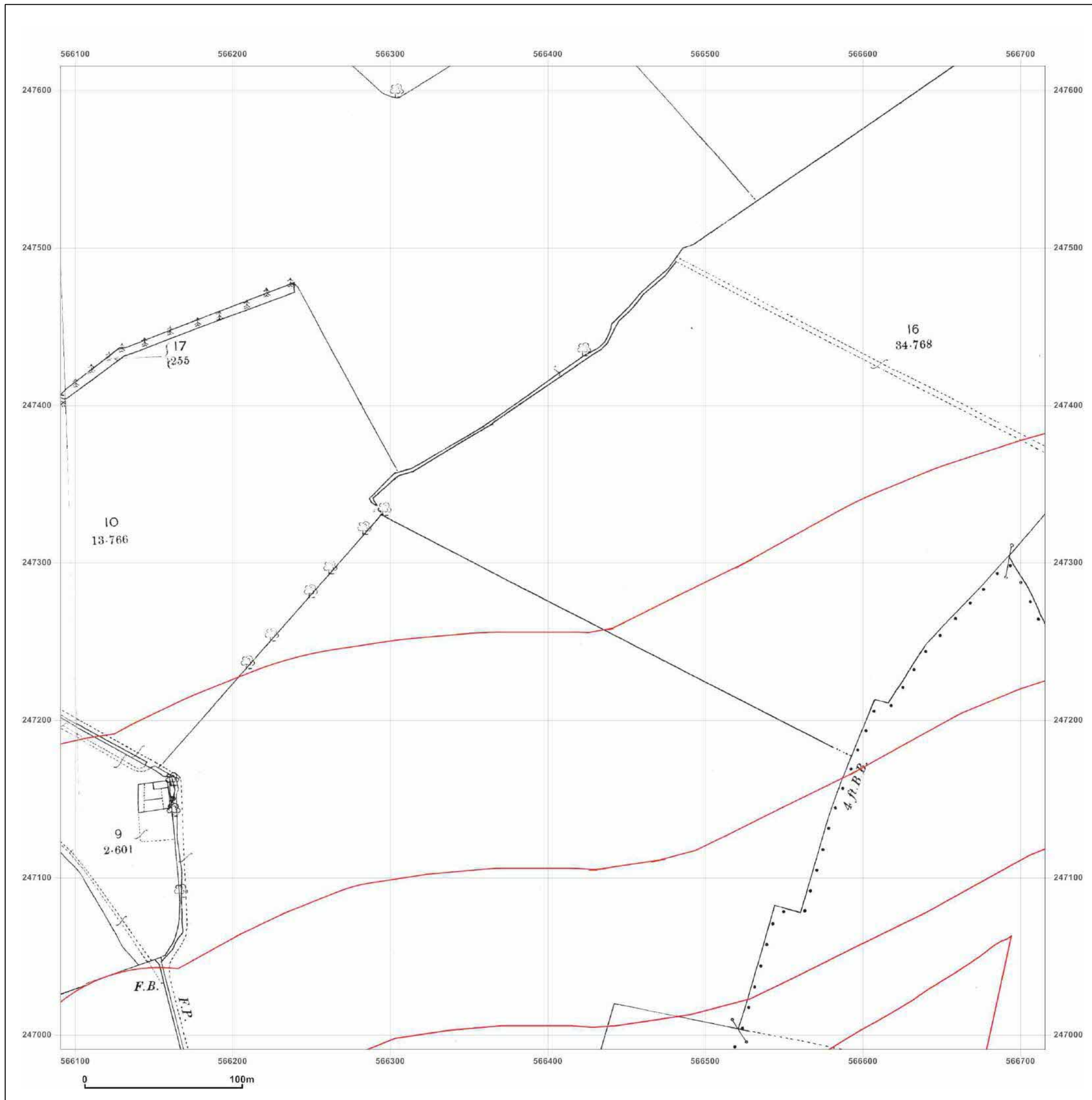
1:1,250 scales (see maps A2, B2, C2 and D2)

Small scale Ordnance Survey Map Extracts at:

1:10,000 and 1:10,560 scales

DRAFT





Site Details:

Land to NW of Haverhill, CB9
0EH

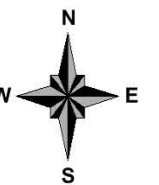
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Map Name: County Series

Map date: 1884-1885

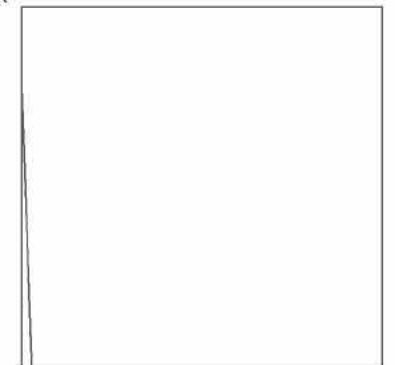
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Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

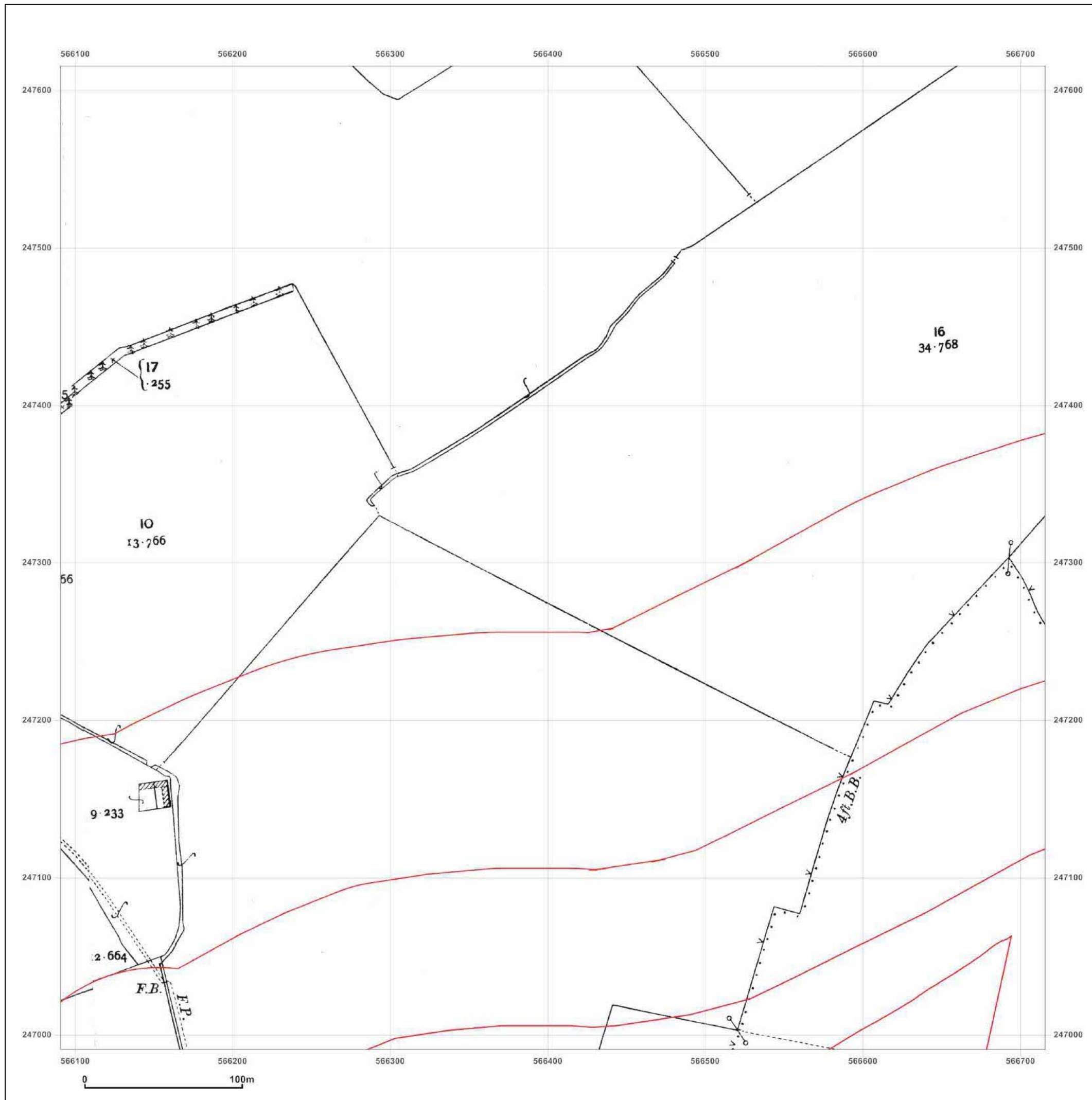


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Site Details:

Land to NW of Haverhill, CB9
0EH

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Report Ref: HMD-369-1706441_LS_B1
Grid Ref: 566403, 247303

Map Name: County Series

Map date: 1902-1903

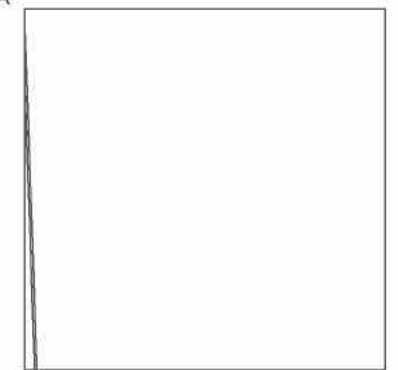
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Edition N/A
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Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A

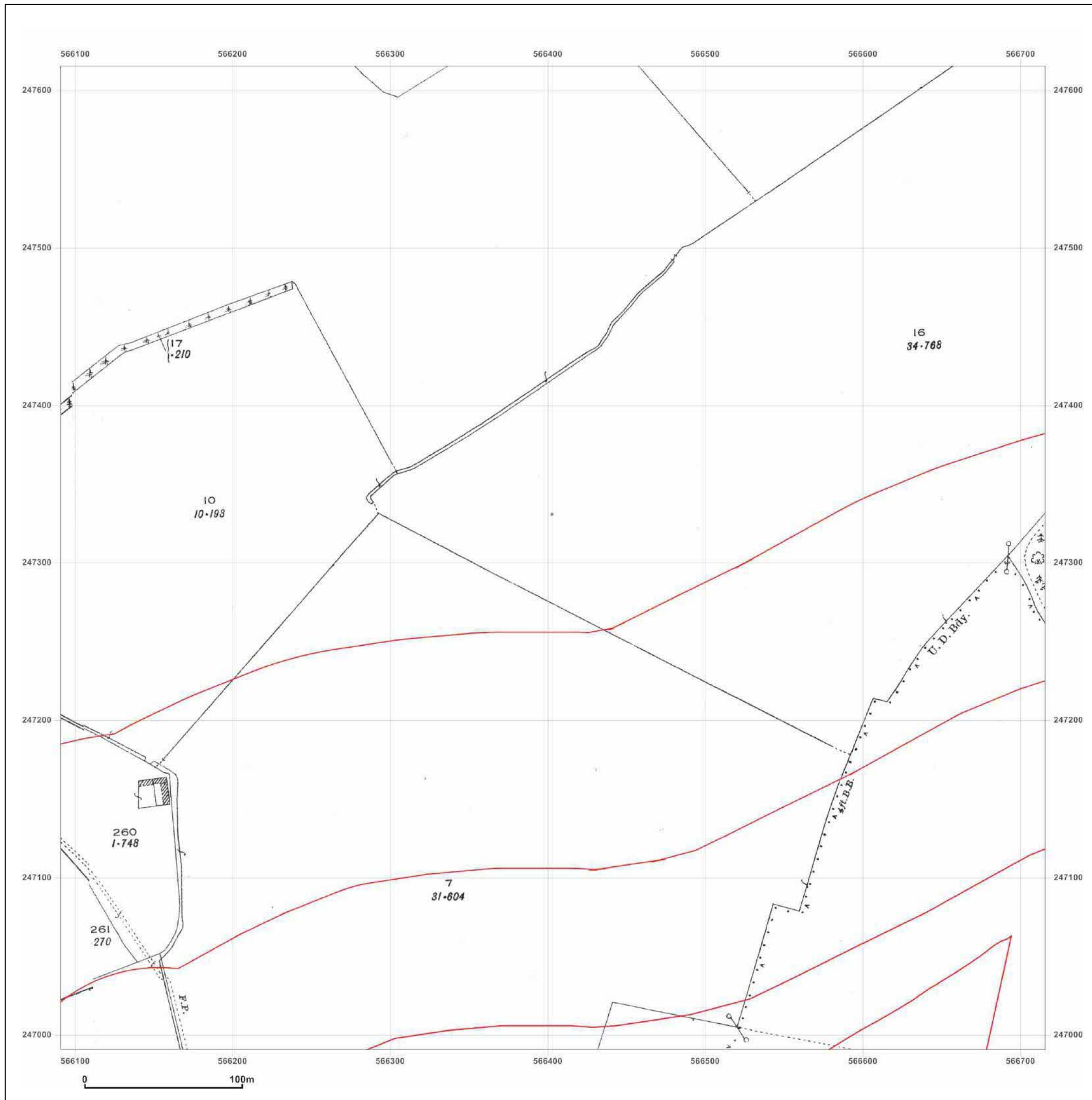


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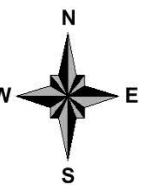
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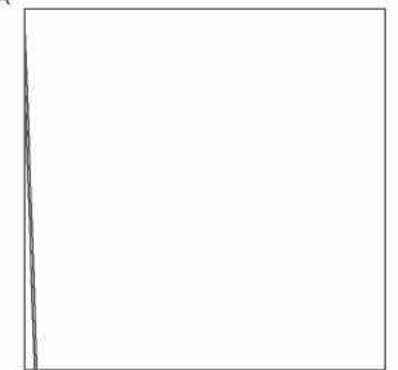
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Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1926
Revised 1926
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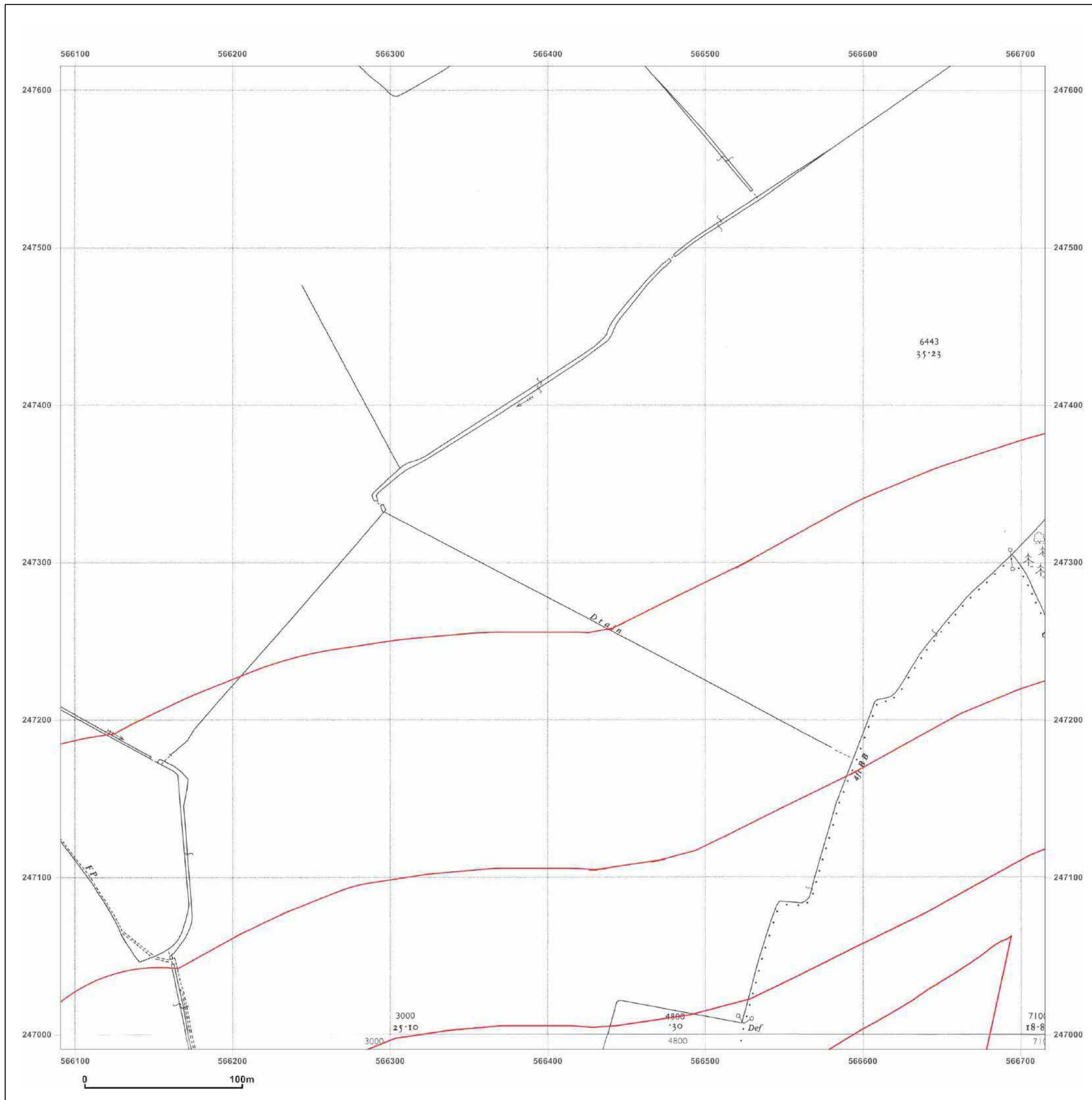


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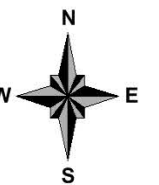
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Grid Ref: 566403, 247303

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



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Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

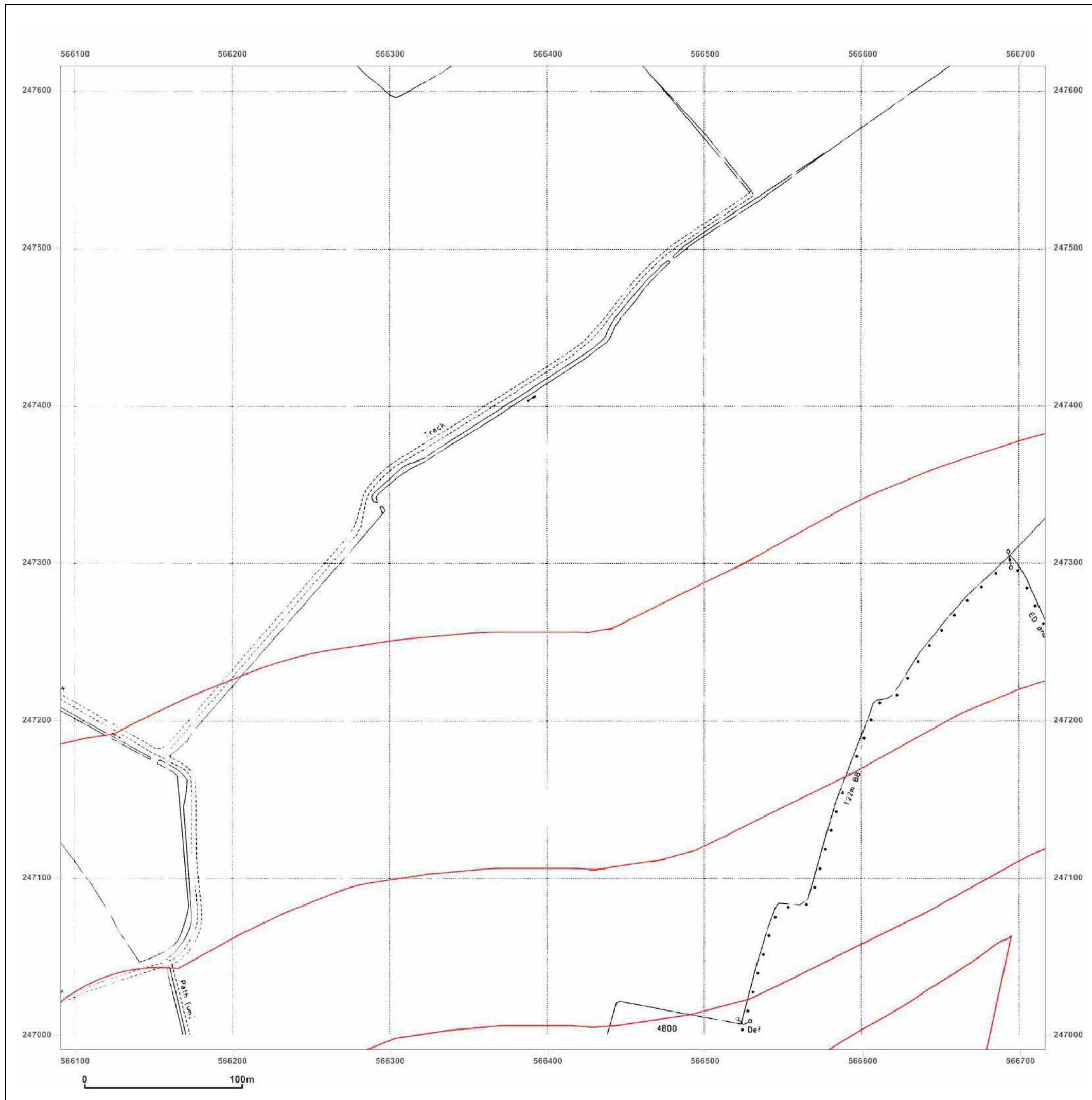


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Site Details:

Land to NW of Haverhill, CB9
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Report Ref: HMD-369-1706441_LS_B1
Grid Ref: 566403, 247303

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

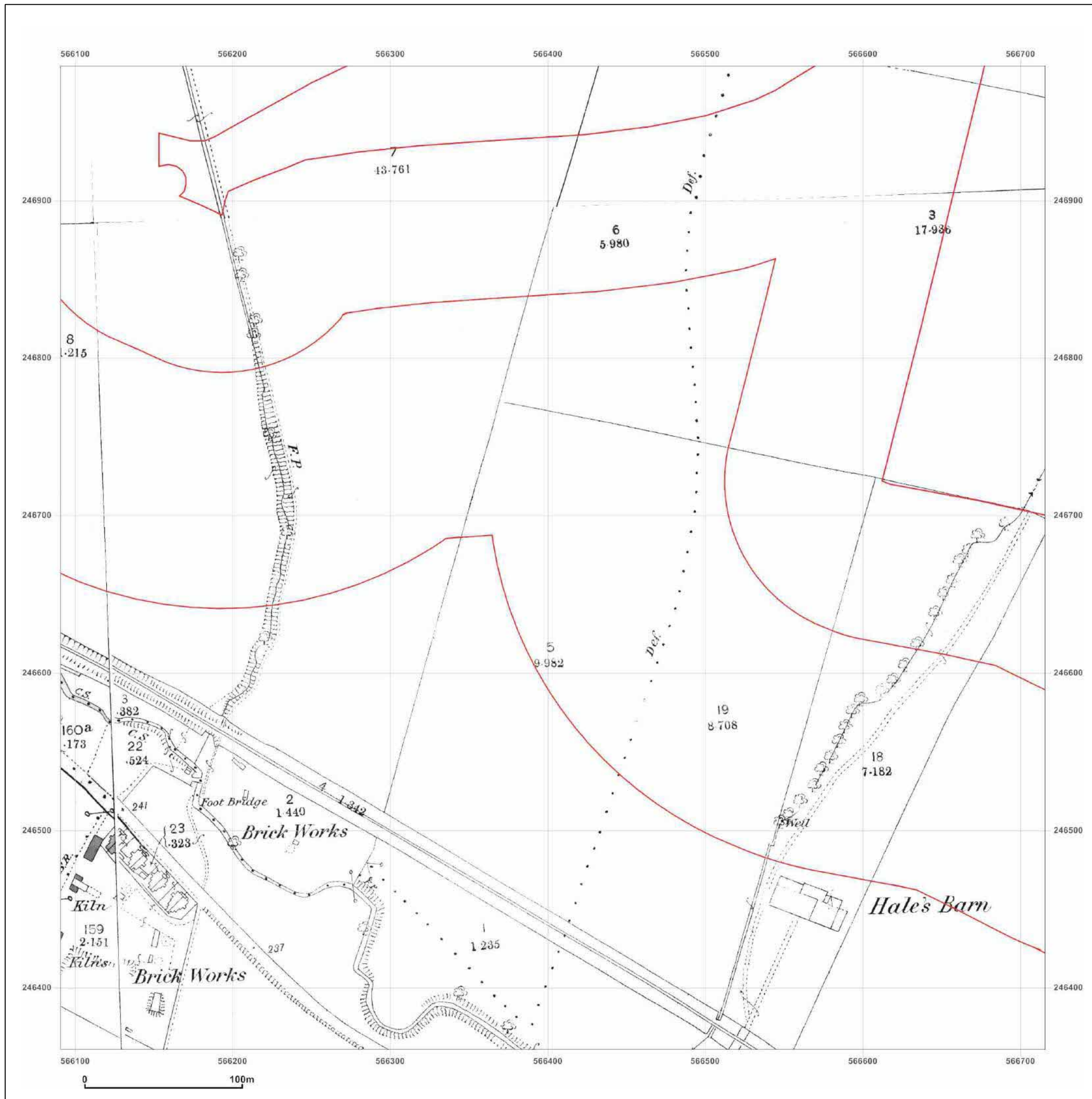


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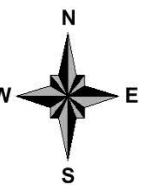
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Map Name: County Series

Map date: 1884-1885

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

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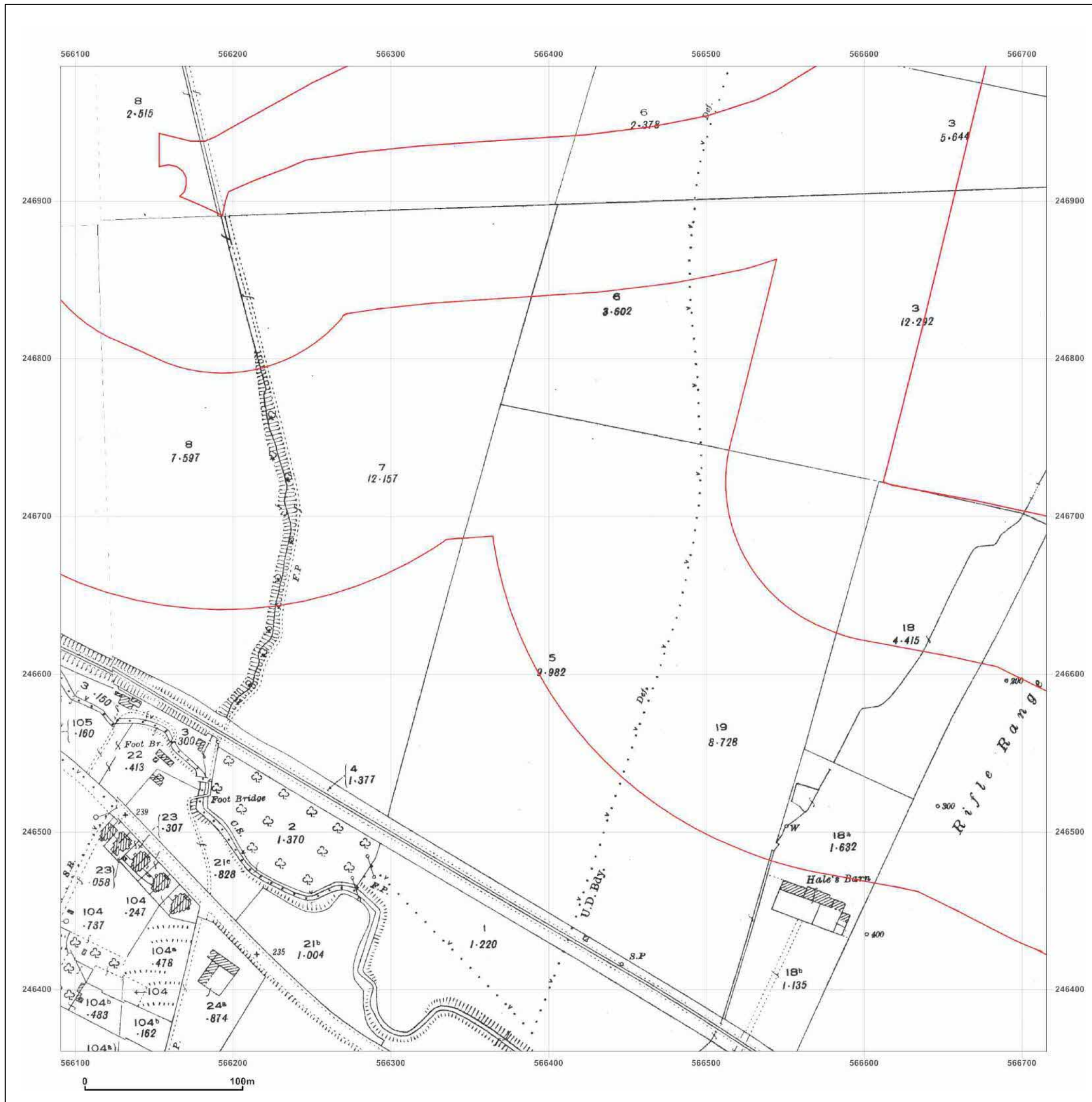


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Site Details:

Land to NW of Haverhill, CB9
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Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_B2
Grid Ref: 566403, 246673

Map Name: County Series

Map date: 1926

Scale: 1:2,500

Printed at: 1:2,500



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Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

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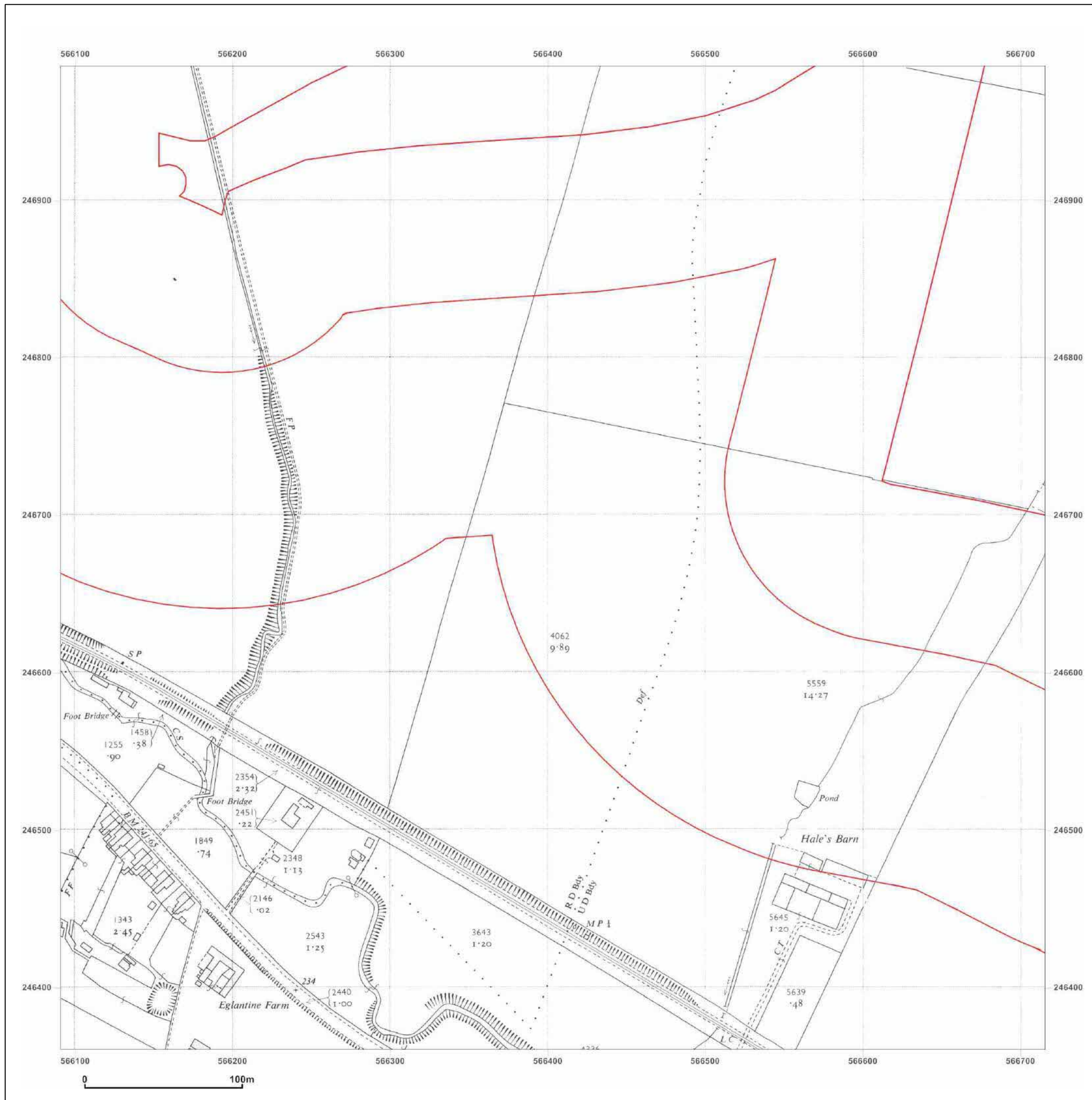


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Site Details:

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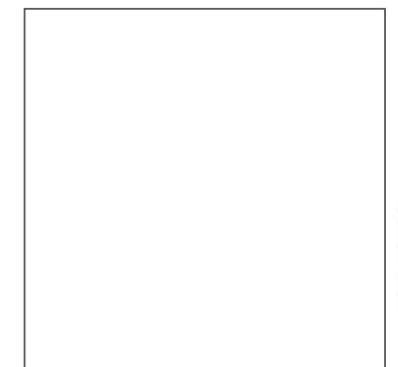
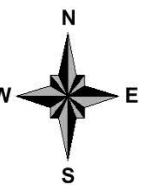
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Printed at: 1:2,500



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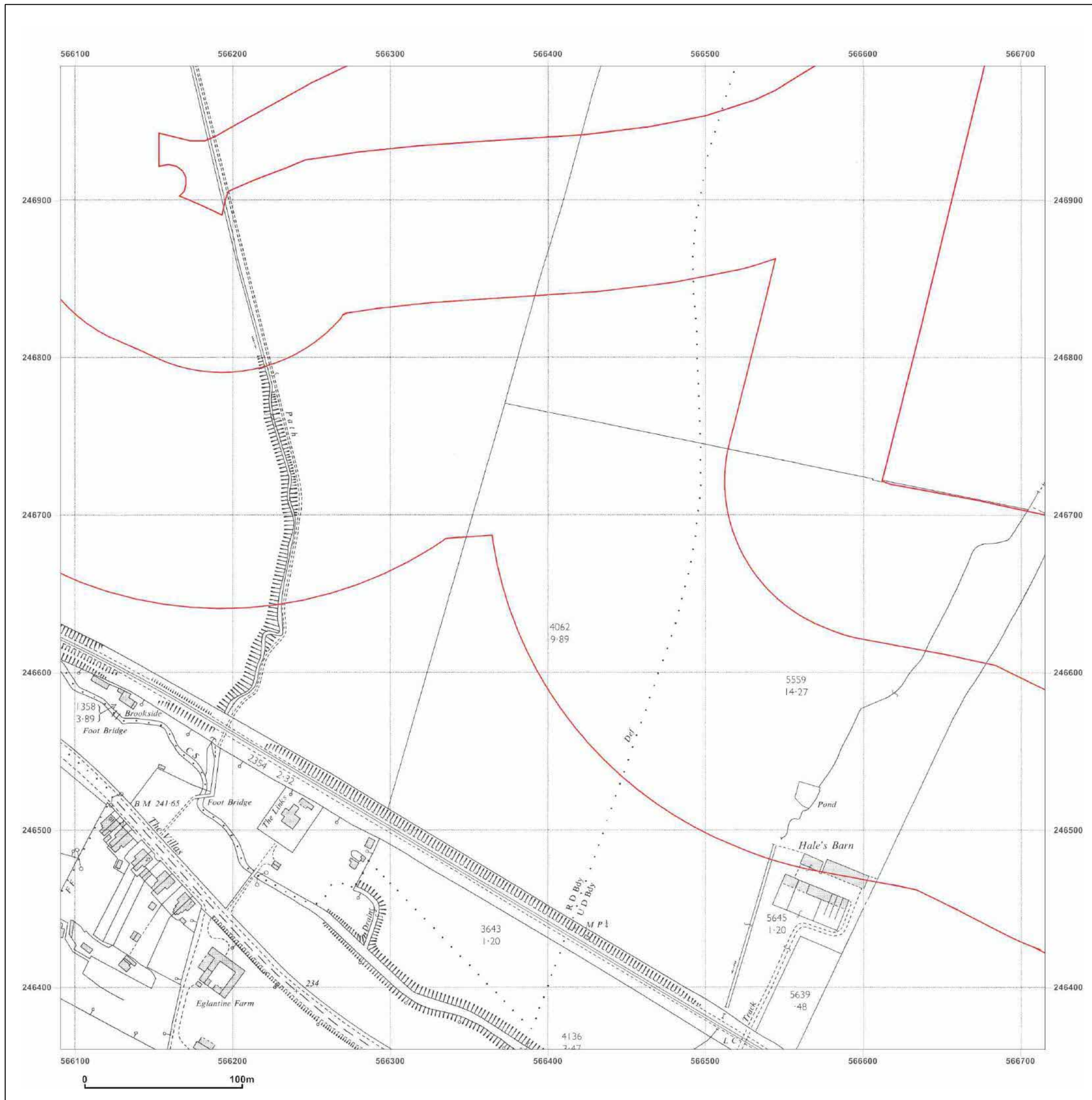


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Site Details:

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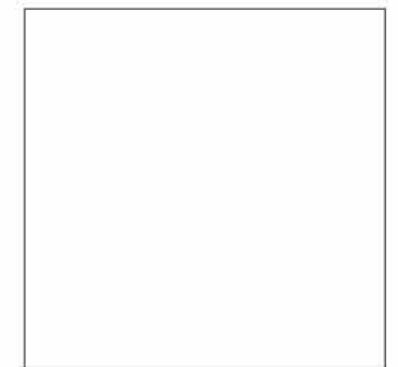
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Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



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Copyright 1968
Levelled 1956

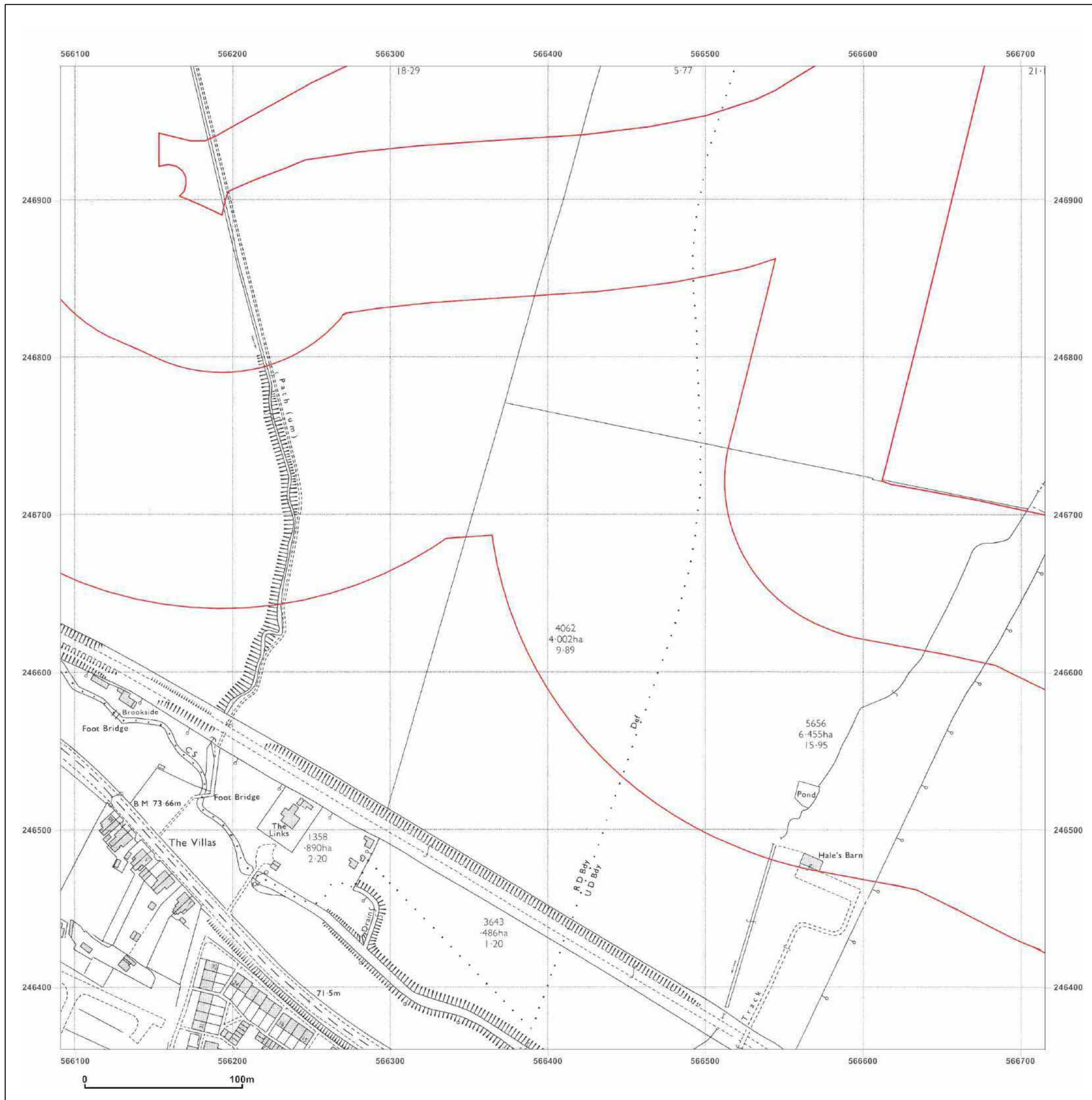


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Site Details:

Land to NW of Haverhill, CB9
0EH

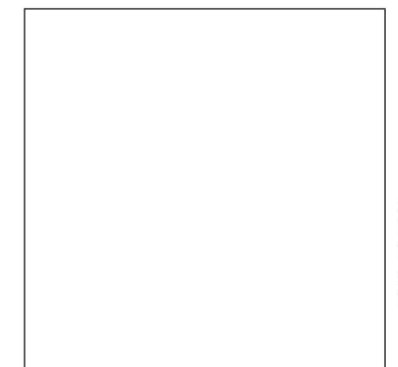
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Report Ref: HMD-369-1706441_LS_B2
Grid Ref: 566403, 246673

Map Name: National Grid

Map date: 1973

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1973
Revised 1973
Edition N/A
Copyright N/A
Levelled 1972



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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_B2
Grid Ref: 566403, 246673

Map Name: National Grid

Map date: 1980

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1980
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Site Details:

Land to NW of Haverhill, CB9
0EH

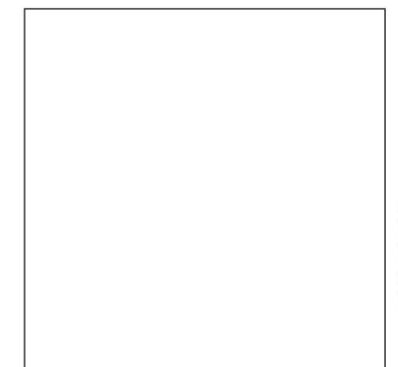
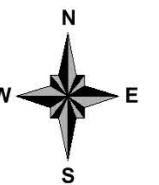
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Report Ref: HMD-369-1706441_LS_B2
Grid Ref: 566403, 246673

Map Name: National Grid

Map date: 1982

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1982
Revised 1982
Edition N/A
Copyright 1983
Levelled 1972

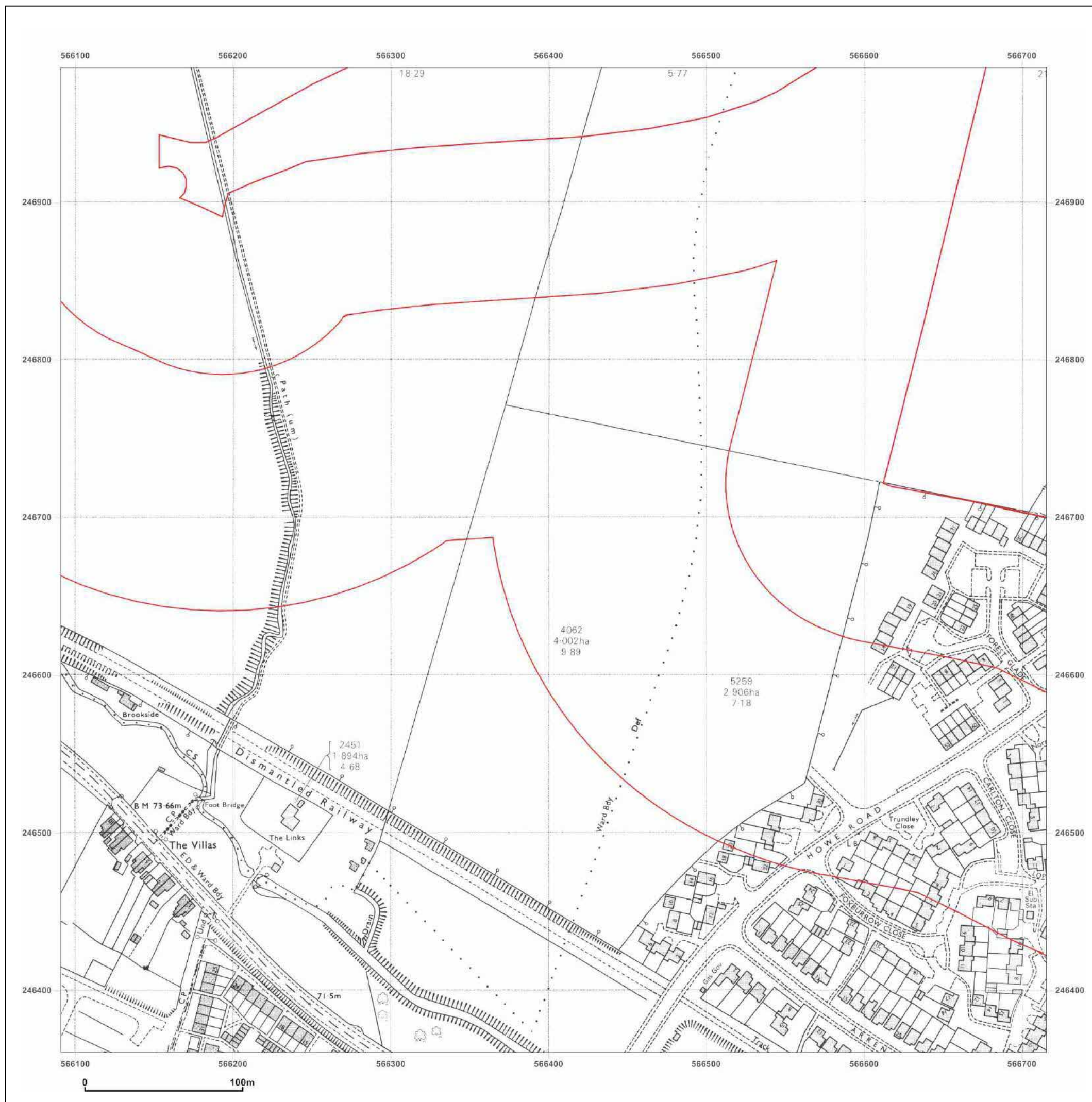


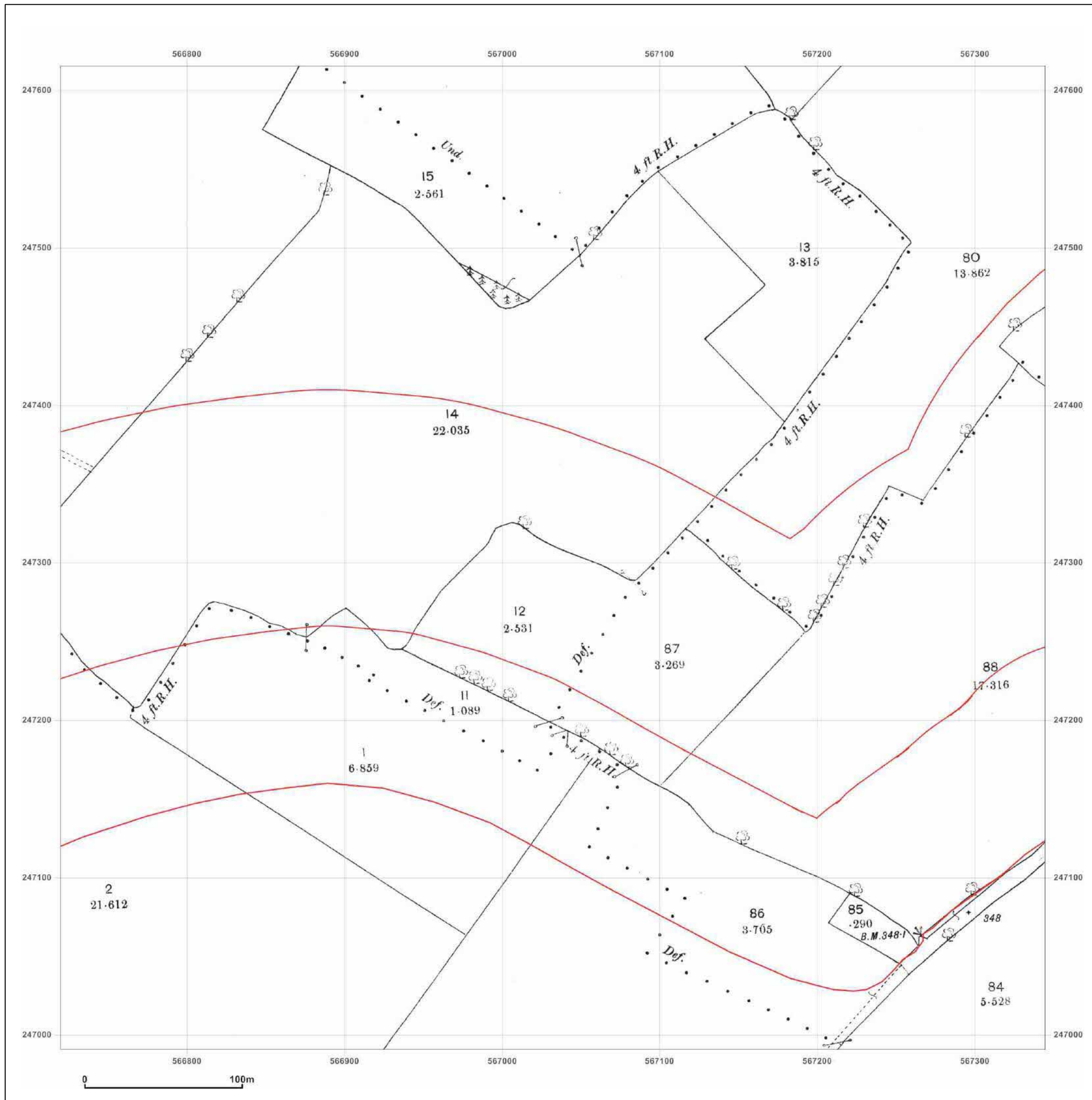
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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C1
Grid Ref: 567032, 247303

Map Name: County Series

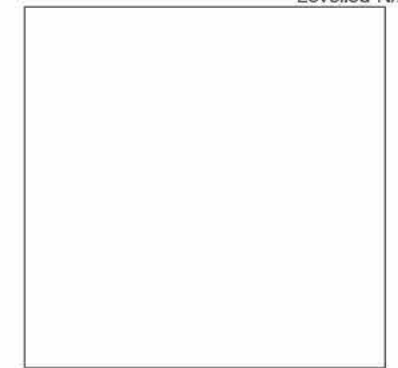
Map date: 1884

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1884
Revised 1884
Edition N/A
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Site Details:

Land to NW of Haverhill, CB9
0EH

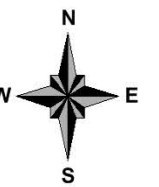
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Report Ref: HMD-369-1706441_LS_C1
Grid Ref: 567032, 247303

Map Name: County Series

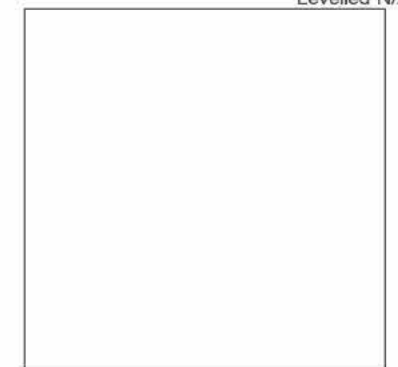
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Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A

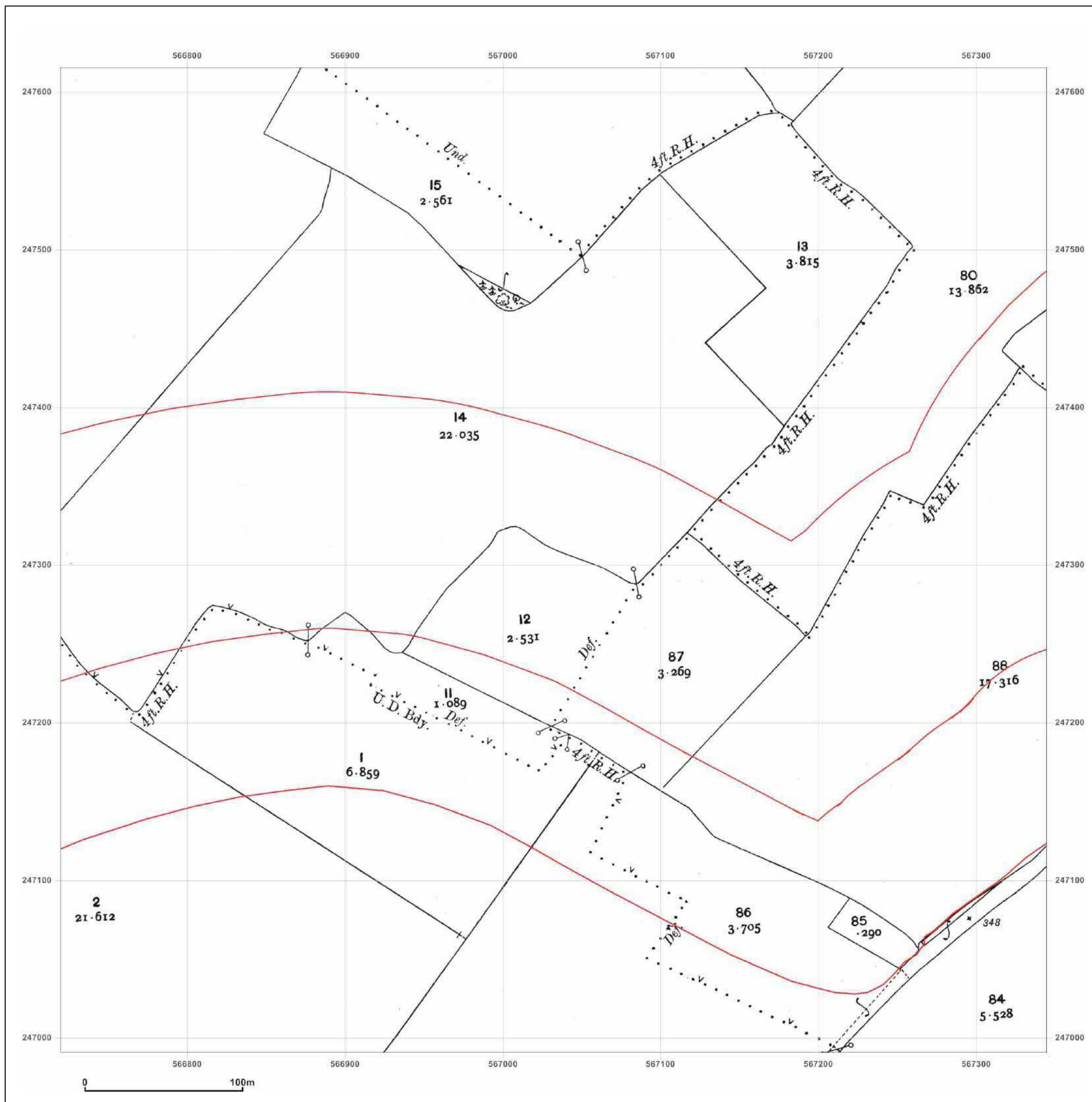


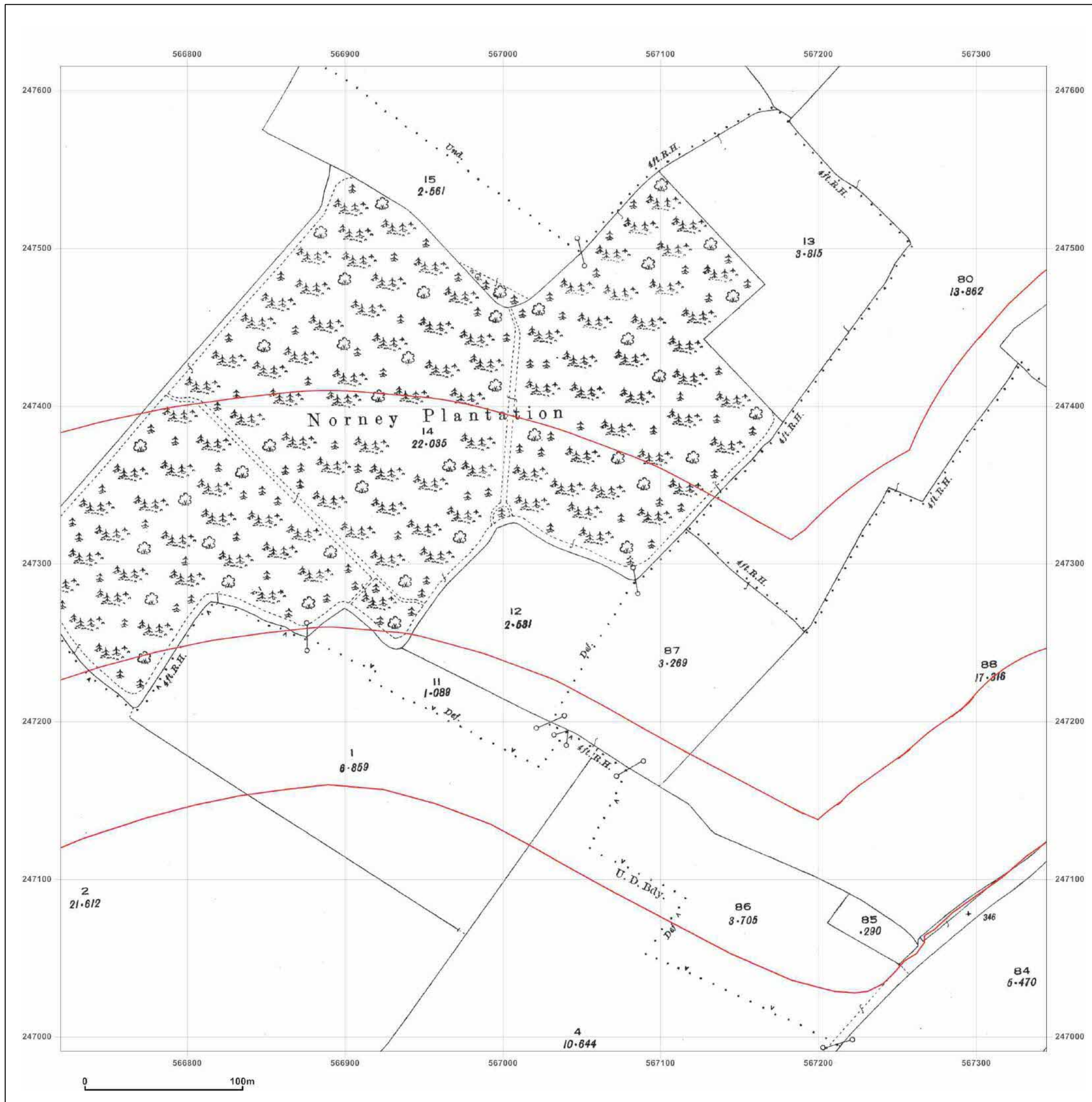
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Site Details:

Land to NW of Haverhill, CB9
OEH

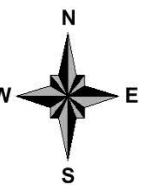
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Map Name: County Series

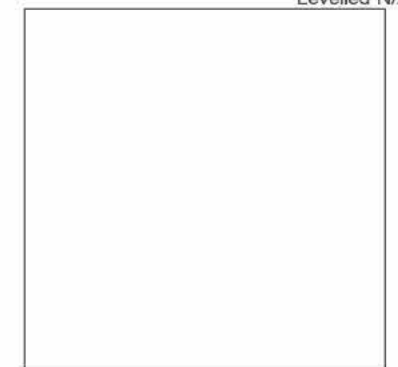
Map date: 1926

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1926
Revised 1926
Edition N/A
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Site Details:

Land to NW of Haverhill, CB9
0EH

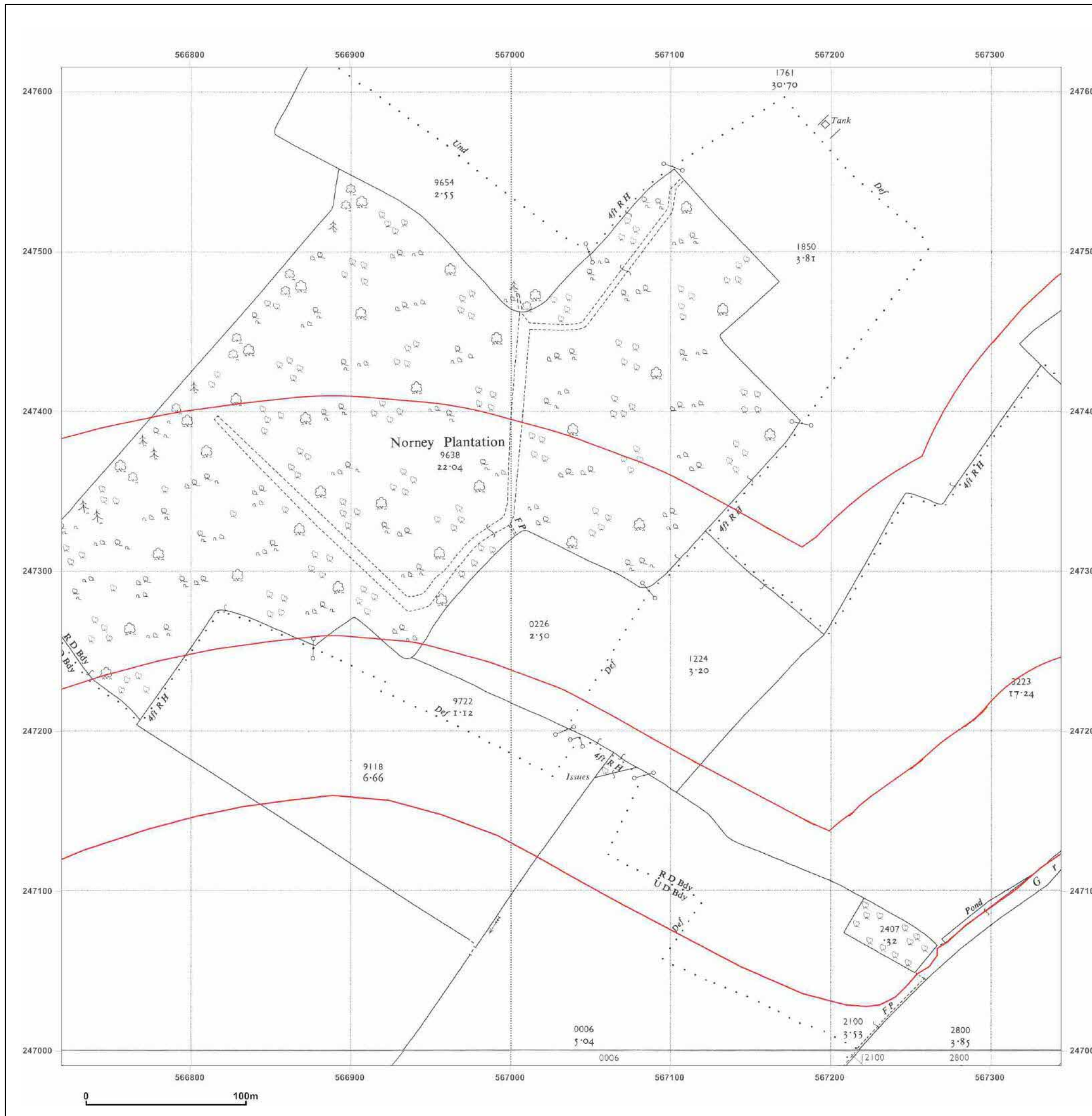
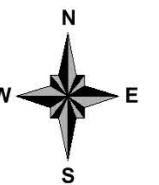
Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C1
Grid Ref: 567032, 247303

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

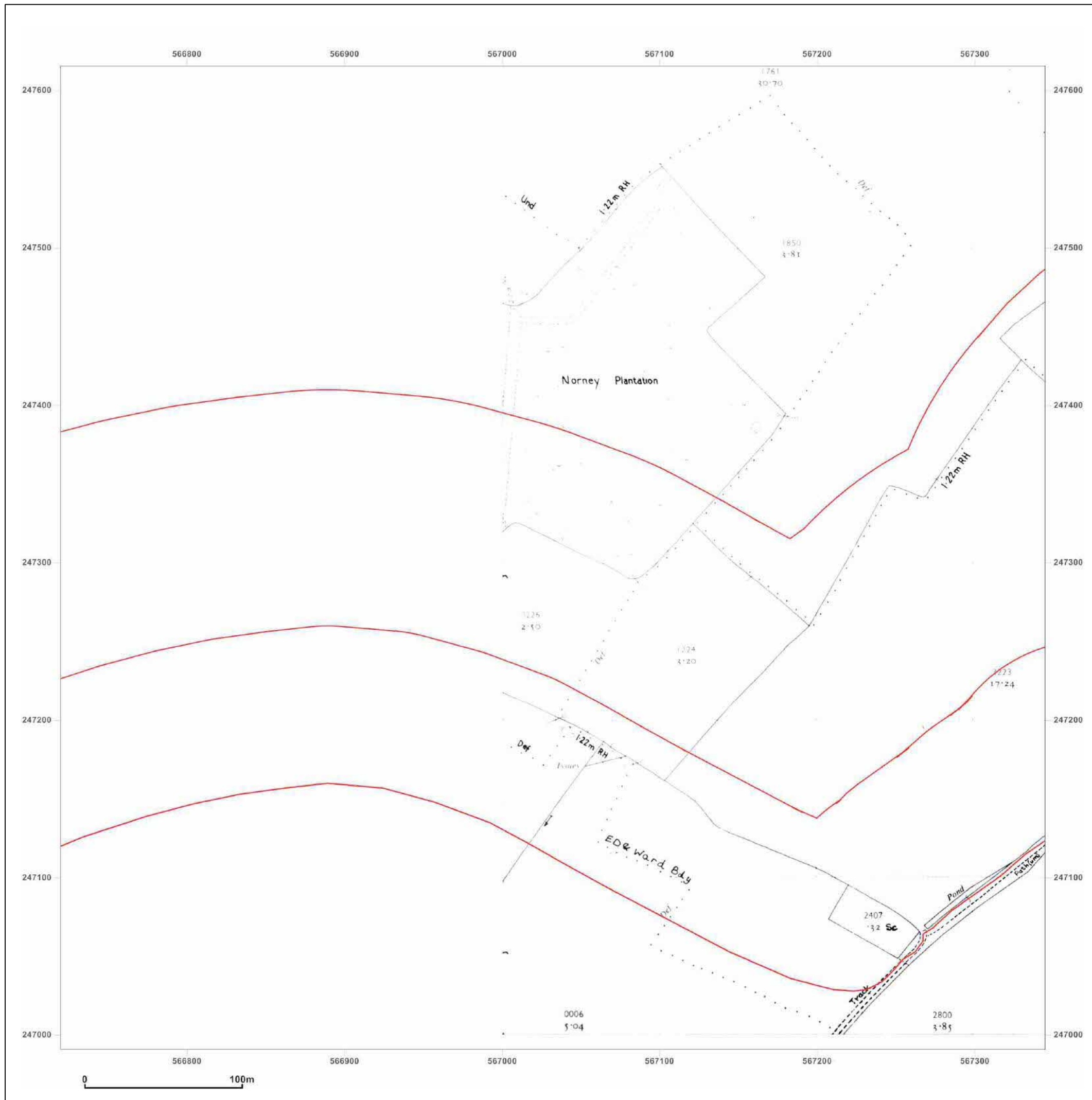


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Site Details:

Land to NW of Haverhill, CB9
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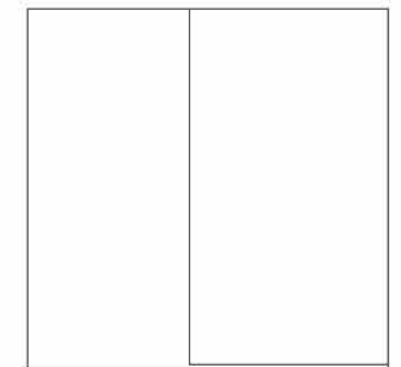
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Report Ref: HMD-369-1706441_LS_C1
Grid Ref: 567032, 247303

Map Name: National Grid

Map date: 1988

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1988
Revised 1988
Edition N/A
Copyright 1988
Levelled N/A

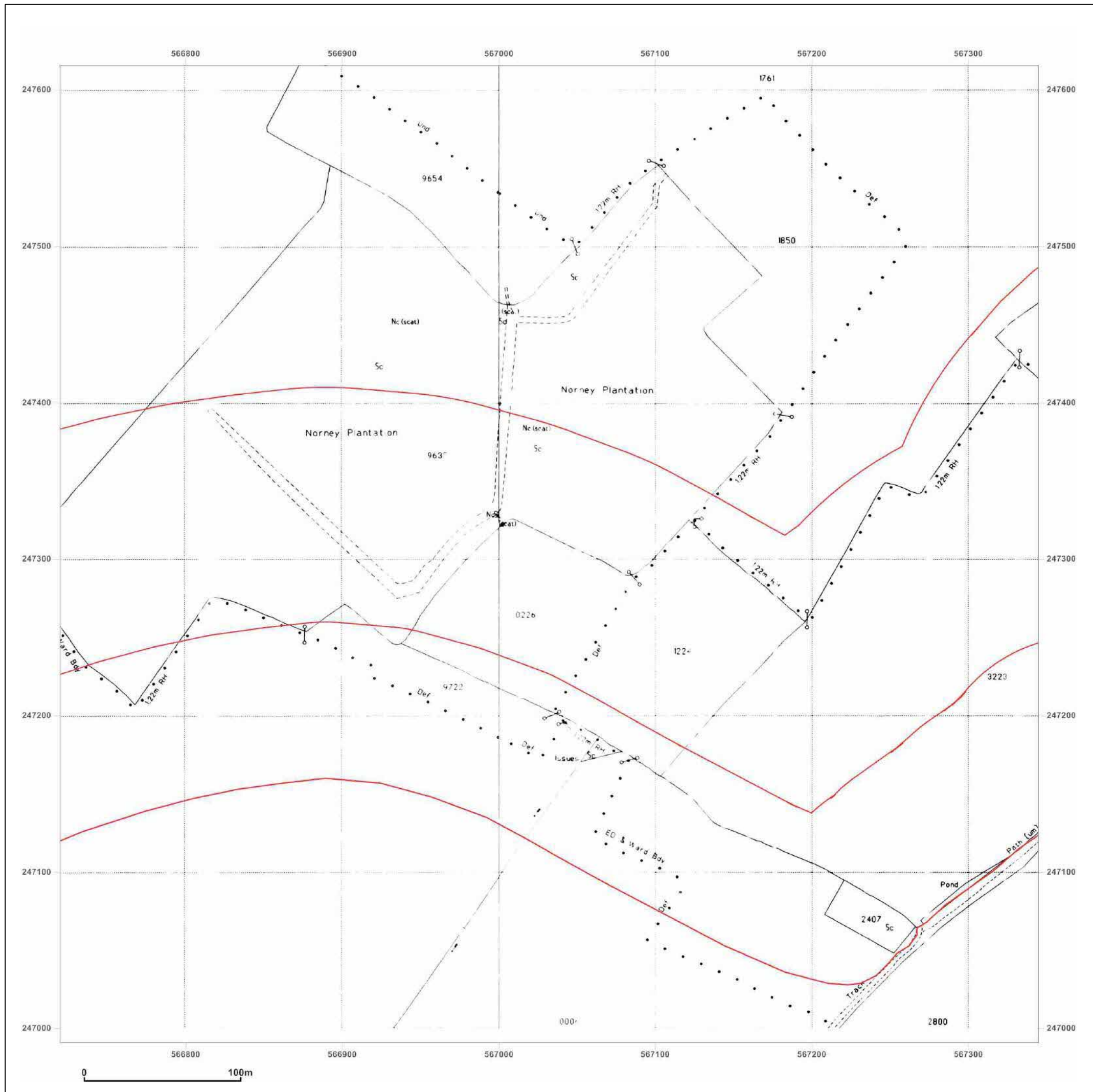


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0EH

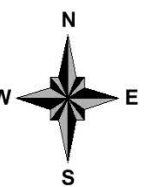
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Report Ref: HMD-369-1706441_LS_C1
Grid Ref: 567032, 247303

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

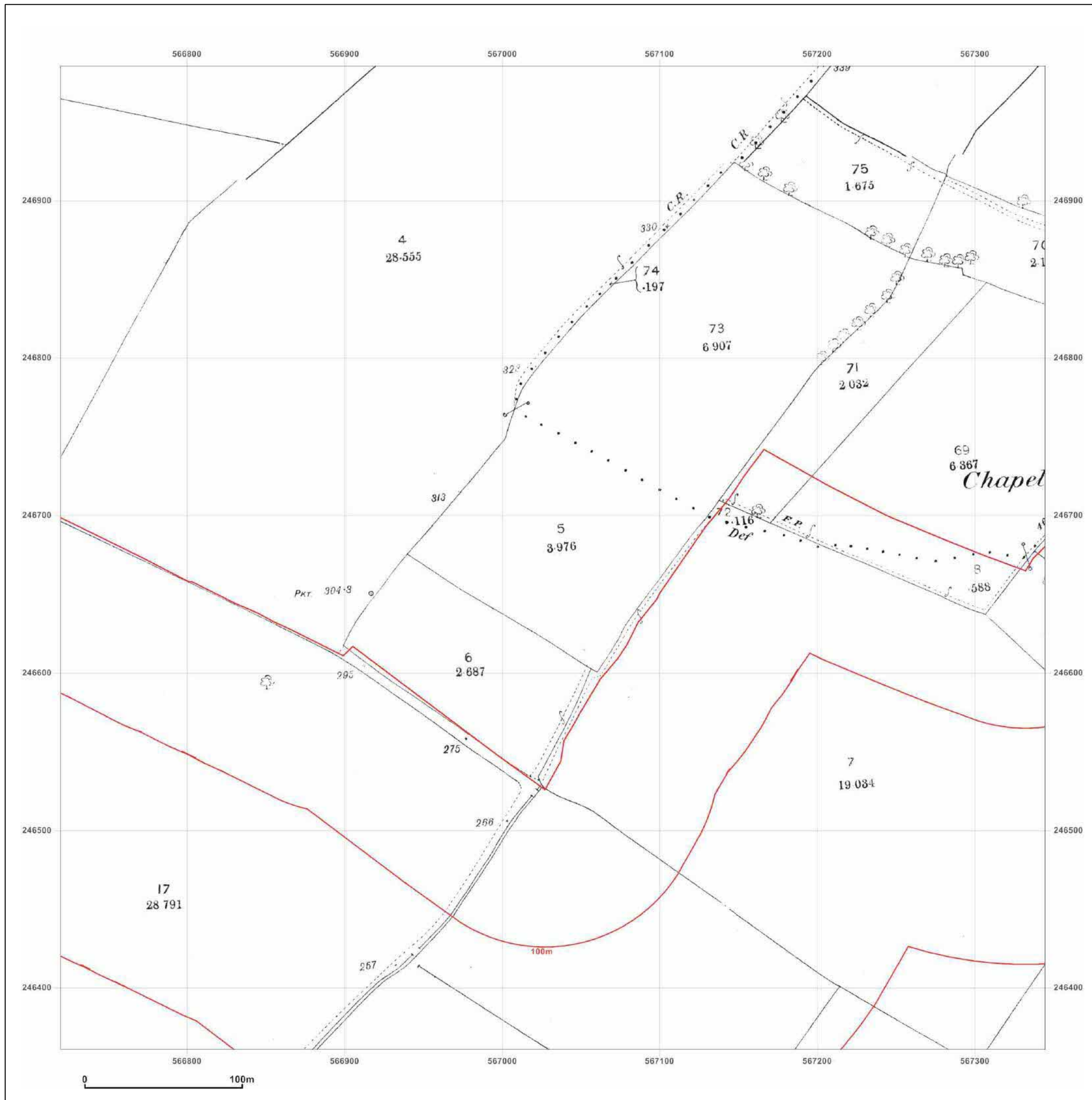


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Site Details:

Land to NW of Haverhill, CB9
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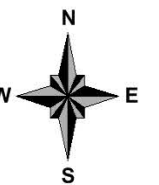
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Map Name: County Series

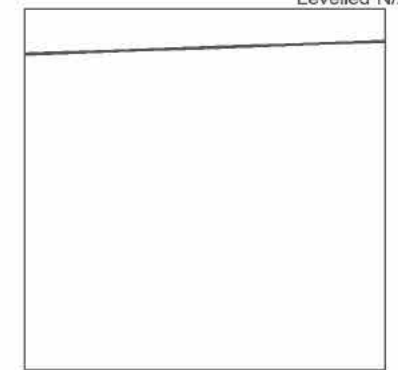
Map date: 1884

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

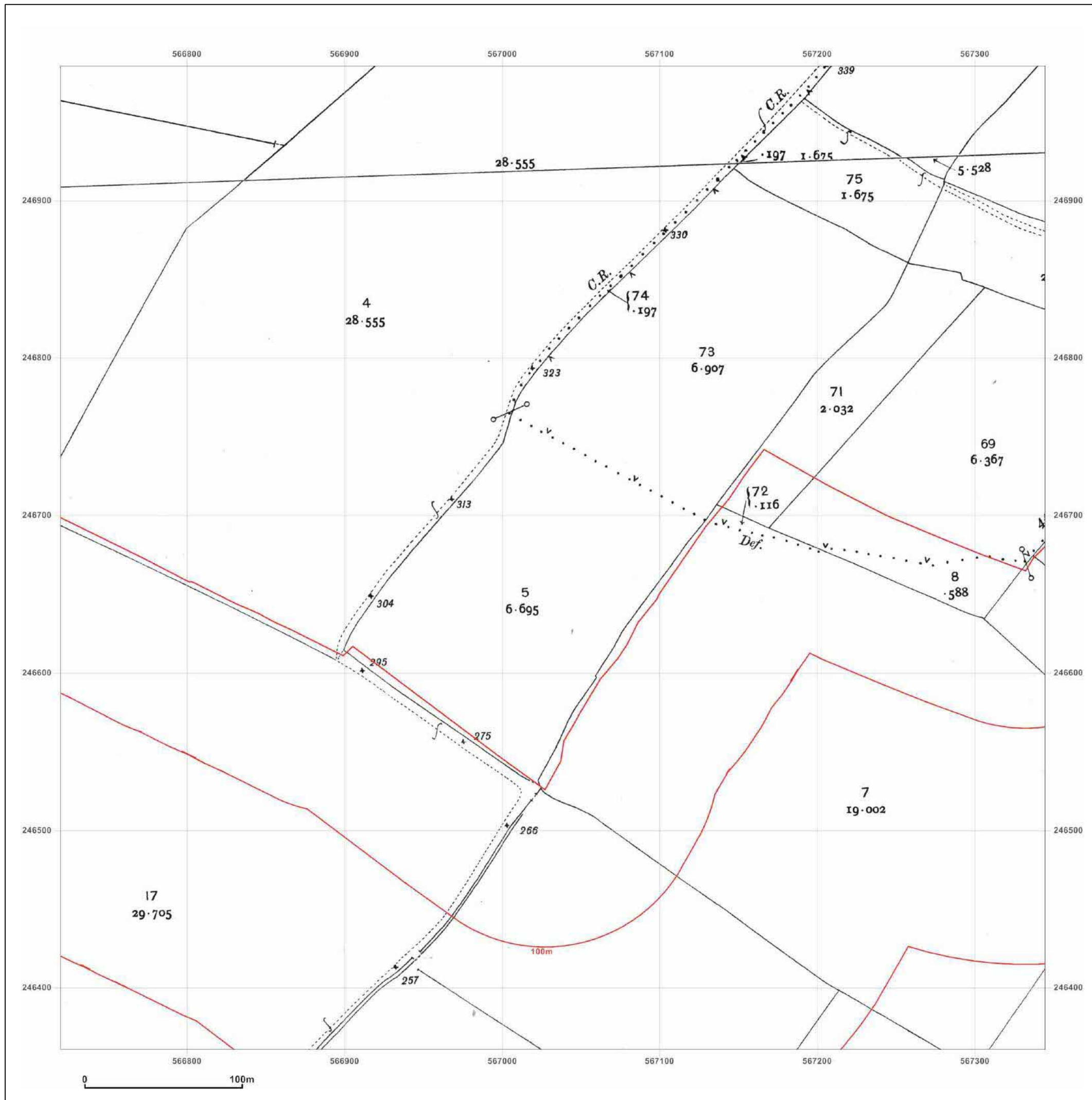


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: County Series

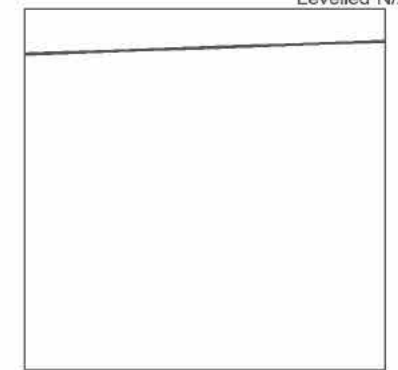
Map date: 1902

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A

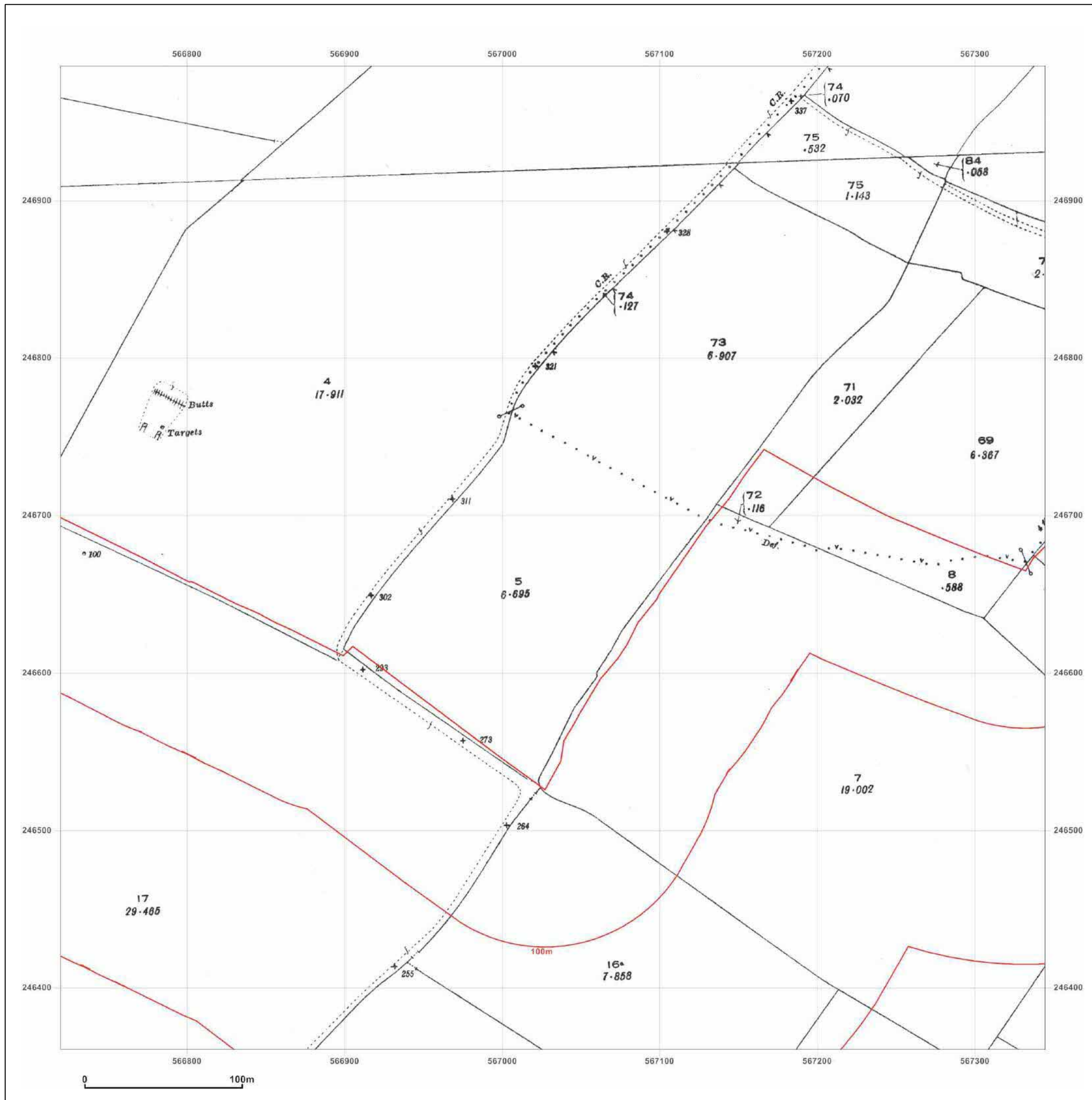


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Site Details:

Land to NW of Haverhill, CB9
0EH

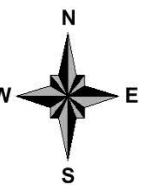
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Grid Ref: 567032, 246673

Map Name: County Series

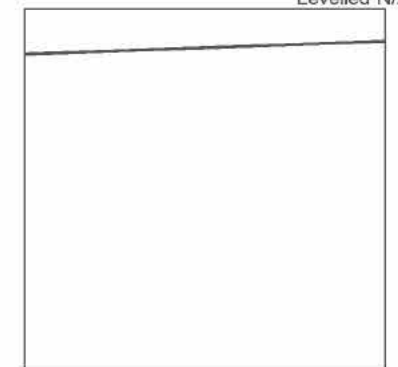
Map date: 1926

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1926
Revised 1926
Edition N/A
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Site Details:

Land to NW of Haverhill, CB9
0EH

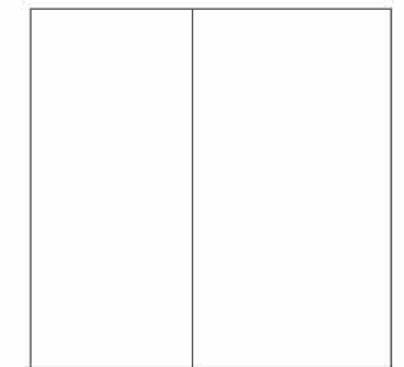
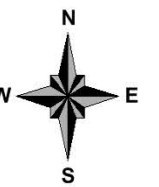
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Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1956

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled 1956

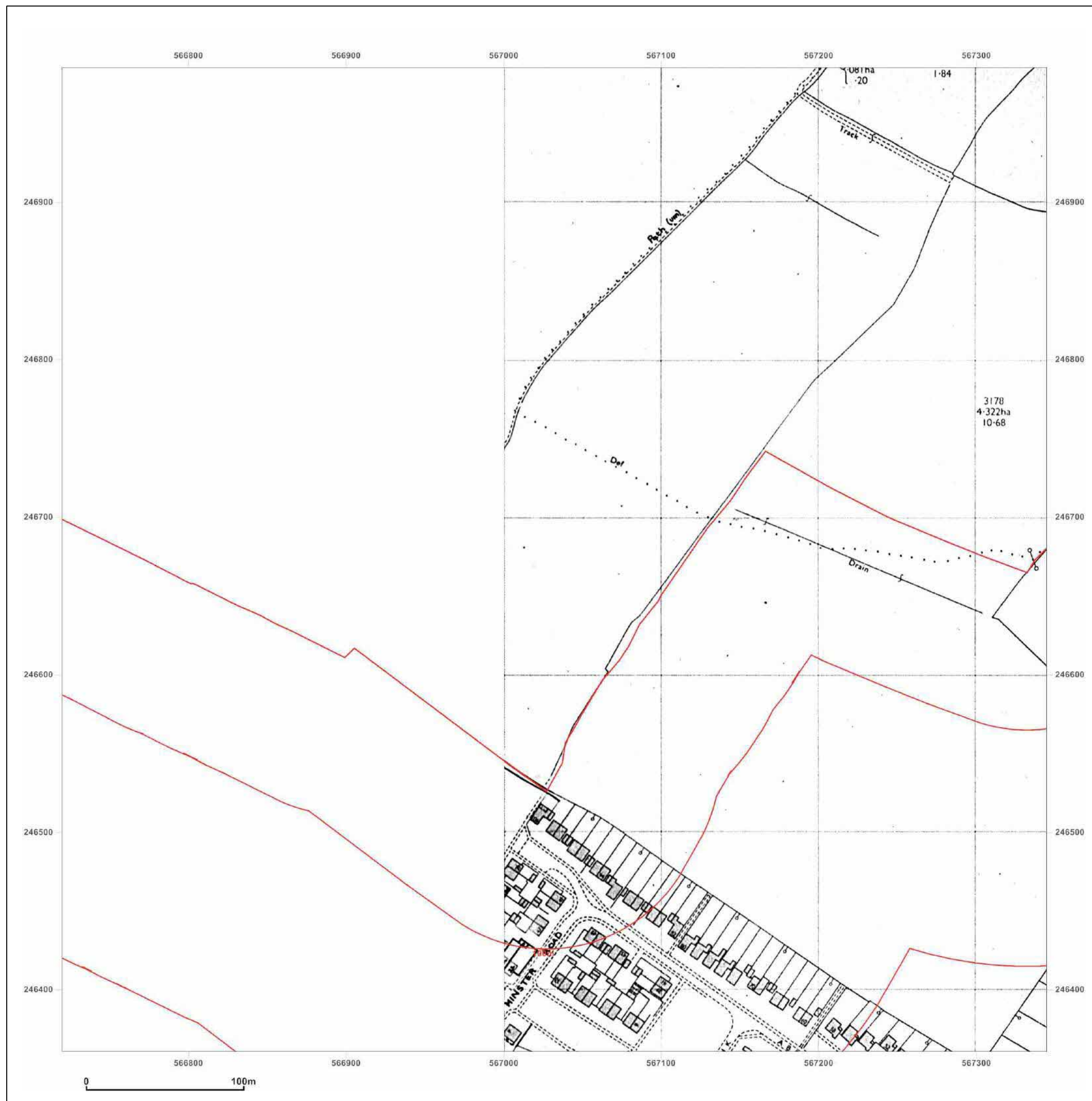


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Site Details:

Land to NW of Haverhill, CB9
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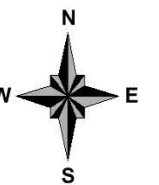
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Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

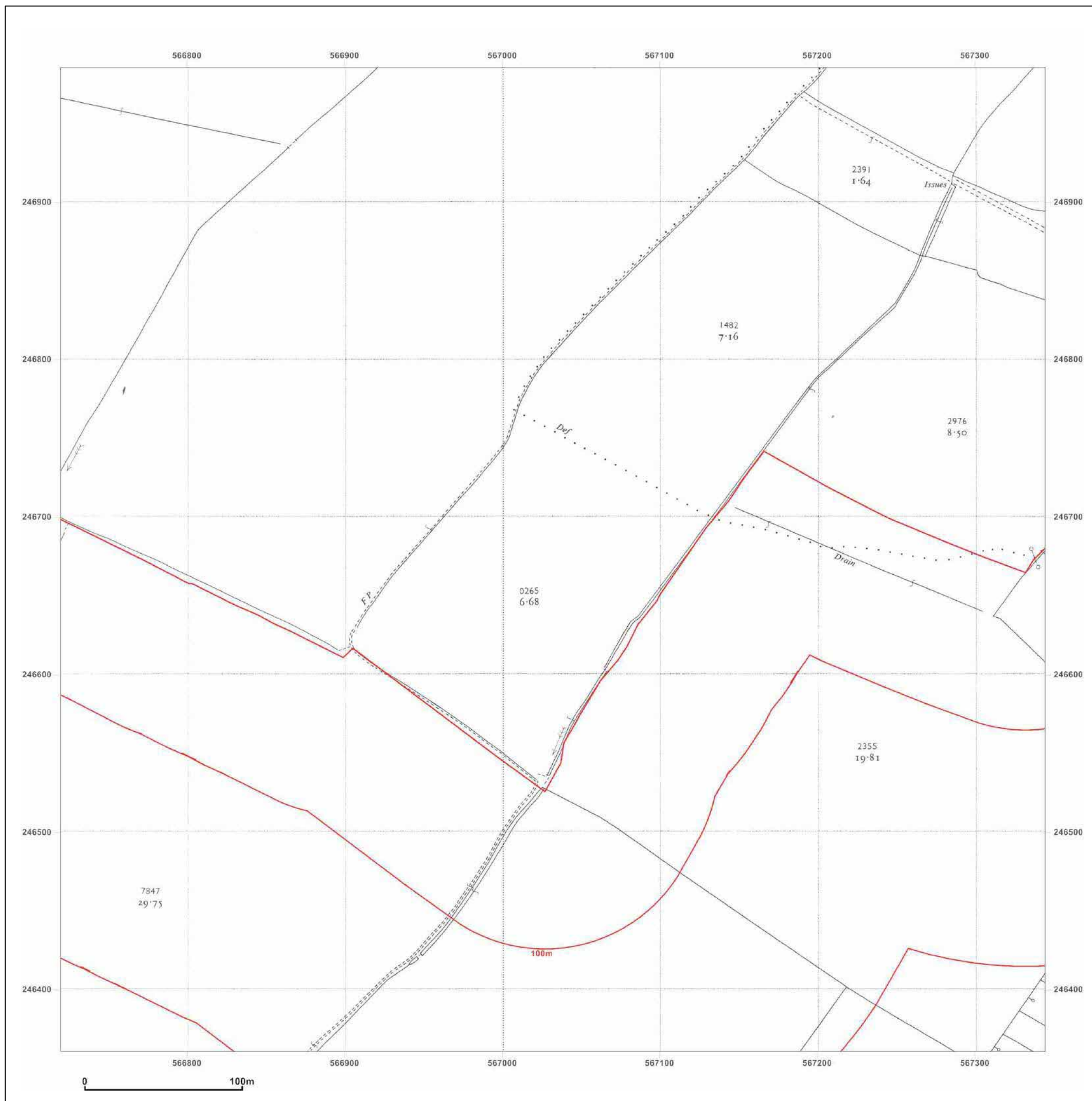


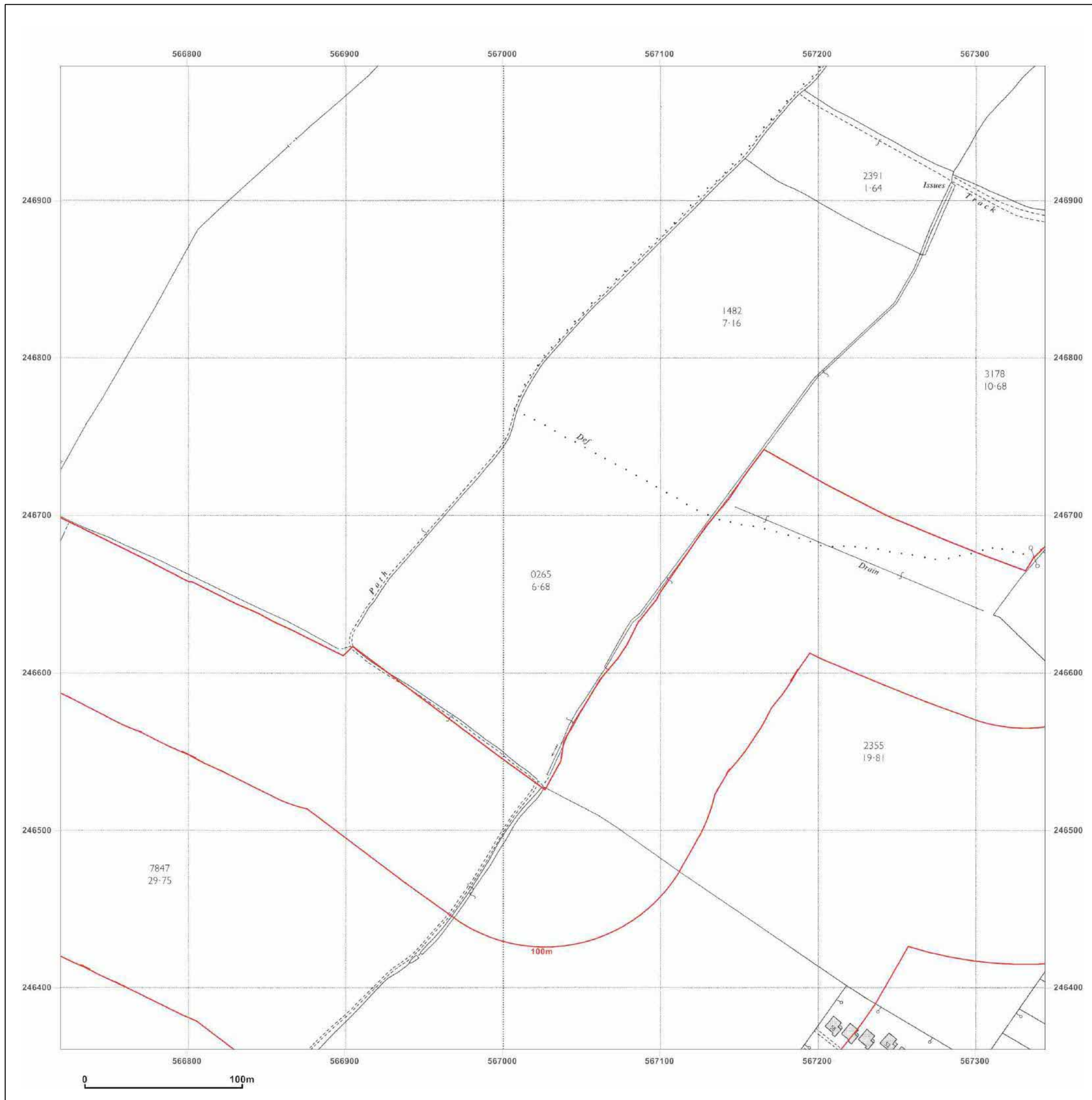
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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1968
Revised 1968
Edition N/A
Copyright 1968
Levelled 1956

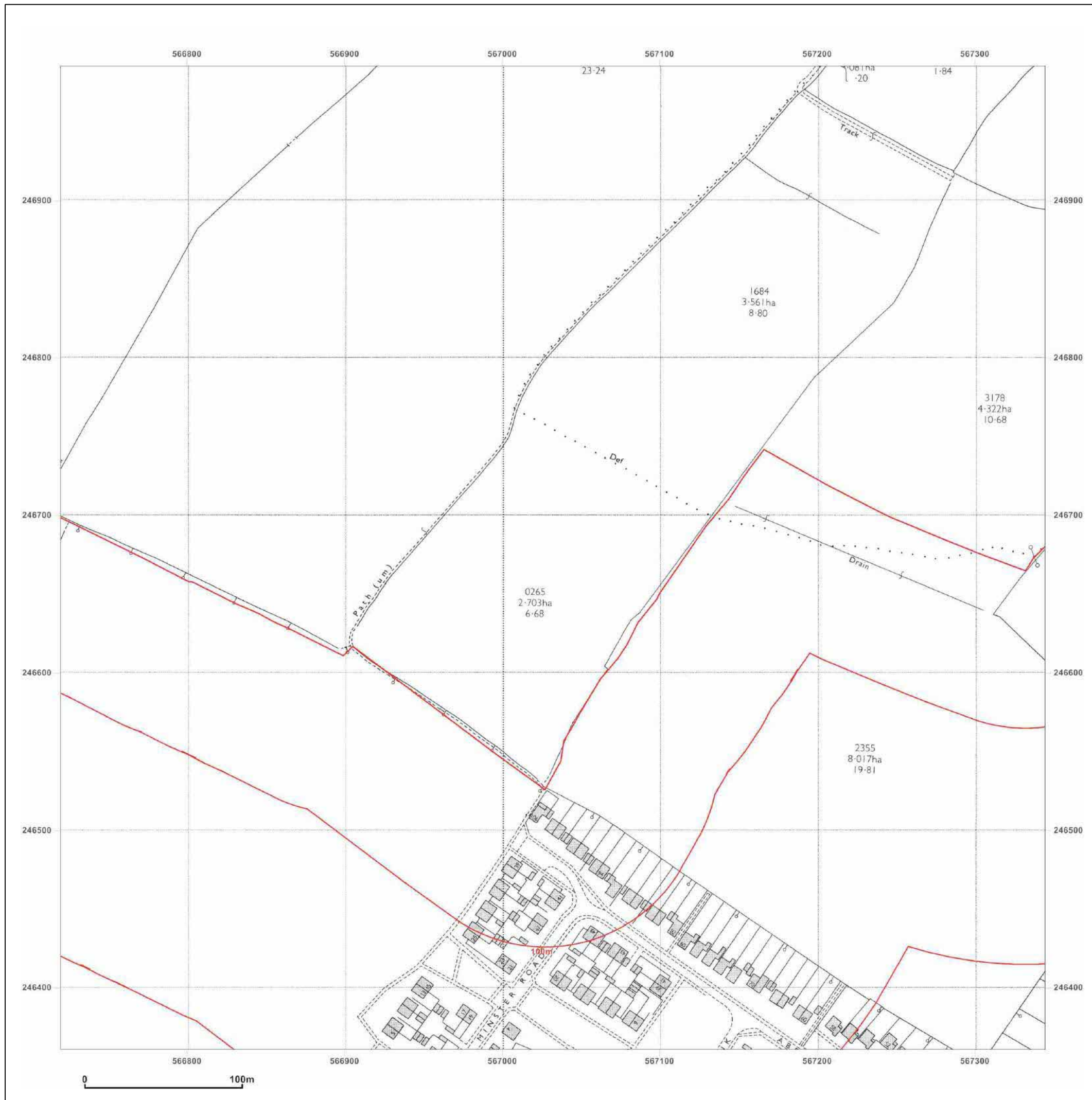


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Site Details:

Land to NW of Haverhill, CB9
0EH

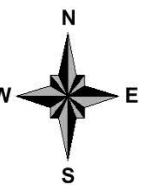
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Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1973

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1973
Revised 1973
Edition N/A
Copyright N/A
Levelled 1972

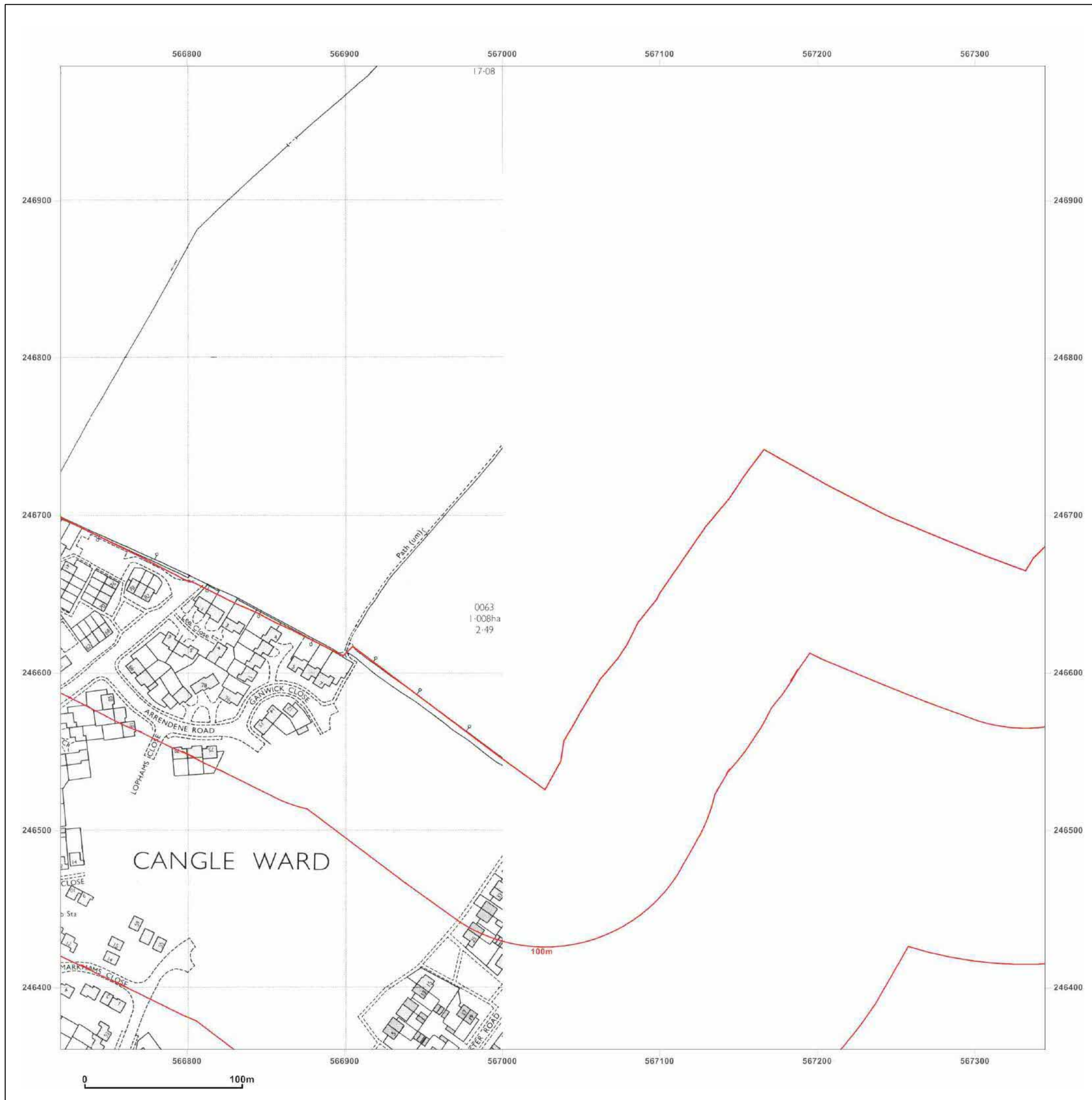


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1980

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1980
Revised 1980
Edition N/A
Copyright 1981
Levelled 1972

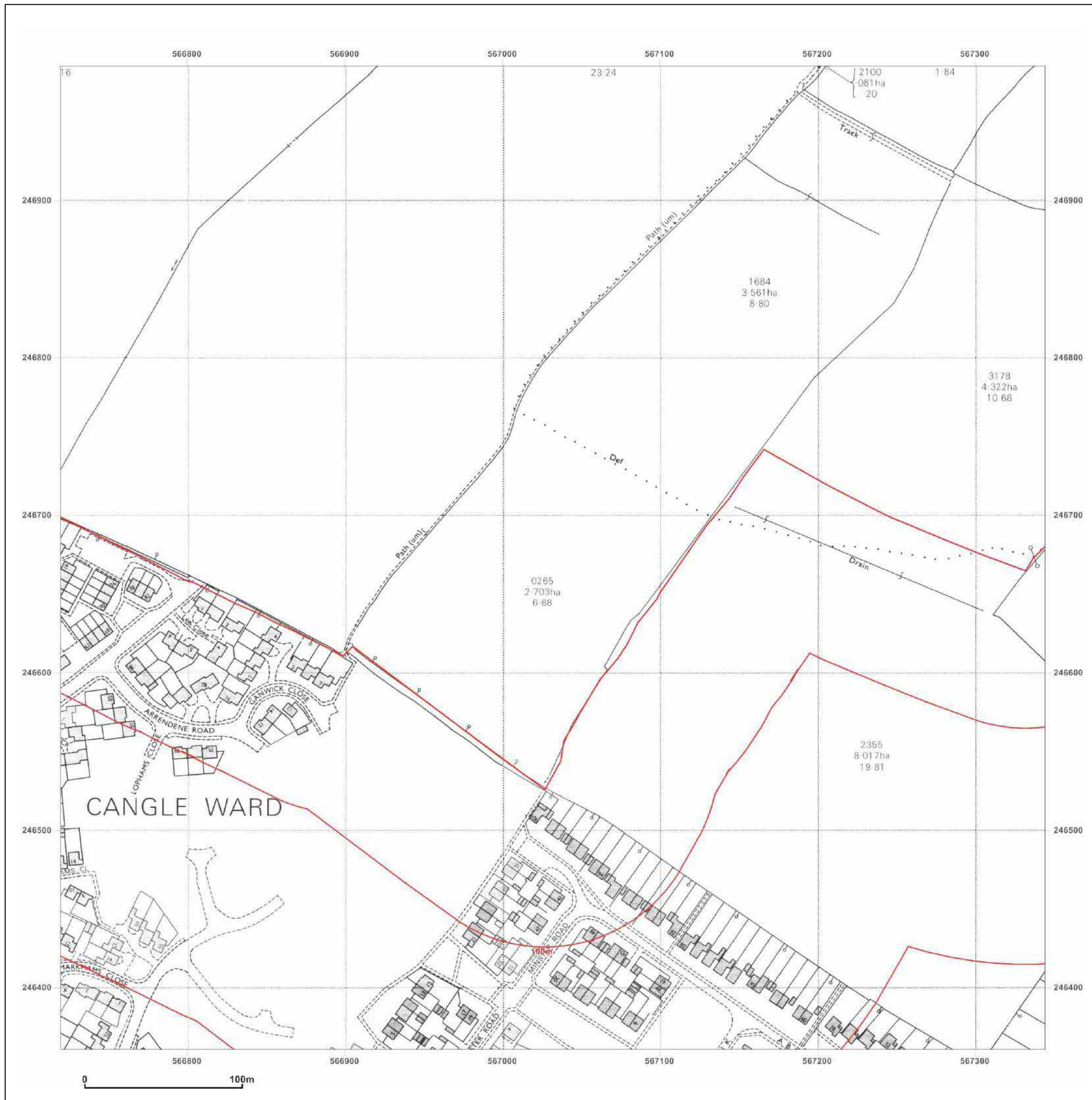


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_C2
Grid Ref: 567032, 246673

Map Name: National Grid

Map date: 1982

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1982
Revised 1982
Edition N/A
Copyright 1983
Levelled 1972

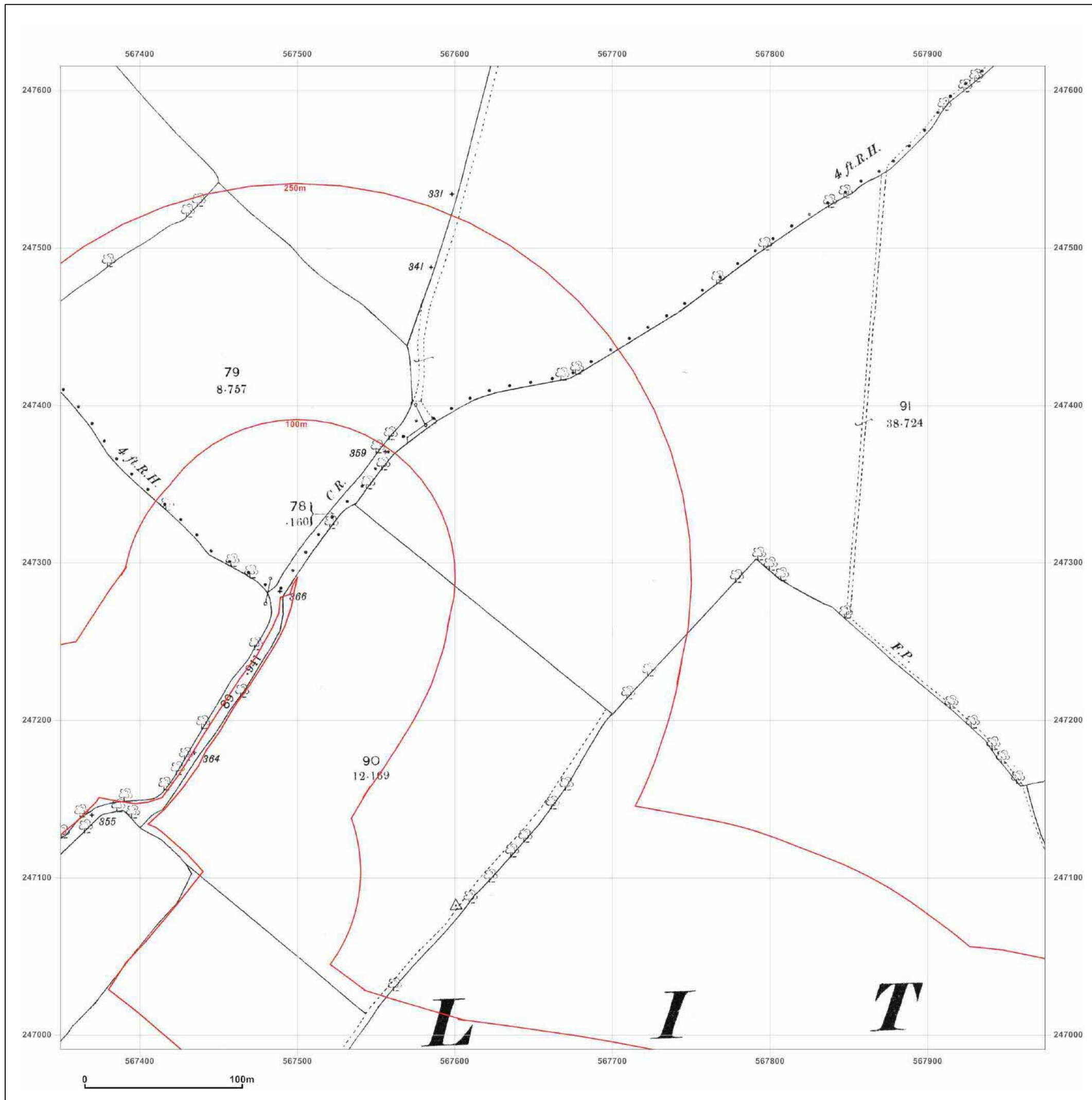


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Site Details:

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0EH

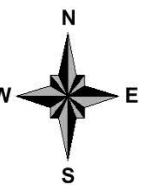
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Report Ref: HMD-369-1706441_LS_D1
Grid Ref: 567662, 247303

Map Name: County Series

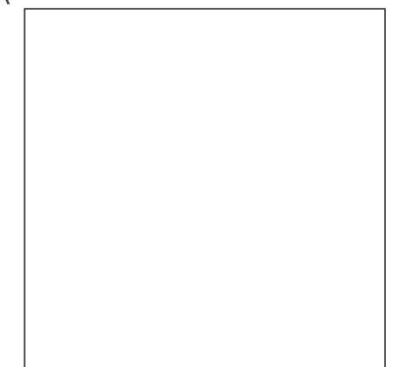
Map date: 1884

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

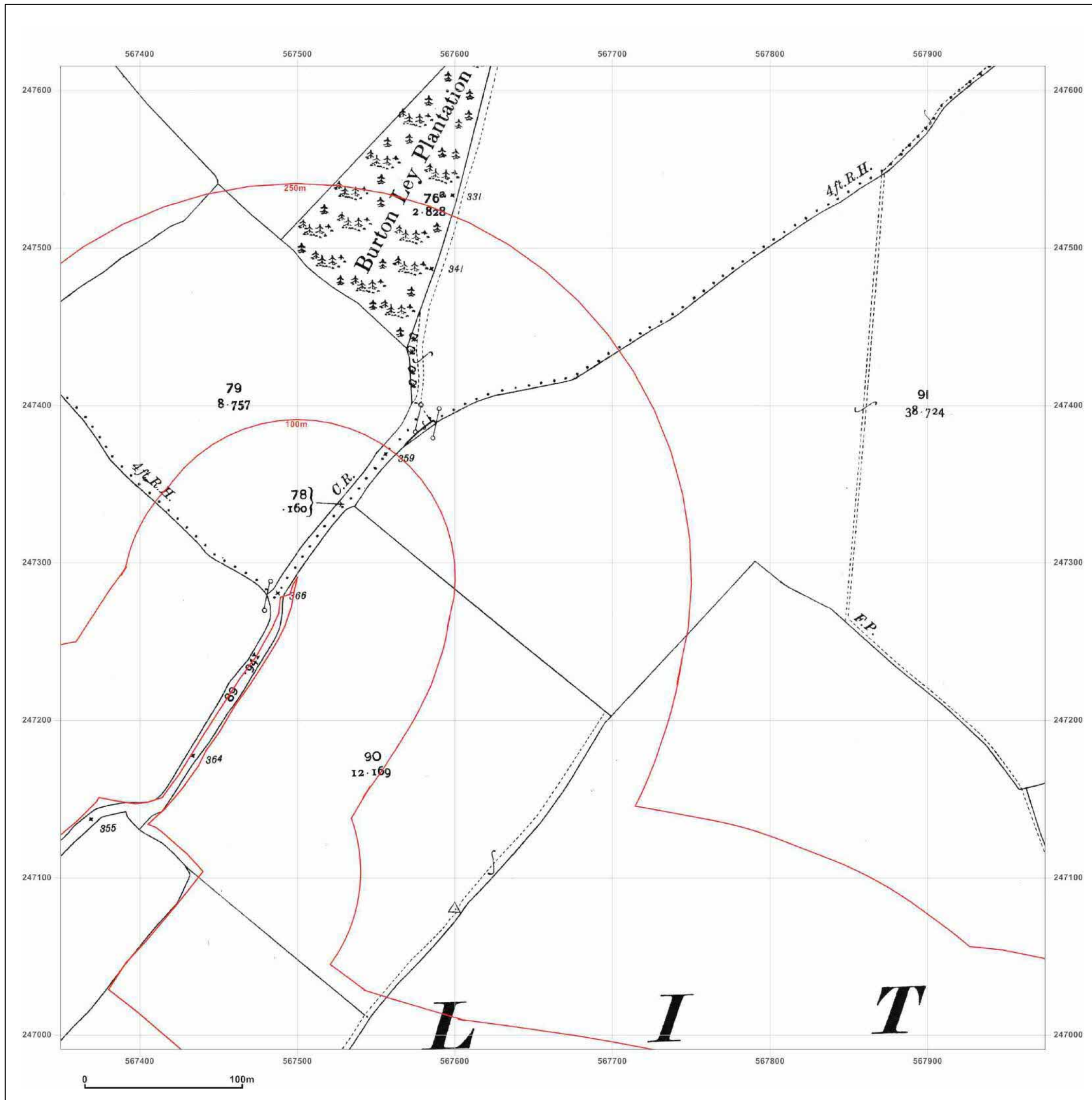


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D1
Grid Ref: 567662, 247303

Map Name: County Series

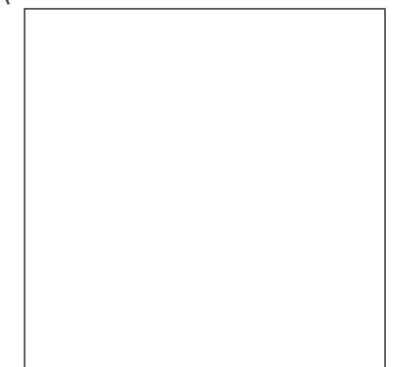
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Printed at: 1:2,500



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A

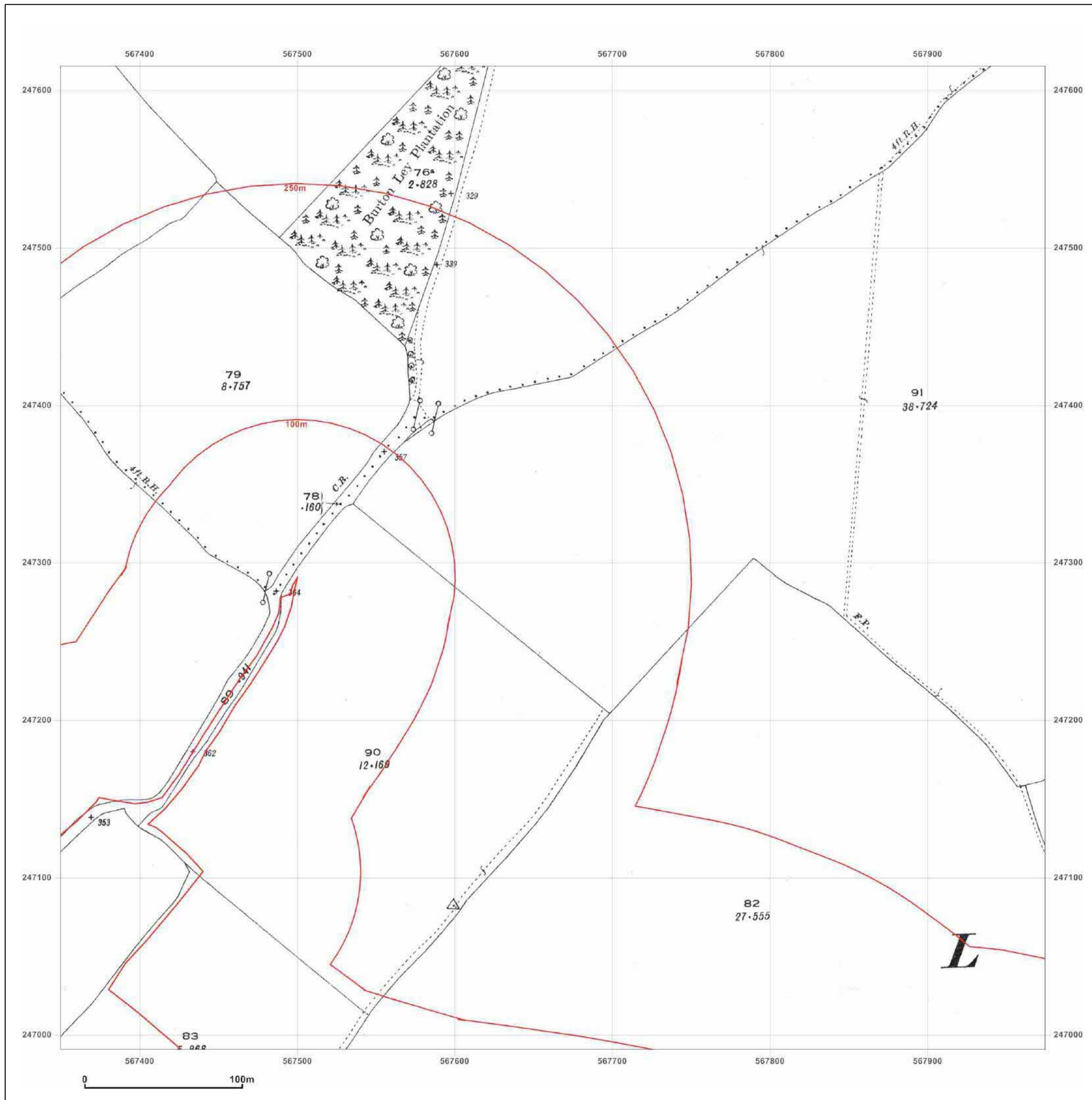


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Site Details:

Land to NW of Haverhill, CB9
0EH

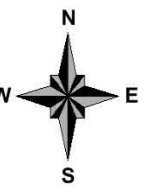
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Map Name: County Series

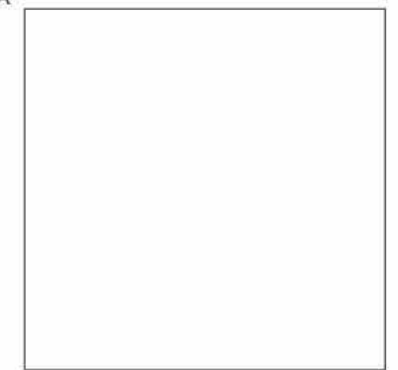
Map date: 1926

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

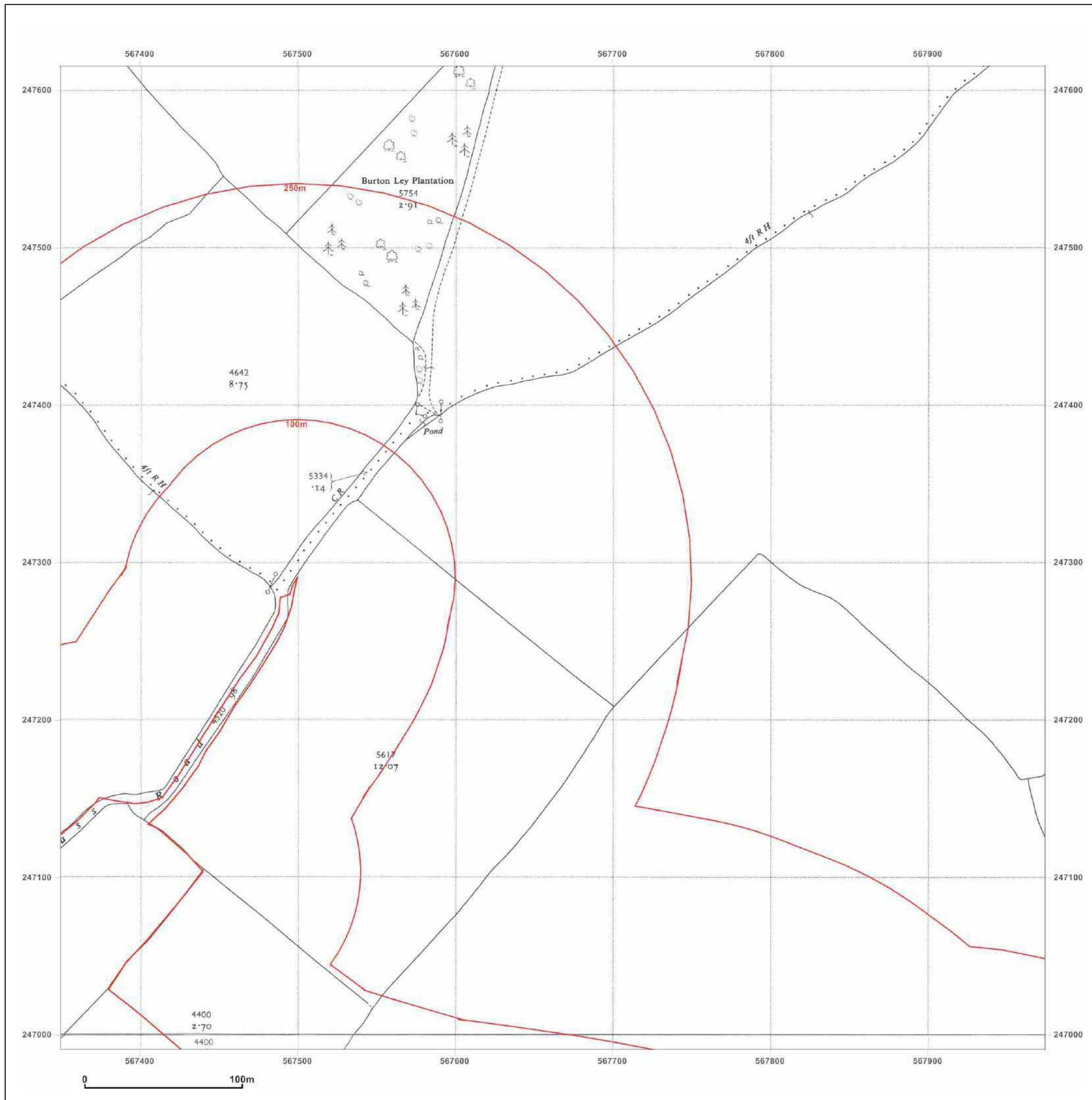


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D1
Grid Ref: 567662, 247303

Map Name: National Grid

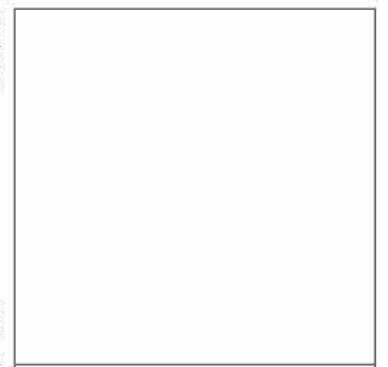
Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D1
Grid Ref: 567662, 247303

Map Name: National Grid

Map date: 1988

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1988
Revised 1988
Edition N/A
Copyright 1988
Levelled N/A

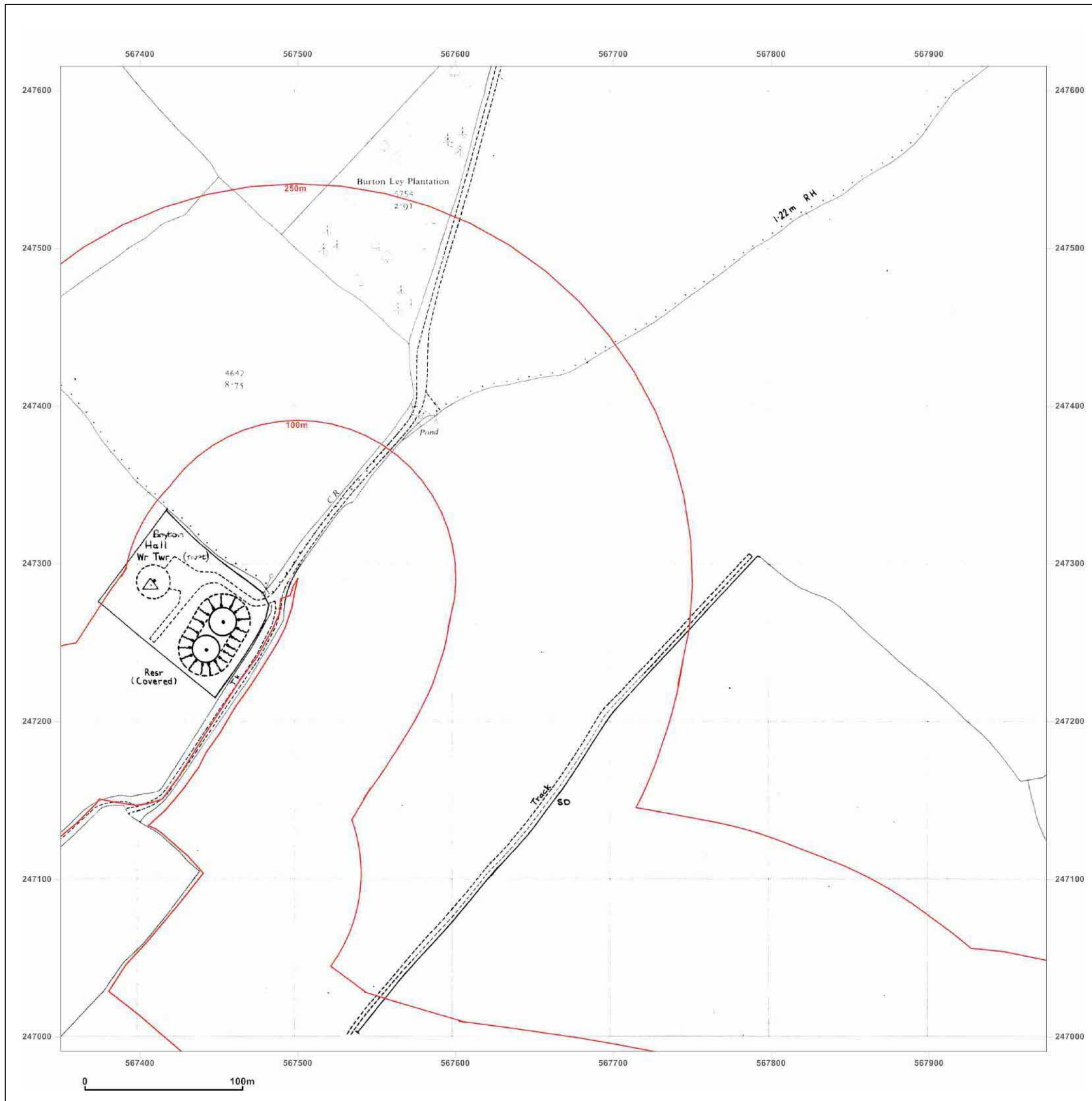


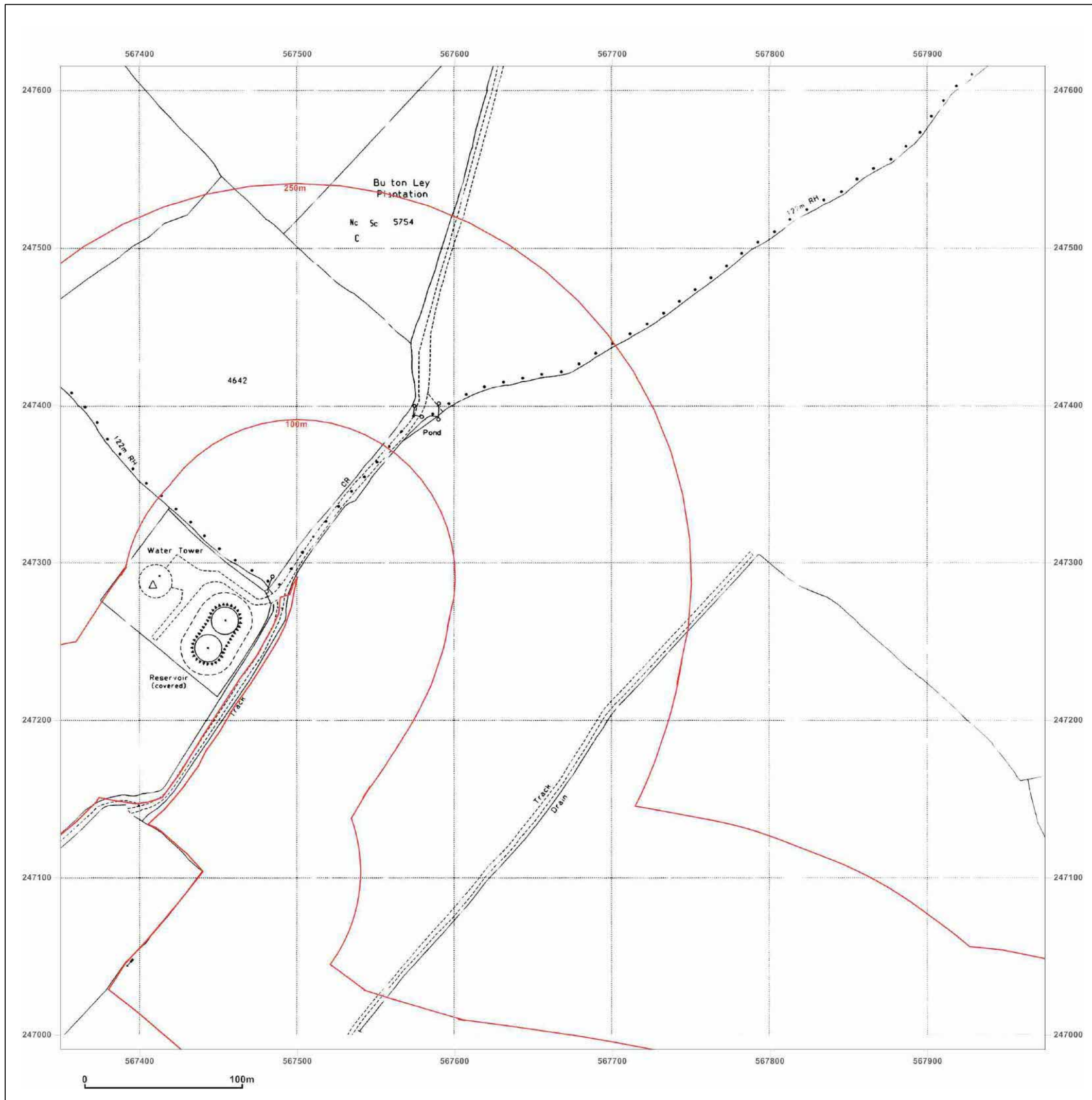
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Site Details:

Land to NW of Haverhill, CB9
0EH

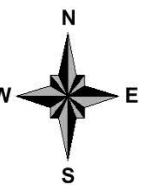
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Report Ref: HMD-369-1706441_LS_D1
Grid Ref: 567662, 247303

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1994
Levelled N/A

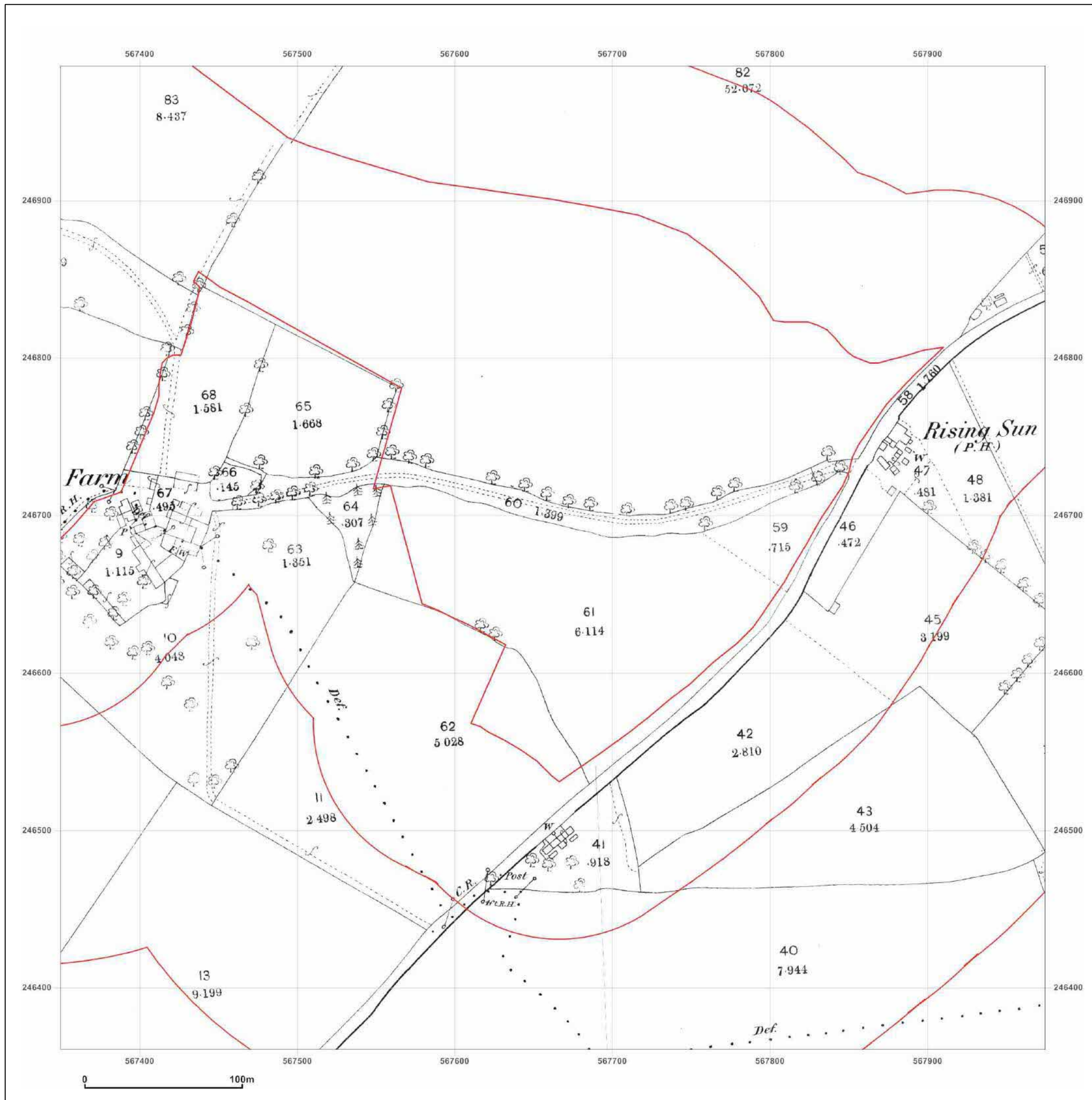


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: County Series

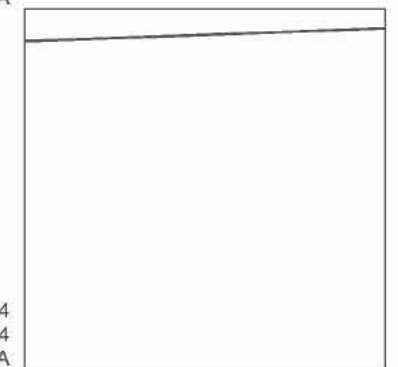
Map date: 1884

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1884
Revised 1884
Edition N/A
Copyright N/A
Levelled N/A

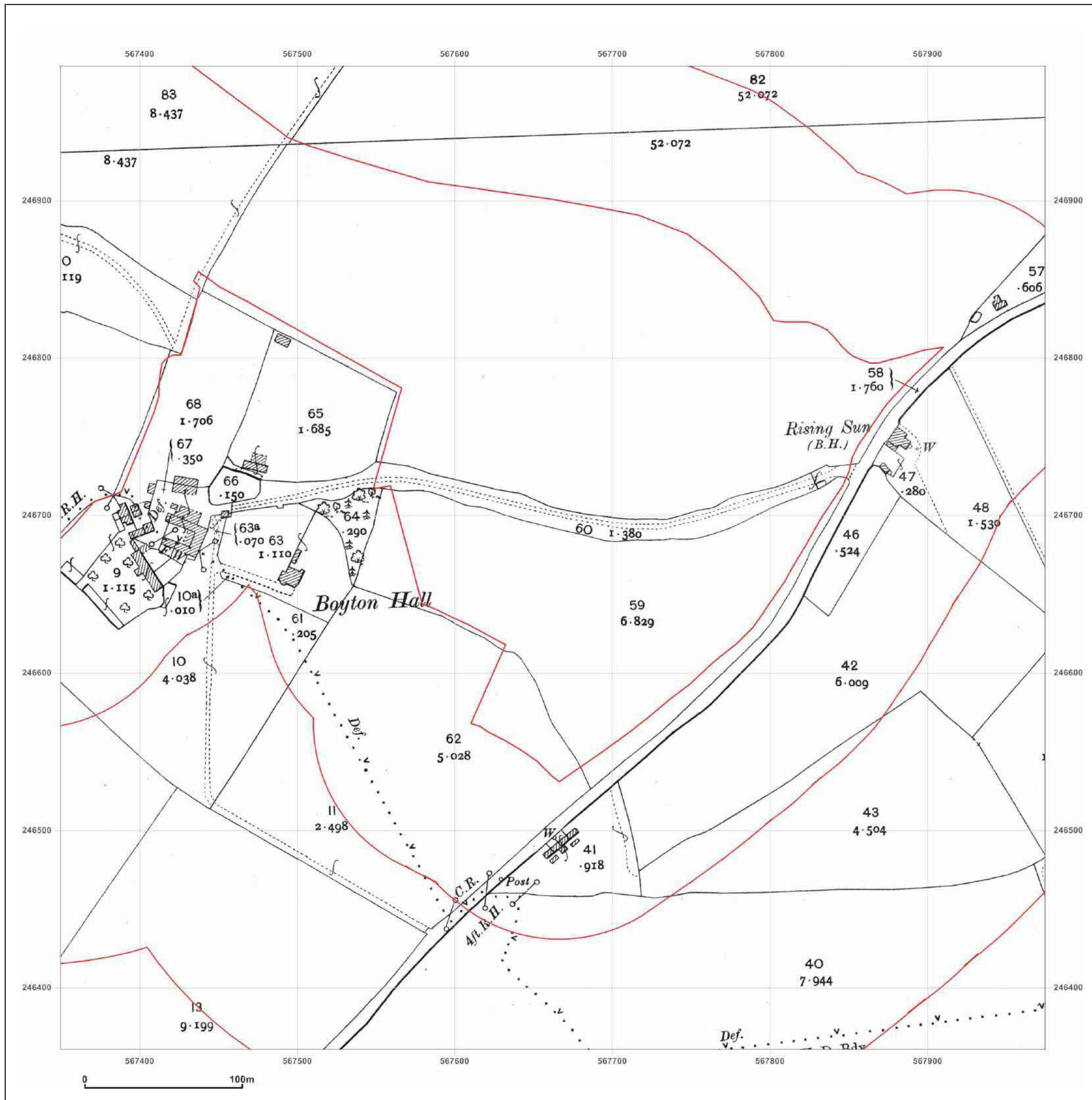


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: County Series

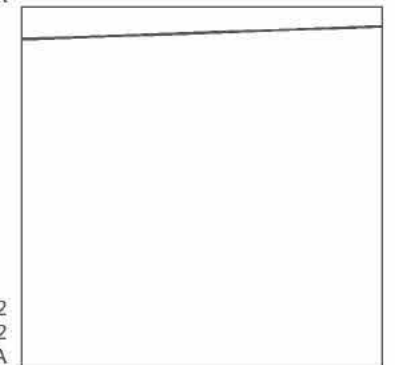
Map date: 1902

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1902
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A

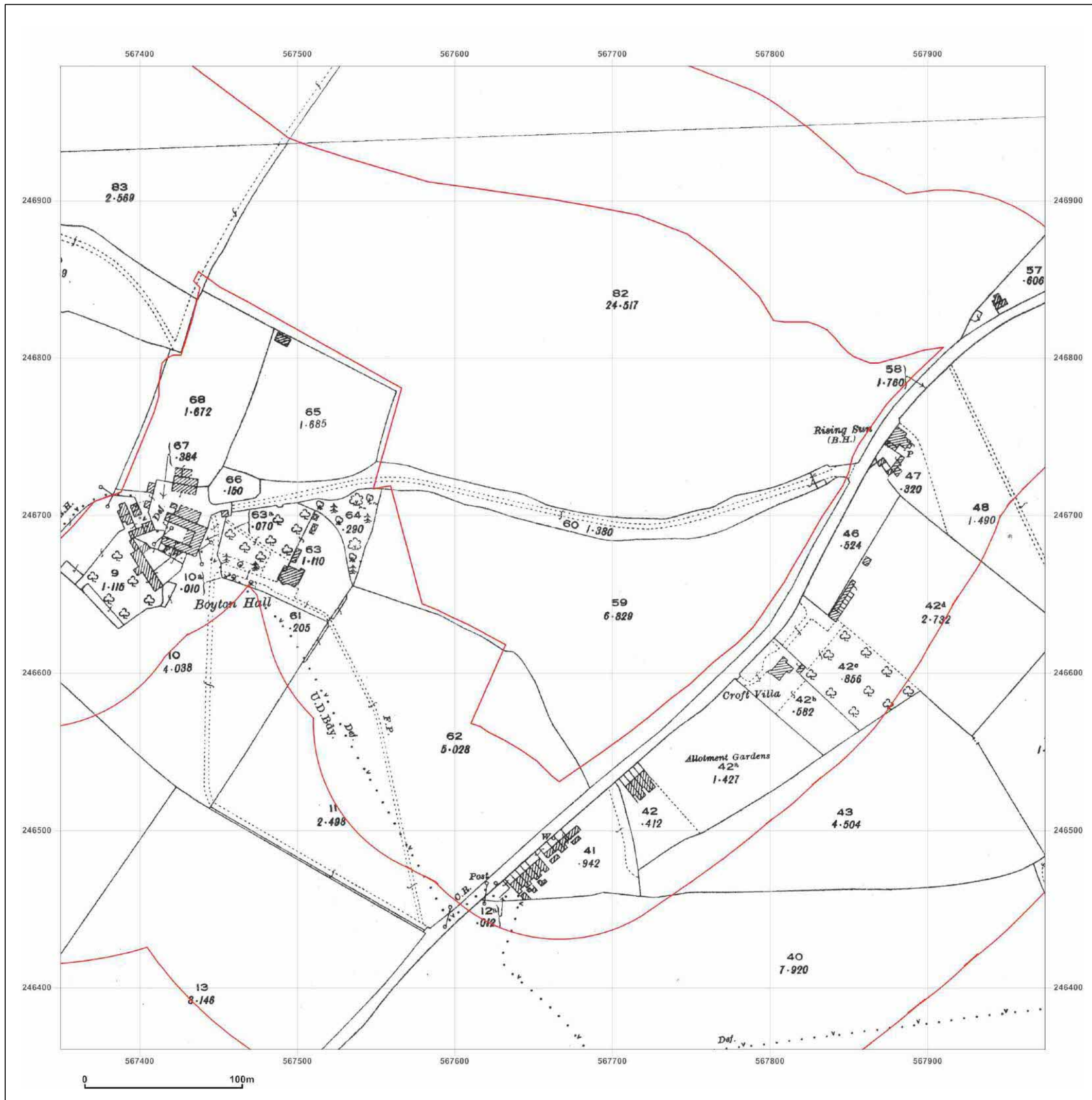


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: County Series

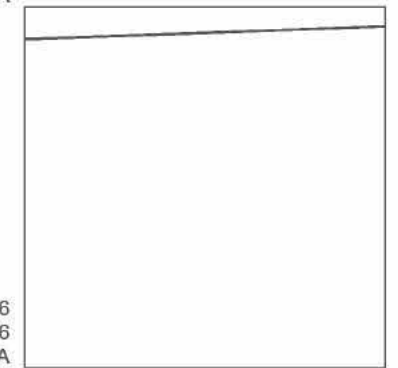
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Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1926
Revised 1926
Edition N/A
Copyright N/A
Levelled N/A

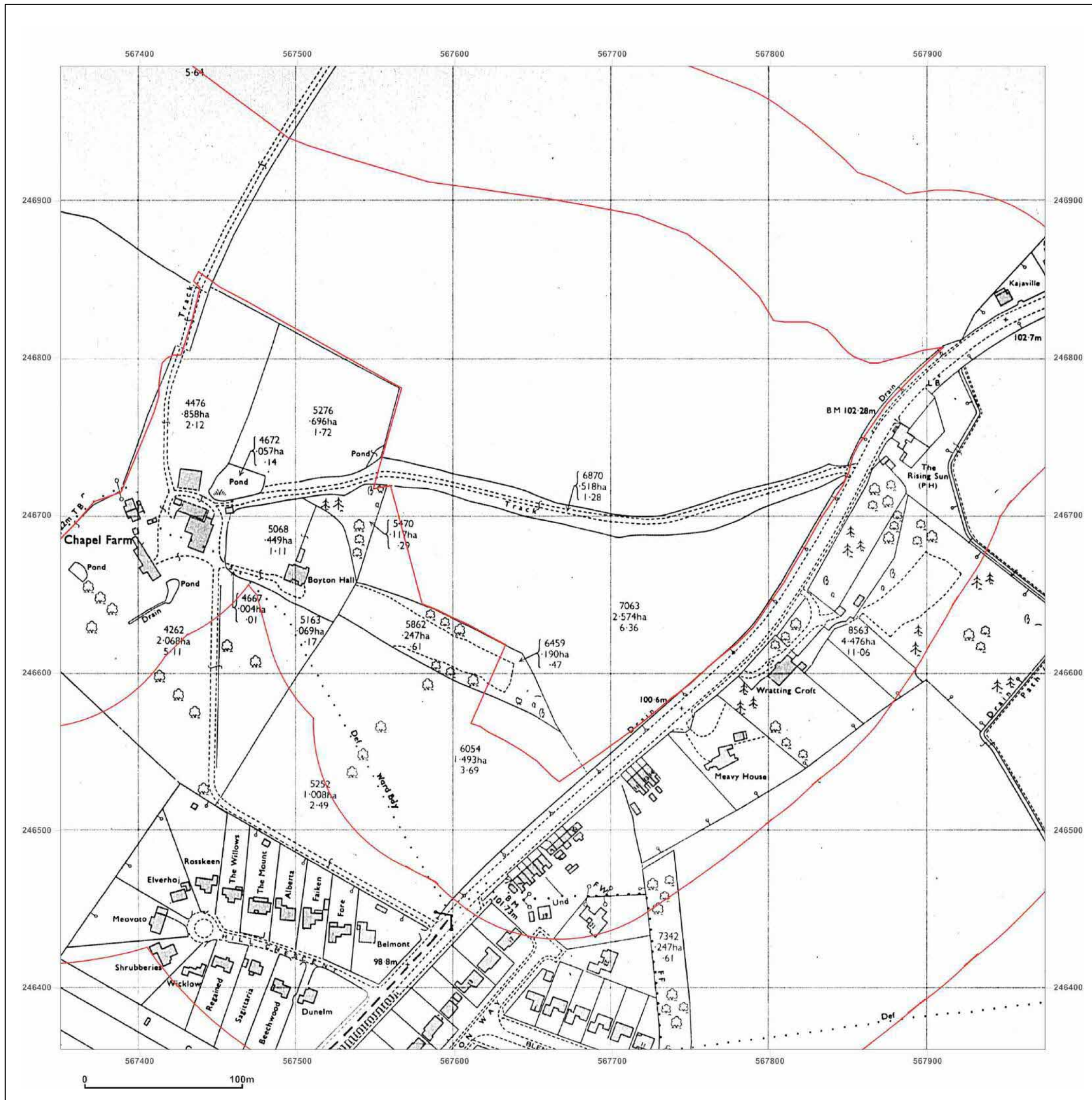


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: National Grid

Map date: 1956

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
Copyright N/A
Levelled 1956

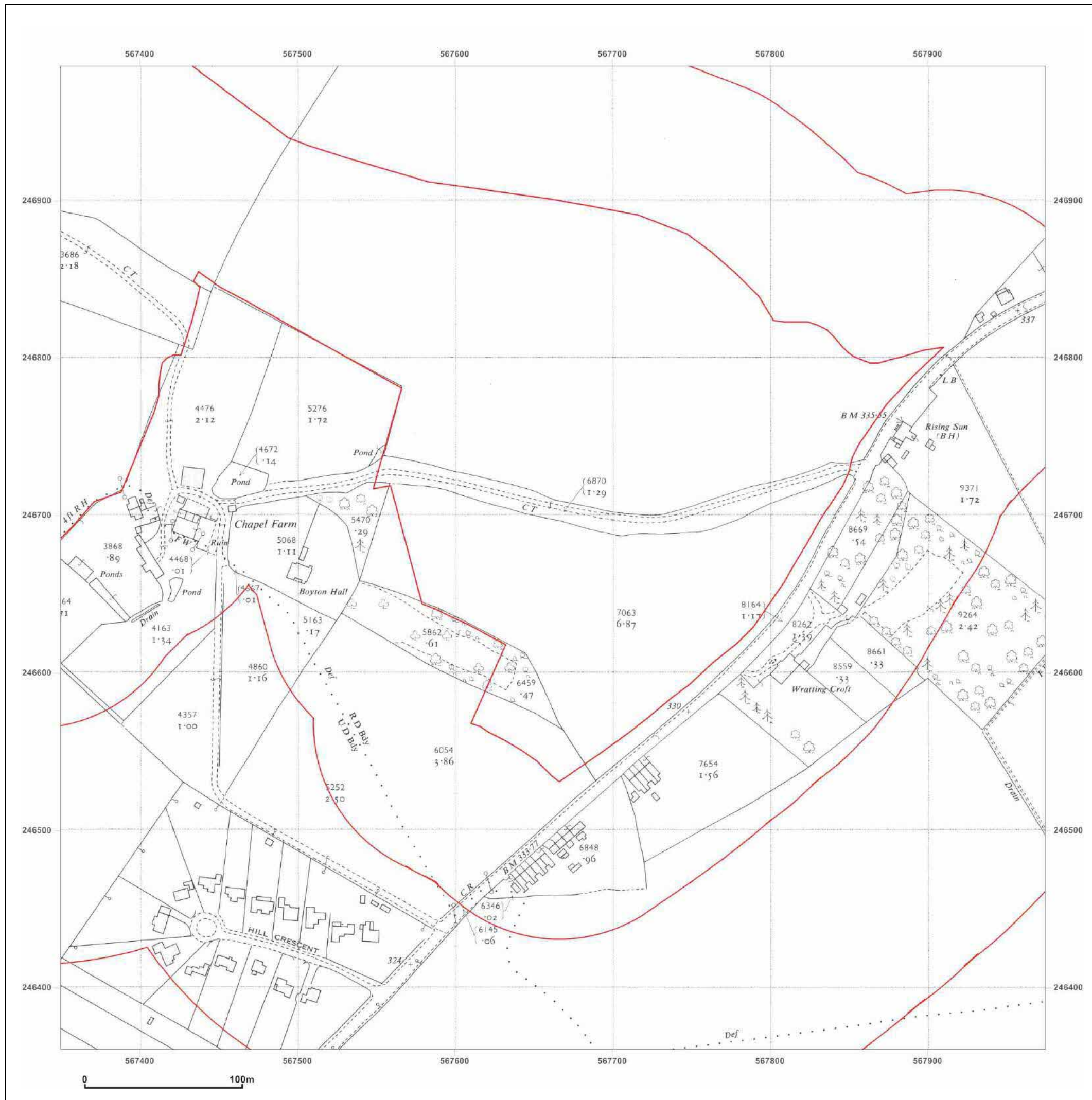


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Site Details:

Land to NW of Haverhill, CB9
0EH

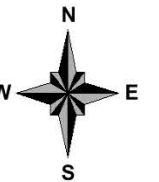
Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: National Grid

Map date: 1959

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1959
Revised 1959
Edition N/A
Copyright 1960
Levelled 1956

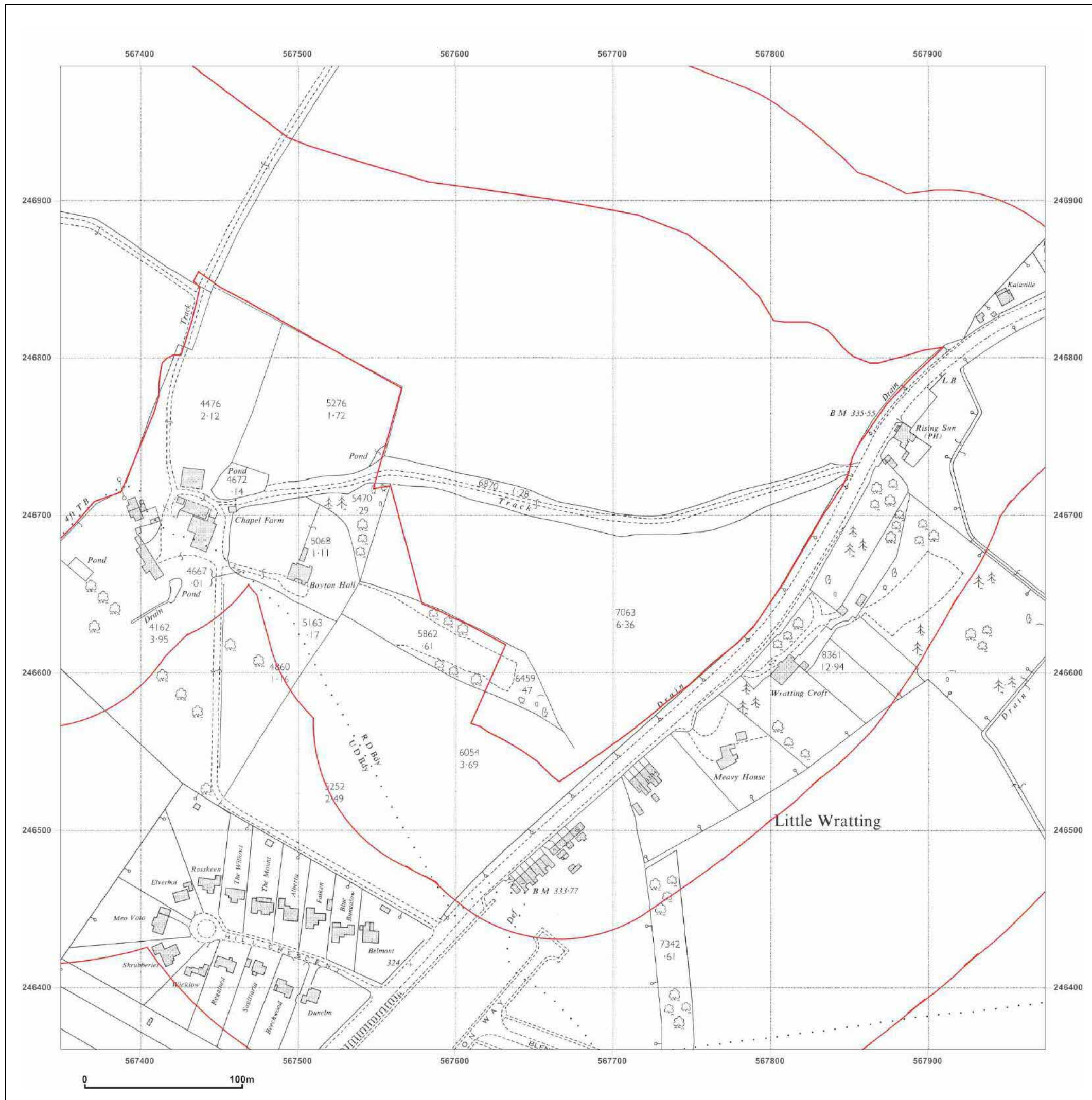


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: National Grid

Map date: 1968

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1968
Revised 1968
Edition N/A
Copyright 1968
Levelled 1956

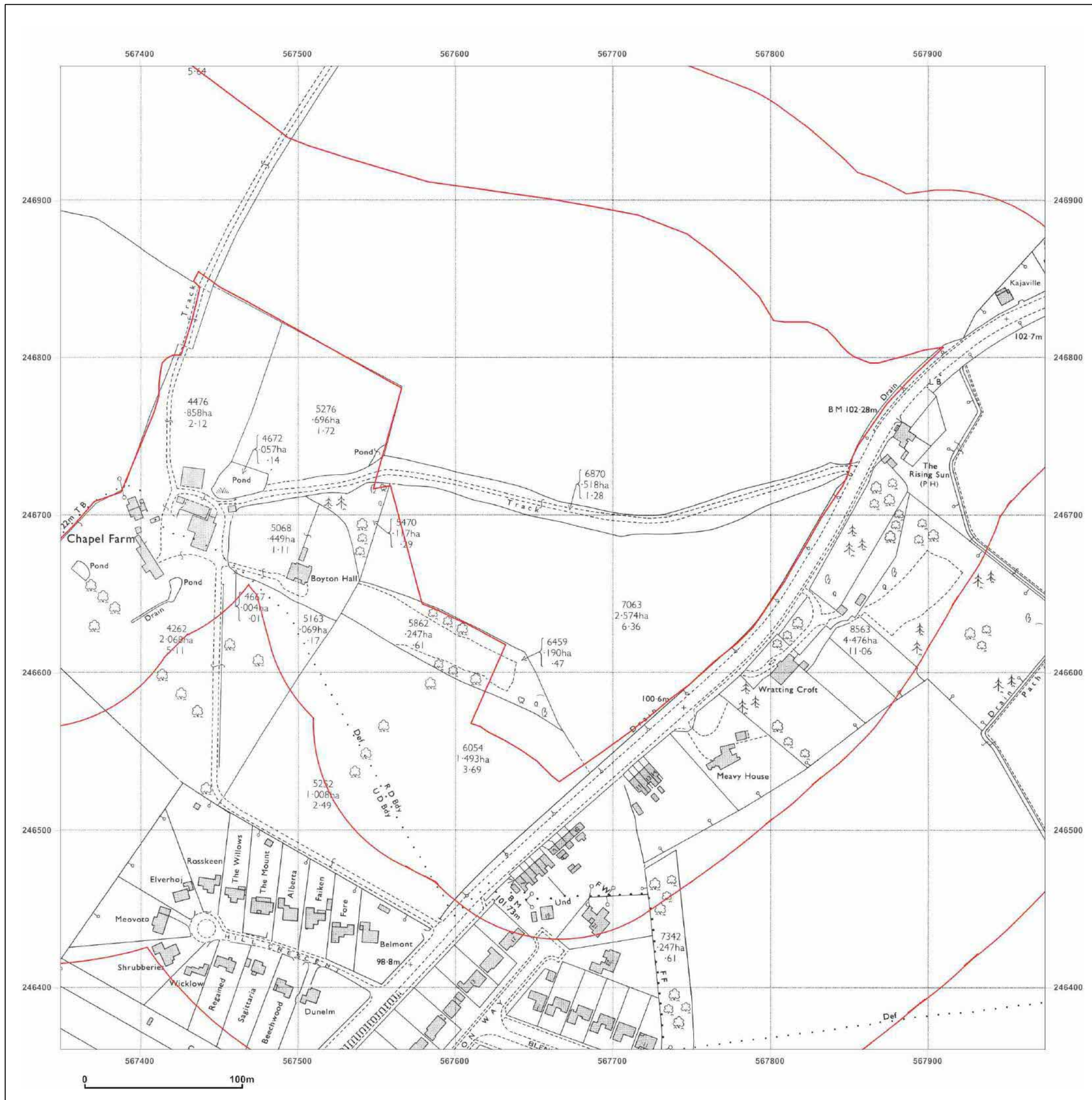


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Site Details:

Land to NW of Haverhill, CB9
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Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: National Grid

Map date: 1973

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1973
Revised 1973
Edition N/A
Copyright N/A
Levelled 1972

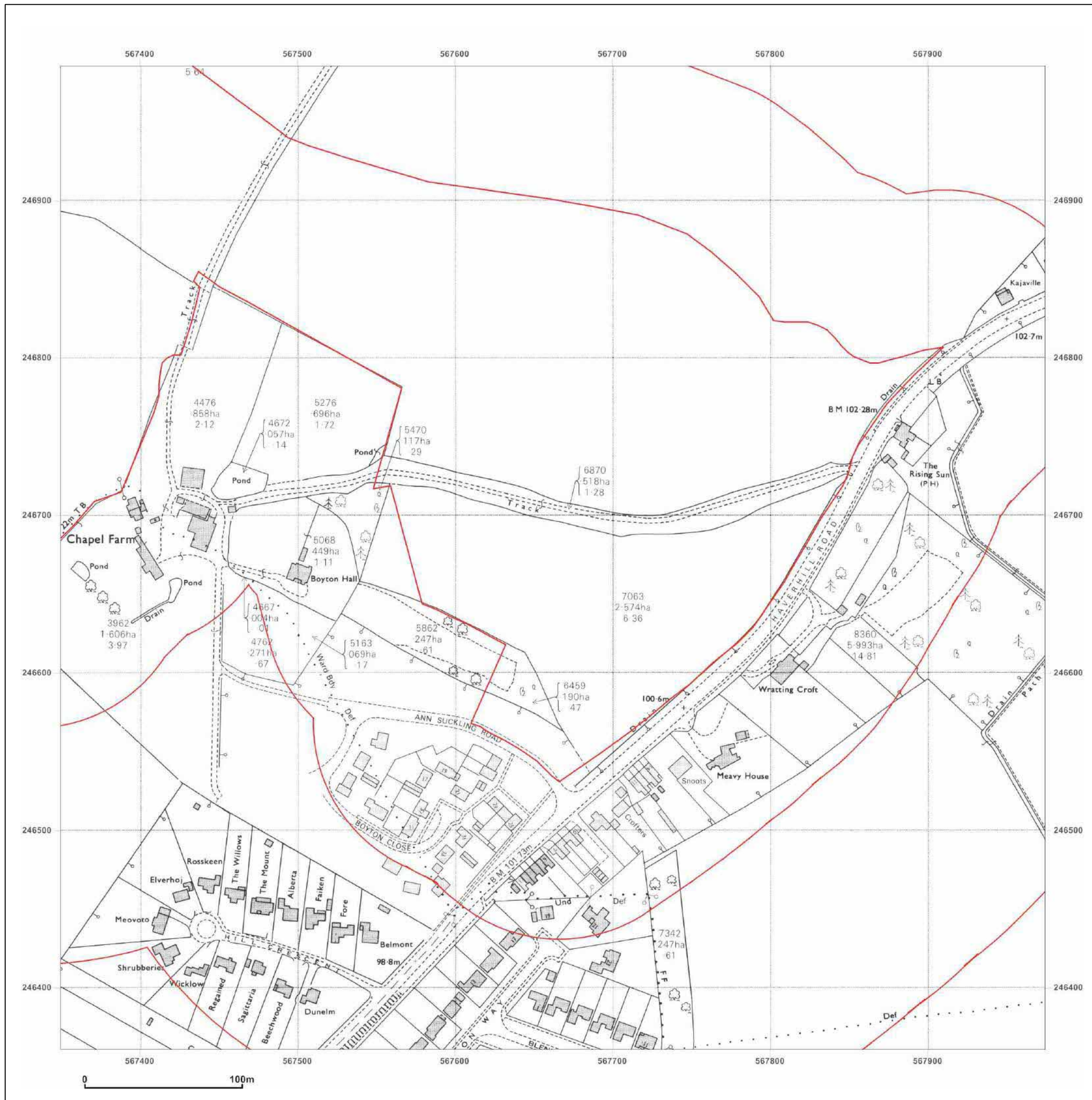


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_D2
Grid Ref: 567662, 246673

Map Name: National Grid

Map date: 1982

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1982
Revised 1982
Edition N/A
Copyright 1983
Levelled 1972

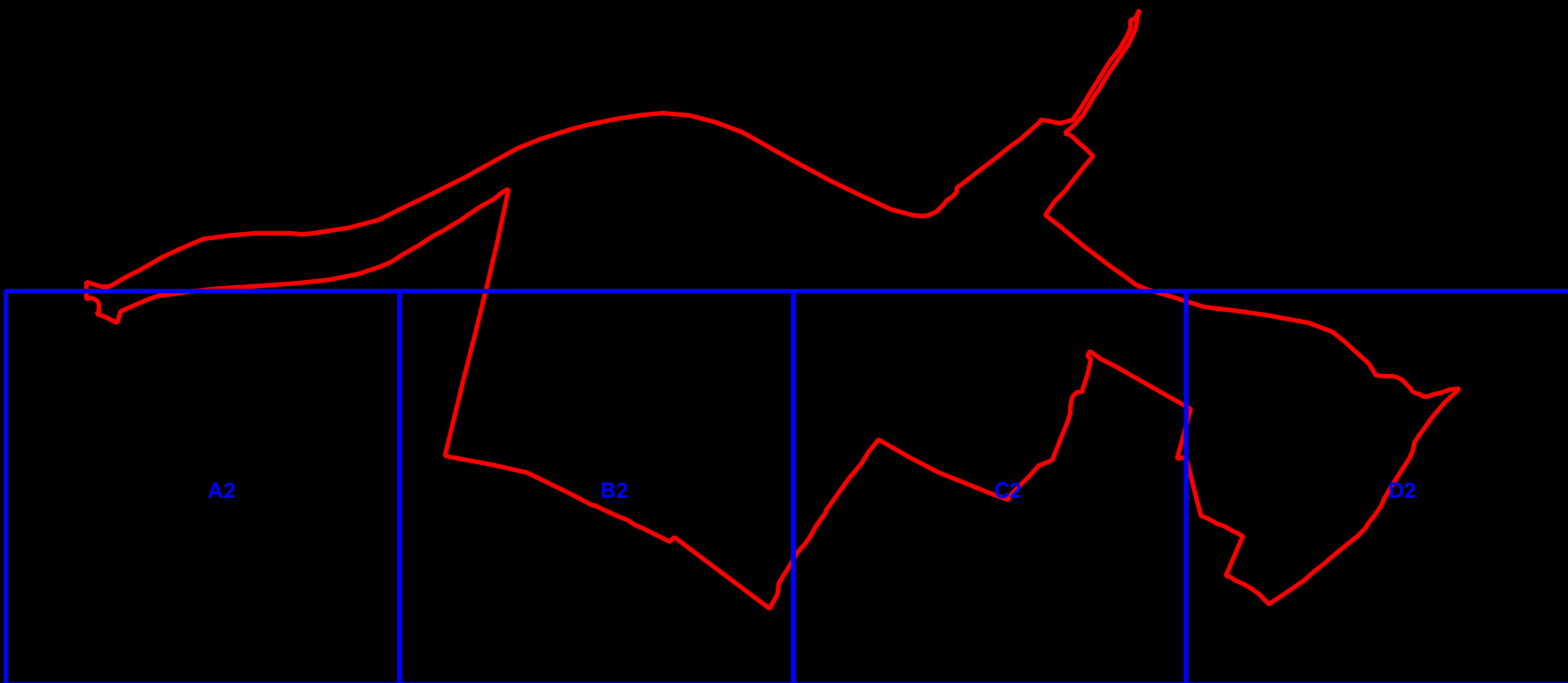


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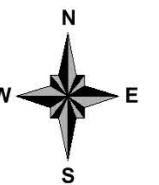
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Report Ref: HMD-369-1706441_LS_1250Scale_A2
Grid Ref: 566303, 246679

Map Name: National Grid

Map date: 1991-1994

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed N/A Revised N/A Edition N/A Copyright 1994 Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1994 Levelled N/A



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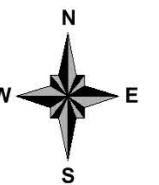
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Report Ref: HMD-369-1706441_LS_1250Scale_B2
Grid Ref: 566806, 246679

Map Name: National Grid

Map date: 1988-1989

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed 1987 Revised 1987 Edition N/A Copyright 1988 Levelled N/A	Surveyed 1987 Revised 1987 Edition N/A Copyright 1989 Levelled N/A



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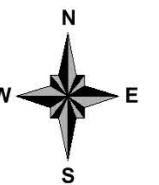
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Report Ref: HMD-369-1706441_LS_1250Scale_B2
Grid Ref: 566806, 246679

Map Name: National Grid

Map date: 1991-1994

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1994 Levelled N/A



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Site Details:

Land to NW of Haverhill, CB9
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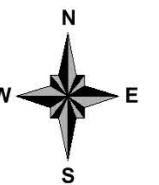
Client Ref: 995,SI
Report Ref: HMD-369-1706441_LS_1250Scale_C2
Grid Ref: 567309, 246679

Map Name: National Grid

Map date: 1989-1992

Scale: 1:1,250

Printed at: 1:2,000



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Site Details:

Land to NW of Haverhill, CB9
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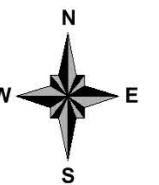
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Report Ref: HMD-369-1706441_LS_1250Scale_C2
Grid Ref: 567309, 246679

Map Name: National Grid

Map date: 1994

Scale: 1:1,250

Printed at: 1:2,000



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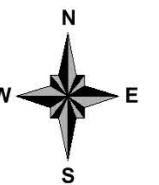
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Report Ref: HMD-369-1706441_LS_1250Scale_D2
Grid Ref: 567812, 246679

Map Name: National Grid

Map date: 1989-1994

Scale: 1:1,250

Printed at: 1:2,000



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Surveyed 1987 Revised 1987 Edition N/A Copyright 1989 Levelled N/A

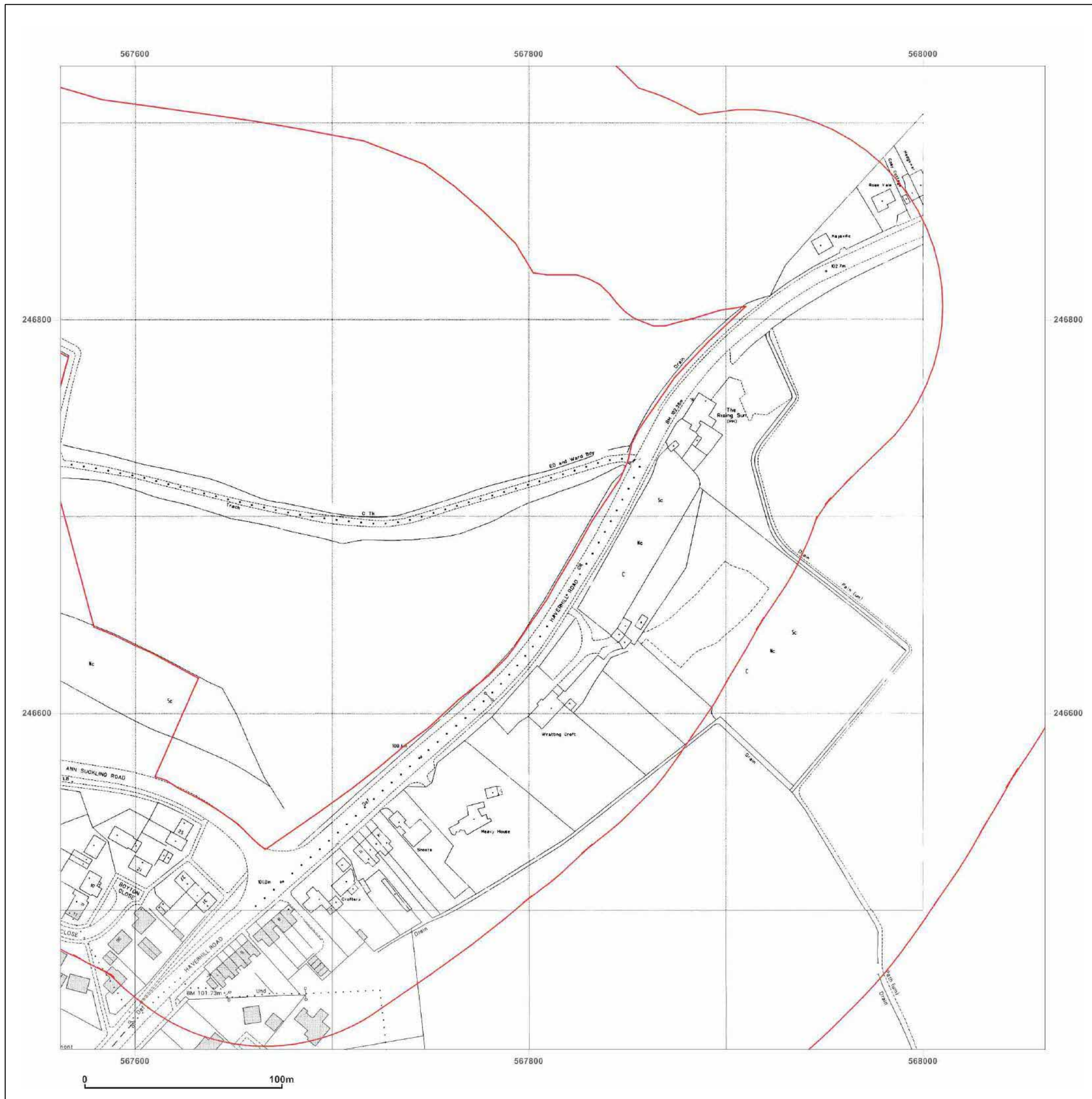


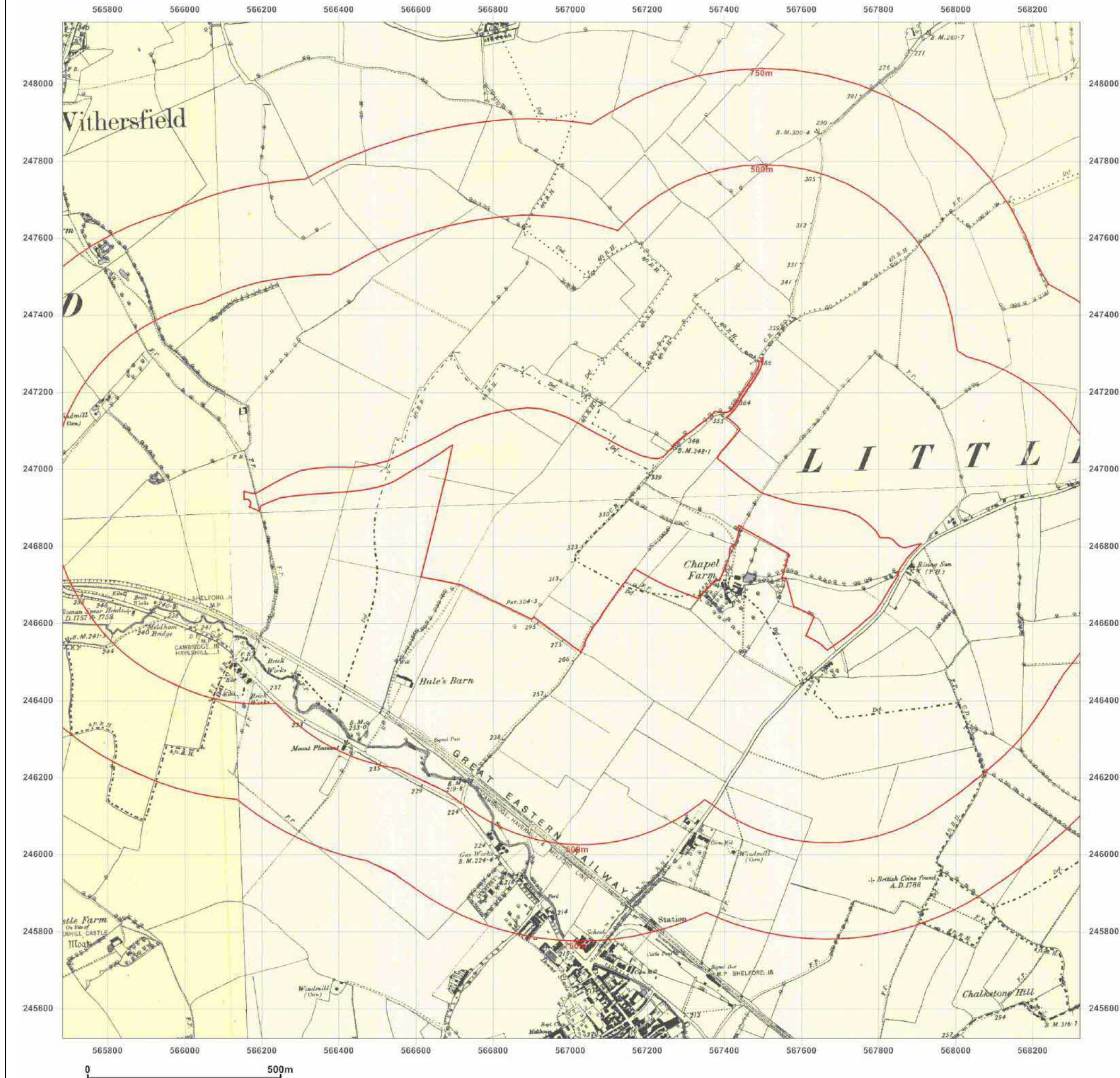
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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1885

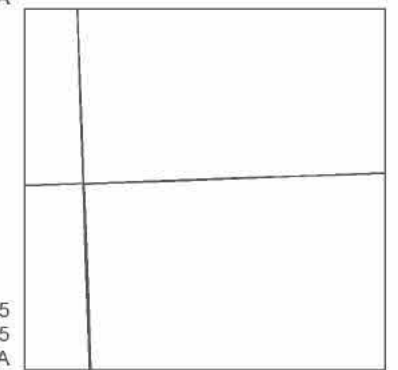
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1885
Revised 1885
Edition N/A
Copyright N/A
Levelled N/A

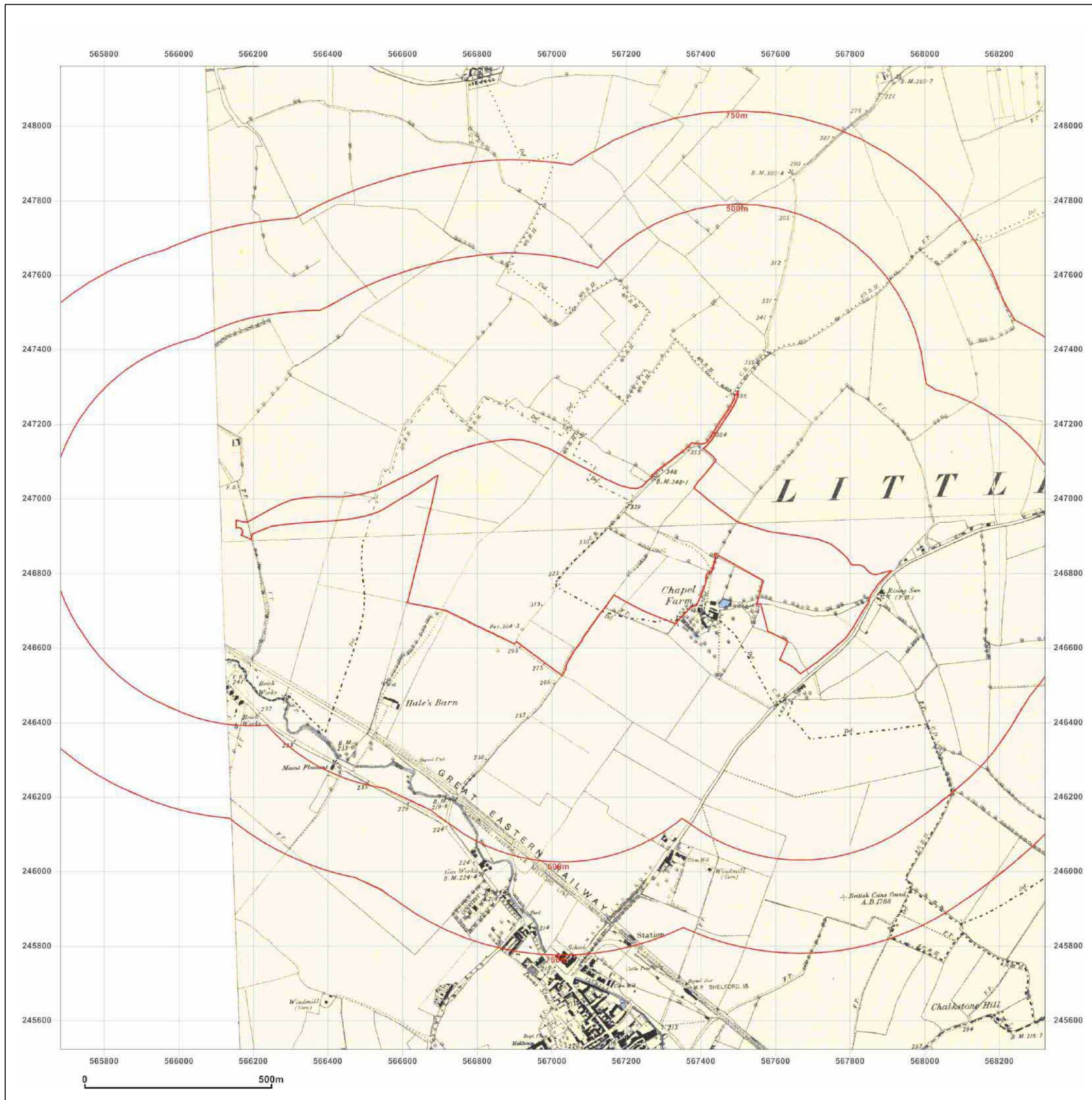


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Site Details:

Land to NW of Haverhill, CB9
0EH

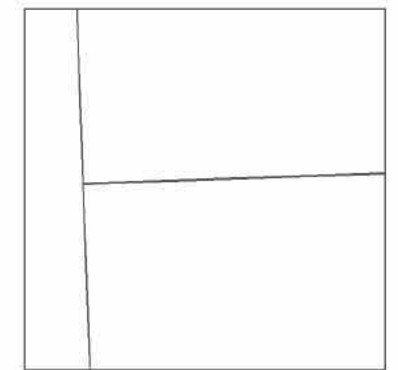
Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1888

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
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Edition N/A
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Levelled N/A

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Revised N/A
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Site Details:

Land to NW of Haverhill, CB9
0EH

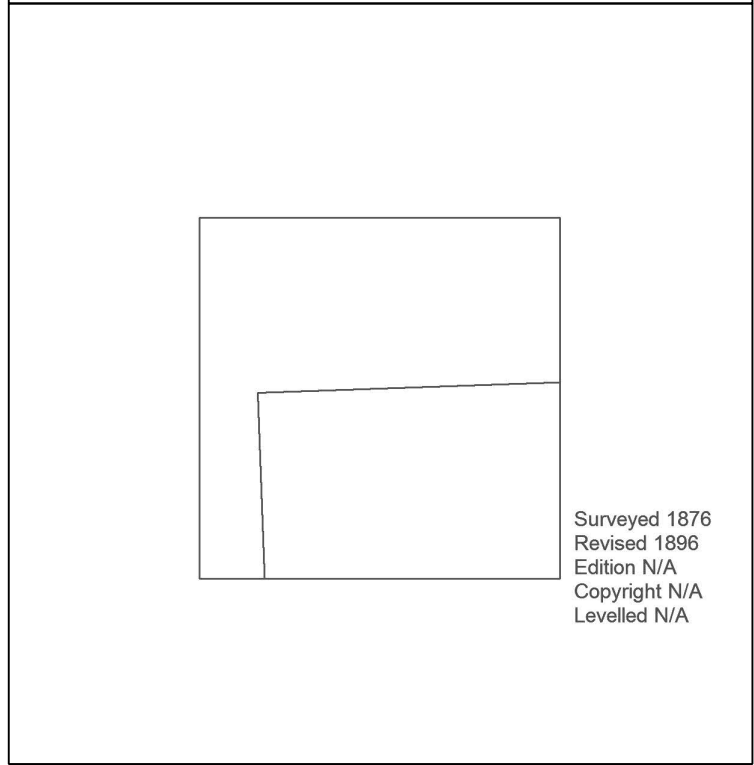
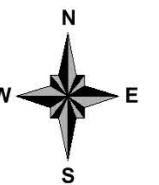
Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1896

Scale: 1:10,560

Printed at: 1:10,560

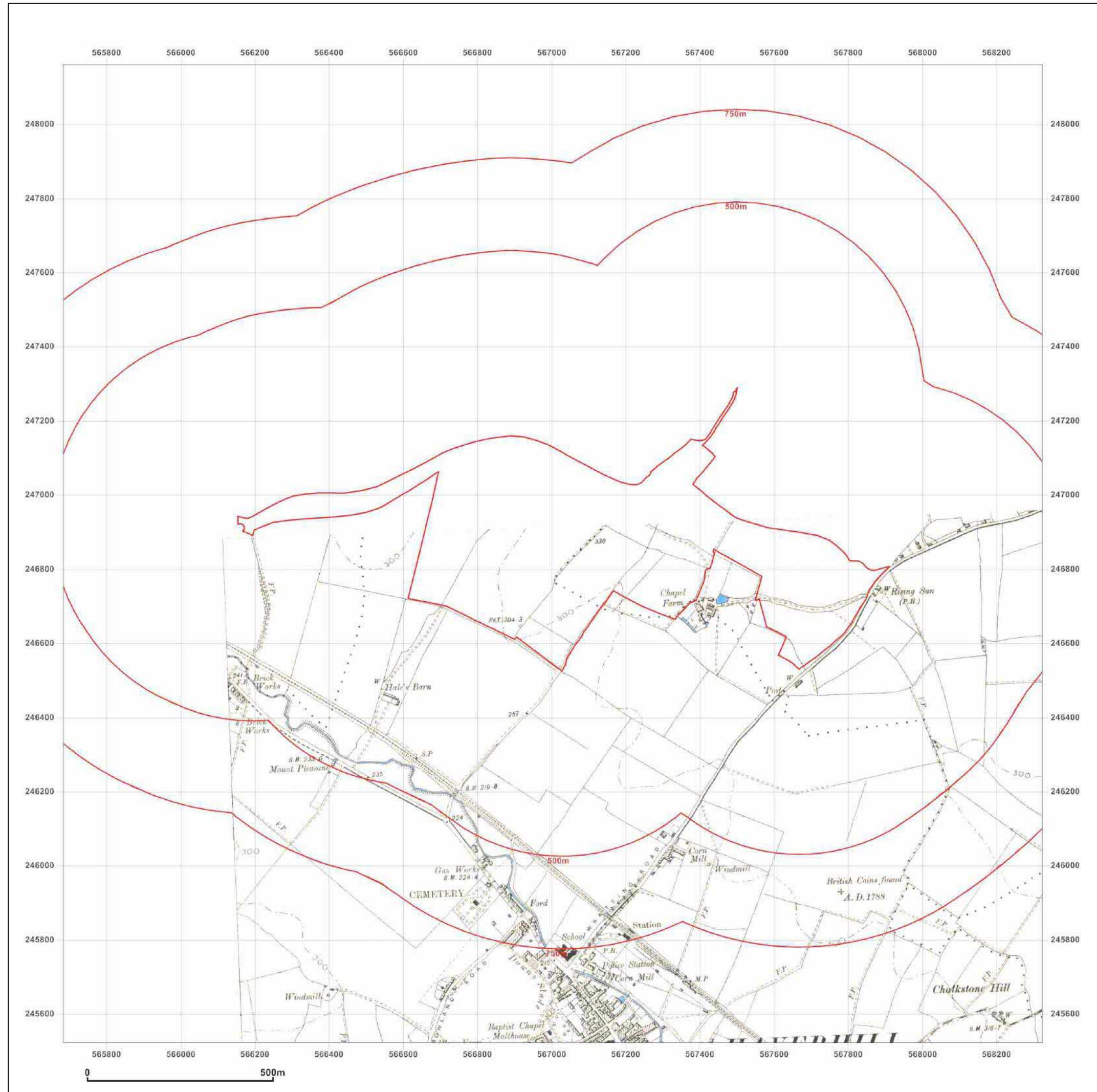


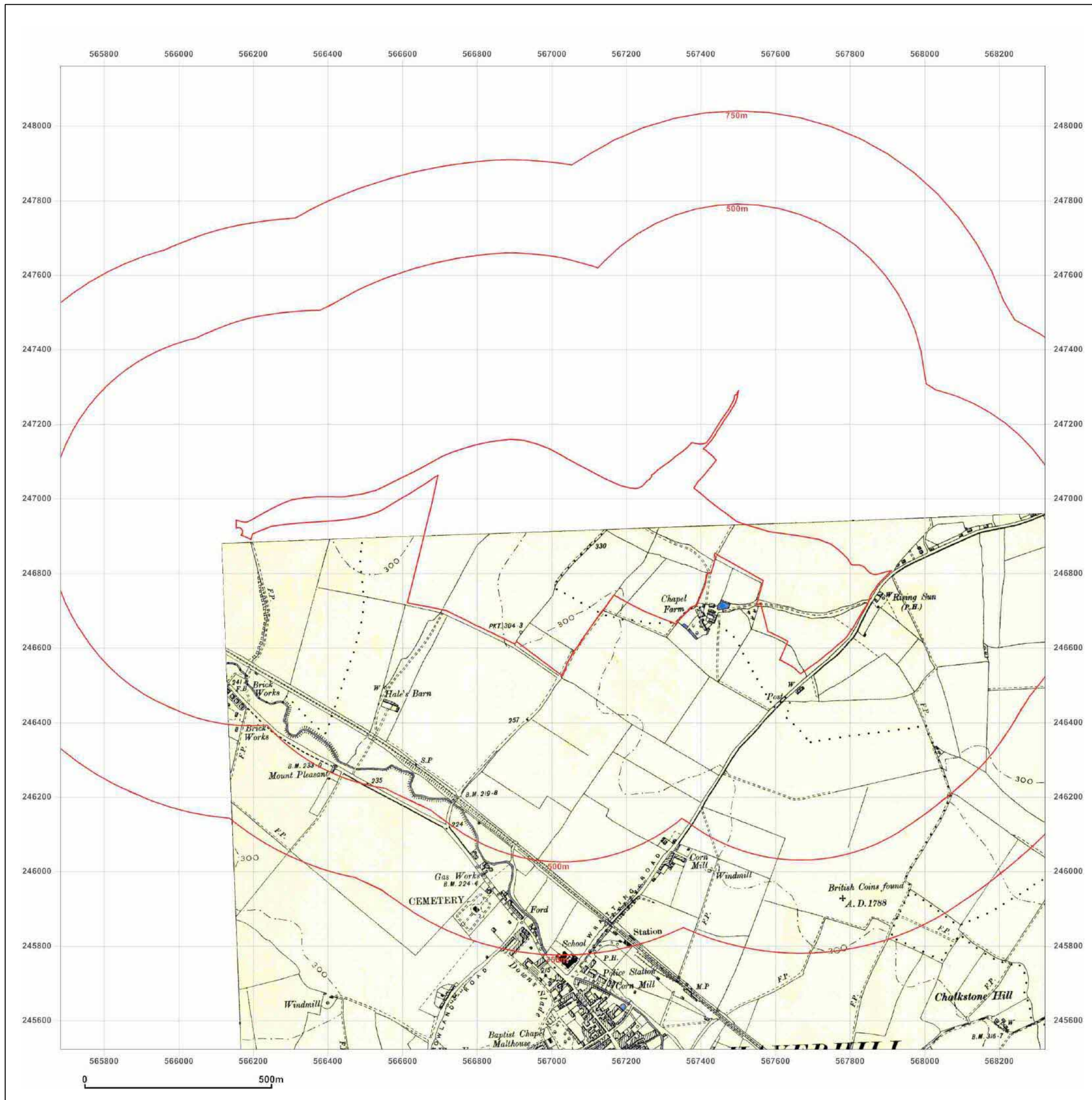
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Site Details:

Land to NW of Haverhill, CB9
0EH

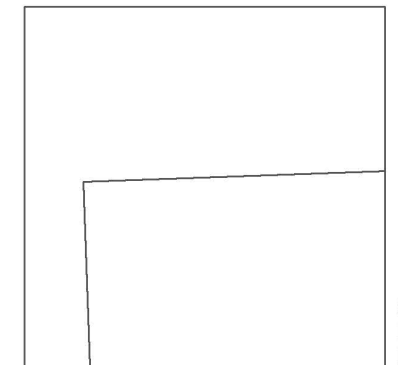
Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1896
Edition N/A
Copyright N/A
Levelled N/A

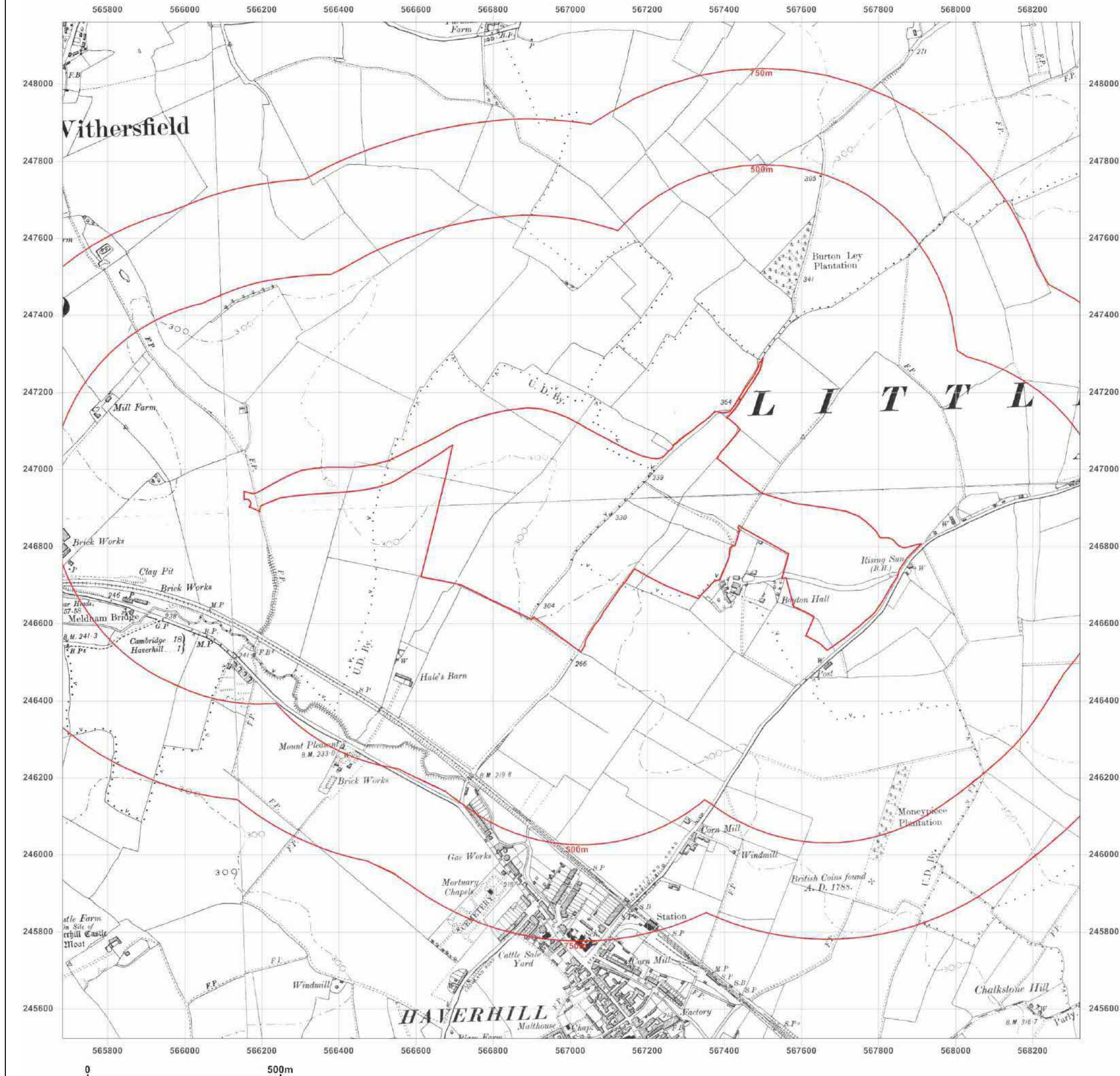


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1901-1905

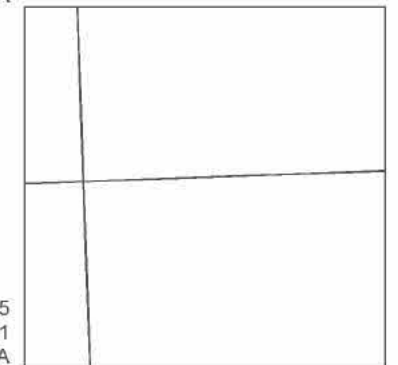
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1902
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1885
Revised 1901
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1876
Revised 1905
Edition N/A
Copyright N/A
Levelled N/A

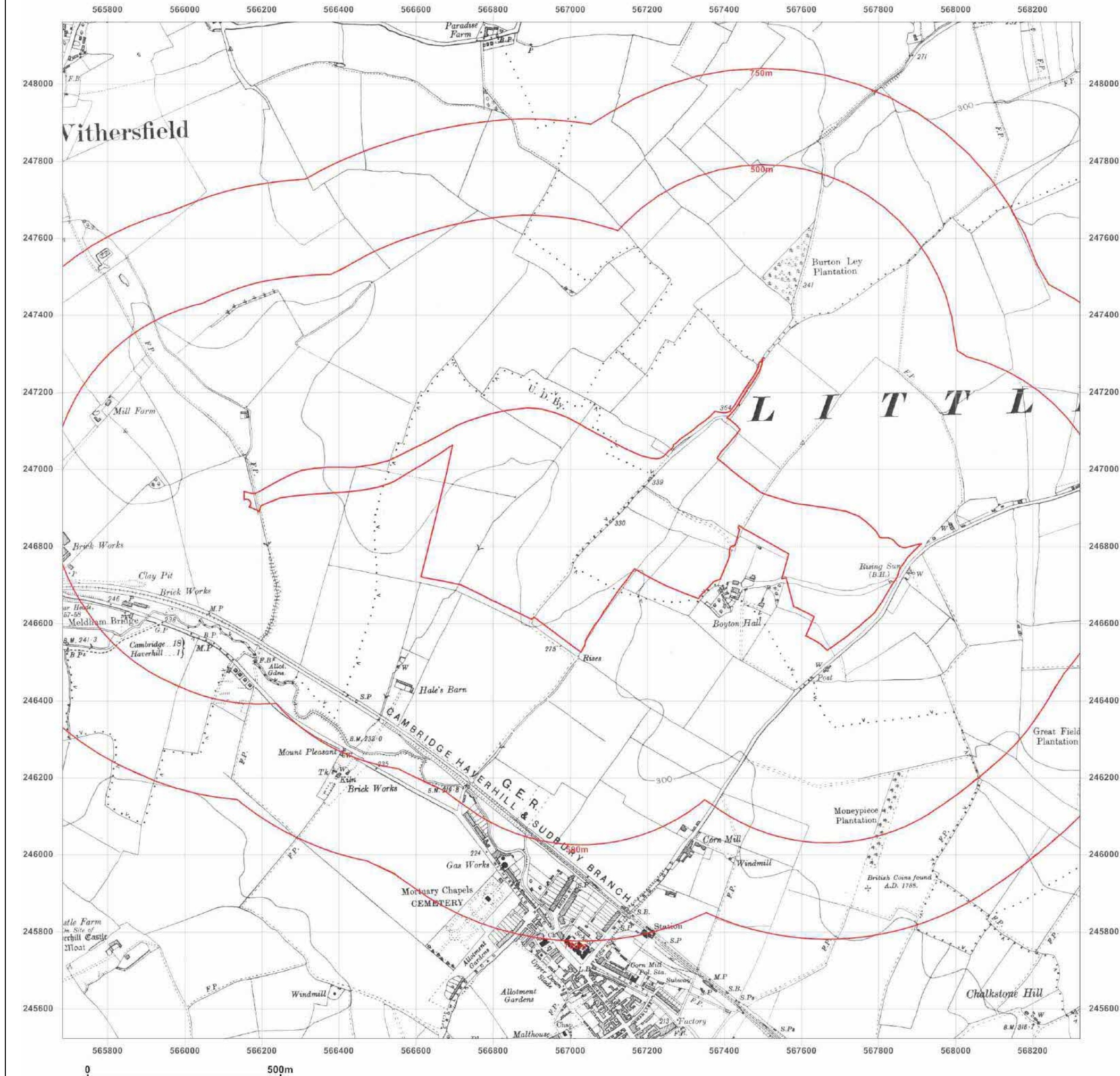


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1924

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1876
Revised 1924
Edition N/A
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Site Details:

Land to NW of Haverhill, CB9
0EH

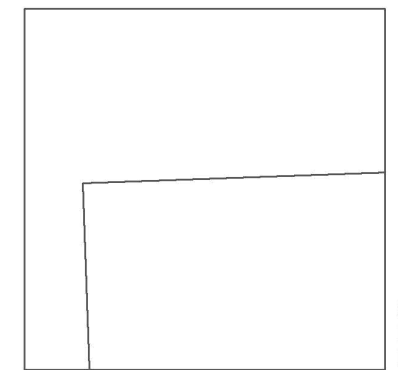
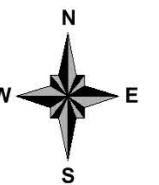
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Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1884
Revised 1938
Edition N/A
Copyright N/A
Levelled N/A



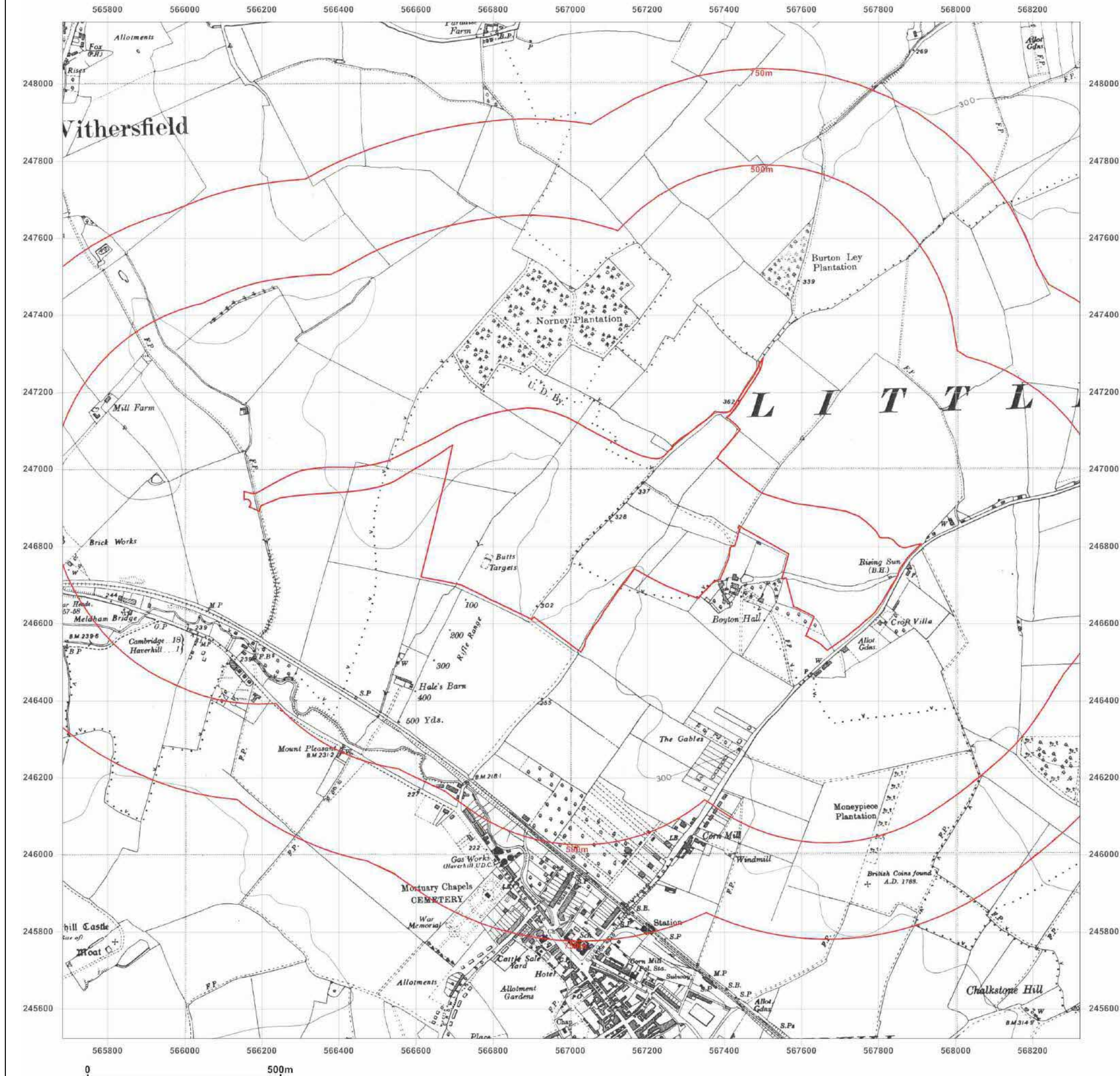
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Production date: 09 October 2014

To view map legend click here [Legend](#)





Site Details:

Land to NW of Haverhill, CB9
0EH

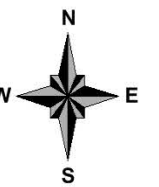
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Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1946

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1876
Revised 1876
Edition N/A
Copyright N/A
Levelled N/A

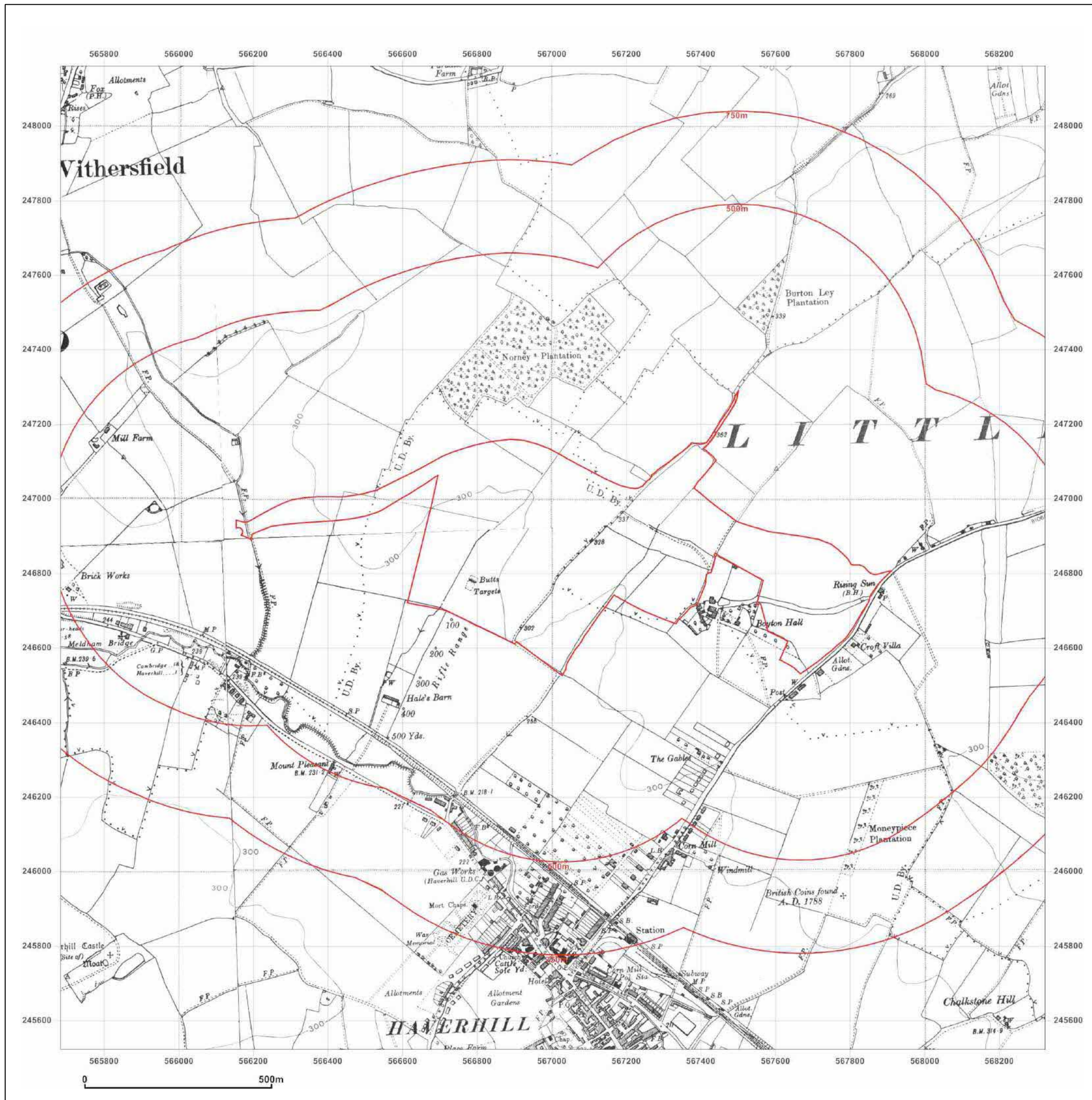


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: County Series

Map date: 1946-1949

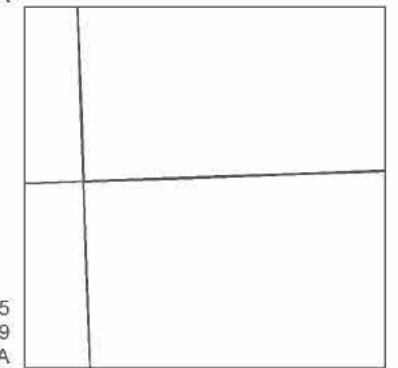
Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1885
Revised 1949
Edition 1949
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1946
Edition N/A
Copyright N/A
Levelled N/A



Surveyed 1885
Revised 1949
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1884
Revised 1949
Edition 1949
Copyright N/A
Levelled N/A

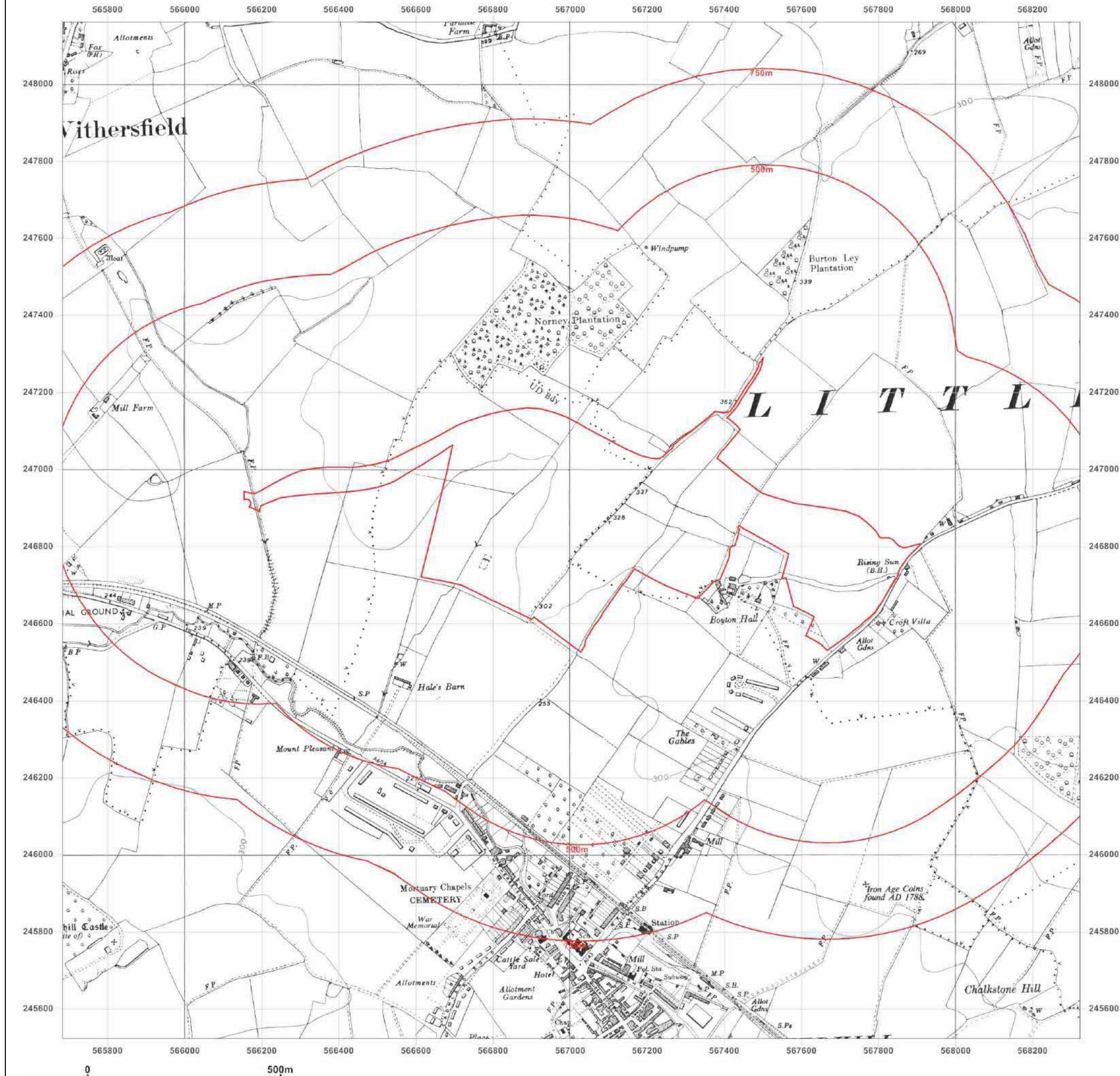


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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: Provisional

Map date: 1959

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1952
Revised 1952
Edition N/A
Copyright N/A
Levelled N/A



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Site Details:

Land to NW of Haverhill, CB9
0EH

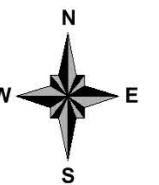
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Grid Ref: 567002, 246841

Map Name: Provisional

Map date: 1967

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1967
Revised 1967
Edition N/A
Copyright N/A
Levelled N/A

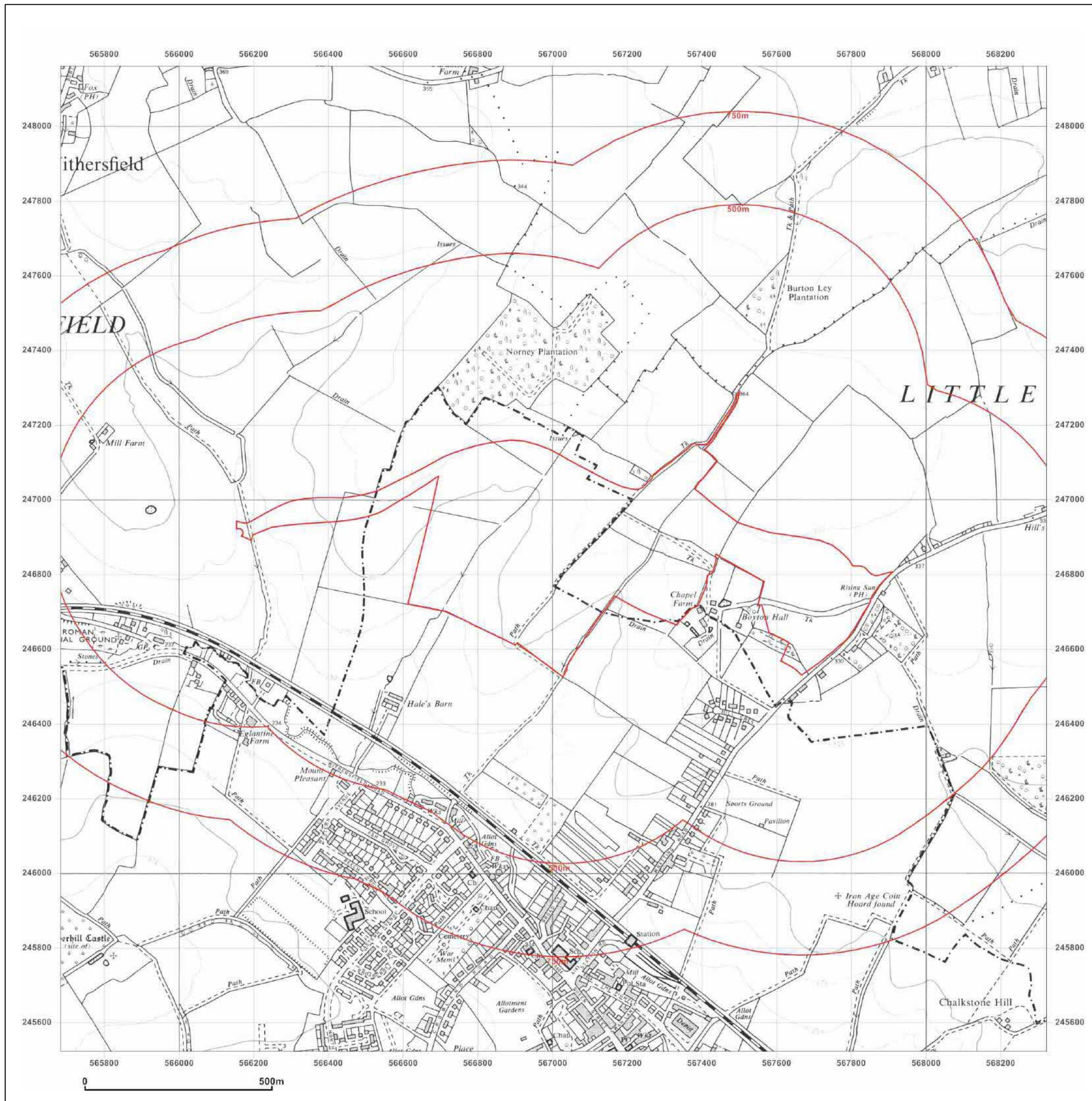


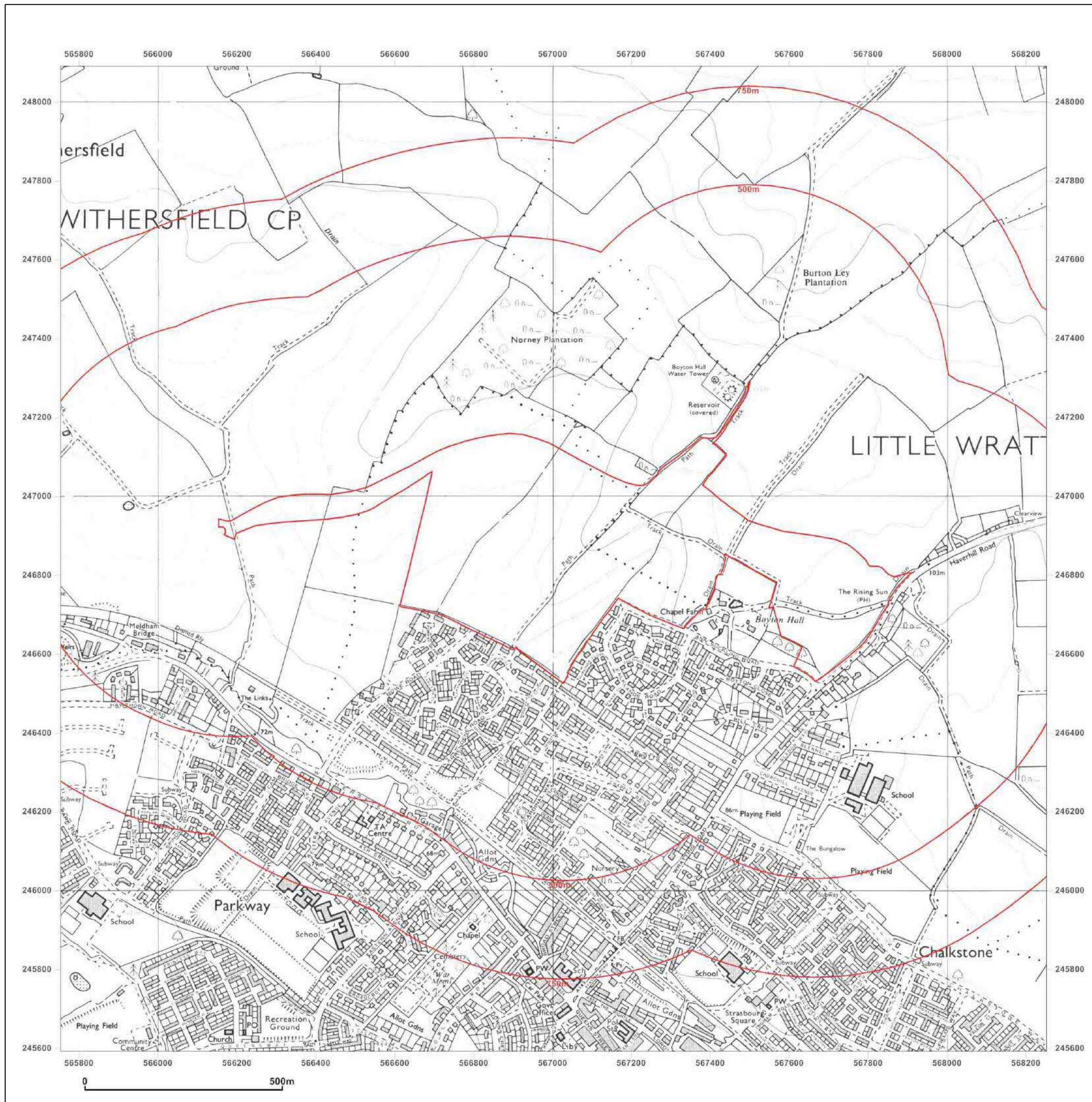
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Production date: 09 October 2014

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Site Details:

Land to NW of Haverhill, CB9
0EH

Client Ref: 995,SI
Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: National Grid

Map date: 1991

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1989
Revised 1991
Edition N/A
Copyright N/A
Levelled N/A

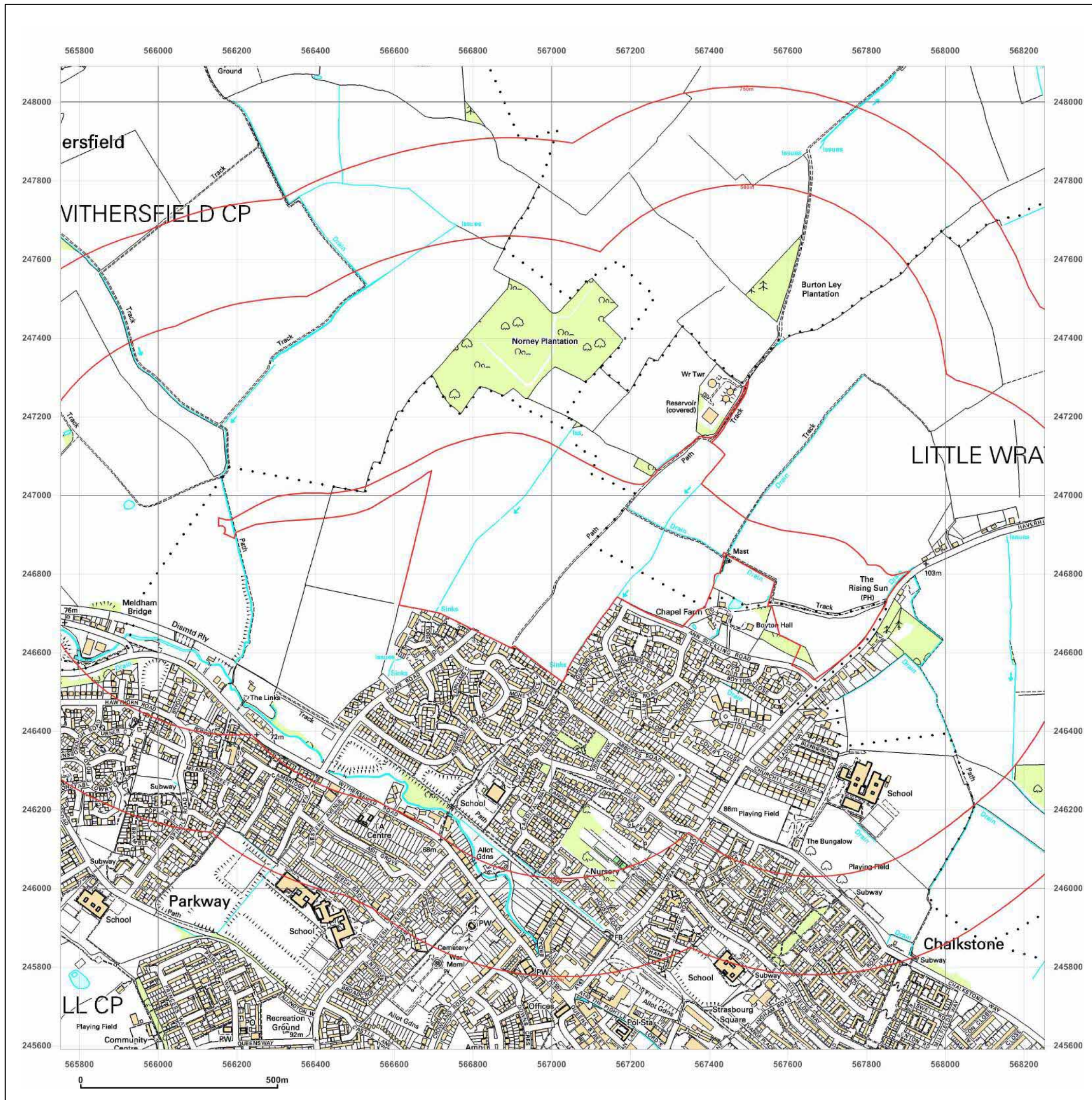


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Site Details:

Land to NW of Haverhill, CB9
0EH

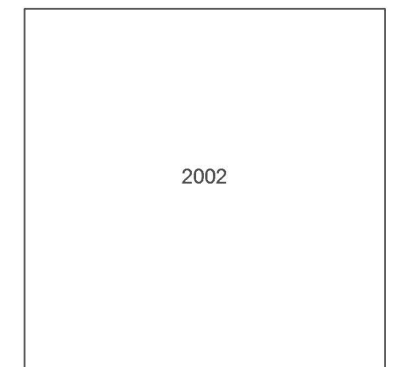
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Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



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Site Details:

Land to NW of Haverhill, CB9
0EH

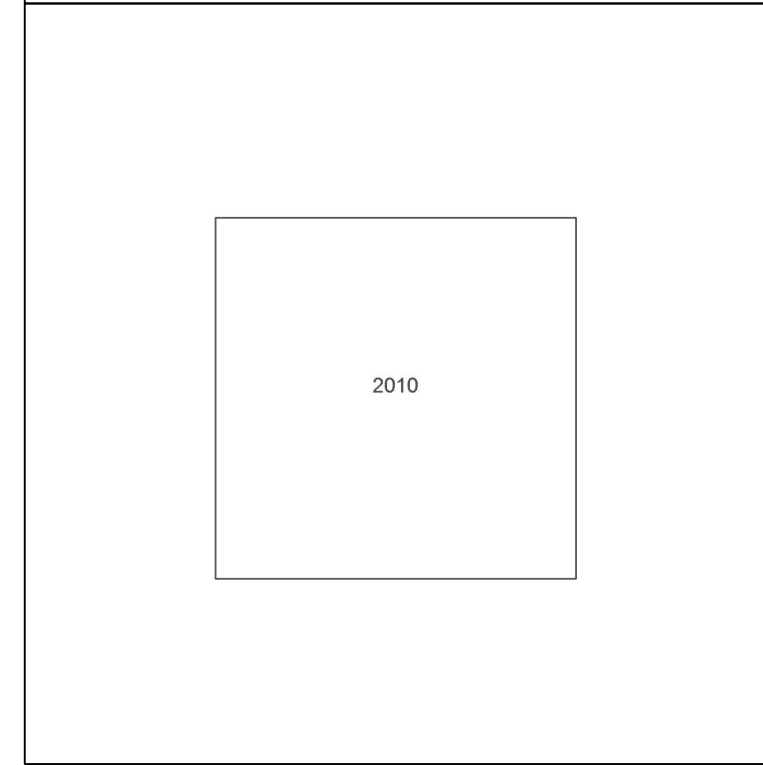
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Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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Production date: 09 October 2014

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Site Details:

Land to NW of Haverhill, CB9
0EH

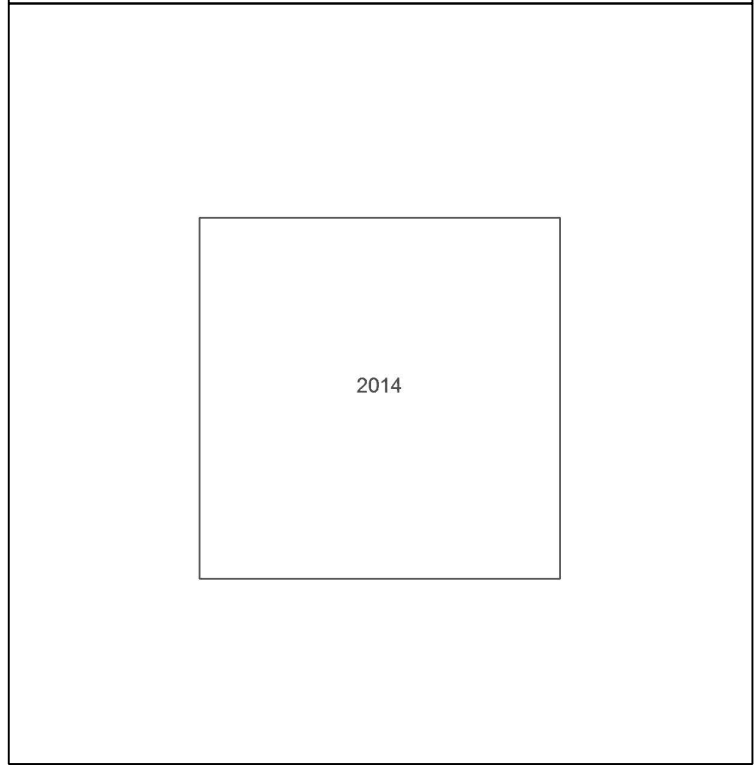
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Report Ref: HMD-369-1706441
Grid Ref: 567002, 246841

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



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APPENDIX 6 – EXPLORATORY HOLE LOGS

Borehole Logs
(BH1 to BH8)

Windowless Sample Hole Logs
(WS1 to WS19 and WSA to WSI)

Trial Pit Logs
(TP1 to TP*)

DRAFT

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. BH1
 LOGGED BY: AC FIELDWORK BY: AGB CHECKED BY: EXCAVATION METHOD: Cable Percussion (shell and auger) COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: 1.50mm cased from 0.0 to 10.0m DATES 20/10/2014 - 20/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
20/10 09:00	0.00	Dry		TOPSOIL (Dark brown clay with rootlets).		0.00					0											Hand pit from GL to 1.2m
				Firm to stiff orange brown grey mottled slightly gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWESTOFT FORMATION)		0.30					0.40-0.80	B	1									
				1.50 Becoming pale in colour with depth							1.20	D S	1	12 34 44	15	78	20	18	37			Moisture content, Atterberg Limit
											2.00	D S	2	12 33 44	14							
											3.00-3.45	U	U	(45)								
											3.45	D	3			89	21	17	35			Moisture content, Atterberg Limit
20/10	1.00	4.00									4.00	D S	4	12 35 56	19							Seepage inflow of water at 4m
				Stiff grey gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWESTOFT FORMATION)		4.80					5.00	D S	5	24 67 810	31							
											6.00	D	6									
											6.50	D S	7	24 66 67	25							pH and Sulphate
											7.50	D	8									
											8.00-8.45	U	2	(70)		90	18	17	33	2.14	272.4	Moisture content, Atterberg Limit, Triaxial test
											8.45	D	9									
											9.00	D	10									
											9.50	D S	11	35 78 99	33							
20/10 16:30	1.50	Damp				10.00																Borehole completed at 10.0m
20/10 16:45	0.00																					

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1.GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd
 Brightwell Barns, Ipswich Road
 Brightwell, Suffolk, IP10 0BJ
 Telephone: 01603 298 076
 Fax: 01603 298 075

HOLE No. BH1
 SHEET 1 OF 1
 PROJECT NO 995,SI

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. BH2
 LOGGED BY: AC CHECKED BY: EXCAVATION METHOD: Cable Percussion (shell and auger) COORDINATES E N SHEET 1 OF 1
 FIELDWORK BY: AGB DATE: 4.50mm cased from 0.0 to 10.0m DATES 21/10/2014 - 21/10/2014 PROJECT NO. 995,SI
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
21/10 08:30	0.00	Dry		TOPSOIL		0.00					0												Hand pit from GL to 1.2m
				Firm to stiff brown slightly sandy CLAY. (HEAD DEPOSITS)		0.30					0.40-0.80	B	1										
											1.20	D	1	11		9							
												S		22									
														23									
				Firm brown slightly gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWEST OFT FORMATION)		1.80					2.00-2.45	U	1	(45)									
											2.45	D	2				91	19	16	30			Moisture content, Atterberg Limit, pH and sulphate
											3.00	D	3	22									
												S		33									
														33									
21/10 +15 mins	1.50	4.00									4.00	D	4	11		8							Inflow of water at 4m
		1.60										S		12									Water sealed out at 4.5m.
				Firm to stiff grey gravelly CLAY. Gravel of rounded fine to coarse rounded chalk. (LOWEST OFT FORMATION)		4.40					5.00-5.45	U	2	(35)				20			2.07	80.5	pH and sulphate, Triaxial test
											5.45	D	5										
											6.00	D	6										
											6.50	D	7	12		20							
												S		34									
														58									
											7.50	D	8										
											8.00	D	9	23		26							
												S		66									
														77									
											9.00	D	10										pH and sulphate
											9.50	D	11	34		29							
												S		66									
														89									Borehole completed at 10.0m
21/10 13:00	4.50										10.00												
21/10 13:15	0.00																						

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ - GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd
 Brightwell Barns, Ipswich Road
 Birghtwell, Suffolk, IP10 0BJ
 Telephone: 01603 298 076
 Fax: 01603 298 075

PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 BH2.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. BH3
 LOGGED BY: AC FIELDWORK BY: AGB CHECKED BY: EXCAVATION METHOD: Cable Percussion (shell and auger) COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: 1.50mm cased from 0.0 to 10.0m DATES 21/10/2014 - 21/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing			Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
21/10/14:00	0.00	Dry		TOPSOIL		0.00					0											Hand pit from GL to 1.2m
				Stiff dark brown slightly silty gravelly CLAY. Gravel of rounded fine to coarse chalk (LOWESTOFT FORMATION)	X	0.30					0.40-0.80	B	1									
											1.20	D	1	22		18						
												S		44								
												D	2	12		15						
												S		34								
												D	3	12		16						
												S		33								
												D	4	35		36						
				Stiff to very stiff dark grey gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWESTOFT FORMATION)	O	3.70						U	1	(60)			90	18	19	48		Moisture content, Atterberg Limit
												D	4									
												D	5	35								
												S		79								
												D	5	10								
												D	6									
												U	2	(80)								
												D	7									
												D	8									
												D	9	57		35						
												S		88								pH and sulphate
												D	10	910								
												D	11	48		44						
												S		910								
												D	11	12								
												S		13								
21/10/17:00	1.50	Dry				10.00																Borehole completed at 10.0m
21/10/17:15	0.00																					

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ - GINT STD AGS 3, 1.GDT 11/12/14

*WATER ∇ Standing water level ∇ Water strikes
 PIEZOMETER
 SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample
 S Standard penetration test
 C Cone penetration test
 K Permeability test
 Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd
 Brightwell Barns, Ipswich Road
 Birghtwell, Suffolk, IP10 0BJ
 Telephone: 01603 298 076
 Fax: 01603 298 075

PROJECT NO 995,SI
 SHEET 1 OF 1
 HOLE No. BH3.

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills

PROJECT: Land to the North West of Haverhill

GROUND LEVEL

HOLE No. BH4

LOGGED BY: AC
FIELDWORK BY: AGB
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY:
DATE:

EXCAVATION METHOD: Cable Percussion (shell and auger)
1.50mm cased from 0.0 to 10.0m

COORDINATES E N

SHEET 1 OF 1

DATES 23/10/2014 - 23/10/2014

PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
23/10/08:30	0.00	Dry		TOPSOIL Stiff orange brown grey mottled gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWESTOFT FORMATION)		0.00	[Graphical SPT 'N' Value Scale: 0, 10, 20, 30, 40]				0												
						0.20	[Graphical SPT 'N' Value Scale]				0.40	B	1										
							[Graphical SPT 'N' Value Scale]				0.80												
							[Graphical SPT 'N' Value Scale]				1.20	D	1	6 10 10 12 8 8	38								
							[Graphical SPT 'N' Value Scale]				2.00	S	2	3 5 6 7 7 7	27								
							[Graphical SPT 'N' Value Scale]				3.00	D	2										
							[Graphical SPT 'N' Value Scale]				3.45	S	2										
							[Graphical SPT 'N' Value Scale]				3.45	U	1	(80)			18			2.10	211.4	Triaxial test	
							[Graphical SPT 'N' Value Scale]				4.00	D	3										
							[Graphical SPT 'N' Value Scale]				4.00	S	4	5 7 10 10 12 15	47								
							[Graphical SPT 'N' Value Scale]				5.00	D	5										
							[Graphical SPT 'N' Value Scale]				5.00	S	D5	3 6 8 10 11 11	40								
							[Graphical SPT 'N' Value Scale]				6.00	D	6										
							[Graphical SPT 'N' Value Scale]				6.50	D	7	5 5 8 10 12 12	42								
							[Graphical SPT 'N' Value Scale]				7.50	D	8										
							[Graphical SPT 'N' Value Scale]				8.00	D	9	3 7 11 14 15 10	60*								
							[Graphical SPT 'N' Value Scale]				9.00	D	10										
							[Graphical SPT 'N' Value Scale]				9.50	U	2	(90)			16			2.14	349.4	pH and sulphate, Triaxial test	
							[Graphical SPT 'N' Value Scale]				9.95	D	11										
23/10/13:00	1.50	Dry				10.00	[Graphical SPT 'N' Value Scale]																
23/10/13:15	0.00						[Graphical SPT 'N' Value Scale]																

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1.GDT 11/12/14

*WATER ∇ Standing water level ∇ Water strikes

PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample

S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT N

SPT N = SPT N value (blows after seating)
N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

Geosphere Environmental Ltd
Brightwell Barns, Ipswich Road
Birghtwell, Suffolk, IP10 0BJ
Telephone: 01603 298 076
Fax: 01603 298 075

PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
BH4.

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. BH5
 LOGGED BY: AC FIELDWORK BY: AGB CHECKED BY: EXCAVATION METHOD: Cable Percussion (shell and auger) COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: 1.50mm cased from 0.0 to 10.0m DATES 22/10/2014 - 22/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
22/10/09:00	0.00	Dry		TOPSOIL Stiff orange brown grey mottled slightly gravelly CLAY. Gravel of rounded fine to medium chalk. (LOWESTOFT FORMATION)		0.00					0											Hand pit from GL to 1.2m
						0.10					0.40-0.80	B	1									
											1.20-1.65	U	1	(55)		18				2.11	148.3	Triaxial test
											2.20	S	2	22								
											2.20	D	2	45								
											2.20	S	2	56								
											3.00	D	3	24								
											3.00	S	3	58								
											3.00	D	3	118								
											4.00	D	4	35								
											4.00	S	4	68								
											4.00	D	4	912								
						4.80					5.00	D	5	35								
											5.00	S	5	68								
											5.00	D	5	89								
											6.00	D	6									
											6.50-6.95	U	2	(80)		93	17	17	42	2.15	312.5	Moisture content, Atterberg Limit, Triaxial test
											6.95	D	7									
											7.50	D	8									
											8.00	D	9	24								
											8.00	S	9	78								
											8.00	D	9	1010								
											9.00	D	10									
											9.50	D	11	519								
											9.50	S	11	3812								74*
22/10 16:00	1.50	Dry																				
22/10 16:15	0.00					10.00																Borehole completed at 10.0m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER ∇ Standing water level ∇ Water strikes
 PIEZOMETER
 SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample
 Upper seal
 Response zone
 Lower seal
 S Standard penetration test
 C Cone penetration test
 K Permeability test
 Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

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HOLE No. BH5
 SHEET 1 OF 1
 PROJECT NO 995,SI

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills		PROJECT: Land to the North West of Haverhill		GROUND LEVEL		HOLE No. BH6	
LOGGED BY: AC FIELDWORK BY: AGB TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 1.50mm cased from 0.0 to 8.3m		COORDINATES E N	
				DATES 24/10/2014 - 24/10/2014		SHEET 1 OF 1	
						PROJECT NO. 995,SI	

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ _p Mg/m ³
24/10/08:30	0.00	Dry		TOPSOIL		0.00	[Graphical SPT 'N' Value]				0											Hand pit from GL to 1.2m
				Firm to stiff orange brown grey mottled gravelly CLAY. Gravel of rounded fine to medium chalk. (LOWESTOFT FORMATION)		0.20	[Graphical SPT 'N' Value]				0.40-0.80	B	1									
							[Graphical SPT 'N' Value]				1.20	D S	1	5 5 6 7 8 8	29							
							[Graphical SPT 'N' Value]				2.00-2.45	U	1	(50)		94	18	19	48	2.09	174.1	Moisture content, Atterberg Limit, Triaxial test
							[Graphical SPT 'N' Value]				2.45	D	2									
							[Graphical SPT 'N' Value]				3.00	D S	3	2 4 5 5 6 8	24							
				Very stiff to hard dark grey slightly gravelly CLAY. Gravel of rounded fine to medium chalk. (LOWESTOFT FORMATION)		4.00	[Graphical SPT 'N' Value]				4.00	D S	4	2 3 5 5 6 7	23							
							[Graphical SPT 'N' Value]				5.00-5.45	U	2	(70)								
							[Graphical SPT 'N' Value]				5.45	D	5									
							[Graphical SPT 'N' Value]				6.00	D	6									
							[Graphical SPT 'N' Value]				6.50	D S	7	2 4 5 6 8 10	29							
							[Graphical SPT 'N' Value]				7.50	D	8									
24/10/13:00 24/10/13:15	1.50 0.00	Dry				8.30	[Graphical SPT 'N' Value]				8.00	D S	9	17								Borehole completed at 8.3m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ, GINT STD, AGS 3, 1,GDT, 11/12/14

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment (35) Undisturbed sample blow count
	Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test	SPT N	N = SPT N value (blows after seating)
			Lower seal		U Undisturbed sample	K Permeability test		N*120 = Total blows/penetration including seating
					P Piston sample			<425 Sample % passing 425 micron sieve
					J Disturbed jar sample			
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
BH6.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. BH7
 LOGGED BY: AC CHECKED BY: EXCAVATION METHOD: Cable Percussion (shell and auger) COORDINATES E N SHEET 1 OF 1
 FIELDWORK BY: AGB DATE: 1.50mm cased from 0.0 to 8.2m DATES 24/10/2014 - 24/10/2014 PROJECT NO. 995,SI
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
24/10/14:00	0.00	Dry		TOPSOIL		0.00					0												Hand pit from GL to 1.2m
				Firm to stiff orange brown grey mottled slightly gravelly CLAY. Gravel of rounded fine to medium chalk. (LOWESTOFT FORMATION)		0.40					0.40-0.80	B	1										
											1.20-1.65	U	1	(40)									
											1.65-2.00	D	1										
											2.00-3.00	D	2	12	17								
											3.00-4.00	S	3	34									
											4.00-4.45	D	4	46									
				Very stiff dark grey gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWESTOFT FORMATION)		3.30																	
											4.45-5.00	D	5	13	19								
											5.00-5.45	S	5	35									
											5.45-6.00	D	6	56									
											6.00-6.50	D	7	78									
											6.50-7.50	D	8	24	27								
											7.50-8.20	S	8	66									
											8.20	C	25	78									Moisture content, Atterberg Limit, pH and sulphate, Triaxial test
24/10/17:00	1.50	Dry																					
24/10/17:15	0.00																						pH and sulphate
																							Borehole completed at 8.20m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1.GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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HOLE No. BH7
 SHEET 1 OF 1
 PROJECT NO 995,SI

CLIENT: c/o Savills		PROJECT: Land to the North West of Haverhill		GROUND LEVEL		HOLE No. BH8	
LOGGED BY: AC FIELDWORK BY: AGB TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Cable Percussion (shell and auger) 6.00mm cased from 0.0 to 10.0m		COORDINATES E N	
				DATES 23/10/2014 - 23/10/2014		SHEET 1 OF 1	
						PROJECT NO. 995,SI	

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value 0 10 20 30 40				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
23/10 14:00	0.00	Dry		TOPSOIL		0.00				0												Hand pit from GL to 1.2m
				Firm brown slightly silty CLAY (HEAD DEPOSITS)	X	0.40				0.40-0.80	B	1										
					X					1.20	D	1	12	14	100	24	20	51				Moisture content, Atterberg Limit
					X					1.80	D	2	23									
23/10	2.00			Soft brown very sandy CLAY. (HEAD DEPOSITS)	X	1.80				2.00	D	3	11	8								Seepage inflow of water at 2m
				Soft to firm brown slightly gravelly sandy CLAY. Gravel of rounded fine to coarse chalk. (HEAD DEPOSITS)	X	2.20					D		12									
					X					3.00	D	4	22	9								
					X						D		23									
23/10	4.50				X					4.00	D	5	12	11								Seepage inflow of water at 4.5m
					X						D		23									
					X						D		33									
				Stiff grey gravelly CLAY. Gravel of rounded fine to coarse chalk. (LOWEST OF T FORMATION)	X	5.20				5.00	D	6	12	10								
					X					6.00	D	7	12									Water sealed out at 6.0m.
					X					6.50	D	8	13	19								
					X						D		45									
					X					7.50	D	9	55									
				7.50 Becoming very stiff with depth.	X					7.50	D	9										
					X					8.00	U	1	(45)									Triaxial test
					X					8.45	D	10										
					X					8.45	D	10										
					X					9.00	D	11										
					X					9.50	D	12	23	23								
23/10 17:00	6.00	Dry			X					9.50	S	12	45									
23/10 17:15	0.00				X					10.00	S	12	68									Borehole completed at 10.0m

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment
	Water strikes		Response zone		B Bulk disturbed sample	C Cone penetration test	(35)	Undisturbed sample blow count
			Lower seal		U Undisturbed sample	K Permeability test	SPT N	N = SPT N value (blows after seating)
					P Piston sample			N * 120 = Total blows/penetration including seating
					J Disturbed jar sample			<425 Sample % passing 425 micron sieve
					ES Environmental soil sample			
					W Water Sample			

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
BH8

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14


CLIENT: c/o Savills		PROJECT: Land to the North West of Haverhill		GROUND LEVEL		HOLE No. WS1	
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA		CHECKED BY: DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m		COORDINATES E N	
				DATES 28/10/2014 - 28/10/2014		SHEET 1 OF 1	
						PROJECT NO. 995,SI	

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to medium flint and infrequent brick fragments)		0.00						0										Groundwater not encountered during drilling	
				Firm becoming stiff brown slightly sandy gravelly CLAY. Gravel of subrounded to rounded chalk and angular to subrounded fine to coarse flint. (LOWEST OFT FORMATION)		0.45						0.20	J	1								Metals, PAH, TPH, Moisture content, pH and Sulphate	
							0.70						0.35	J	2								
				1.20 Becomes brown grey mottled with depth								0.70	J	3								Metals, PAH, TPH, Moisture content, pH and Sulphate	
							0.80						0.80	D	1								Shear vane test = 48kN/m ² Shear vane test = 50kN/m ²
												1.00	1	D	2	11	22	34					
												2.00	2	D	3	11	5	5	7				Shear vane test = 87kN/m ²
												3.00	3	D	4	4	4	6	7	9			Collapse of sidewalls at 3.0m depth Shear vane test = 112kN/m ²
												4.00	4	D	5	5	7	8	10	12	14		50mm diameter monitoring well installed to 4.0m Windowless sample hole completed at 4.0m depth

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER	Standing water level	PIEZOMETER	Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment (35) Undisturbed sample blow count
∇	Water strikes		Response zone	B Bulk disturbed sample	C Cone penetration test	SPT N	N = SPT N value (blows after seating)	
			Lower seal	U Undisturbed sample	K Permeability test		N*120 = Total blows/penetration including seating	
				P Piston sample			<425 Sample % passing 425 micron sieve	
				J Disturbed jar sample				
				ES Environmental soil sample				
				W Water Sample				

DEPTH All depths, level and thicknesses in metres



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PROJECT NO
995,SI

SHEET
1 OF 1

HOLE No.
WS1.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS2
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 28/10/2014 - 28/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes																	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²															
							0	10	20	30	40																												
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to coarse flint and infrequent fine to medium brick and charcoal fragments)		0.00						0	J	1																							Groundwater not encountered during drilling		
				Firm becoming stiff brown slightly sandy gravelly CLAY. Gravel of subrounded to rounded chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.47						0.10	J	2																							No collapse of sidewalls during drilling		
					0.80 Becomes brown grey mottled with depth								0.70	J	3																						Shear vane test = 70kN/m ²		
												0.80	D	1																							Shear vane test = 76kN/m ²		
												1.00	1	D	2																								
												2.00	2	D	3																							Shear vane test = 82kN/m ²	
												3.00	3	D	4																							Shear vane test = 91kN/m ²	
												4.00	4	D	5																						50mm diameter monitoring well installed to 4.0m Shear vane test = 96kN/m ² Windowless sample hole completed at 4.0m depth		

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT N = SPT N value (blows after seating), N*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

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PROJECT NO 995,SI
 SHEET 1 OF 1
 HOLE No. WS2.

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS3
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 1.8 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown sandy clay with rootlets)		0.00						0											Groundwater not encountered during drilling
				TOPSOIL (Brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.05						0.10	J	1									No collapse of sidewalls during drilling
				Firm becoming stiff brown slightly sandy gravelly CLAY. Gravel of subrounded to rounded chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.30						0.20	J	2									
												0.60	J	3									
												0.80	D	1									Shear vane test = 74kN/m ²
												1.00	D	2									Shear vane test = 84kN/m ²
						1.80						1.80	D	3									Infiltration test undertaken at 1.48m depth Shear vane test = 96kN/m ²
																							Windowless sample hole completed at 1.8m depth

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ_GINT STD AGS 3_1.GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count, SPT N N = SPT N value (blows after seating), N*120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

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PROJECT NO 995,SI
 SHEET 1 OF 1
 HOLE No. WS3.

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS4
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²	
							0	10	20	30	40														
				TOPSOIL (Dark brown slightly gravelly sandy clay with rootlets. Gravel of angular to subrounded fine to medium flint)		0.00						0												Groundwater not encountered during drilling	
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.05						0.10	J	1										No collapse of sidewalls during drilling	
				Stiff becoming very stiff pale brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.25																			
													0.50	J	2										
													0.80	D	1										Shear vane test = 68kN/m ²
													1.00	D	2										Shear vane test = 82kN/m ²
						2.00						2.00	D	3										Shear vane test = 87kN/m ² Windowless sample hole completed at 2.0m depth	

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS5
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
							0	10	20	30	40											
				TOPSOIL (Dark brown slightly gravelly sandy clay with rootlets. Gravel of angular to subrounded fine to medium flint)		0.00						0										Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.05						0.10	J	1								
				Firm becoming stiff pale brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.40																
				1.00 Becoming dark yellow brown grey mottled with depth								0.70	D	1								
												1	C		23 34 55	17						
				2.00 Becoming dark brown grey mottled with depth								1.60	D	2								
												2	C		33 44 56	19						
				3.50 Occasional iron oxide staining below 3.5m depth								2.60	D	3								
												3	C		44 55 76	23						
												3.60	D	4								
												4	C		55 57 79	28						Windowless sample hole completed at 4.0m depth

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS5.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS6
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 1.9 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly sandy clay with rootlets. Gravel of angular to subrounded fine to medium flint)		0.00						0											Groundwater not encountered during drilling
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.05						0.10	J	1									No collapse of sidewalls during drilling
				Stiff becoming very stiff pale brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.25																	
				1.00 Becoming yellow brown grey mottled with depth below 1.0m								0.60	J	2									
												0.80	D	1									
												1											Infiltration test undertaken at 1.41m depth
												1.80	D	2									Windowless sample hole completed at 1.89m depth
						1.89						2											
												3											
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd
 Brightwell Barns, Ipswich Road,
 Bightwell, Suffolk, IP10 0BJ
 Telephone: 01603 298 076
 Fax: 01603 298 075

PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WS6.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS7
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly clay. Gravel of angular to subrounded fine to medium flint, rare brick and charcoal fragments)		0.00						0	J	1									Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				Firm becoming stiff brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.30						0.10	J	2								Metals, PAH, TPH, Moisture content, pH and Sulphate	
				1.00 Occasional iron oxide staining below 1.0m depth								0.40	J										
				2.00 Becoming dark yellow brown grey mottled with depth								0.80	D	1								Shear vane test = 82kN/m ²	
				3.50 Becoming dark grey with brown mottling with depth								1.80	D	2									Shear vane test = 94kN/m ²
												2.60	D	3								Shear vane test = 88kN/m ² Windowless sample hole completed at 4.0m depth 50mm diameter monitoring well installed to 4.0m	
						4.00						3.60	D	4									
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres



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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS7.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS8
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %
							0	10	20	30	40											
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.00						0	J	1								Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				Firm becoming stiff yellow brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.30						0.10	J	2								
				0.80 - Becoming yellow brown grey mottled with depth								0.40	J									
				1.00 - Becoming brown/grey mottled with depth								0.80	D	1								
												1										Shear vane test = 78kN/m ²
												1.70	D	2								Infiltration test undertaken at 1.58m depth
						2.00						2										Shear vane test = 102kN/m ²
												3										Windowless sample hole completed at 2.0m depth
												4										

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ_GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WS8.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS9
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 29/10/2014 - 29/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of angular to subrounded fine to medium flint and rare fine brick and charcoal fragments)		0.00						0	J	1									Groundwater not encountered during drilling
				Stiff becoming very stiff yellow brown grey mottled slightly sandy gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)		0.30						0.10	J	2									No collapse of sidewalls during drilling
				1.00 - Becoming brown/grey mottled with depth								0.50	J										
												0.80	D	1									
												1	C		35	35	23						
												1.60	D	2	78								
						2.00						2										Windowless sample hole completed at 2.0m depth	
												3										50mm diameter monitoring well installed to 2.0m	
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WS9.

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS10
 LOGGED BY: BG FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
							0	10	20	30	40													
				TOPSOIL (Dark brown slightly sandy slightly gravelly clay. Gravel of subangular to subrounded fine to medium flint and rare chalk)		0.00						0												Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				Stiff pale brown gravelly CLAY. Gravel of subangular to rounded fine to coarse chalk. (LOWESTOFT FORMATION)		0.15						0.10	J	1										
				Stiff dark grey brown mottled gravelly CLAY. Gravel of angular to subrounded fine to coarse chalk. (LOWESTOFT FORMATION)		1.10						1	C		25 34 45	16							Shear vane test = 108kN/m ²	
						1.50						1.50	D	2									Shear vane test = 116kN/m ²	
						2.00						2											Shear vane test = 132kN/m ² Windowless sample hole completed at 2.0m depth	

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS10

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS11
 LOGGED BY: BG FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
				TOPSOIL (Desiccated dark brown sandy slightly gravelly clay with rootlets. Gravel of subangular fine to coarse flint and chalk with very rare brick fragments)		0.00					0											Groundwater not encountered during drilling
				Stiff pale brown grey mottled gravelly slightly cobbly desiccated CLAY. Gravel of angular to subangular fine to coarse chalk. (LOWESTOFT FORMATION)		0.30					0.20	J	1									No collapse of sidewalls during drilling
				1.10 Becoming brown dark grey mottled and very stiff to hard with depth							0.75	D	1									
				1.30 Orange brown sandy pockets present with depth							1	C		32 44 46	18							Shear vane test = 104kN/m ²
											1.50	D	2									Shear vane test = 136kN/m ²
											2	C		34 45 66	21							Shear vane test = 136kN/m ²
											2.50	D	3									Shear vane test = 120kN/m ² Shear vane test = 128kN/m ²
				2.80 Becoming dark brown dark grey mottled with depth							3	C		44 56 7	26							Shear vane test = 128kN/m ² Shear vane test = 140kN/m ²
						4.00					4	C		57 78 1012	37							Windowless sample hole completed 4.0m depth 50mm diameter monitoring well installed to 4.0m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER
 Water strikes

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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HOLE No. WS11
 SHEET 1 OF 1
 PROJECT NO 995,SI

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS12
 LOGGED BY: BG CHECKED BY: PROJECT: Land to the North West of Haverhill WINDOWLESS SAMPLER
 FIELDWORK BY: GEL EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: UNCASSED TO 1.7 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %
							0	10	20	30	40											
				TOPSOIL (Dark brown slightly gravelly clay. Gravel of subangular to subrounded fine to coarse flint with fragments of brick)		0.00						0										
				Firm brown slightly gravelly CLAY. Gravel of subangular fine chalk. (LOWESTOFT FORMATION)		0.10						0.10	J	1								
												1										Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate Infiltration test undertaken at 0.15m depth No collapse of sidewalls during drilling Shear vane test = 72kN/m ²
												1.50	D	1								Shear vane test = 60kN/m ²
						1.68						2										Shear vane test = 52kN/m ²
												3										Shear vane test = 72kN/m ² Windowless sample hole completed at 1.68m depth
												4										

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS12

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS13
 LOGGED BY: BG CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 FIELDWORK BY: GEL DATE: Uncased to 4.0 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI
 TEMPLATE REF: GEL AGS BH BETA

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly silty slightly sandy slightly gravelly clay with rootlets. Gravel of subangular to subrounded fine to medium flint)		0.00						0											Groundwater not encountered during drilling
				Stiff to very stiff gravelly CLAY. Gravel of subangular fine to coarse chalk and flint. (LOWESTOFT FORMATION)		0.40						0.20	J	1									No collapse of sidewalls with depth
				Soft to firm brown and orange brown mottled slightly sandy slightly gravelly CLAY. Gravel of subangular coarse flint. (LOWESTOFT FORMATION)		1.00						0.75	D	1									
				Very stiff to hard pale brown grey mottled gravelly CLAY. Gravel of subangular to subrounded fine to coarse chalk. (LOWESTOFT FORMATION)		1.50						1.50	D	2									Shear vane test = 52kN/m ²
												2											Shear vane test = 52kN/m ²
												3											Shear vane test = 68kN/m ²
												3.50	D	3									Shear vane test = 128kN/m ²
						4.00						4											Windowless sample hole completed at 4.0m depth 50mm diameter monitoring well installed to 4.0m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ_GINT STD AGS 3_1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS13

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS14
 LOGGED BY: BG FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly silty slightly sandy slightly gravelly CLAY with rootlets. Gravel of subangular fine to medium flint and chalk)		0.00						0											Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling Shear vane test = 88kN/m ² Infiltration test undertaken at 0.70m depth Shear vane test = 132kN/m ²
				Stiff pale brown slightly gravelly CLAY. Gravel of subangular to subrounded fine to coarse chalk. (LOWESTOFT FORMATION)		0.30						0.15	J	1									
				Stiff dark brown and dark grey mottled gravelly CLAY. Gravel of subangular to subrounded fine to coarse chalk. (LOWESTOFT FORMATION)		0.60																	
				1.10 Becoming hard with depth								1											
				1.70 Orange brown sandy clay pocket present								1.50	D	1									Shear vane test = 100kN/m ²
						1.97						2											Windowless sample hole completed at 1.97m depth
												3											
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS14

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS15
 LOGGED BY: BG FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 30/10/2014 - 30/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Desiccated dark brown slightly silty slightly gravelly desiccated CLAY with rootlets. Gravel of subangular to subrounded fine to coarse flint)		0.00						0											
				Stiff to desiccated pale brown and grey mottled gravelly slightly cobbly desiccated CLAY. Gravel of subangular to rounded fine to coarse chalk (LOWESTOFT FORMATION)		0.20						0.10	J	1									
				1.00 Becoming hard and dark grey with depth								0.75	D	1									Infiltration test undertaken at 0.9m depth
												1.50	D	2									
						2.00						2											Windowless sample hole completed at 2.0m depth
												3											
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ_GINT STD AGS 3_1.GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WS15

CLIENT: c/o Savills	PROJECT: Land to the North West of Haverhill	GROUND LEVEL	HOLE No. WS16
LOGGED BY: SG FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA	CHECKED BY: DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m	COORDINATES E N
			DATES 31/10/2014 - 31/10/2014
			PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark grey brown slightly gravelly clay. Gravel of fine to medium flint with occasional brick).		0.00						0											Groundwater not encountered during drilling
				Firm becoming stiff dark yellow brown slightly gravelly desiccated CLAY. Gravel of fine to medium flint with occasional medium chalk. (LOWESTOFT FORMATION) 0.50 Rootlets present		0.30						0.10	J	1									No collapse of sidewalls during drilling
				1.50 No desiccation below 1.5m and becoming slightly sandy and firm with depth								1											
				2.20 Becoming gravelly and pale grey orange brown mottled below 2.2m. Gravel is fine to coarse chalk and flint								2											
												3											
												4											Windowless sample hole completed at 4.0m
						4.00																	

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WS16

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS17
 LOGGED BY: SG WINDOWLESS SAMPLER COORDINATES E N SHEET 1 OF 1
 FIELDWORK BY: GEL EXCAVATION METHOD: Windowless sampler DATES 31/10/2014 - 31/10/2014 PROJECT NO. 995,SI
 TEMPLATE REF: GEL AGS BH BETA UNCAGED TO 2.0 m

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly clay. Gravel is fine to medium flint with occasional brick).		0.00						0											
				Firm dark brown slightly gravelly CLAY. Gravel of fine to coarse flint and chalk. (HEAD DEPOSITS)		0.35						0.10	J	1									Groundwater not encountered with depth
				Firm becoming stiff dark yellow brown gravelly CLAY. Gravel of fine to coarse flint and chalk. (LOWEST OFT FORMATION)		0.80																	No collapse of sidewalls during drilling
				1.30 Becoming dark grey and dark orange brown mottled with depth																			
				1.65 Cobbles of chalk present																			
						2.00																	Windowless sample hole completed at 2.0m

*WATER Standing water level Water strikes
 PIEZOMETER Upper seal Response zone Lower seal
 SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample
 S Standard penetration test
 C Cone penetration test
 K Permeability test
 Blows SPT N
 SPT N = SPT N value (blows after seating)
 N * 120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve
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 PROJECT NO 995,SI
 SHEET 1 OF 1
 HOLE No. WS17

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WS18
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 31/10/2014 - 31/10/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to medium flint and infrequent charcoal fragments).			0.00																No collapse of sidewalls during drilling
				Firm becoming stiff dark brown slightly gravelly CLAY. Gravel of angular to subrounded fine to medium flint. (HEAD DEPOSITS)			0.30																
31/10		1.00										0.80	D	1									
												1											Seepage inflow of water at 1m
												1.20	D	2									
				Firm becoming stiff orange brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint. (LOWESTOFT FORMATION)			1.50																
												2											
				2.20 Becoming brown grey mottled with depth																			
												3											
												3.00	D	3									
												4											Windowless sample hole completed at 4.0m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
SPT N N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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HOLE No. WS18
 SHEET 1 OF 1
 PROJECT NO 995,SI

CLIENT: c/o Savills		PROJECT: Land to the North West of Haverhill			GROUND LEVEL			HOLE No. WS19		
LOGGED BY: SG FIELDWORK BY: GEL		CHECKED BY: DATE:		EXCAVATION METHOD: Windowless sampler Uncased to 4.0 m			COORDINATES E N			
TEMPLATE REF: GEL AGS BH BETA		DATES 31/10/2014 - 31/10/2014							SHEET 1 OF 1	
PROJECT NO. 995,SI										

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes						
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²				
							0	10	20	30	40																	
				TOPSOIL (Dark brown gravelly very desiccated clay. Gravel of frequent fine to coarse flint and chalk).		0.00																					Groundwater not encountered during drilling	
				Dark brown pale grey mottled gravelly cobbly very desiccated CLAY. Gravel of fine to coarse flint and chalk with frequent cobbles of chalk. (LOWESTOFT FORMATION)		0.40																					No collapse of sidewalls during drilling	
				2.80 Becoming dark grey with depth																								
				3.00 No desiccation below 3.0m																								
						4.00																					Windowless sample hole completed at 4.0m 50mm diameter monitoring well installed to 4.0m	

*WATER Standing water level Water strikes

PIEZOMETER

Upper seal

Response zone

Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample

B Bulk disturbed sample

U Undisturbed sample

P Piston sample

J Disturbed jar sample

ES Environmental soil sample

W Water Sample

S Standard penetration test

C Cone penetration test

K Permeability test

Blows SPT N

SPT N = SPT N value (blows after seating)

N * 120 = Total blows/penetration including seating

<425 Sample % passing 425 micron sieve

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DEPTH All depths, level and thicknesses in metres

PROJECT NO

995,SI

SHEET

1 OF 1

HOLE No.

WS19

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WSA
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 18/11/2014 - 18/11/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
				TOPSOIL (Dark brown gravelly slightly silty clayey sand with occasional rootlets. Gravel is angular to subrounded fine to medium flint)		0.00					0	J	1									Groundwater not encountered during drilling
				Firm becoming very stiff yellow brown gravelly CLAY. Gravel of angular to subrounded fine to coarse flint and subrounded to rounded fine to coarse chalk (LOWEST OFT FORMATION) 0.50 - Becoming desiccated with depth 0.60 - 1.00 - Becoming dark grey brown with depth		0.25					0.10 0.30	J	2									No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate
				1.00 - 4.00 - Becoming grey brown mottled with depth							1	C	11 12 9 8 8 9	34								
											2	C	6 6 7 7 8 9	31								
											3	C	6 8 9 9 10 12	40								
						4.00					4	C	8 9 10 12 13 14	49								Windowless sample hole completed at 4.0m

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER
 Water strikes

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT blows for each 75mm increment (35) Undisturbed sample blow count
 N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
995,SI
SHEET
1 OF 1
HOLE No.
WSA

CLIENT: c/o Savills	PROJECT: Land to the North West of Haverhill	GROUND LEVEL	HOLE No. WSB
LOGGED BY: LF FIELDWORK BY: GEL TEMPLATE REF: GEL AGS BH BETA	CHECKED BY: DATE:	EXCAVATION METHOD: Windowless sampler Uncased to 2.0 m	COORDINATES E N
			DATES 18/11/2014 - 18/11/2014
			PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes			
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³	Cu kN/m ²
							0	10	20	30	40													
				TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to medium flint)			0.00						0											Groundwater not encountered during drilling No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate Metals, PAH, TPH, Moisture content, pH and Sulphate Infiltration test undertaken at 0.69m depth
				Firm becoming stiff light orange brown gravelly CLAY. Gravel of angular to subrounded fine to coarse flint and subrounded fine to coarse chalk (LOWESTOFT FORMATION)			0.30						0.20	J	1									
							0.40							J	2									
				0.80 - Becoming brown grey mottled with depth									1											
							2.00						2											Windowless sample hole completed at 2.00m depth

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level Water strikes	PIEZOMETER	Upper seal Response zone Lower seal	SAMPLE AND TEST KEY D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample	S Standard penetration test C Cone penetration test K Permeability test	Blows SPT N SPT N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating <425 Sample % passing 425 micron sieve	 Geosphere Environmental Ltd Brightwell Barns, Ipswich Road, Bightwell, Suffolk, IP10 0BJ Telephone: 01603 298 076 Fax: 01603 298 075	HOLE No. WSB.	SHEET 1 OF 1	PROJECT NO 995,SI
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DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills		PROJECT: Land to the North West of Haverhill				GROUND LEVEL				HOLE No. WSD			
LOGGED BY: SG		CHECKED BY:		EXCAVATION METHOD: Windowless sampler				COORDINATES E N				SHEET 1 OF 1	
FIELDWORK BY: GEL		DATE:		Uncased to 2.0 m				DATES 18/11/2014 - 18/11/2014				PROJECT NO. 995,SI	
TEMPLATE REF: GEL AGS BH BETA													

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
								0	10	20	30	40	0										
				TOPSOIL (Brown slightly sandy clay with occasional fine to medium gravel of flint)		0.00						0											Groundwater not encountered during drilling No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate Infiltration test undertaken at 0.55m depth
				Firm becoming stiff yellow brown CLAY with occasional fine to coarse gravel of flint and chalk (LOWESTOFT FORMATION)		0.30						0.20	J	1									
						0.40						0.40	J	2									
				0.70 - 2.00 - Becoming pale grey/orange brown mottled.								1											
						2.00						2											Windowless sample hole completed at 2.00m depth
												3											
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ_GINT STD AGS 3_1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY: D Small disturbed sample, B Bulk disturbed sample, U Undisturbed sample, P Piston sample, J Disturbed jar sample, ES Environmental soil sample, W Water Sample

S S Standard penetration test, C Cone penetration test, K Permeability test

Blows SPT N = SPT N value (blows after seating), N * 120 = Total blows/penetration including seating, <425 Sample % passing 425 micron sieve

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HOLE No. WSD. SHEET 1 OF 1 PROJECT NO 995,SI

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WSE
 LOGGED BY: SG FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 4.0 m DATES 18/11/2014 - 18/11/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes	
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³
				TOPSOIL (Dark grey slightly sandy clay with occasional fine gravel of flint and brick)		0.00					0											No collapse of sidewalls during drilling
				Firm yellow brown sandy CLAY with occasional black speckling (HEAD DEPOSITS)		0.40																Rising to 0.8m on completion
				Stiff dark brown/pale grey mottled gravelly CLAY. Gravel is fine to coarse flint and chalk (HEAD DEPOSITS)		1.20					1	C	11 23 23	10								
				Orange brown fine to medium gravelly SAND. Gravel is fine to medium flint (HEAD DEPOSITS)		1.80																Moderate inflow of water at 1.8m
				Stiff dark brown/pale grey mottled gravelly CLAY. Gravel is fine flint and chalk (LOWEST OF FORMATION) 2.25 - becoming dark grey		2.00					2	C	34 45 55	19								
											3	C	33 44 57	20								50mm diameter monitoring well installed to 2.6m
						4.00					4	C	33 45 59	23								Windowless sample hole completed at 4.0m depth

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level Water strikes

PIEZOMETER

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY

D Small disturbed sample B Bulk disturbed sample U Undisturbed sample P Piston sample J Disturbed jar sample ES Environmental soil sample W Water Sample

S Standard penetration test C Cone penetration test K Permeability test

Blows SPT N

SPT blows for each 75mm increment (35) Undisturbed sample blow count N = SPT N value (blows after seating) N*120 = Total blows/penetration including seating Sample % passing 425 micron sieve

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PROJECT NO 995,SI SHEET 1 OF 1 HOLE No. WSE.

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills	PROJECT: Land to the North West of Haverhill	GROUND LEVEL	HOLE No. WSF
LOGGED BY: SG	CHECKED BY:	COORDINATES E N	SHEET 1 OF 1
FIELDWORK BY: GEL	DATE:	DATES 18/11/2014 - 18/11/2014	PROJECT NO. 995,SI
TEMPLATE REF: GEL AGS BH BETA	EXCAVATION METHOD: Windowless sampler Uncased to 2.0 m		

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
				TOPSOIL (Dark grey slightly sandy clay with occasional fine gravel of flint and brick)		0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
				Firm becoming soft orange brown sandy CLAY with occasional fine to medium gravel of flint (HEAD DEPOSITS)		0.25	0.20	J	1														No collapse of sidewalls during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate
						0.45	0.45	J	2														
						1																	
18/11		1.30																				Inflow of water at 1.3m	
				Stiff dark brown/pale grey mottled slightly gravelly CLAY. Gravel is fine to medium flint and chalk (LOWESTOFT FORMATION)		1.60																	
						2.00	2																Window sample hole completed at 2.00m depth

*WATER	Standing water level	PIEZOMETER		Upper seal	SAMPLE AND TEST KEY	D Small disturbed sample	S Standard penetration test	Blows	SPT blows for each 75mm increment (35) Undisturbed sample blow count
	Water strikes			Response zone		B Bulk disturbed sample	C Cone penetration test	SPT N	N = SPT N value (blows after seating)
				Lower seal		U Undisturbed sample	K Permeability test		N * 120 = Total blows/penetration including seating
						P Piston sample			<425 Sample % passing 425 micron sieve
						J Disturbed jar sample			
						ES Environmental soil sample			
						W Water Sample			

DEPTH All depths, level and thicknesses in metres

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PROJECT NO. 995,SI
 SHEET 1 OF 1
 HOLE No. WSF.

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ,GIN,STD,AGS,3,1,GDT,11/12/14

CLIENT: c/o Savills

PROJECT: Land to the North West of Haverhill

GROUND LEVEL

HOLE No. WSG

LOGGED BY: LF
FIELDWORK BY: GEL
TEMPLATE REF: GEL AGS BH BETA

CHECKED BY:
DATE:

EXCAVATION METHOD: Windowless sampler
Uncased to 2.0 m

COORDINATES E N

SHEET 1 OF 1

DATES 19/11/2014 - 19/11/2014

PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing					Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %		LL %	ρ Mg/m ³
							0	10	20	30	40												
				TOPSOIL (Dark brown slightly gravelly slightly sandy clay with occasional rootlets. Gravel of angular to subrounded fine to medium flint)		0.00						0											Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				Dark orange brown fine to medium SAND (HEAD DEPOSITS)		0.40																	
				Firm dark orange brown very sandy slightly gravelly CLAY. Gravel of angular to subrounded fine to medium flint (HEAD DEPOSITS) 1.00 - Becoming gravelly with depth. Gravel is coarse flint 1.10 - 1.70 - Becoming black speckled		0.70						1											Shear vane test = 70kN/m ² Infiltration test undertaken at 0.73m depth
				Orange brown clayey gravelly SAND. Gravel of angular to rounded fine to coarse chalk and flint (HEAD DEPOSITS)		1.70																	
						2.00						2											Windowless sample hole completed at 2.00m depth
												3											
												4											

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1.GDT 11/12/14

*WATER Standing water level
 Water strikes

PIEZOMETER

Upper seal
Response zone
Lower seal

SAMPLE AND TEST KEY
D Small disturbed sample
B Bulk disturbed sample
U Undisturbed sample
P Piston sample
J Disturbed jar sample
ES Environmental soil sample
W Water Sample

S Standard penetration test
C Cone penetration test
K Permeability test

Blows SPT N
SPT N = SPT N value (blows after seating)
N*120 = Total blows/penetration including seating
<425 Sample % passing 425 micron sieve

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HOLE No.
WSG: 1 OF 1

SHEET
1 OF 1

PROJECT NO
995,SI

DEPTH All depths, level and thicknesses in metres

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WSH
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 19/11/2014 - 19/11/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth* of Water	Piez.	Description of Strata	Strata		Graphical Representation					Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value					Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
				TOPSOIL (Dark brown slightly gravelly clay, Gravel of angular to subrounded fine to medium flint)		0.00	0							0										Groundwater not encountered during drilling
				Firm orange brown slightly gravelly CLAY with occasional sandy pockets. Gravel of angular to subrounded fine to medium flint (HEAD DEPOSITS)		0.30								0.20	J	1								Borehole collapsed to 1.7m on completion Infiltration test undertaken at 0.24m depth
				0.40 - Becoming orange brown/grey mottled with depth		0.40								0.40	J	2								Shear vane test = 61kN/m ²
				0.90 - Becoming slightly sandy with depth		0.90								1										Shear vane test = 40kN/m ²
				1.70 - 2.00 - With a sandy clay pocket		1.70																		Shear vane test = 36kN/m ²
				Soft yellow brown/grey mottled sandy gravelly CLAY. Gravel of angular to rounded fine to coarse flint and chalk (LOWEST OF FORMATION)		1.80								2										Shear vane test = 23kN/m ² Windowless sample hole completed at 2.0m depth
						2.00																		

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N*120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

Geosphere Environmental Ltd
 Brightwell Barns, Ipswich Road,
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PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WSH

CLIENT: c/o Savills PROJECT: Land to the North West of Haverhill GROUND LEVEL HOLE No. WSI
 LOGGED BY: LF FIELDWORK BY: GEL CHECKED BY: EXCAVATION METHOD: Windowless sampler COORDINATES E N SHEET 1 OF 1
 TEMPLATE REF: GEL AGS BH BETA DATE: Uncased to 2.0 m DATES 19/11/2014 - 19/11/2014 PROJECT NO. 995,SI

Date/Time and Depth	Depth of Casing	Depth of Water	Piez.	Description of Strata	Strata		Graphical Representation				Sampling/In-Situ Testing				Laboratory Testing						Additional Tests and Notes		
					Leg	Reduced Level	Depth	SPT 'N' Value				Depths	Type	No.	Blows	SPT N	<425 %	WC %	PL %	LL %		ρ Mg/m ³	Cu kN/m ²
								0	10	20	30	40											
				TOPSOIL (Dark brown slightly gravelly clay, Gravel of angular to subrounded fine to medium flint)		0.00							0										Groundwater not encountered during drilling Metals, PAH, TPH, Moisture content, pH and Sulphate No collapse of sidewalls during drilling
				Firm brown slightly sandy slightly gravelly CLAY. Gravel of angular to subrounded fine to medium flint (HEAD DEPOSITS)		0.25							0.10	J	1								
													0.30	J	2								
				Firm becoming stiff brown/grey mottled gravelly CLAY. Gravel of angular to subrounded fine to coarse flint and subrounded to rounded chalk (LOWESTOFT FORMATION)		0.90							1	C		22 22 23	9					Shear vane test = 62kN/m ² Shear vane test = 78kN/m ² Shear vane test = 80kN/m ²	
						2.00							2										Shear vane test = 76kN/m ² Widow sample hole completed at 2.0m depth
													3										
													4										

GEL AGS BH BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3, 1,GDT 11/12/14

*WATER Standing water level PIEZOMETER
 Water strikes

Upper seal Response zone Lower seal

SAMPLE AND TEST KEY
 D Small disturbed sample
 B Bulk disturbed sample
 U Undisturbed sample
 P Piston sample
 J Disturbed jar sample
 ES Environmental soil sample
 W Water Sample

S Standard penetration test
 C Cone penetration test
 K Permeability test

Blows SPT N
 SPT N = SPT N value (blows after seating)
 N * 120 = Total blows/penetration including seating
 <425 Sample % passing 425 micron sieve

DEPTH All depths, level and thicknesses in metres

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PROJECT NO
 995,SI
 SHEET
 1 OF 1
 HOLE No.
 WSI



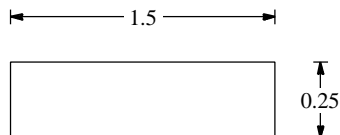
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP1
Job No 995,SI	Date 28-10-14 28-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark brown slightly gravelly clay. Gravel is fine to medium flint with occasional fine to medium brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation Trial pit completed at 1.5m depth
0.35-1.50	Stiff dark yellow brown slightly gravelly CLAY. Gravel is fine to medium flint and chalk (LOWESTOFT FORMATION)				
	0.80 - 1.50 - Becoming gravelly				
	1.00 - 1.50 - Becoming dark grey with occasional cobble of flint and chalk				

GEL.AGS.TP.BETA.995.SI-NW.HAVERHILL.31-10-14.LF.SG.GPJ.GINT.STD.AGS.3.1.GDT.11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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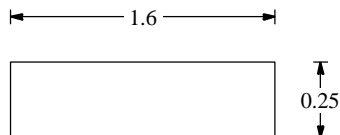
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP2
Job No 995,SI	Date 28-10-14 28-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown clay with occasional medium gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff dark yellow brown slightly gravelly CLAY. Gravel of fine to coarse flint and chalk with occasional cobble of chalk and flint (LOWESTOFT FORMATION)				
	0.60 - Becoming pale grey/orange brown mottled		0.60-0.80	1B	CBR
	1.00 - Becoming very gravelly				
					Trial pit completed at 1.4m depth

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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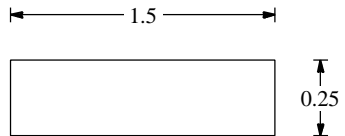
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP3
Job No 995,SI	Date 28-10-14 28-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark brown clay with occasional medium gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation Trial pit completed at 1.5m depth
0.25-1.50	Firm becoming stiff dark yellow brown CLAY with frequent fine to coarse gravel of flint and chalk and occasional roots (2mm) (LOWESTOFT FORMATION)	[Hatched pattern]			
0.65	- Becoming gravelly				
0.90	- Becoming pale grey/orange brown mottled				

GEL/AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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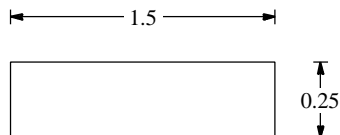
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP4
Job No 995,SI	Date 28-10-14 28-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of chalk, flint and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.25-1.50	Firm becoming stiff dark yellow brown slightly gravelly CLAY. Gravel is fine to coarse chalk and flint (LOWESTOFT FORMATION)				
	0.55 - Becoming gravelly		0.60-0.70	1B	Moisture content, CBR
	0.90 - Becoming pale grey with occasional cobbles of chalk, flint and ironstone				
					Trial pit completed at 1.5m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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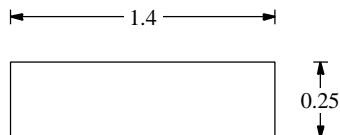
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP5
Job No 995,SI	Date 28-10-14 28-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.50	Firm becoming stiff dark yellow brown CLAY with occasional fine to medium gravel of flint and chalk (LOWESTOFT FORMATION)				
0.60	- Becoming gravelly				
0.90	- Becoming pale grey with occasional cobbles of flint and chalk				
					Trial pit completed at 1.5m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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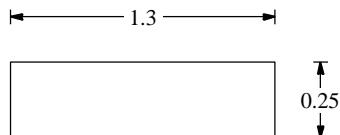


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP6
Job No 995,SI	Date 29-10-14 29-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				No collapse of sidewalls during excavation
0.30-1.50	Firm becoming stiff dark yellow brown very gravelly CLAY. Gravel is fine to coarse flint, chalk and occasional cobble of chalk (LOWESTOFT FORMATION)		0.70-1.00	1B	
	1.05 - Becoming pale grey				Very slow inflow of water at 1.5 m Rising to 1.45m after 20 minutes Trial pit completed at 1.5m depth

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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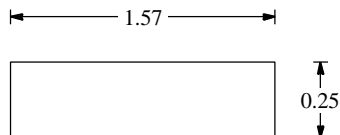
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP7
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				No collapse of sidewalls during excavation Moisture content, CBR
0.30-1.20	Firm dark yellow brown very gravelly CLAY. Gravel is fine to coarse flint, chalk and occasional cobble of flint (HEAD DEPOSITS) 0.80 - Becoming pale grey				
1.20-1.80	Soft orange brown very gravelly sandy CLAY. Gravel is fine to coarse chalk and flint (HEAD DEPOSITS)				Slight seepage inflow of water at 1.8 m Trial pit completed at 1.9m depth
1.80-1.90	Stiff dark grey CLAY with frequent fine to coarse gravel of chalk and flint (LOWEST OFT FORMATION)				

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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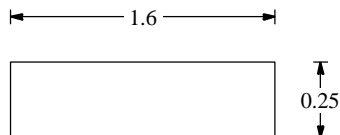


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP8
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional gravel of brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.05	Firm becoming stiff dark yellow brown gravelly CLAY. Gravel is fine to coarse flint and chalk (LOWESTOFT FORMATION) 0.60 - Becoming dark yellow brown/pale grey mottled with occasional cobble of chalk 0.80 - Becoming pale grey				
					Trial pit completed at 1.05m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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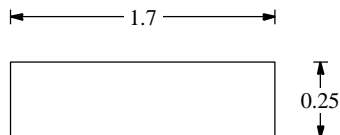
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP9
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-0.70	Firm dark brown CLAY with occasional fine to coarse gravel of flint (HEAD DEPOSITS)				
0.70-1.50	Firm becoming stiff dark yellow brown gravelly CLAY. Gravel of fine to coarse flint and chalk (LOWESTOFT FORMATION)				
					Trial pit completed at 1.5m depth

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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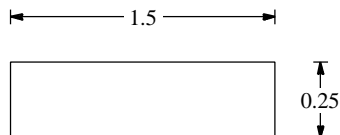
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP10
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-0.70	Firm dark brown CLAY with occasional fine to coarse gravel of flint (HEAD DEPOSITS)				
0.70-1.40	Firm becoming stiff dark yellow brown gravelly CLAY. Gravel is fine to coarse flint and chalk (LOWESTOFT FORMATION) -0.95 - Becoming pale grey/dark yellow brown mottled	○			
					Trial pit completed at 1.4m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
Stability: STABLE


All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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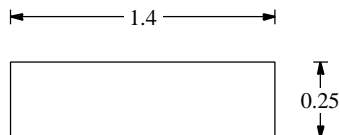
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP12
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.35-1.40	Firm becoming stiff dark yellow brown gravelly CLAY. Gravel is fine to coarse flint and chalk (LOWESTOFT FORMATION)				
	0.80 - Becoming dark yellow brown/pale grey mottled				
					Trial pit completed at 1.4m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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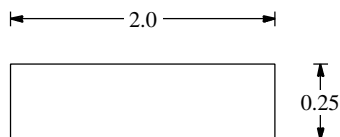


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP13
Job No 995,SI	Date 30-10-14 30-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown clay with frequent fine to medium gravel of flint, chalk and occasional coarse gravel of brick fragments)				Groundwater not encountered during excavation
0.25-1.40	Firm becoming stiff dark yellow brown CLAY with frequent fine to coarse gravel of chalk and flint (LOWESTOFT FORMATION)				No collapse of sidewalls during excavation
	0.80 - Becoming dark grey/dark yellow brown mottled		0.70-0.80	1B	Moisture content, CBR
	0.90 - With occasional cobble of flint and chalk				
	-----				Trial pit completed at 1.4m depth

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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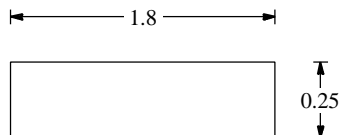
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP14
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff orange brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION)				
	1.00 - Becoming pale brown				Trial pit completed at 1.4m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

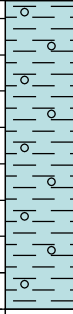
All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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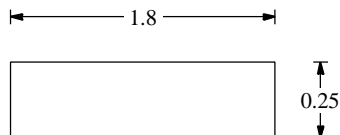
Geosphere Environmental Ltd
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP15
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation Trial pit completed at 1.1m depth
0.25-1.10	Firm becoming stiff brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION) 0.50 - With occasional cobbles of chalk 0.70 - Becoming brown/grey mottled				

GEL/AGS/TP/BETA/995,SI-NW/HAYERHILL/31-10-14/LF,SG/GPJ/GINT/STD/AGS/3_1/GDT/11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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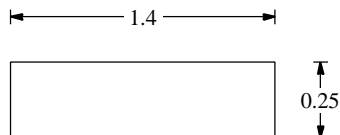
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP16
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of angular to subrounded fine to coarse flint and occasional fine brick and charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff orange brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION) 0.70 - With a cobble of metamorphic material 0.90 - Becoming brown/grey mottled 1.00 - With occasional iron oxide staining				
Trial pit completed at 1.4m depth					

GEL:AGS:TP BETA_995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
Stability: STABLE

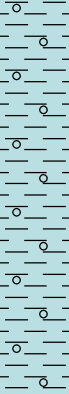
All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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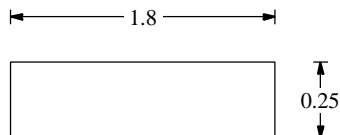


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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP17
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.40	Firm becoming stiff yellow brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION) 0.80 - Becoming yellow brown/grey mottled				
					Trial pit completed at 1.4m depth



Shoring/Support: NONE
 Stability: STABLE

GEL:AGS:TP BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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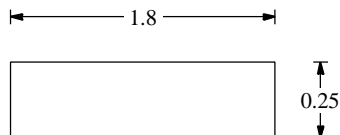
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP18
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation Trial pit completed at 1.5m depth
0.30-1.50	Firm becoming stiff yellow brown gravelly CLAY. Gravel of fine to coarse subrounded to rounded chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION)				

GEL:AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE


All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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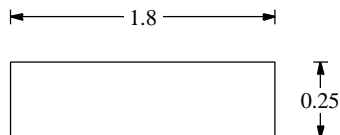
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP19
Job No 995,SI	Date 31-10-14 31-10-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark brown slightly gravelly clay with occasional rootlets. Gravel of fine to coarse angular to subrounded flint and occasional fine charcoal fragments)				Groundwater not encountered during excavation No collapse of sidewalls during excavation Trial completed at 1.5m depth
0.25-1.50	Firm becoming stiff yellow brown gravelly CLAY. Gravel of subrounded to rounded fine to coarse chalk and angular to subrounded fine to coarse flint (LOWESTOFT FORMATION)				
0.90	Becoming grey/brown mottled				

GEL:AGS:TP BETA 995,SI - NW HAVERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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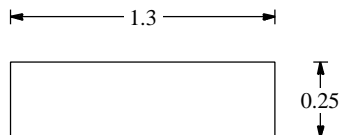


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP20
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly gravelly silty clay. Gravel of fine to coarse angular to sub rounded flint)				No collapse of sidewalls during excavation
0.30-1.45	Firm yellow brown grey CLAY. Gravel of angular to subrounded fine to coarse flint and subrounded fine to coarse chalk (LOWESTOFT FORMATION)				
	0.60 - Becoming brown/grey mottled				Seepage inflow of water at 1.45 m Trial completed at 1.45m depth
	1.00 - With frequent iron oxide staining				

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14




Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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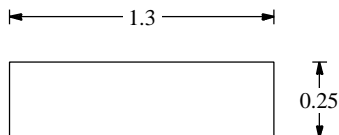


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP22
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly gravelly silty clay. Gravel of fine to coarse angular to sub rounded flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.45	Firm orange brown Clay (HEAD DEPOSITS)				
	1.30 - Becoming sandy				Trial completed at 1.45m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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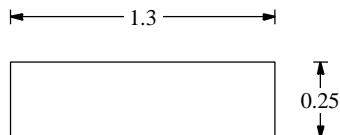
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP23
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to medium flint)				No collapse of sidewalls during excavation
0.30-1.50	Firm orange brown slightly gravelly CLAY. Gravel of angular to subrounded fine to medium flint and chalk (LOWESTOFT FORMATION)				
1.00	Becoming slightly sandy with frequent gravel				
	▽				Seepage inflow of water at 1.2 m
					Trial completed at 1.5m depth

GEL/AGS/TP/BETA/995,SI-NW/HAYERHILL/31-10-14/LF,SG/GPJ/GINT/STD/AGS/3_1/GDT/11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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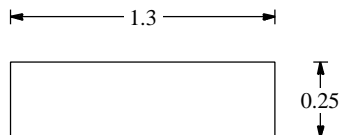
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP24
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.28	TOPSOIL (Dark brown slightly gravelly clay with rootlets. Gravel of angular to subrounded fine to medium flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.28-1.20	Firm becoming stiff brown gravelly CLAY. Gravel of angular to subrounded fine to coarse flint with frequent subrounded fine to coarse chalk (LOWESTOFT FORMATION)				
	1.00 - Becoming grey/brown mottled				Trial completed at 1.2m depth

GEL AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14




Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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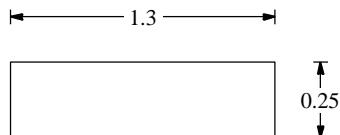


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP25
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Brown slightly sandy clay with occasional fine to medium gravel of flint and flint)				No collapse of sidewalls during excavation Perched inflow of water at 0.3 m
0.30-1.40	Firm becoming stiff brown CLAY with occasional fine to coarse gravel of flint and chalk (LOWESTOFT FORMATION) 0.80 - Becoming pale grey/orange brown mottled				
					Trial completed at 1.4m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

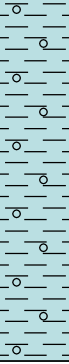
All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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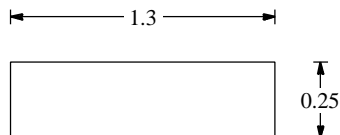
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP26
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Brown slightly sandy clay with occasional fine to medium gravel of flint and flint)				No collapse of sidewalls during excavation
0.20-1.20	Firm becoming stiff orange brown gravelly CLAY. Gravel of angular to rounded fine to coarse flint with frequent chalk (LOWESTOFT FORMATION)				
0.90 -	Becoming grey/brown mottled				
▽					Perched inflow of water at 1.2 m Trial completed at 1.2m depth

GEL.AGS.TP.BETA.995.SI-NW.HAVERHILL.31-10-14.LF.SG.GPJ.GINT.STD.AGS.3.1.GDT.11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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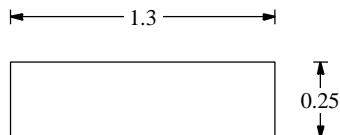


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP27
Job No 995,SI	Date 18-11-14 18-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By LF		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Brown slightly sandy clay with occasional fine to medium gravel of flint and flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.20-1.45	Firm becoming stiff yellow brown gravelly CLAY. Gravel of angular to subrounded fine to coarse flint with frequent subrounded to rounded fine to coarse gravel and cobbles of chalk (LOWESTOFT FORMATION) 0.80 - Becoming grey/brown mottled				
					Trial completed at 1.45m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE


All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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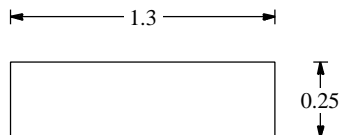
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP28
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-1.50	Firm dark orange brown gravelly CLAY. Gravel of fine to coarse flint and chalk (HEAD DEPOSITS) 0.60 - becoming very gravelly 1.10 - with cobble of flint				
					Trial completed at 1.5m depth

GEL/AGS/TP/BETA/995,SI-NW HAYERHILL, 31-10-14, LF,SG,GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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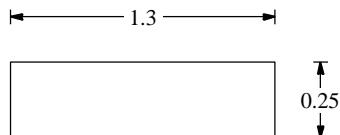


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP29
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.25-0.60	Firm dark orange brown slightly sandy CLAY with occasional fine to coarse gravel of chalk and flint (HEAD DEPOSITS)				
0.60-1.20	Firm becoming stiff pale grey brown/orange brown mottled very gravelly CLAY. Gravel of fine to coarse flint and chalk (HEAD DEPOSITS)		0.70-0.80	1B	CBR
1.20-1.50	Stiff pale grey/pale orange brown mottled gravelly CLAY. Gravel of fine to coarse chalk (LOWESTOFT FORMATION)				Trial completed at 1.5m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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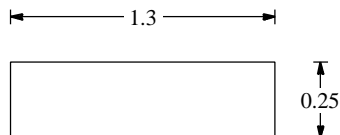
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP30
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.20	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.20-0.60	Firm dark orange brown slightly sandy CLAY (HEAD DEPOSITS)		0.20	1J	
			0.40	2J	
0.60-1.50	Stiff pale grey/dark orange brown mottled gravelly CLAY. Gravel of fine to coarse chalk with occasional fine to medium flint (LOWESTOFT FORMATION)	○			Trial completed at 1.5m depth
		○			

GEL/AGS/TP/BETA/995,SI-NW/HAYERHILL/31-10-14/LF,SG/GPJ/GINT/STD/AGS/3_1.GDT/11/12/14



Shoring/Support: NONE
Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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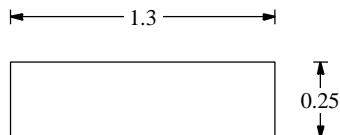
TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP31
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.30	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.30-0.65	Firm becoming stiff pale grey/yellow brown mottled gravelly CLAY. Gravel of fine to medium chalk and flint (LOWESTOFT FORMATION)		0.20	1J	
0.65-1.50	Stiff dark grey gravelly CLAY. Gravel of fine to medium flint (LOWESTOFT FORMATION)		0.70	2J	

Trial completed at 1.5m depth					

GEL/AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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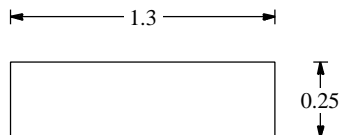
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TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP32
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.35	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.35-1.50	Firm becoming stiff pale grey/yellow brown mottled gravelly CLAY. Gravel is fine to medium chalk with occasional fine to medium flint (LOWESTOFT FORMATION)				
					Trial completed at 1.5m depth

GEL AGS TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF.SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



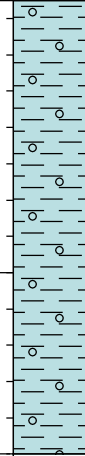
Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.833333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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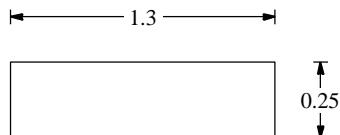


TRIAL PIT LOG

Project Land to the North West of Haverhill		Client c/o Savills		TRIAL PIT No TP33
Job No 995,SI	Date 19-11-14 19-11-14	Ground Level (m)	Co-Ordinates ()	
Fieldwork By GEL		Logged By SG		Sheet 1 of 1

Depth	DESCRIPTION	Legend	Depth	No	Remarks/Tests
0.00-0.25	TOPSOIL (Dark grey brown slightly sandy clay with occasional fine gravel of flint)				Groundwater not encountered during excavation No collapse of sidewalls during excavation
0.25-1.50	Firm becoming stiff pale grey/yellow brown gravelly CLAY. Gravel is fine to medium chalk with occasional fine to medium flint (LOWESTOFT FORMATION)				
					Trial completed at 1.5m depth

GEL:AGS:TP BETA 995.SI - NW HAVERHILL, 31-10-14, LF,SG.GPJ GINT STD AGS 3_1.GDT 11/12/14



Shoring/Support: NONE
 Stability: STABLE

All dimensions in metres Scale 1:20.83333333333333	Method Trial Pit/trench	Plant Used MECHANICAL EXCAVATOR	Checked By AD
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APPENDIX 7 – INFILTRATION TEST RESULTS

DRAFT

Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	1.48	0.101	1.80
1	1.48		
2	1.48		
3	1.48		
4	1.48		
5	1.48		
10	1.48		
15	1.48		
20	1.48		
30	1.48		
45	1.48		
60	1.48		
90	1.48		
120	1.48		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.5600
h_{75}	[m]	1.7200
$h_{75}-h_{25}$	[m]	0.160
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
v_{75-25}	[m ³]	1.28E-03
<i>effective area</i>		
a_{p50}	[m ²]	5.88E-02
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WS3

Run 1 of 1

Test Date 29/10/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	1.41	0.101	1.89
1	1.41		
2	1.41		
3	1.41		
4	1.41		
5	1.41		
10	1.41		
15	1.41		
20	1.41		
30	1.41		
45	1.41		
60	1.41		
90	1.41		
120	1.41		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.5300
h_{75}	[m]	1.7700
$h_{75}-h_{25}$	[m]	0.240
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	1.93E-03
<i>effective area</i>		
a_{p50}	[m ²]	8.41E-02
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WS6

Run 1 of 1

Test Date 29/10/2014

Groundwater Encountered at: n/a

Soakage Rate

The graph plots Depth [mbgl] on the y-axis (ranging from 1.00 to 1.90) against Time [min] on the x-axis (ranging from 0 to 120). A horizontal line is drawn at a depth of 1.41 mbgl, with data points plotted at 0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100, 110, and 120 minutes. All points lie on the 1.41 mbgl line, indicating a constant water level throughout the test.

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]				
		Diameter	Depth			
0	1.58	0.101	2.00			
1	1.58					
2	1.56					
3	1.56					
4	1.56					
5	1.56					
10	1.56					
15	1.56					
20	1.56					
30	1.56					
45	1.56					
60	1.56					
90	1.56					
120	1.56					
Infiltration Rate Calculations						
Parameter	Unit	Result				
<i>height</i>						
h₂₅	[m]	1.6500				
h₇₅	[m]	1.8500				
h₇₅-h₂₅	[m]	0.200				
<i>time</i>						
t₇₅	[s]	N/A				
t₂₅	[s]	N/A				
t₇₅ - t₂₅	[s]	N/A				
<i>effective volume</i>						
v₇₅₋₂₅	[m ³]	1.61E-03				
<i>effective area</i>						
a_{p50}	[m ²]	8.73E-02				
<i>infiltration rate</i>						
f	[m/s]	N/A				
<p>Borehole WS8</p> <p>Run 1 of 1</p> <p>Test Date 29/10/2014</p> <p>Groundwater Encountered at: n/a</p>						
<p style="text-align: center;">Soakage Rate</p> <p style="text-align: center;">mbgl - metres below ground level</p>						
SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014

Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.15	0.101	1.68
1	0.15		
2	0.15		
3	0.15		
4	0.15		
5	0.15		
10	0.15		
15	0.15		
20	0.15		
30	0.15		
45	0.15		
60	0.15		
90	0.15		
120	0.15		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	0.5325
h_{75}	[m]	1.2975
$h_{75}-h_{25}$	[m]	0.765
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	6.14E-03
<i>effective area</i>		
a_{p50}	[m ²]	2.51E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WS12

Run 1 of 1

Test Date 30/10/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.70	0.101	1.97
1	0.70		
2	0.70		
3	0.70		
4	0.70		
5	0.70		
10	0.70		
15	0.70		
20	0.70		
30	0.70		
45	0.70		
60	0.70		
90	0.70		
120	0.70		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.0250
h_{75}	[m]	1.6750
$h_{75}-h_{25}$	[m]	0.650
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	5.22E-03
<i>effective area</i>		
a_{p50}	[m ²]	2.05E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole	WS14
Run	1 of 1
Test Date	30/10/2014
Groundwater Encountered at:	n/a

Soakage Rate

The graph plots Depth [mbgl] on the y-axis (0.00 to 2.00) against Time [min] on the x-axis (0 to 120). A horizontal line of data points is plotted at a depth of 0.70 mbgl, indicating that groundwater was not encountered during the test.

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.900	0.101	2.00
1	0.900		
2	0.900		
3	0.900		
4	0.900		
5	0.900		
10	0.900		
15	0.900		
20	0.905		
30	0.905		
45	0.905		
60	0.905		
90	0.905		
120	0.905		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.1737
h_{75}	[m]	1.7250
$h_{75}-h_{25}$	[m]	0.551
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	4.43E-03
<i>effective area</i>		
a_{p50}	[m ²]	1.83E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WS15

Run 1 of 1

Test Date 30/10/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.69	0.101	2.00
1	0.69		
2	0.69		
3	0.69		
4	0.69		
5	0.69		
10	0.69		
15	0.69		
20	0.69		
30	0.69		
45	0.69		
60	0.69		
90	0.69		
120	0.69		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.0175
h_{75}	[m]	1.6725
$h_{75}-h_{25}$	[m]	0.655
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	5.26E-03
<i>effective area</i>		
a_{p50}	[m ²]	2.16E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WSB

Run 1 of 1

Test Date 18/11/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.550	0.101	2.00
1	0.550		
2	0.550		
3	0.560		
4	0.560		
5	0.560		
10	0.560		
15	0.560		
20	0.570		
30	0.580		
45	0.595		
60	0.600		
90	0.610		
120	0.620		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	0.9125
h_{75}	[m]	1.6375
$h_{75}-h_{25}$	[m]	0.725
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	5.82E-03
<i>effective area</i>		
a_{p50}	[m ²]	2.38E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WSD

Run 1 of 1

Test Date 18/11/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.730	0.090	2.00
1	0.750		
2	0.760		
3	0.765		
4	0.765		
5	0.770		
10	0.790		
15	0.800		
20	0.810		
30	0.830		
60	0.870		
90	0.900		
120	0.930		
180	0.970		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	1.0475
h_{75}	[m]	1.6825
$h_{75}-h_{25}$	[m]	0.635
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	N/A
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	4.05E-03
<i>effective area</i>		
a_{p50}	[m ²]	1.86E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

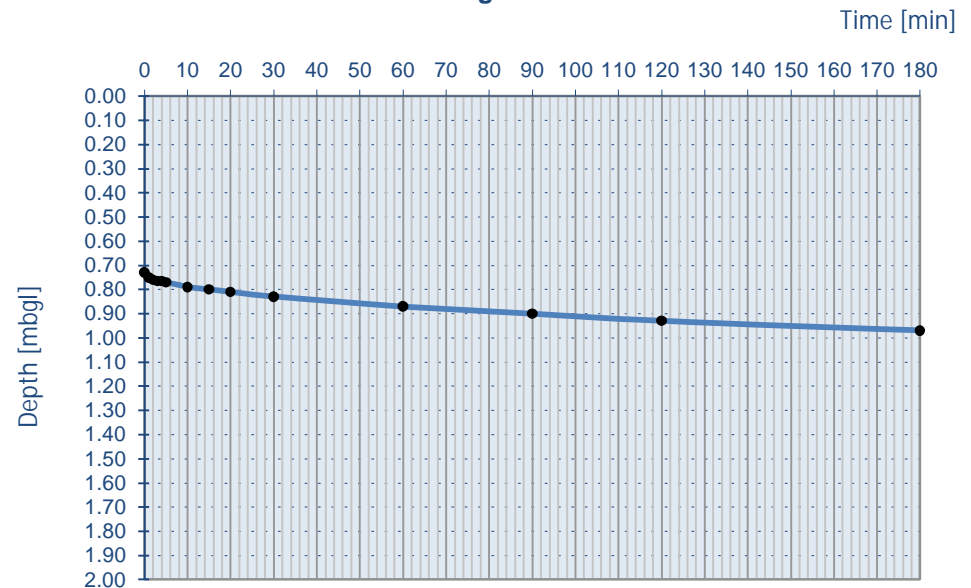
Borehole WSG

Run 1 of 1

Test Date 19/11/2014

Groundwater Encountered at: n/a

Soakage Rate



mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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Time [min]	Depth to Water [mbgl]	Borehole Dimensions [m]	
		Diameter	Depth
0	0.24	0.090	2.00
1	0.26		
2	0.36		
3	0.43		
5	0.48		
10	0.63		
20	0.68		
30	0.69		
60	0.68		
90	0.68		
120	0.68		

Infiltration Rate Calculations		
Parameter	Unit	Result
<i>height</i>		
h_{25}	[m]	0.6050
h_{75}	[m]	1.3350
$h_{75}-h_{25}$	[m]	0.730
<i>time</i>		
t_{75}	[s]	N/A
t_{25}	[s]	540.00
$t_{75} - t_{25}$	[s]	N/A
<i>effective volume</i>		
V_{75-25}	[m ³]	4.65E-03
<i>effective area</i>		
a_{p50}	[m ²]	2.97E-01
<i>infiltration rate</i>		
f	[m/s]	N/A

Borehole WSH

Run 1 of 1

Test Date 19/11/2014

Groundwater Encountered at: n/a

Soakage Rate

mbgl - metres below ground level

SITE NW Haverhill	CLIENT Savills	REPORT NO 995,GI	SITE SUPERVISION LF	CALCULATIONS SG	CHECKED BY AD	DATE 05 December 2014
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APPENDIX 8 – GAS AND GROUNDWATER MONITORING DATA

DRAFT

Exploratory Hole Location		WS1					Date of Installation		28/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1002	<0.1	<2	2.1	20.1	-0.0	3.40	Cold, overcast, damp, breezy	
2nd visit	01/12/2014	998	<0.1	<2	1.9	20.2	-0.1	2.91	Cold, overcast, damp, breezy	
3rd visit	08/12/2014	1003	<0.1	<2	1.6	20.1	-0.1	2.70	Cold, sunny, dry, windy	
4th visit	dd/mm/yyyy	0								
5th visit	dd/mm/yyyy	0								
6th visit	dd/mm/yyyy	0								
Instrument Used: GA2000 gas analyser							NOTE:	n/a	Not applicable	
REMARKS:								nm	Not measured	

Monitoring Visit	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)
1	<0.1	2.1	20.1
2	<0.1	1.9	20.2
3	<0.1	1.6	20.1

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

Monitoring Visit	Groundwater Level (mbgl)
1	3.40
2	2.91
3	2.70

KEY:

- Groundwater Level (mbgl)

SITE Land to the north west of Haverhill, Suffolk	REPORT 995,SI	DATE 09 December 2014
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Exploratory Hole Location		WS2					Date of Installation		28/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1001	<0.1	<2	0.8	21.8	-0.0	0.72		
2nd visit	01/12/2014	998	<0.1	<2	1.2	21.3	-0.0	1.11		
3rd visit	08/12/2014	1003	<0.1	<2	0.2	21.8	-0.0	0.76		
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used:		GA2000 gas analyser					NOTE:		n/a Not applicable	
REMARKS:									nm Not measured	

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

Monitoring Visit	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)
1	<0.1	21.8	21.8
2	<0.1	21.3	21.3
3	<0.1	21.8	21.8

KEY:

- Groundwater Level (mbgl)

Monitoring Visit	Groundwater Level (mbgl)
1	0.72
2	1.11
3	0.76

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WS9					Date of Installation		29/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1002	<0.1	<2	2.0	18.8	+0.2	N/A	Cold, overcast, damp, breezy	
2nd visit	01/12/2014	998	<0.1	<2	2.1	19.9	-0.0	1.90	Cold, overcast, damp, breezy	
3rd visit	08/12/2014	1003	<0.1	<2	2.1	19.4	-0.0	2.39	Cold, sunny, dry, windy	
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used: GA2000 gas analyser							NOTE:	n/a	Not applicable	
REMARKS:								nm	Not measured	

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

Monitoring Visits	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)
1	0.0	2.0	18.8
2	0.0	2.1	19.9
3	0.0	2.1	19.4

KEY:

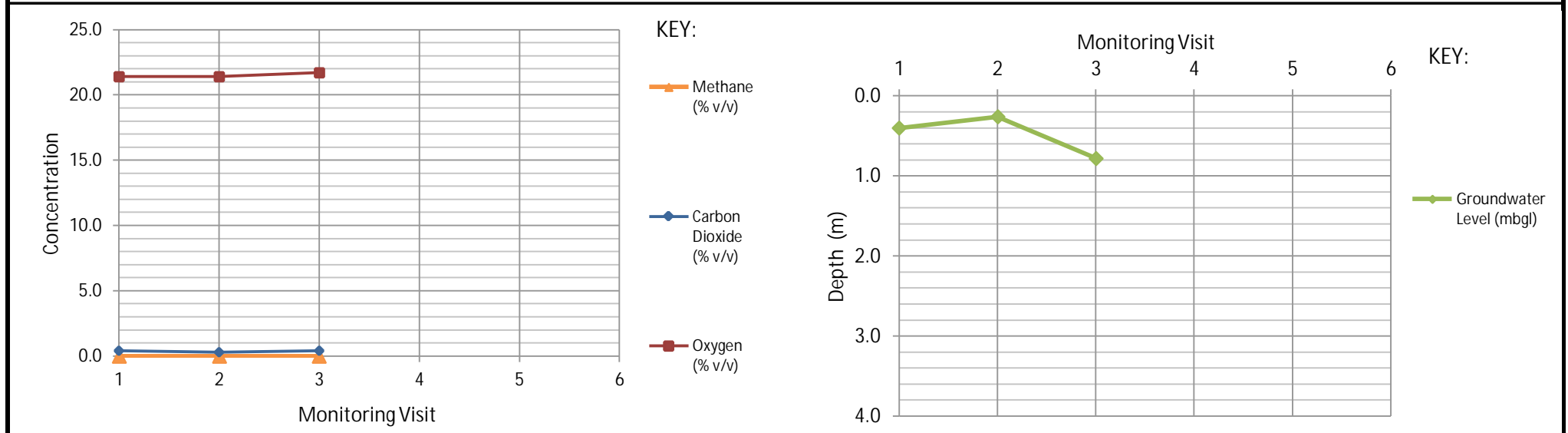
- Groundwater Level (mbgl)

Monitoring Visit	Groundwater Level (mbgl)
1	N/A
2	1.90
3	2.39

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WS11					Date of Installation		30/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1001	<0.1	<2	0.4	21.4	-0.0	0.40		Cold, overcast, damp, breezy
2nd visit	01/12/2014	998	<0.1	<2	0.3	21.4	-0.0	0.26		Cold, overcast, damp, breezy
3rd visit	08/12/2014	1003	<0.1	<2	0.4	21.7	-0.2	0.78		Cold, sunny, dry, windy
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used:		GA2000 gas analyser					NOTE:		n/a Not applicable	
REMARKS:									nm Not measured	

PRELIM DATA



SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WS13			Date of Installation			30/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)	
1st visit	21/11/2014	1005	<0.1	<2	1.1	20.5	-0.2	1.20	
2nd visit	01/12/2014	1000	<0.1	<2	1.2	20.6	-0.2	1.17	
3rd visit	08/12/2014	1003	<0.1	<2	1.2	21.0	-0.1	1.26	
4th visit	dd/mm/yyyy	0						0	
5th visit	dd/mm/yyyy	0						0	
6th visit	dd/mm/yyyy	0						0	
Instrument Used:		GA2000 gas analyser			NOTE:		n/a	Not applicable	
REMARKS:							nm	Not measured	

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

KEY:

- Groundwater Level (mbgl)

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WS19			Date of Installation			31/10/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content (% v/v) (% LEL)		Carbon Dioxide (% v/v)	Oxygen (% v/v)	Flow Rate (l/hr)	Water Level (mbgl)	Comments
1st visit	21/11/2014	1001	<0.1	<2	1.1	19.9	-0.0	N/A	Cold, overcast, damp, breezy
2nd visit	01/12/2014	999	<0.1	<2	1.3	18.6	-0.0	N/A	Cold, overcast, damp, breezy
3rd visit	08/12/2014	1003	<0.1	<2	1.8	17.7	-0.2	N/A	Cold, sunny, dry, windy
4th visit	dd/mm/yyyy	0						0	
5th visit	dd/mm/yyyy	0						0	
6th visit	dd/mm/yyyy	0						0	
Instrument Used: GA2000 gas analyser							NOTE:	n/a	Not applicable
REMARKS:								nm	Not measured

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

Monitoring Visit	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)
1	0.0	1.1	19.9
2	0.0	1.3	18.6
3	0.0	1.8	17.7

KEY:

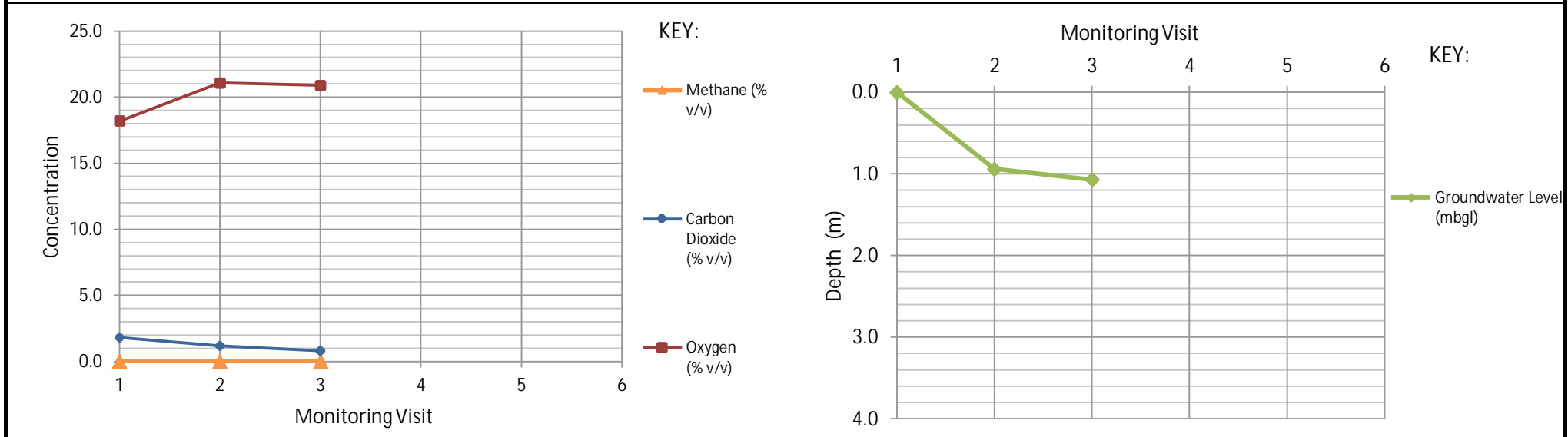
- Groundwater Level (mbgl)

Monitoring Visit	Groundwater Level (mbgl)
1	0.0
2	0.0
3	0.0

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WSA					Date of Installation		18/11/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1005	<0.1	<2	1.8	18.2	-0.0	N/A		
2nd visit	01/12/2014	1001	<0.1	<2	1.2	21.1	-0.0	0.94		
3rd visit	08/12/2014	1003	<0.1	<2	0.8	20.9	-0.2	1.07		
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used:		GA2000 gas analyser					NOTE:	n/a	Not applicable	
REMARKS:								nm	Not measured	

PRELIM DATA



SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WSC				Date of Installation			18/11/2014
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)	
1st visit	21/11/2014	1004	<0.1	<2	1.0	20.5	-0.0	1.20	Cold, overcast, damp, breezy
2nd visit	01/12/2014	1001	<0.1	<2	0.9	20.7	-0.1	0.86	Cold, overcast, damp, breezy
3rd visit	08/12/2014	1003	<0.1	<2	0.8	21.2	-0.0	1.22	Cold, sunny, dry, windy
4th visit	dd/mm/yyyy	0						0	
5th visit	dd/mm/yyyy	0						0	
6th visit	dd/mm/yyyy	0						0	
Instrument Used:		GA2000 gas analyser				NOTE:		n/a	Not applicable
REMARKS:								nm	Not measured

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

Monitoring Visit	Methane (% v/v)	Carbon Dioxide (% v/v)	Oxygen (% v/v)
1	<0.1	20.5	20.5
2	<0.1	20.7	20.7
3	<0.1	21.2	21.2

KEY:

- Groundwater Level (mbgl)

Monitoring Visit	Groundwater Level (mbgl)
1	1.20
2	0.86
3	1.22

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WSE					Date of Installation		18/11/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1003	<0.1	<2	0.4	21.3	-0.0	0.37	Cold, overcast, damp, breezy	
2nd visit	01/12/2014	1000	<0.1	<2	0.3	21.4	+0.3	0.36	Cold, overcast, damp, breezy	
3rd visit	08/12/2014	1003	<0.1	<2	0.8	21.2	-0.2	0.65	Cold, sunny, dry, windy	
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used: GA2000 gas analyser							NOTE:	n/a	Not applicable	
REMARKS:								nm	Not measured	

PRELIM DATA

KEY:

- Methane (% v/v)
- Carbon Dioxide (% v/v)
- Oxygen (% v/v)

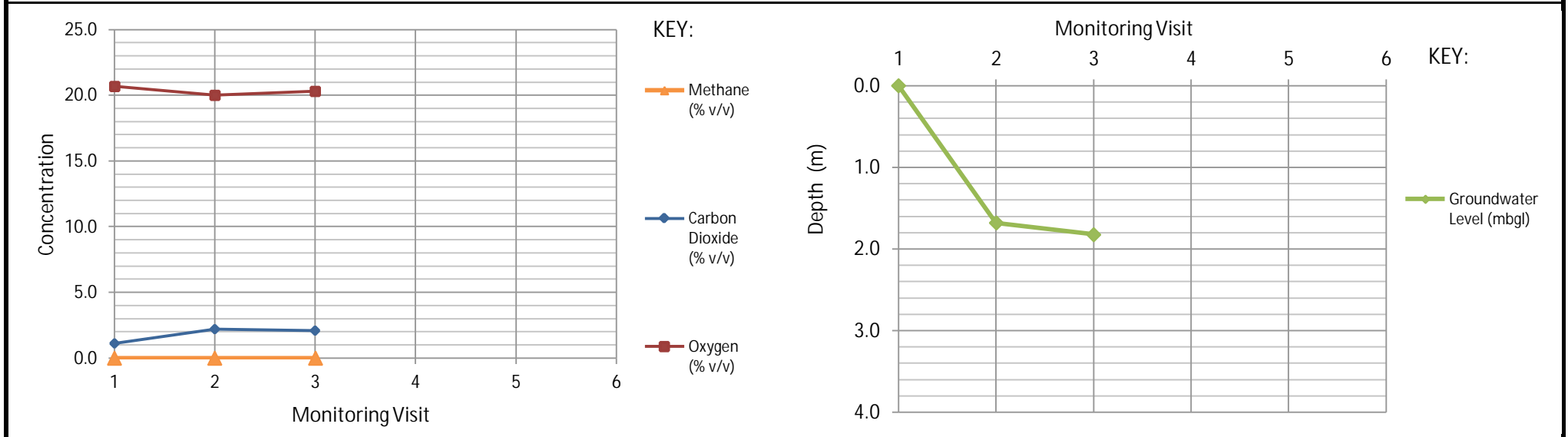
KEY:

- Groundwater Level (mbgl)

SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

Exploratory Hole Location		WSI					Date of Installation		19/11/2014	
Return Visit #	Monitoring Date	Atmospheric Pressure (mb)	Methane Content		Carbon Dioxide	Oxygen	Flow Rate	Water Level	Comments	
			(% v/v)	(% LEL)	(% v/v)	(% v/v)	(l/hr)	(mbgl)		
1st visit	21/11/2014	1002	<0.1	<2	1.1	20.7	-0.0	N/A		
2nd visit	01/12/2014	1002	<0.1	<2	2.2	20.0	-0.0	1.68		
3rd visit	08/12/2014	1003	<0.1	<2	2.1	20.3	-0.0	1.82		
4th visit	dd/mm/yyyy	0						0		
5th visit	dd/mm/yyyy	0						0		
6th visit	dd/mm/yyyy	0						0		
Instrument Used:		GA2000 gas analyser					NOTE:	n/a	Not applicable	
REMARKS:								nm	Not measured	

PRELIM DATA



SITE	REPORT	DATE
Land to the north west of Haverhill, Suffolk	995,SI	09 December 2014

APPENDIX 9 – ENVIRONMENTAL LABORATORY TEST RESULTS

DRAFT



Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Geosphere Environmental
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention : Stephen Gilchrist
Date : 10th November, 2014
Your reference : 995,SI
Our reference : Test Report 14/13128 Batch 1
Location : NW Haverhill
Date samples received : 31st October, 2014
Status : Final report
Issue : 1

Twenty samples were received for analysis on 31st October, 2014 of which six were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:



Phil Sommerton BSc
Project Manager



Bob Millward BSc FRSC
Principal Chemist

Client Name: Geosphere Environmental
Reference: 995,SI
Location: NW Haverhill
Contact: Stephen Gilchrist

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/13128						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating.
 Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/13128

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Please include all sections of this report if it is reproduced

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/13128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes	Yes	AD	Yes

JE Job No: 14/13128

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes



Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
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Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention : Stephen Gilchrist
Date : 10th November, 2014
Your reference : 995,SI
Our reference : Test Report 14/13190 Batch 1
Location : Haverhill
Date samples received : 1st November, 2014
Status : Final report
Issue : 1

Six samples were received for analysis on 1st November, 2014 of which three were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:



Phil Sommerton BSc
Project Manager



Bob Millward BSc FRSC
Principal Chemist

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/13190

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

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ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/13190

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes

JE Job No: 14/13190

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes



Jones Environmental Laboratory

Registered Address : Unit 3 Deeside Point, Zone 3, Deeside Industrial Park, Deeside, CH5 2UA. UK

Unit 3 Deeside Point
Zone 3
Deeside Industrial Park
Deeside
CH5 2UA

Geosphere Environmental
Brightwell Barns
Ipswich Road
Brightwell
Ipswich
Suffolk
IP10 0BJ

Tel: +44 (0) 1244 833780

Fax: +44 (0) 1244 833781



Attention : Stephen Gilchrist
Date : 1st December, 2014
Your reference : 995, SI
Our reference : Test Report 14/14102 Batch 1
Location : Haverhill
Date samples received : 21st November, 2014
Status : Final report
Issue : 1

Twenty one samples were received for analysis on 21st November, 2014 of which seven were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

Compiled By:


Phil Sommerton BSc
Project Manager


Bob Millward BSc FRSC
Principal Chemist

Jones Environmental Laboratory

Client Name: Geosphere Environmental
Reference: 995, SI
Location: Haverhill
Contact: Stephen Gilchrist
JE Job No.: 14/14102

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

J E Sample No.	3-4	5-6	7-8	13-14	19-20	29-30	37-38								
Sample ID	J2 WSA	J1 WSB	J2 WSB	C1 WSD	C1 WSF	J1 WSG	J1 WSI								
Depth	0.3	0.2	0.4	0.2	0.2	0.1	0.1								
COC No / misc															
Containers	V J	V J	V J	V J	V J	V J	V J								
Sample Date	18/11/2014	18/11/2014	18/11/2014	18/11/2014	18/11/2014	19/11/2014	19/11/2014								
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil								
Batch Number	1	1	1	1	1	1	1								
Date of Receipt	21/11/2014	21/11/2014	21/11/2014	21/11/2014	21/11/2014	21/11/2014	21/11/2014								
Please see attached notes for all abbreviations and acronyms												LOD/LOR	Units	Method No.	
Arsenic ^{#M}	11.4	15.0	9.4	14.9	13.0	13.1	14.0	<0.5	mg/kg	TM30/PM15					
Barium ^{#M}	70	76	46	79	82	81	79	<1	mg/kg	TM30/PM15					
Beryllium	1.1	1.5	1.1	1.6	1.1	1.0	0.9	<0.5	mg/kg	TM30/PM15					
Cadmium ^{#M}	0.2	0.4	0.2	0.3	0.9	0.4	0.3	<0.1	mg/kg	TM30/PM15					
Chromium ^{#M}	46.5	47.8	29.6	48.4	53.9	40.3	52.5	<0.5	mg/kg	TM30/PM15					
Copper ^{#M}	17	22	15	21	22	17	18	<1	mg/kg	TM30/PM15					
Lead ^{#M}	16	25	10	23	25	22	23	<5	mg/kg	TM30/PM15					
Mercury ^{#M}	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	mg/kg	TM30/PM15					
Nickel ^{#M}	30.6	39.7	27.6	40.7	25.6	25.1	25.6	<0.7	mg/kg	TM30/PM15					
Selenium ^{#M}	<1	<1	<1	<1	<1	1	1	<1	mg/kg	TM30/PM15					
Vanadium	46	67	44	68	55	50	49	<1	mg/kg	TM30/PM15					
Water Soluble Boron ^{#M}	1.9	2.9	1.4	2.6	2.9	2.3	2.2	<0.1	mg/kg	TM74/PM32					
Zinc ^{#M}	64	89	50	94	79	64	59	<5	mg/kg	TM30/PM15					
PAH MS															
Benzo(a)anthracene [#]	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	mg/kg	TM4/PM8					
Chrysene ^{#M}	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8					
Benzo(bk)fluoranthene ^{#M}	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	<0.07	mg/kg	TM4/PM8					
Benzo(a)pyrene [#]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8					
Indeno(123cd)pyrene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8					
Dibenzo(ah)anthracene [#]	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	mg/kg	TM4/PM8					
Benzo(b)fluoranthene	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	mg/kg	TM4/PM8					
Benzo(k)fluoranthene	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	mg/kg	TM4/PM8					
Benzo(j)fluoranthene	<1	<1	<1	<1	<1	<1	<1	<1	mg/kg	TM4/PM8					
Total PAH 8	<1.27	<1.27	<1.27	<1.27	<1.27	<1.27	<1.27	<1.27	mg/kg	TM4/PM8					
PAH Surrogate % Recovery	92	90	91	124	105	81	89	<0	%	TM4/PM8					
EPH (C8-C40) ^{#M}											<30	mg/kg	TM5/PM8		
Natural Moisture Content	14.8	29.1	20.1	23.3	24.3	19.5	22.1	<0.1	%	PM4/PM0					
Hexavalent Chromium [#]	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	mg/kg	TM38/PM20					
Sulphate as SO4 (2:1 Ext) ^{#M}	0.0025	0.0020	0.0099	<0.0015	0.0101	<0.0015	0.0030	<0.0015	g/l	TM38/PM20					
Chromium III	46.5	47.8	29.6	48.4	53.9	40.3	52.5	<0.5	mg/kg	NONE/NONE					
Organic Matter	1.2	2.4	0.7	2.4	3.0	2.1	2.3	<0.2	%	TM21/PM24					
pH ^{#M}	8.46	8.20	8.42	8.37	8.25	8.17	8.07	<0.01	pH units	TM73/PM11					
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	None		PM13/PM0					
Sample Colour	Medium Brown	Medium Brown	Light Brown	Medium Brown	Medium Brown	Medium Brown	Medium Brown	None		PM13/PM0					
Other Items	clinker and roots	stones	clinker and vegetation	clinker	grass	none	vegetation	None		PM13/PM0					

Please include all sections of this report if it is reproduced

Client Name: Geosphere Environmental
Reference: 995, SI
Location: Haverhill
Contact: Stephen Gilchrist

J E Job No.	Batch	Sample ID	Depth	J E Sample No.	Analysis	Reason
No deviating sample report results for job 14/14102						

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

JE Job No.: 14/14102

SOILS

Please note we are only MCERTS accredited for sand, loam and clay and any other matrix is outside our scope of accreditation.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. If we are instructed to keep samples, a storage charge of £1 (1.5 Euros) per sample per month will be applied until we are asked to dispose of them.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

WATERS

Please note we are not a Drinking Water Inspectorate (DWI) Approved Laboratory . It is important that detection limits are carefully considered when requesting water analysis.

UKAS accreditation applies to surface water and groundwater and one other matrix which is analysis specific, any other liquids are outside our scope of accreditation

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil or Fats, Oils and Grease is quoted, this refers to Total Aliphatics C10-C40.

DEVIATING SAMPLES

Samples must be received in a condition appropriate to the requested analyses. All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. If this is not the case you will be informed and any test results that may be compromised highlighted on your deviating samples report.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a UKAS requirement for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

ABBREVIATIONS and ACRONYMS USED

#	UKAS accredited.
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
++	Result outside calibration range, results should be considered as indicative only and are not accredited.
*	Analysis subcontracted to a Jones Environmental approved laboratory.
AD	Samples are dried at 35°C ±5°C
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
OC	Outside Calibration Range

JE Job No: 14/14102

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35°C or 105°C. Calculation based on ISO 11465 and BS1377.	PM0	No preparation is required.				
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270 method for the solvent extraction and determination of 16 PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified USEPA 8015B method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) with carbon banding within the range C8-C40 GC-FID.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	
TM21	Modified USEPA 415.1. Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection.	PM24	Dried and ground solid samples are washed with hydrochloric acid, then rinsed with deionised water to remove the mineral carbon before TOC analysis.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metal elements by ICP-OES (Inductively Coupled Plasma - Optical Emission Spectrometry). Modified US EPA Method 200.7	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 °C. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes	Yes	AD	Yes

JE Job No: 14/14102

Test Method No.	Description	Prep Method No. (if appropriate)	Description	UKAS	MCERTS (soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM38	Soluble Ion analysis using the Thermo Aquakem Photometric Automatic Analyser. Modified US EPA methods 325.2, 375.4, 365.2, 353.1, 354.1	PM20	Extraction of dried and ground samples with deionised water in a 2:1 water to solid ratio for anions. Extraction of as received samples with deionised water in a 2:1 water to solid ratio for ammoniacal nitrogen. Samples are extracted using an orbital shaker.	Yes		AR	Yes
TM73	Modified US EPA methods 150.1 and 9045D. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No
TM74	Analysis of water soluble boron (20:1 extract) by ICP-OES.	PM32	Hot water soluble boron is extracted from dried and ground samples using a 20:1 ratio.	Yes	Yes	AD	Yes
NONE	No Method Code	NONE	No Method Code			AR	Yes

APPENDIX 10 – GEOTECHNICAL LABORATORY TEST RESULTS

DRAFT



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.
DATE OF ISSUE : 17/11/14 PAGE 1 of 35 Pages
Contract Serial No.
NW Haverhill S28232

**CLIENT:**

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing

18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cams. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- T.FOORD BSc (Hons.) FGS
Site Services Manager

SAMPLES LABELLED:

NW Haverhill

DATE RECEIVED: 31/10/14

SAMPLES TESTED BETWEEN 31/10/14 and 17/11/14

REMARKS: For the attention of Mr S Gilchrist
Your Ref: 995

- NOTES: 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
- 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
- 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
- 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 2 of 35

Contract
NW Haverhill

Serial No.
S28232

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	1:Moisture Content Determination 4:Liquid/Plastic limit 1 point 5:Wet Sieve Preparation for Limit 700:Sulphate Test (2:1 Water Sol. 702:ph value of Soil or Water 13:Triaxial Test single stage 20:CBR Compaction 2.5 Kg method 19:California Bearing Ratio Test										Remarks								
			1	2	3	4	5	6	7	8	9	10									
BH1	D1	1.20	*	*	*																
	D3	3.45	*	*	*																
	D7	6.50				*	*														
	U2	8.00	*	*	*					*											
BH2	D2	2.45	*	*	*	*	*														
	U2	5.00				*	*	*													
	D10	9.00				*	*														
BH3	U1	4.00	*	*	*																
	D9	8.00				*	*														
BH4	U1	3.00								*											
	U2	9.50				*	*	*													
BH5	U1	1.20								*											
	U2	6.50	*	*	*					*											
BH6	U1	2.00	*	*	*					*											
BH7	U2	4.00	*	*	*	*	*	*		*	*	*									
	D8	7.50				*	*														
BH8	D1	1.20	*	*																	
	U1	8.00								*											
TP4	B1	0.60	*	*	*					*	*										
TP7	B1	0.70	*	*	*					*	*										
TP13	B1	0.80	*	*	*					*	*										
-	-	-	12	12	11	8	8	9	3	3											<-- Total Number of Tests -->

Scheduled by: Geosphere Environmental Ltd.

Target Date: 14/11/14



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 3 of 35

Contract
NW Haverhill

Serial No.
S28232



SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plast- icity Index (%)	Liqu- idity Index (%)	SAMPLE PREPARATION				Description	CLASS
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm	Curing Time (hrs.)		
BH1	1.20	D1	20	37	18	19	0.42*	S	22 (M)	26	24	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	CI
BH1	3.45	D3	21	35	17	18	0.39*	S	11 (M)	24	24	Stiff pale brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	CL/ CI
BH1	8.00	U2	18	33	17	16	0.19*	S	10 (M)	20	24	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine and medium chalk and rare flint	CL
BH2	2.45	D2	19	30	16	14	0.36*	S	9 (M)	21	24	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	CL
BH3	4.00	U1	18	48	19	29	0.03*	S	10 (M)	20	24	Very stiff olive grey slightly gravelly slightly sandy silty CLAY with rare selenite crystals. Gravel is fine to coarse chalk and rare flint	CI
BH5	6.50	U2	17	42	17	25	0.04*	S	7 (M)	18	24	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk	CI
BH6	2.00	U1	18	48	19	29	0.00*	S	6 (M)	19	24	Very stiff (Very high strength) light olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine and medium chalk	CI

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen
METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4 N = prepared from Natural

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS : Liquidity Index, *=calculated liquidity index assumes material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

ISSUED BY : SOIL PROPERTY TESTING LTD.

DATE OF ISSUE : As page 1 PAGE 4 of 35

Contract
NW Haverhill

Serial No.
S28232



SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)	SAMPLE PREPARATION			Description	CLASS	
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm			Curing Time (hrs.)
BH7	4.00	U2	20	42	19	23	0.13*	S	8 (M)	22	24	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint	CI
BH8	1.20	D1	24	51	20	31	0.13	N	0 (A)		24	Firm dark yellowish brown slightly sandy CLAY	CH
TP4	0.60 -0.70	B1	21	45	21	24	0.13*	S	14 (M)	24	72	Stiff olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active roots. Gravel is fine to coarse chalk and rare flint	CI
TP7	0.70 -1.00	B1	20	46	19	27	0.11*	S	7 (M)	22	24	Very stiff olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	CI
TP13	0.80 -0.90	B1	19	44	20	24	0.04*	S	11 (M)	21	72	Stiff light yellowish brown slightly gravelly slightly sandy silty CLAY with grey mottling. Gravel is fine to coarse chalk and rare flint	CI

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2 S = Wet Sieved Specimen
METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4 N = prepared from Natural

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

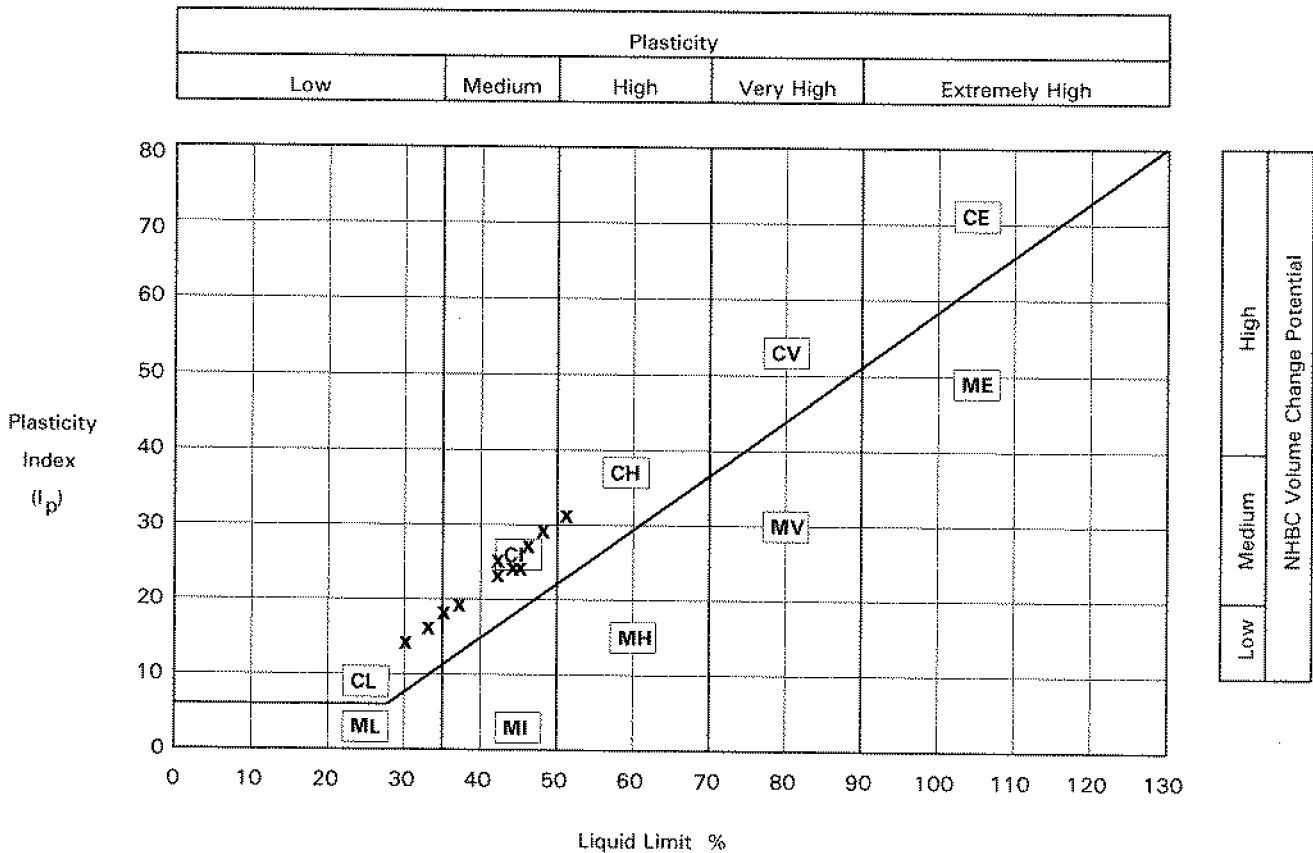
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DATE OF ISSUE : As page 1 PAGE 5 of 5

Contract
NW Haverhill

Serial No.
S28232

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
PLASTICITY CHART BS5930:1999:Figure 18



TEST REPORT.

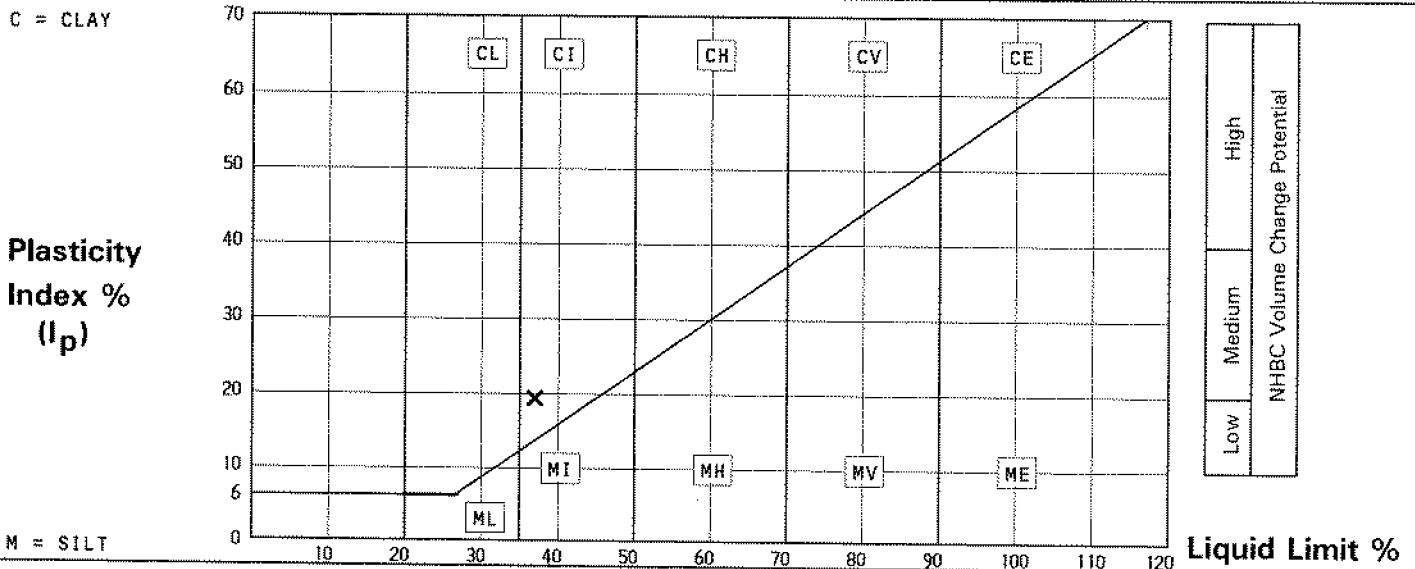
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DETERMINATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH1	1.20	D1	20	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	

PREPARATION		Liquid Limit	17 %
Method of Preparation	Sieved Specimen	Plastic Limit	18 %
Sample retained 0.425 sieve (Measured)	22 %	Plasticity Index	19 %
Corrected moisture content for material passing 0.425mm	26 %	Liquidity Index	0.42
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
 VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
 NOTE: Modified Plasticity Index I_p = I_p × (% less than 425 microns/100)
 7% retained on 2mm sieve.
 Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

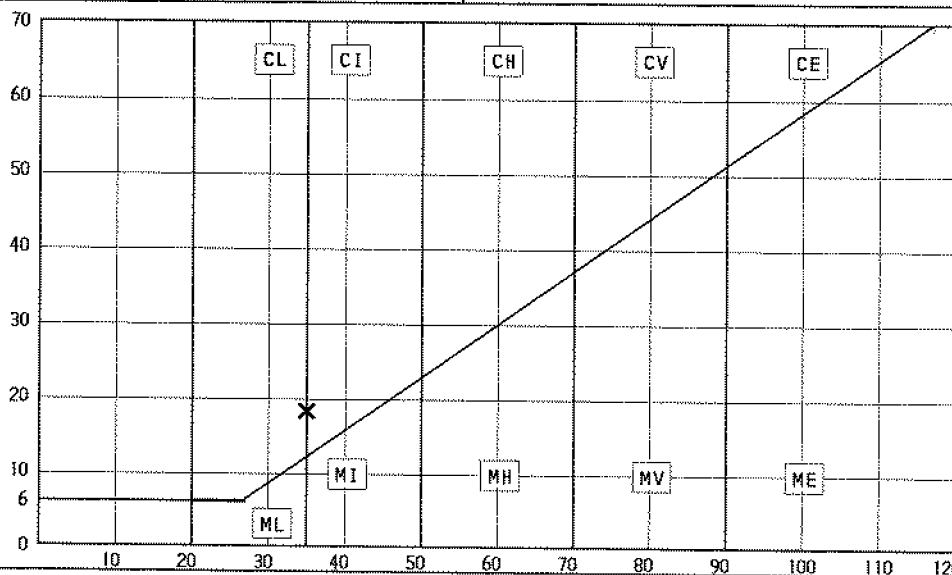
Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH1	3.45	D3	21	Stiff pale brown slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	

PREPARATION		Liquid Limit	35 %
Method of Preparation	Sieved Specimen	Plastic Limit	17 %
Sample retained 0.425 sieve (Measured)	11 %	Plasticity Index	18 %
Corrected moisture content for material passing 0.425mm	24 %	Liquidity Index	0.39
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity Index %
(I_p)

M = SILT



High	NHBC Volume Change Potential
Medium	
Low	

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BSS930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
9% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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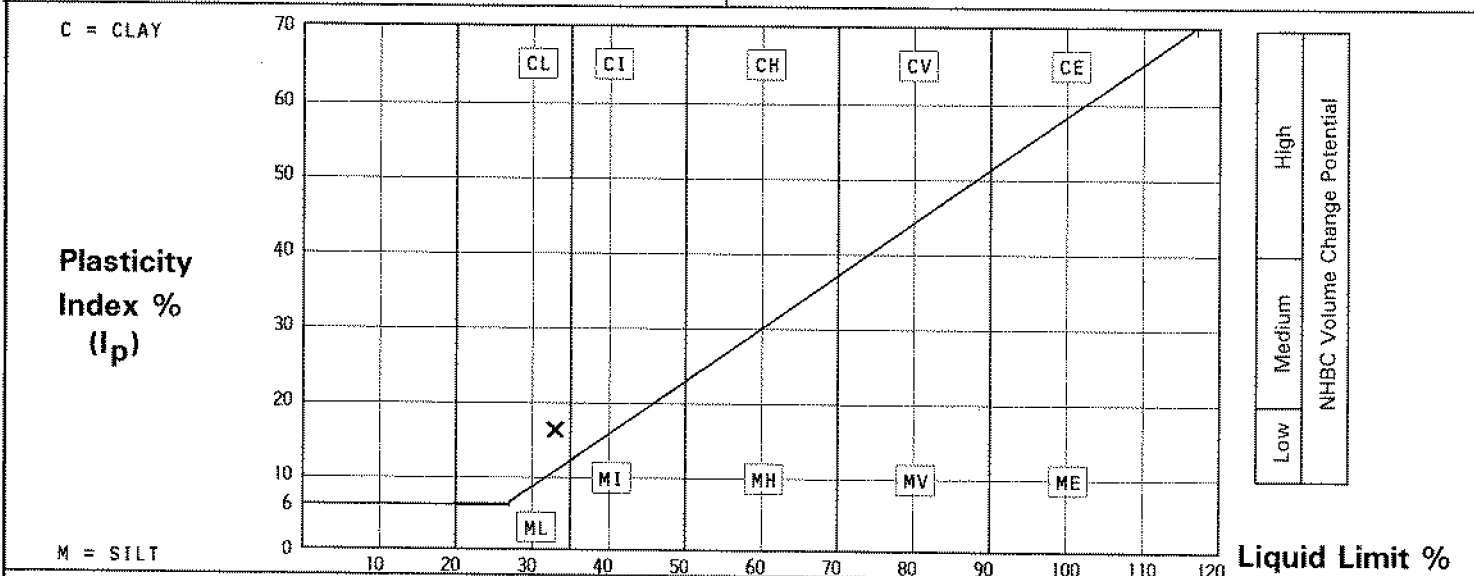
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH1	8.00	U2	18	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine and medium chalk and rare flint	

PREPARATION		Liquid Limit	33 %
Method of Preparation	Sieved Specimen	Plastic Limit	17 %
Sample retained 0.425 sieve (Measured)	10 %	Plasticity Index	16 %
Corrected moisture content for material passing 0.425mm	20 %	Liquidity Index	0.19
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
8% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

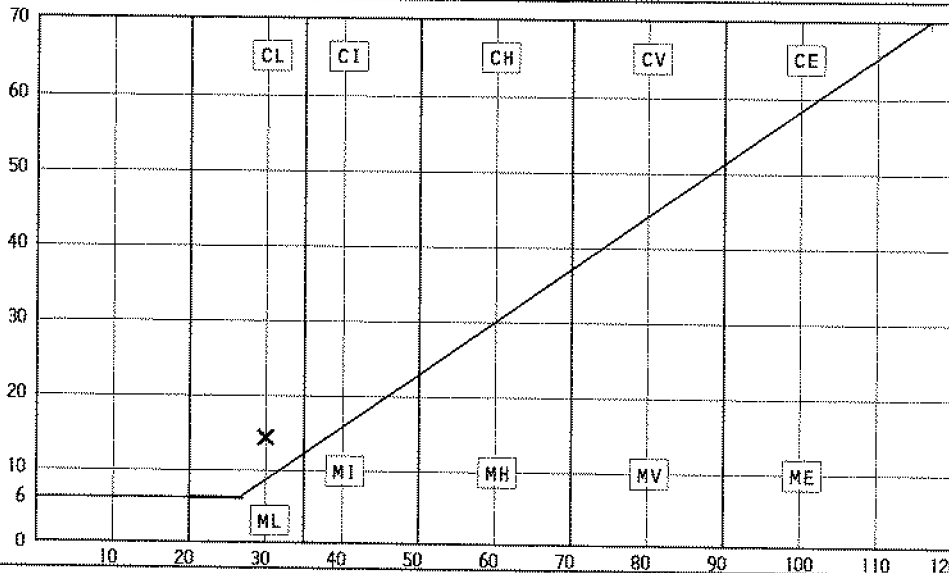
Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH2	2.45	D2	19	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	

PREPARATION		Liquid Limit	30 %
Method of Preparation	Sieved Specimen	Plastic Limit	16 %
Sample retained 0.425 sieve (Measured)	9 %	Plasticity Index	14 %
Corrected moisture content for material passing 0.425mm	21 %	Liquidity Index	0.36
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity
Index %
(I_p)

M = SILT



High
Medium
Low
NHBC Volume Change Potential

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
6% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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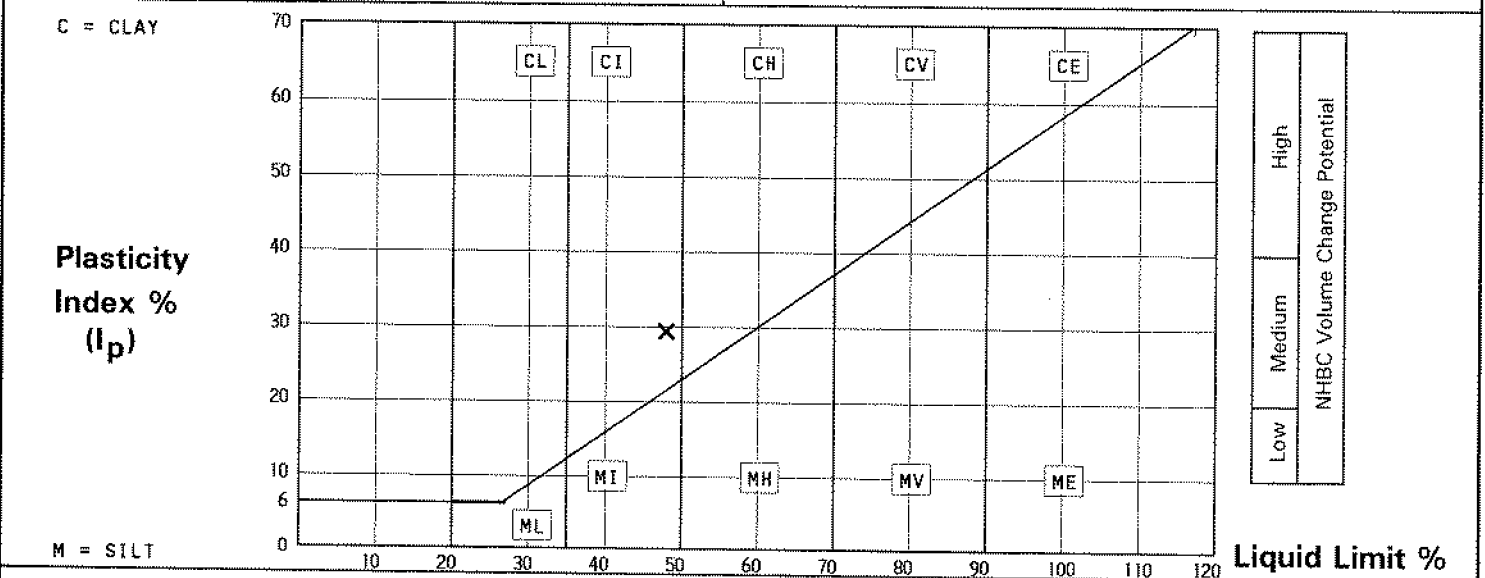
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH3	4.00	U1	18	Very stiff olive grey slightly gravelly slightly sandy silty CLAY with rare selenite crystals. Gravel is fine to coarse chalk and rare flint	

PREPARATION		Liquid Limit	48 %
Method of Preparation	Sieved Specimen	Plastic Limit	19 %
Sample retained 0.425 sieve (Measured)	10 %	Plasticity Index	29 %
Corrected moisture content for material passing 0.425mm	20 %	Liquidity Index	0.03
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
5% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

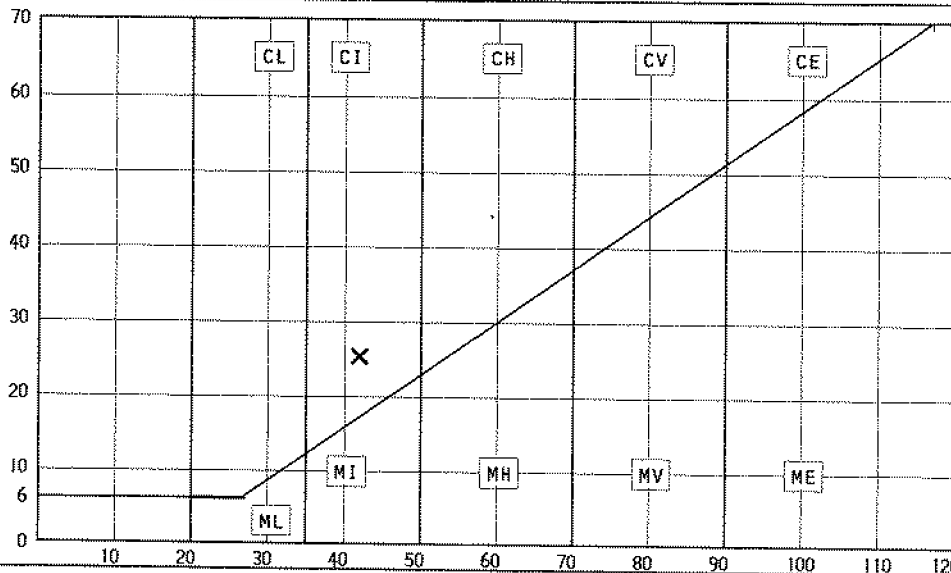
Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH5	6.50	U2	17	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk	

PREPARATION		Liquid Limit	42 %
Method of Preparation	Sieved Specimen	Plastic Limit	17 %
Sample retained 0.425 sieve (Measured)	7 %	Plasticity Index	25 %
Corrected moisture content for material passing 0.425mm	18 %	Liquidity Index	0.04
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity Index %
(I_p)

M = SILT



High	NHBC Volume Change Potential
Medium	
Low	

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I_p = I_p x (% less than 425 microns/100)
5% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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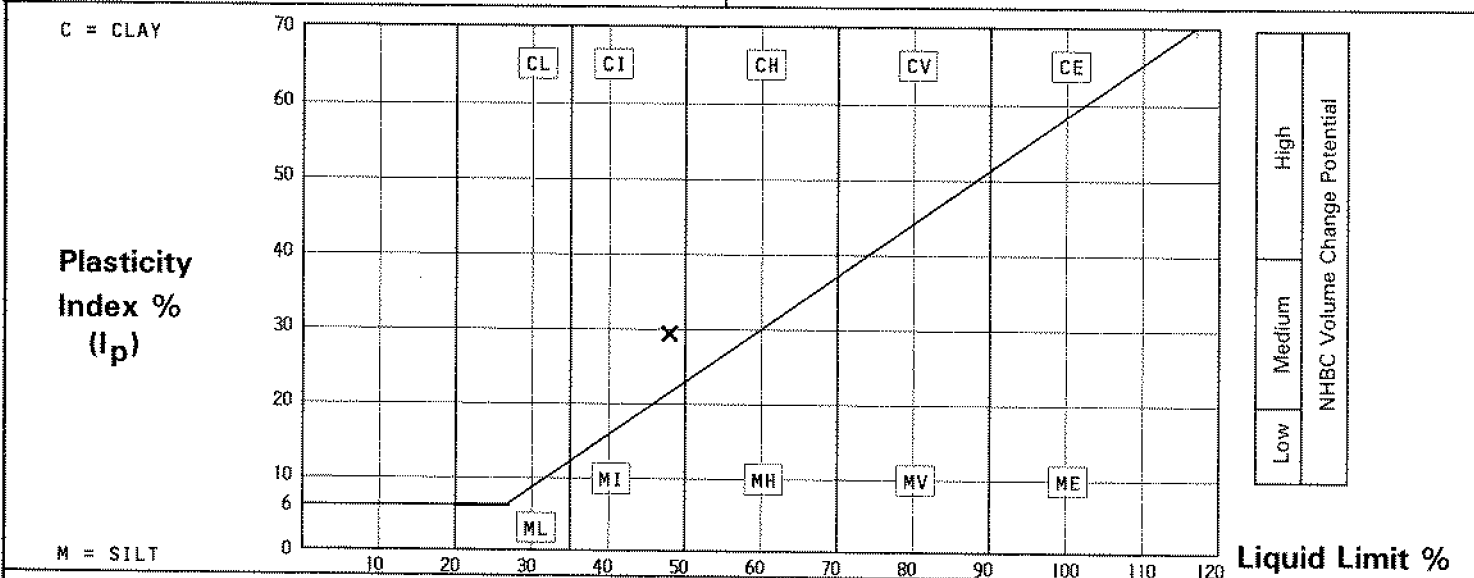
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH6	2.00	U1	18	Very stiff (Very high strength) light olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine and medium chalk	

PREPARATION		Liquid Limit	46 %
Method of Preparation	Sieved Specimen	Plastic Limit	19 %
Sample retained 0.425 sieve (Measured)	6 %	Plasticity Index	29 %
Corrected moisture content for material passing 0.425mm	19 %	Liquidity Index	0.00
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHARGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = Ip x (% less than 425 microns/100)
4% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

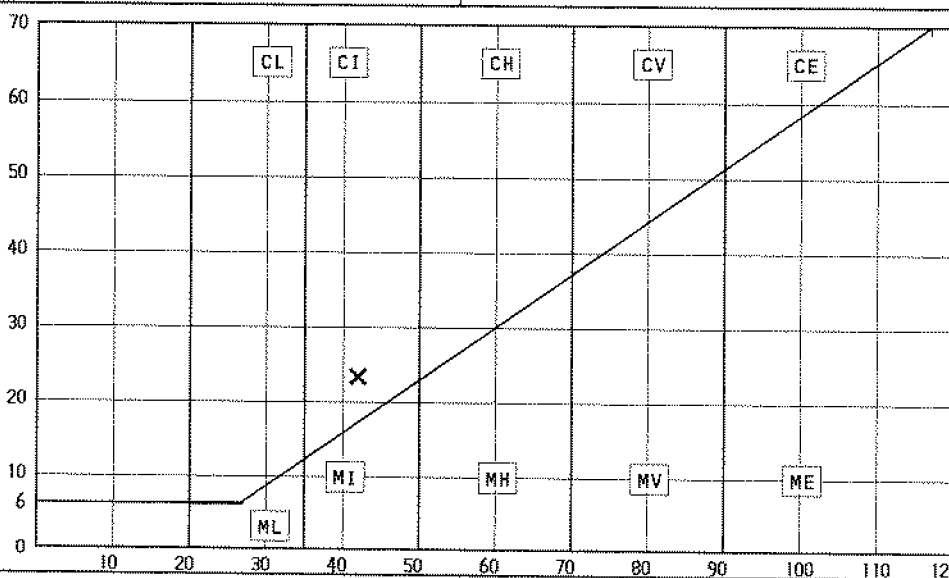
Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
BH7	4.00	U2	20	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint	

PREPARATION		Liquid Limit	42 %
Method of Preparation	Sieved Specimen	Plastic Limit	19 %
Sample retained 0.425 sieve (Measured)	8 %	Plasticity Index	23 %
Corrected moisture content for material passing 0.425mm	22 %	Liquidity Index	0.13
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.

C = CLAY

Plasticity Index %
(I_p)

M = SILT



High
Medium
Low
NHBC Volume Change Potential

Liquid Limit %

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I_p = I_p x (% less than 425 microns/100)
6% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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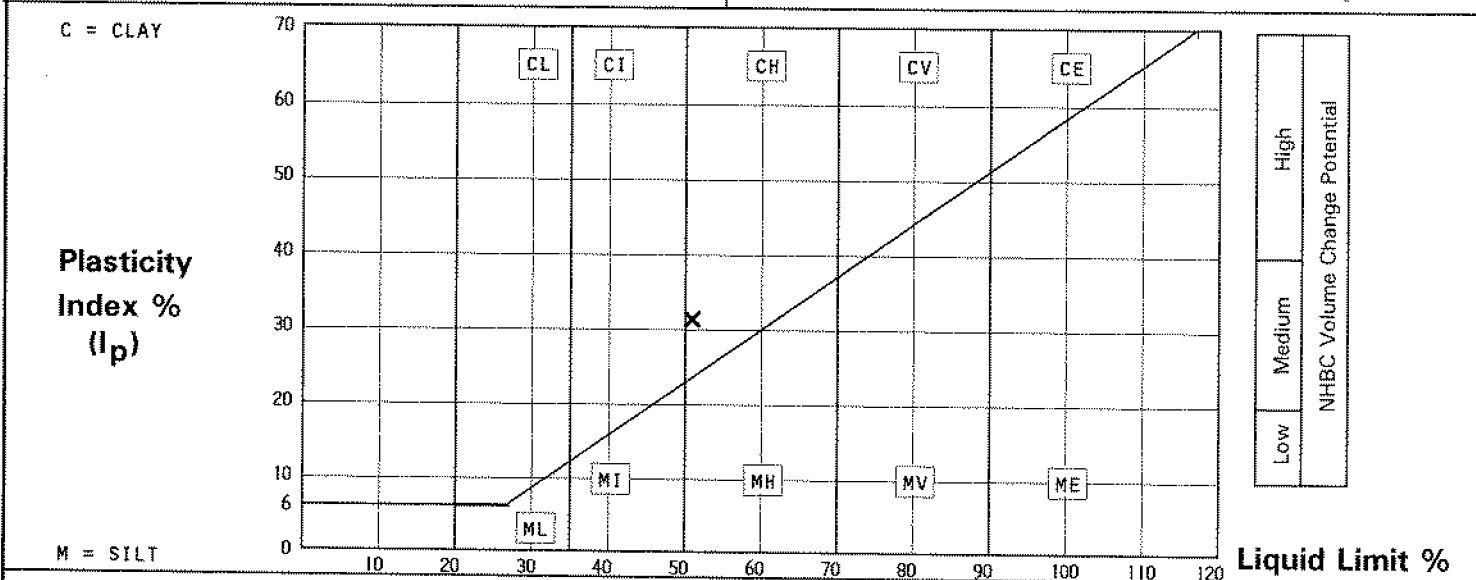
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
B88	1.20	D1	24	Firm dark yellowish brown slightly sandy CLAY	

PREPARATION		Liquid Limit	51 %
Method of Preparation	Specimen from Natural Soil	Plastic Limit	20 %
Sample retained 0.425 sieve (Assumed)	0 %	Plasticity index	31 %
Corrected moisture content for material passing 0.425mm	%	Liquidity Index	0.13
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)



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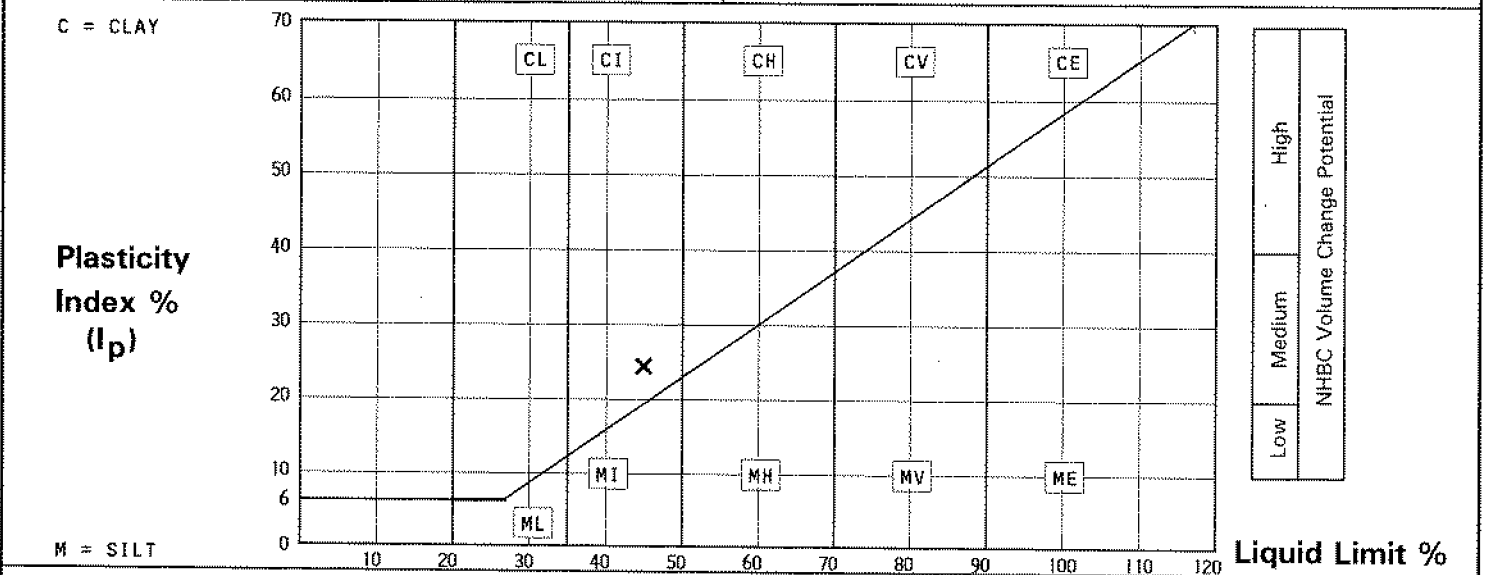
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP4	0.60 -0.70	B1	21	Stiff olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active roots. Gravel is fine to coarse chalk and rare flint	

PREPARATION		Liquid Limit	45 %
Method of Preparation	Sieved Specimen	Plastic Limit	21 %
Sample retained 0.425 sieve (Measured)	14 %	Plasticity Index	24 %
Corrected moisture content for material passing 0.425mm	24 %	Liquidity Index	0.13
Curing Time	72 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p × (% less than 425 microns/100)
12% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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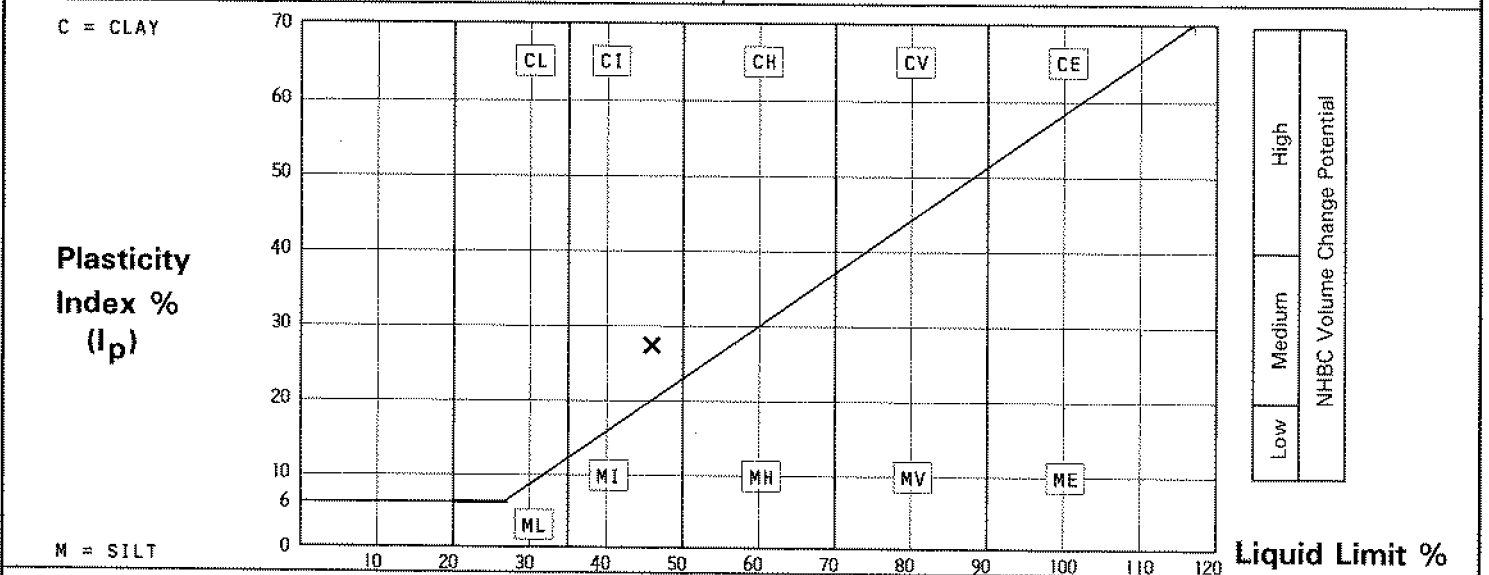
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP7	0.70 -1.00	BI	20	Very stiff olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	

PREPARATION		Liquid Limit	46 %
Method of Preparation	Sieved Specimen	Plastic Limit	19 %
Sample retained 0.425 sieve (Measured)	7 %	Plasticity Index	27 %
Corrected moisture content for material passing 0.425mm	22 %	Liquidity Index	0.11
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'_p = I_p x (% less than 425 microns/100)
5% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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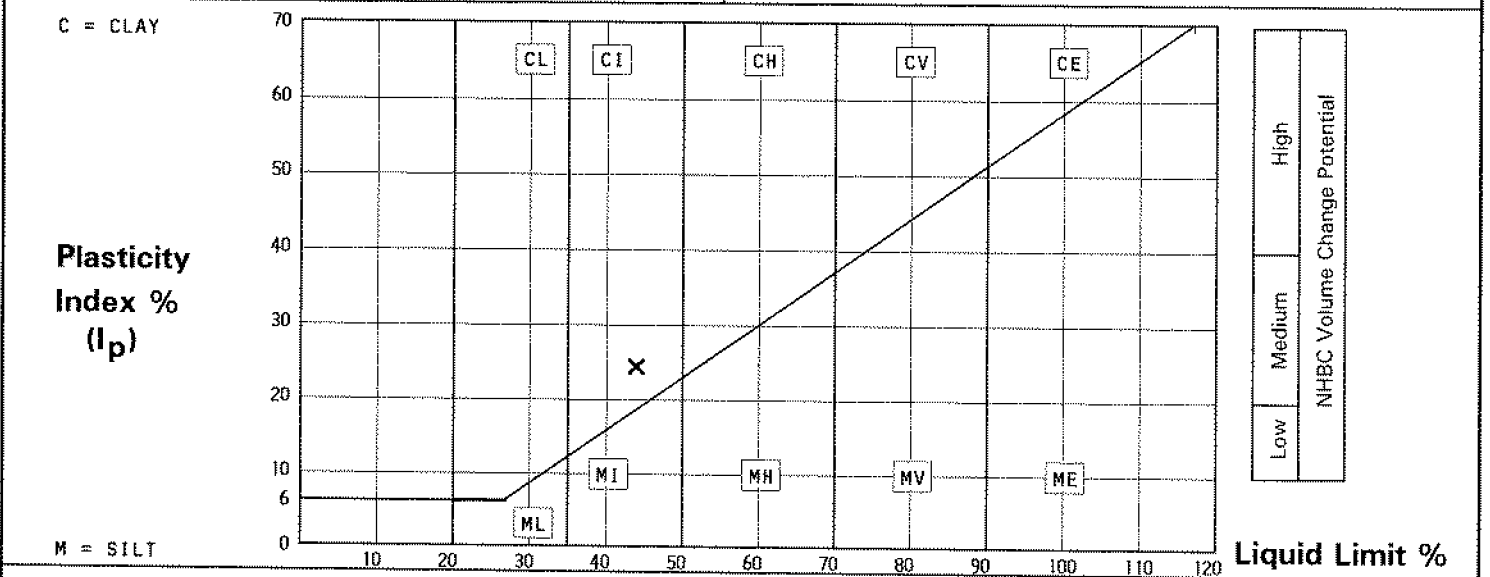
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP13	0.80 -0.90	B1	19	Stiff light yellowish brown slightly gravelly slightly sandy silty CLAY with grey mottling. Gravel is fine to coarse chalk and rare flint	

PREPARATION		Liquid Limit	44 %
Method of Preparation	Sieved Specimen	Plastic Limit	20 %
Sample retained 0.425 sieve (Measured)	11 %	Plasticity Index	24 %
Corrected moisture content for material passing 0.425mm	21 %	Liquidity Index	0.04
Curing Time	72 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index $I_p' = I_p \times (\% \text{ less than } 425 \text{ microns}/100)$
9% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	MOHRS CIRCLE ANALYSIS		Description
									Cu (kPa)	φ (degrees)	
BH1	8.00	U2	18	2.14	1.81	159 319 479	623 658 684	312 329 342	272.4	5.0	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine and medium chalk and rare flint
BH2	5.00	U2	20	2.07	1.73	100 200 301	190 207 224	95 104 112	80.5	4.4	Stiff (High strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk
BH4	3.00	U1	18	2.10	1.78	62 118 182	577 622 653	289 311 327	211.4	13.9	Very stiff (Very high strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk
BH4	9.50	U2	16	2.14	1.84	189 380 572	835 892 937	417 446 469	349.4	6.8	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk and rare flint
BH5	1.20	U1	18	2.11	1.79	23 49 71	465 485 520	232 243 260	148.3	21.5	Very stiff (Very high strength) olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine to coarse chalk
BH5	6.50	U2	17	2.15	1.84	130 259 390	721 752 781	361 376 390	312.5	5.9	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk
BH6	2.00	U1	18	2.09	1.77	39 83 118	466 493 514	233 247 257	174.1	13.6	Very stiff (Very high strength) light olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine and medium chalk

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4.2 & 8 PART 2:1990:7.2 PART 7:1990:8.3

METHOD OF TEST : BS 1377:PART 2:1990:3 Determination of Moisture Content 1990:7 Determination of Density
:PART 7:1990:8 Undrained Shear Strength 1990:9 Multi-stage test
Note Multi-stage test used when specimen has granular content / behaviour and length of
specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample,
C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin
of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF DENSITY, MOISTURE CONTENT AND UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Bulk Density (Mg/m ³)	Dry Density (Mg/m ³)	Lateral Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	MOHR'S CIRCLE ANALYSIS		Description
									Cu (kPa)	φ (degrees)	
BH7	4.00	U2	20	2.12	1.77	78	461	230	205.6	4.8	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint
						160	478	239			
						243	491	245			
BH8	8.00	U1	18	2.16	1.83	159	487	244	217.2	3.9	Very stiff (Very high strength) grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk
						320	514	257			
						483	534	267			

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4.2 & 8 PART 2:1990:7.2 PART 7:1990:8.3

METHOD OF TEST : BS 1377:PART 2:1990:3 Determination of Moisture Content 1990:7 Determination of Density
:PART 7:1990:8 Undrained Shear Strength 1990:9 Multi-stage test

Note Multi-stage test used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

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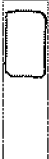
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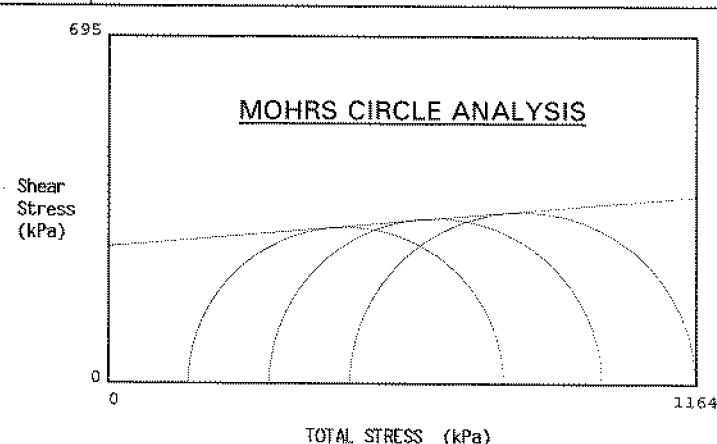
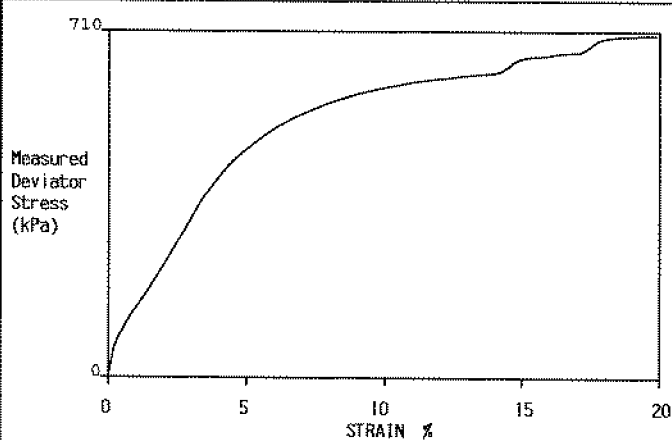
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH1	8.00	U2	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine and medium chalk and rare flint				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m) 8.07		200.0	102.9	3566	18	2.14	1.81

TEST INFORMATION Rate of Strain 1.9 % per Min Rubber Membrane Thickness 0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ_{int} °
	159	14.1	1.7	/	623	312	272.40	4.98
	319	16.9	1.9	7.3	658	329		
	479	19.5	2.2	16.2	684	342		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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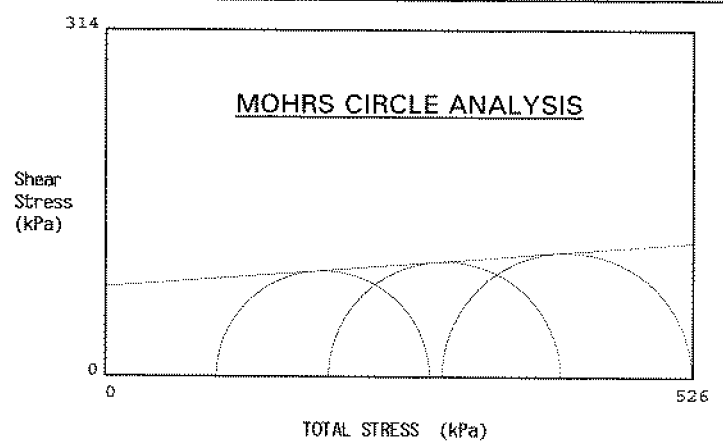
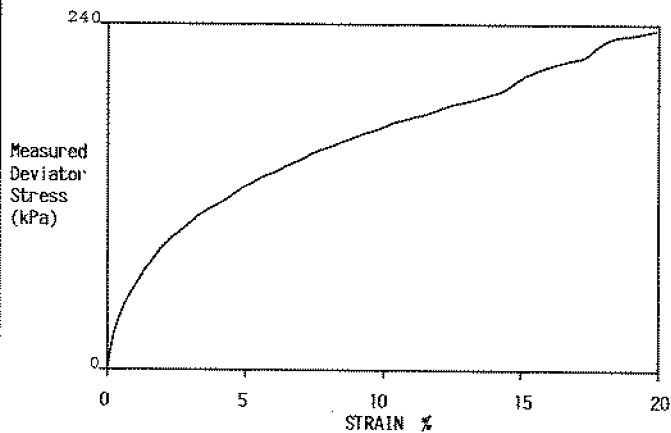
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH2	5.00	U2	Stiff (High strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m)							
5.20		156.0	102.9	2692	20	2.07	1.73

TEST INFORMATION Rate of Strain 2.5 % per Min Rubber Membrane Thickness 0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ °
	100	14.1	1.7	/	190	95	80.47	4.41
	200	16.9	1.9	7.0	207	104		
	301	19.9	2.2	10.5	224	112		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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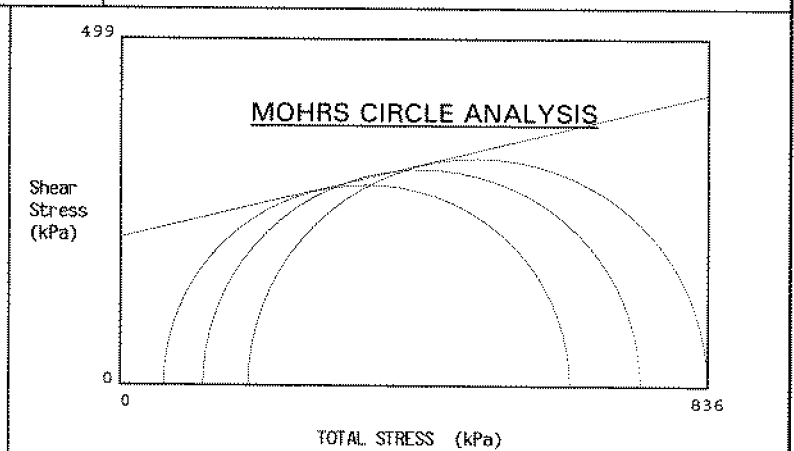
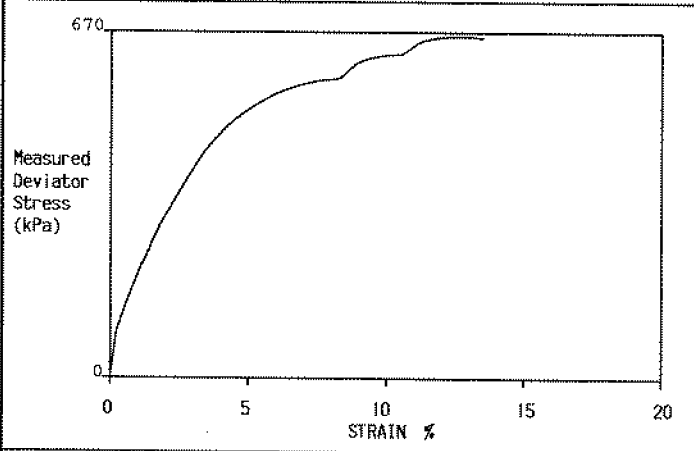
DETERMINATION OF UNDRAINED SHEAR STRENGTH

IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH4	3.00	U1	Very stiff (Very high strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk	

Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m)							
3.11		199.7	103.2	351.6	18	2.10	1.78

TEST INFORMATION	Rate of Strain	1.9	% per Min	Rubber Membrane Thickness	0.6	mm
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Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress Cu $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			Cu (kPa)	PHI °
	62	8.3	1.1	/	577	289	311.44	13.93
	118	10.3	1.3	4.1	622	311		
	182	12.5	1.5	7.1	653	327		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.




TEST REPORT.

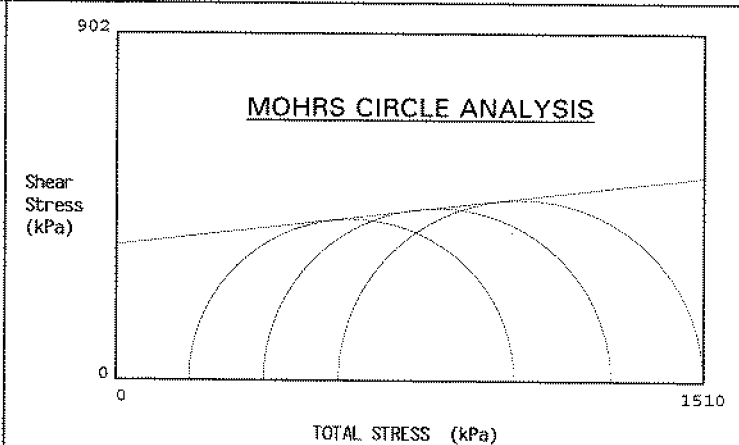
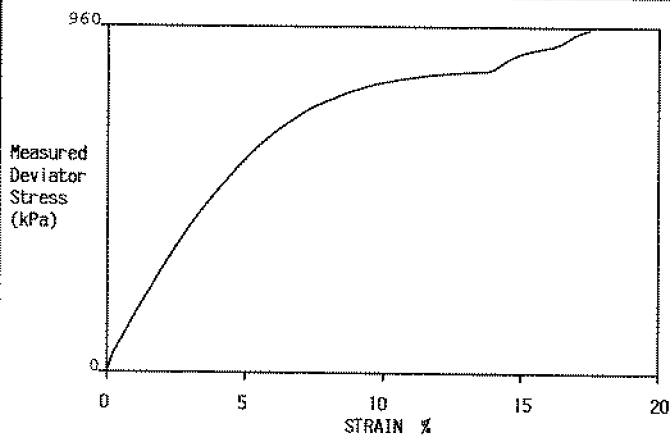
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH4	9.50	U2	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk and rare flint				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m) 9.56		185.1	102.8	3285	16	2.14	1.84

TEST INFORMATION Rate of Strain 2.0 % per Min Rubber Membrane Thickness 0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_r$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ_{HI}°
	189	13.7	1.7	/	835	417	349.36	6.76
	380	16.1	1.9	11.1	892	446		
	572	17.7	2.0	19.9	937	469		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
 UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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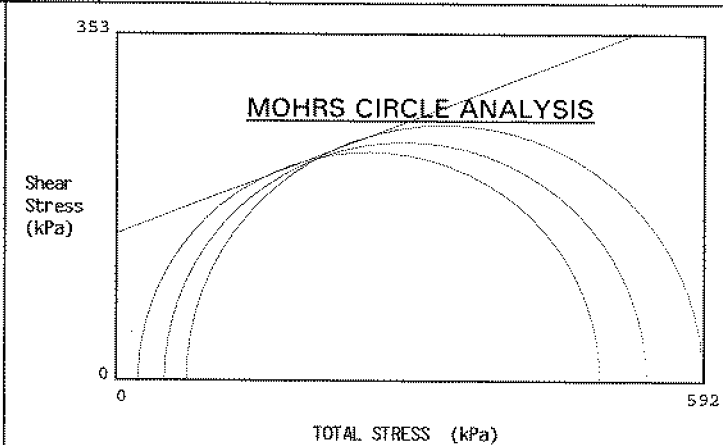
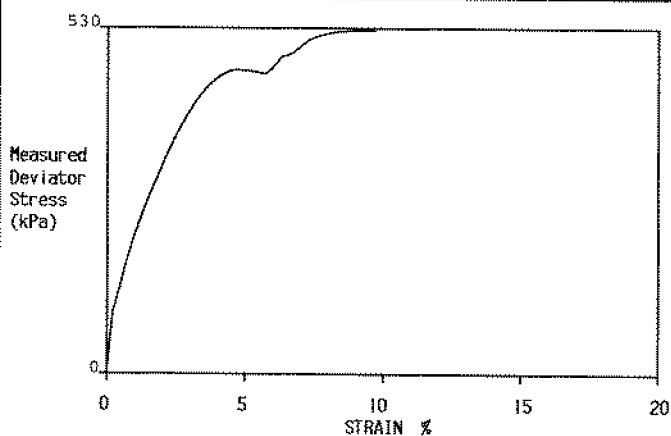
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH5	1.20	U1	Very stiff (Very high strength) olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine to coarse chalk				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m) 1.29		199.8	103.1	3522	18	2.11	1.79

TEST INFORMATION Rate of Strain 1.9 % per Min Rubber Membrane Thickness 0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress C_u $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ_{int} °
	23	4.5	0.8	/	465	232	148.26	31.45
	49	6.7	0.9	3.3	485	243		
	71	9.1	1.2	4.8	520	260		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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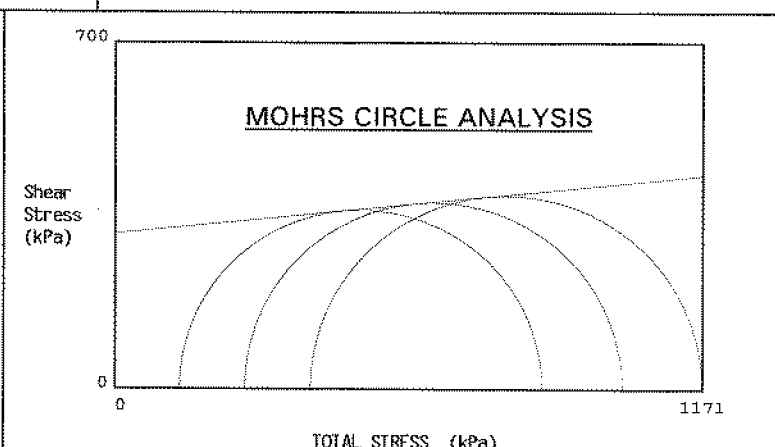
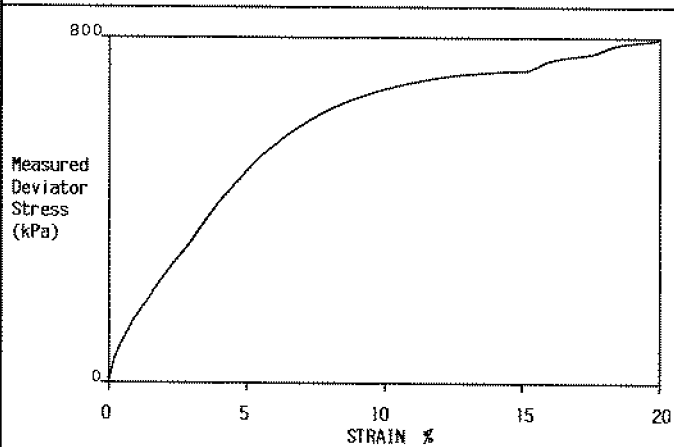
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH5	6.50	U2	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m) 6.58		155.7	103.5	2821	17	2.15	1.84

TEST INFORMATION Rate of Strain 2.4 % per Min Rubber Membrane Thickness 0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ °
	130	14.9	1.8	/	721	361	312.47	5.86
	259	17.5	2.0	7.8	752	376		
	390	20.1	2.2	12.6	781	390		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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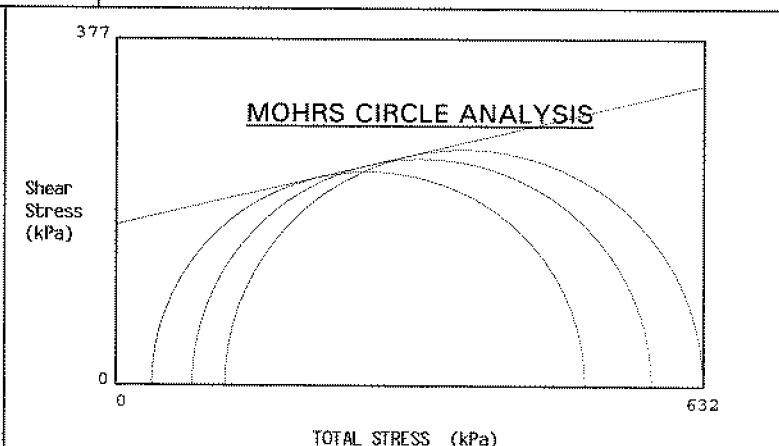
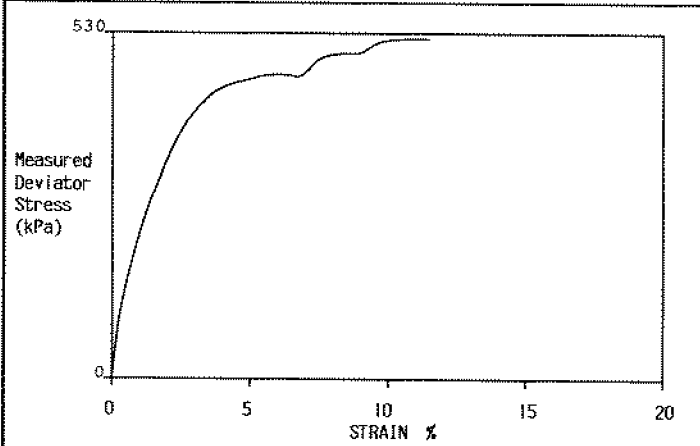
DETERMINATION OF UNDRAINED SHEAR STRENGTH

IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks
BH6	2.00	U1	Very stiff (Very high strength) light olive brown slightly gravelly slightly sandy silty CLAY with occasional grey mottling. Gravel is fine and medium chalk	

Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
Depth of Top of Specimen (m)							
2.08		199.7	103.3	3495	18	2.09	1.77

TEST INFORMATION	Rate of Strain	1.9	% per Min	Rubber Membrane Thickness	0.6	mm
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Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			c_u (kPa)	ϕ_{11}°
	39	6.1	0.8	/	466	233	174.06	13.57
	83	8.5	1.2	4.2	493	247		
	118	11.5	1.4	6.2	514	257		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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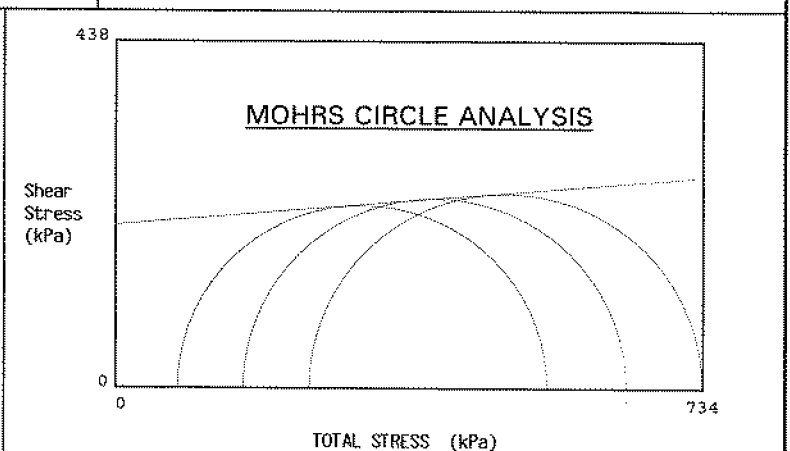
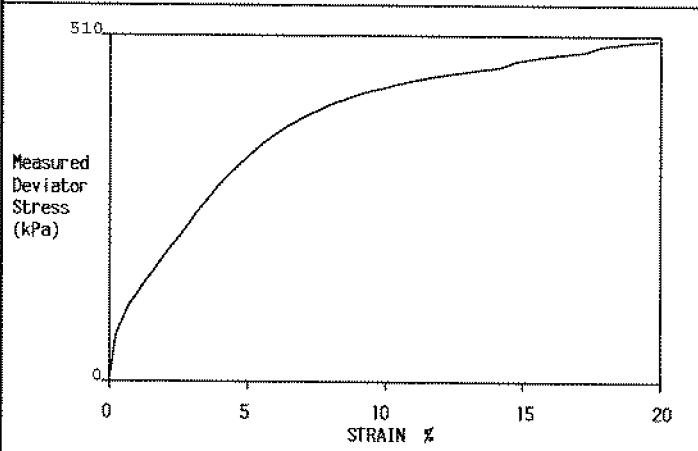
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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH7	4.00	U2	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint				
Initial Specimen		Height mm	Diameter mm	Weight g	Moisture Content %	Wet Density Mg/m ³	Dry Density Mg/m ³
 Depth of Top of Specimen (m) 4.11		199.7	103.3	3551	20	2.12	1.77

TEST INFORMATION	Rate of Strain	1.9	% per Min	Rubber Membrane Thickness	0.6	mm
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Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohrs Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ_{HI}^p
	78	14.1	1.7	/	461	230	205.58	4.82
	160	17.1	1.9	5.2	478	239		
	243	20.1	2.2	9.5	491	245		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

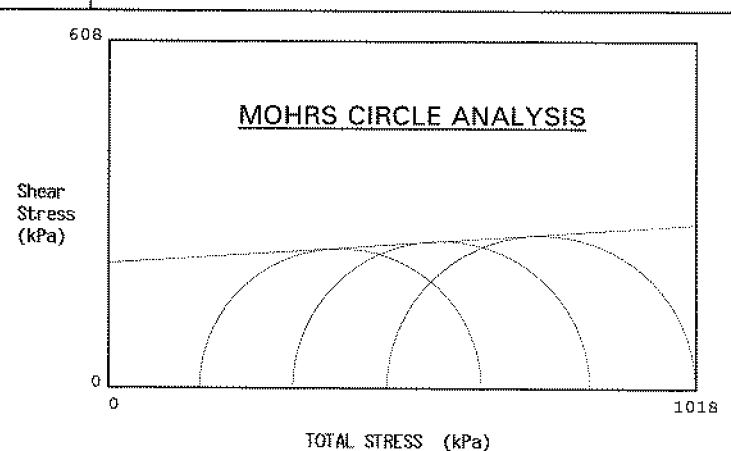
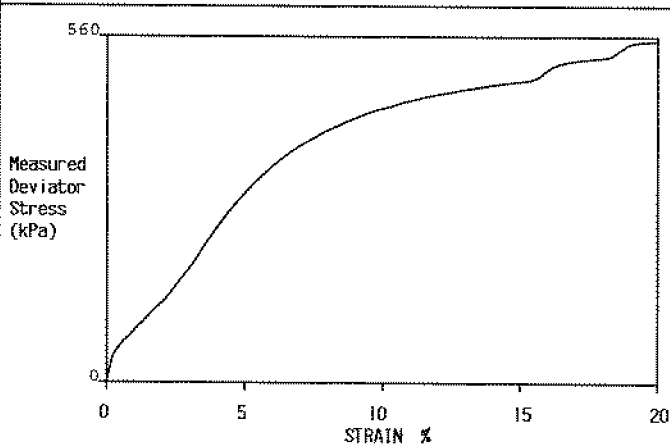
Borehole/ Pit No.	Depth m.	Sample	Description	Remarks			
BH8	8.00	U1	Very stiff (Very high strength) grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk				
Initial Specimen							
	Depth of Top of Specimen (m)	Height (mm)	Diameter (mm)	Weight (g)	Moisture Content (%)	Wet Density (Mg/m ³)	Dry Density (Mg/m ³)
	8.09	199.8	102.3	3548	18	2.16	1.83

TEST INFORMATION

Rate of Strain 1.9 % per Min

Rubber Membrane Thickness

0.6 mm



Specimen at Failure	Measured Cell Pressure σ_3 (kPa)	Strain at Failure (%)	Stress Correction (kPa)		Corrected Max. Deviator Stress $\sigma_1 - \sigma_3$ (kPa)	Shear Stress $\frac{1}{2}(\sigma_1 - \sigma_3)_f$ (kPa)	Mohr's Circle Analysis	
			Membrane Thickness	Piston Friction			C_u (kPa)	ϕ_{HI}°
	159	15.3	1.8	/	487	244	217.24	3.90
	320	17.7	2.0	8.8	514	257		
	483	20.1	2.2	17.1	534	267		

METHOD OF PREPARATION: BS 1377:PART 1:1990:

METHOD OF TEST : BS 1377:PART 7:1990:8 Definitive Method. 1990:9 Multi-stage loading - used when specimen has granular content / behaviour and length of specimen precludes the taking of 3 x 100mm dia by 200mm long specimens.

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Tested in Vertical Orientation.
UKAS Calibration - loads from 0.2 to 10kN.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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S28232

LABORATORY CALIFORNIA BEARING RATIO TESTS ADJUSTED FOR SEASONAL MOISTURE CONTENT CHANGES.

Due to seasonal variations of water content in near surface soils, many clients require CBR test samples to be subjected to sample preparation in the laboratory before testing. With Clay soils, liquid and plastic limits and moisture contents are carried out to classify them on material passing 20mm. The plastic limit is then compared against the moisture content with due regard to the proportion of material then retained on a 0.425mm sieve. If the moisture content is already 2% or more above the plastic limit, compaction may take place immediately. If this is not the case a calculated amount of water is added to the sample and cured for 24 hours before compaction. The samples are then cured for a further 24 hours before CBR tests are carried out at both the top and bottom of the sample.

CALCULATION OF ADJUSTED MOISTURE CONTENT FOR CBR TESTING

When a significant proportion of a basically clay material is >0.425mm, the adjusted moisture content (MC) for test shall be derived as follows:

Obtain test specimens for CBR, Limits and Moisture content from Material Passing 20mm. (If the sample is large enough a moisture content may also be carried out on a representative portion of the whole sample including material greater than 20mm, and reported for information)

The Plastic Limit (PL) for the fine fraction is obtained by testing material passing the 0.425mm sieve. A notional 5% Moisture Content is to be allowed for material passing 20mm, and retained on the 0.425mm sieve. The proportion passing the 0.425mm is obtained by the wet sieve preparation method.

If X% passes 0.425mm, (100-X) % is retained on 0.425mm and with the 5% MC required to be incorporated for the retained 0.425mm portion, the adjusted MC for test shall be at least:

$$\frac{X(PL+2) + (100-X)5}{100} \text{ for the sample passing 20mm}$$

CALCULATIONS:

S28232 – NW Haverhill.

TP4 B1 @ 0.60m

86% passing 0.425mm therefore X = 86

Plastic limit of specimen = 20.6%

Moisture content as received (excluding +20mm) = 21.0%

1% of the original sample retained on 20mm sieve and excluded from tests

$$\frac{86(20.6+2) + (100-86)5}{100} = 20.1\%$$

Therefore moisture content adjustment not required

Moisture Content after CBR Test (excluding +20mm) = 21%



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TP7 B1 @ 0.70m

93% passing 0.425mm therefore X = 93

Plastic limit of specimen = 18.7%

Moisture content as received (excluding +20mm) = 20.3%

1% of the original sample retained on 20mm sieve and excluded from tests

$$\frac{93(18.7+2) + (100-93)5}{100} = 18.7\%$$

Therefore moisture content adjustment not required

Moisture Content after CBR Test (excluding +20mm) = 20%

TP13 B1 @ 0.80m

87% passing 0.425mm therefore X = 87

Plastic limit of specimen = 19.6%

Moisture content as received (excluding +20mm) = 18.8%

1% of the original sample retained on 20mm sieve and excluded from tests

$$\frac{87(19.6+2) + (100-87)5}{100} = 19.4\%$$

Therefore moisture content adjustment required

Moisture Content after CBR Test (excluding +20mm) = 20%



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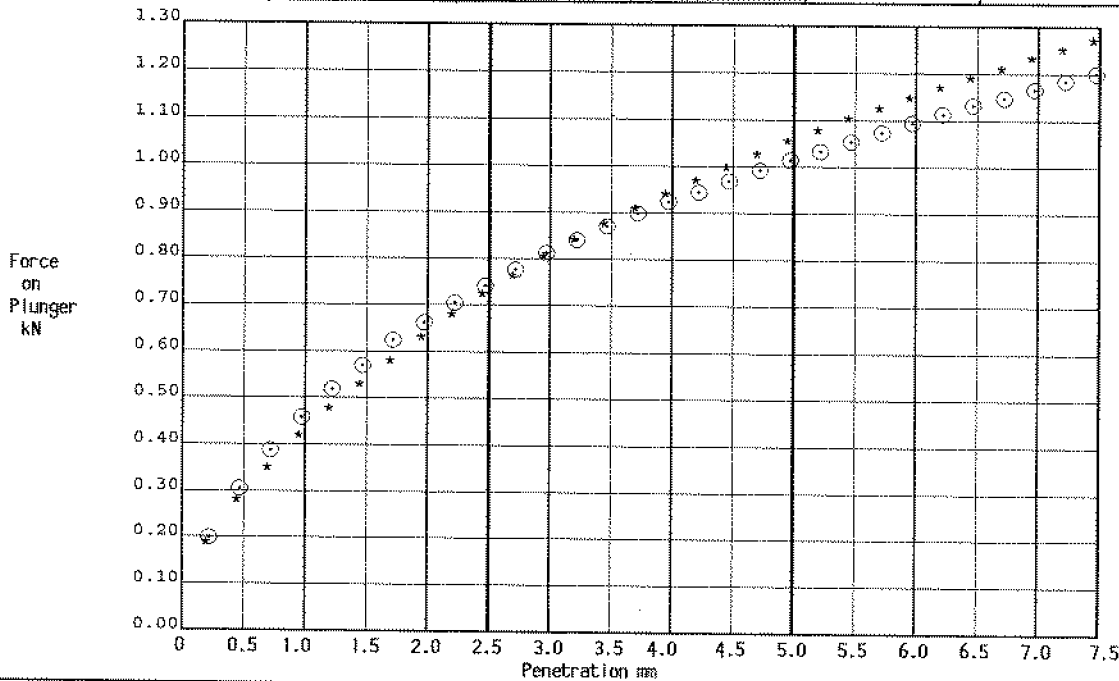
DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP4	0.60 -0.70	B1	Stiff olive yellow slightly gravelly slightly sandy silty CLAY with occasional recently active roots. Gravel is fine to coarse chalk and rare flint	

Moisture Content % TOP: 21 BOTTOM: 21 Average: 21 Bulk Density Mg/m³ 2.04 Dry Density Mg/m³ 1.69

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 1
TOP *	2.5 5.0	0.72 1.05	5.4 5.2	5.4	5.5	METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
BOTTOM ⊙	2.5 5.0	0.74 1.02	5.6 5.1	5.5		
						Surcharge weights (kg) : 15
						SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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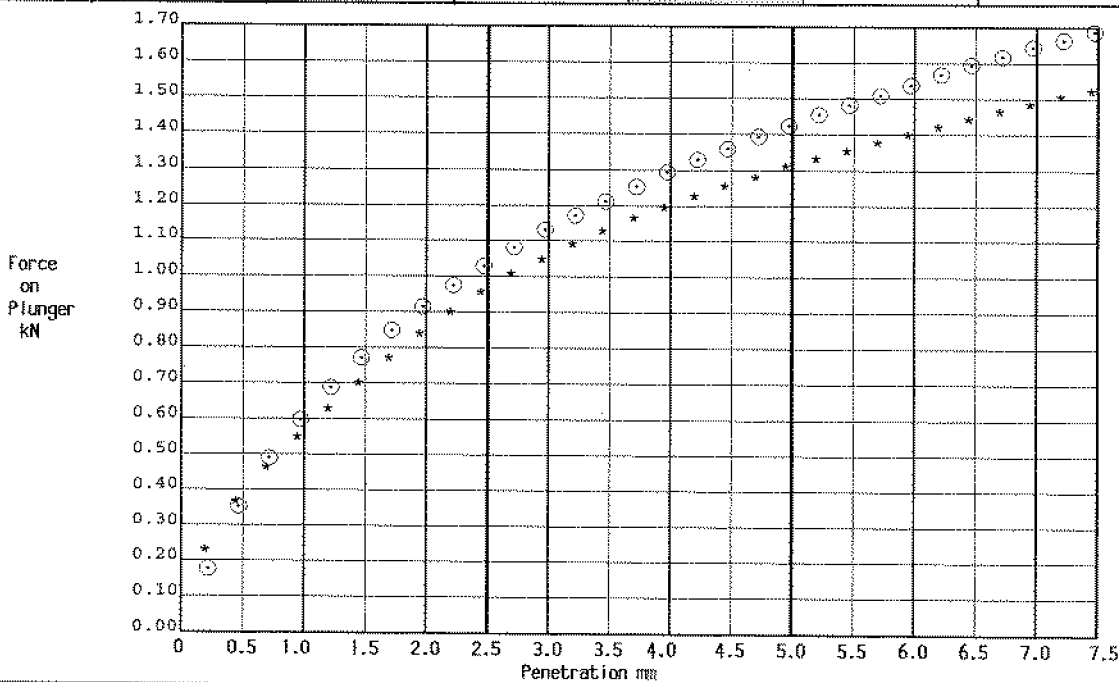
DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP7	0.70 -1.00	B1	Very stiff olive yellow slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	

Moisture Content % TOP: 20 BOTTOM: 20 Average: 20 Bulk Density Mg/m³ 1.24 Dry Density Mg/m³ 1.03

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 1
TOP *	2.5 5.0	0.95 1.30	7.2 6.5	7.2	7.5	METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
BOTTOM ⊙	2.5 5.0	1.03 1.43	7.8 7.1	7.8		
						Surcharge weights (kg) : 15
						SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

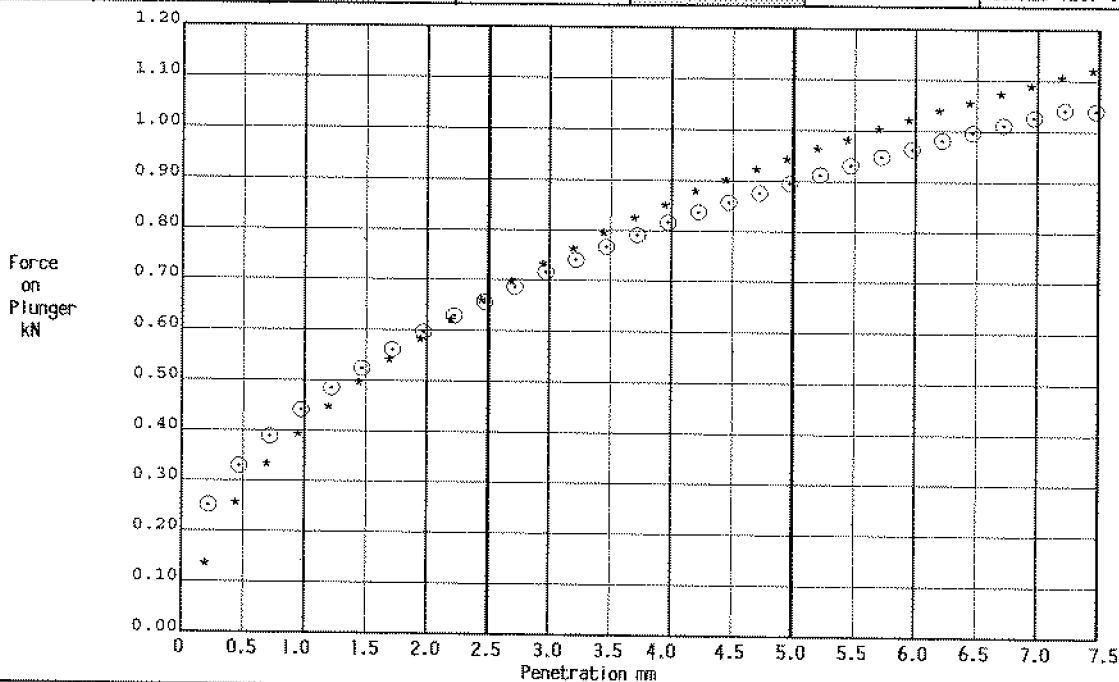
Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP13	0.80 -0.90	B1	Stiff light yellowish brown slightly gravelly slightly sandy silty CLAY with grey mottling. Gravel is fine to coarse chalk and rare flint	

Moisture Content % TOP: 20 BOTTOM: 20 Average: 20 Bulk Density Mg/m³ 2.04 Dry Density Mg/m³ 1.71

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 1
TOP *	2.5 0.65	4.9		4.9	5.0	METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
	5.0 0.94	4.7				
BOTTOM ⊙	2.5 0.66	5.0		5.0	5.0	Surcharge weights (kg) : 15
	5.0 0.90	4.5				

SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF THE SULPHATE CONTENT OF SOIL AND GROUNDWATER

Borehole/ Pit No.	Depth m.	Sample	Concentration of Soluble Sulphate		% of sample passing 2mm sieve	Description	Remarks	
			Soil	Groundwater				
			Acid Soluble SO ₄ %	Water Soluble 2:1 SO ₄ g/l	g/l			
BH1	6.50	D7		0.21		98	Very stiff grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH2	2.45	D2		< 0.01		94	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH2	5.00	U2		0.08		99	Stiff (High strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk	
BH2	9.00	D10		0.14		100	Very stiff grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	Chalk crushed to pass 2mm sieve
BH3	8.00	D9		0.31		99	Very stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH4	9.50	U2		0.34		100	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk and rare flint	
BH7	4.00	U2		0.07		94	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint	
BH7	7.50	D8		0.15		99	Stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7.5 BS1377:PART 3:1990:5.2 Acid Soluble, 5.3 Soil/Water Extract :5.4 Groundwater

METHOD OF TEST : BS 1377:PART 3:1990:5.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Test not UKAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF THE pH VALUE

Borehole/ Pit No.	Depth m.	Sample	pH Value	Description	Remarks
BH1	6.50	D7	7.4	Very stiff grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH2	2.45	D2	7.3	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH2	5.00	U2	7.6	Stiff (High strength) dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk	
BH2	9.00	D10	6.9	Very stiff grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	Chalk crushed to pass 2mm sieve
BH3	8.00	D9	7.2	Very stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	
BH4	9.50	U2	7.7	Hard (Extremely high strength) dark grey slightly gravelly slightly sandy silty CLAY/extremely weak MUDSTONE. Gravel is fine to coarse chalk and rare flint	
BH7	4.00	U2	7.6	Very stiff (Very high strength) dark olive grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to coarse chalk and rare flint	
BH7	7.50	D8	7.1	Stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine and medium chalk	

METHOD OF PREPARATION: BS 1377:PART 1:1990:7 BS 1377:PART 3:1990:9.4

METHOD OF TEST : BS 1377:PART 3:1990:9.5

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : Test not UKAS accredited.

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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Serial No.

NW Haverhill

S28297



CLIENT:

Geosphere Environmental Ltd.
Brightwell Barns
Brightwell
Ipswich
IP10 0BJ

Soil Property Testing

18 Halcyon Court, St Margarets Way,
Stukeley Meadows, Huntingdon,
Cams. PE29 6DG.

Telephone (01480) 455579 Fax (01480) 453619
Email enquiries@soilpropertytesting.com

SAMPLES SUBMITTED BY:

Geosphere Environmental Ltd.

APPROVED SIGNATORIES:

- J.C.GARNER B.Eng (Hons.) FGS
Technical Director
- S.P.TOWNEND FGS
Quality Manager
- T.FOORD BSc (Hons.) FGS
Site Services Manager

SAMPLES LABELLED:

NW Haverhill

DATE RECEIVED: 21/11/14

SAMPLES TESTED BETWEEN 21/11/14 and 08/12/14

REMARKS: For the attention of Mr S Gilchrist
Your Ref: 995,SI

- NOTES:**
- 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
 - 2 (a) UKAS - United Kingdom Accreditation Service.
(b) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
 - 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
 - 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.



TEST REPORT.

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Contract
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S28297

SCHEDULE OF LABORATORY TESTS

Bh./ Tp No.	Sample Ref	Depth (from)	<i>1: Moisture Content Determination 4: Liquid/Plastic limit 1 point 5: Wet Sieve Preparation for Limb 20: CBR Compaction 2.5 Kg method 19: California Bearing Ratio Test</i>										Remarks				
TP24	B1	0.20	*	*	*	*	*										
TP29	B1	0.70	*	*	*	*	*										
TP31	B1	0.70	*	*	*	*	*										
-	-	-	3	3	3	3	3										<— Total Number of Tests —>



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SUMMARY OF MOISTURE CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plast- icity Index (%)	Liqu- idity Index (%)	SAMPLE PREPARATION			Description	CLASS	
								Method S/N	Ret'd 0.425mm (%)	Corr'd M/C <0.425mm			Curing Time (hrs.)
TP24	0.20 -0.50	B1	26	52	23	29	0.21*	S	10 (M)	29	24	Firm dark olive brown and light yellowish brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine and medium chalk	CH
TP29	0.70	B1	19	41	18	23	0.13*	S	8 (M)	21	72	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	CI
TP31	0.70	B1	20	50	20	30	0.07*	S	8 (M)	22	72	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse chalk and rare flint	CI/ CH

METHOD OF PREPARATION : BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

S = Wet Sieved Specimen
N = prepared from Natural

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter. A = Assumed, M = Measured

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

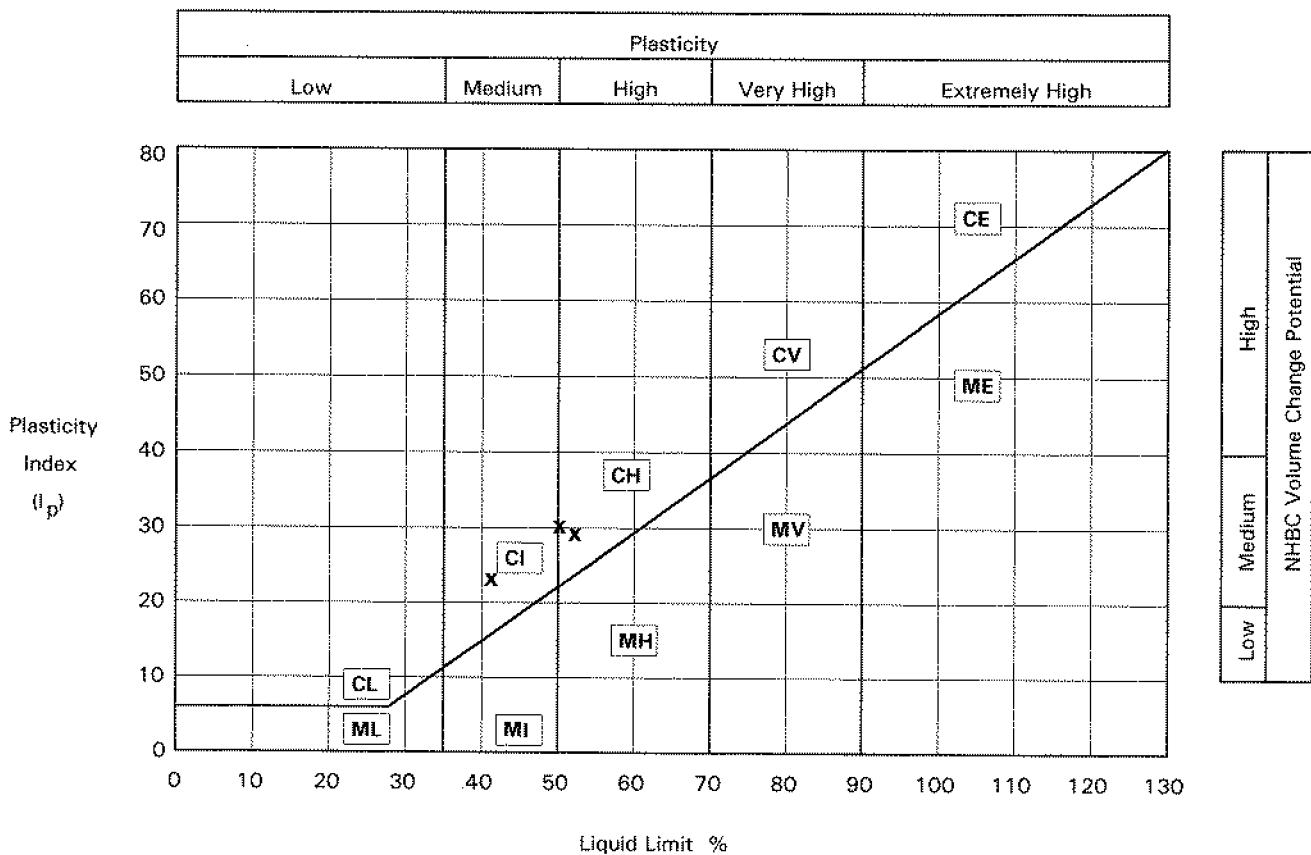
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PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index PLASTICITY CHART BS5930:1999:Figure 18



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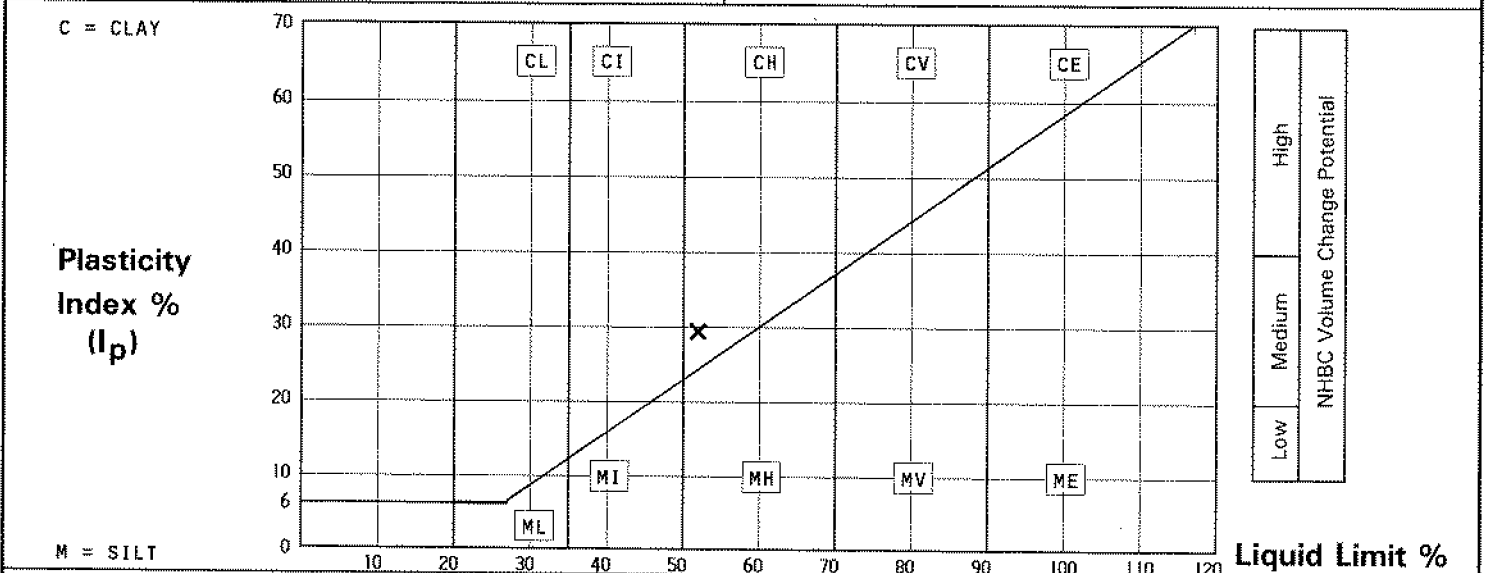
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP24	0.20 -0.50	B1	26	Firm dark olive brown and light yellowish brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine and medium chalk	NHBC Modified I'p = 26% (Medium Volume Change Potential)

PREPARATION		Liquid Limit	52 %
Method of Preparation	Sieved Specimen	Plastic Limit	23 %
Sample retained 0.425 sieve (Measured)	10 %	Plasticity Index	29 %
Corrected moisture content for material passing 0.425mm	29 %	Liquidity Index	0.21
Curing Time	24 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = I_p x (% less than 425 microns/100)
7% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



TEST REPORT.

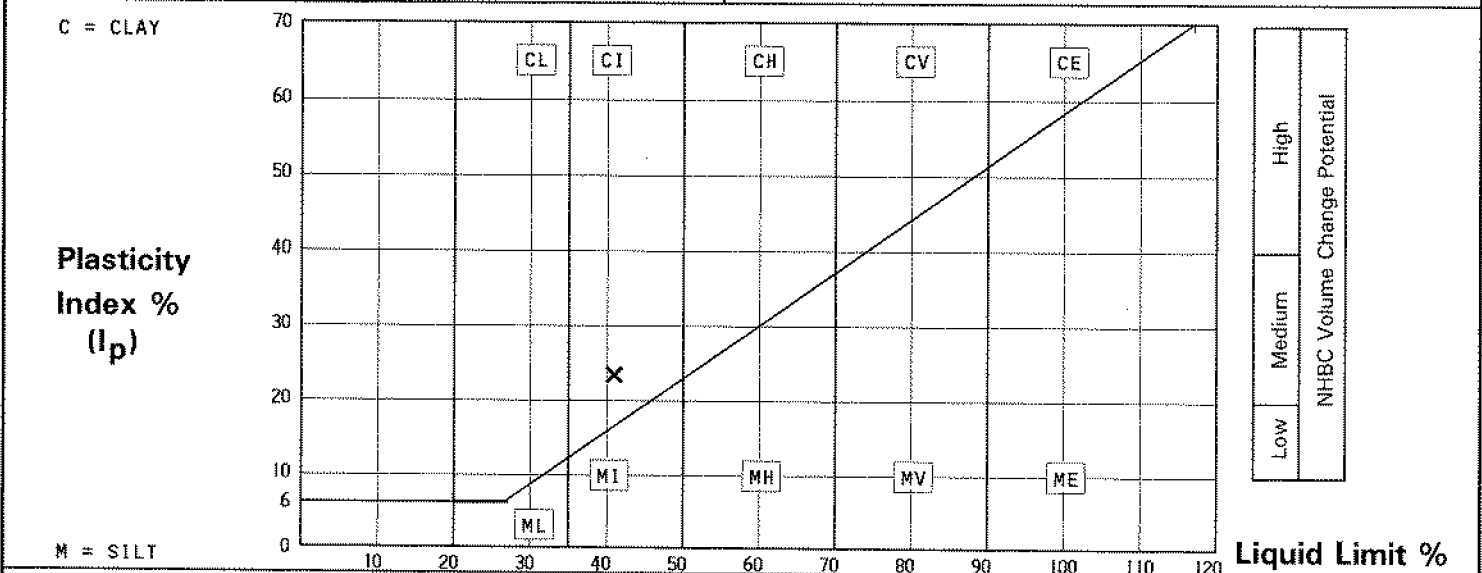
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 NW Haverhill S28297



DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP29	0.70	B1	19	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	NHBC Modified I'p = 21% (Medium Volume Change Potential)

PREPARATION		Liquid Limit	41 %
Method of Preparation	Sieved Specimen	Plastic Limit	16 %
Sample retained 0.425 sieve (Measured)	8 %	Plasticity Index	23 %
Corrected moisture content for material passing 0.425mm	21 %	Liquidity Index	0.13
Curing Time	72 Hours	Clay Content	Not analysed. %
		Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
 VOLUME CHANGE POTENTIAL; NHBC Standards Chapter 4.2 Unmodified Plasticity Index
 NOTE: Modified Plasticity Index I'p = I_p x (% less than 425 microns/100)
 6% retained on 2mm sieve.
 Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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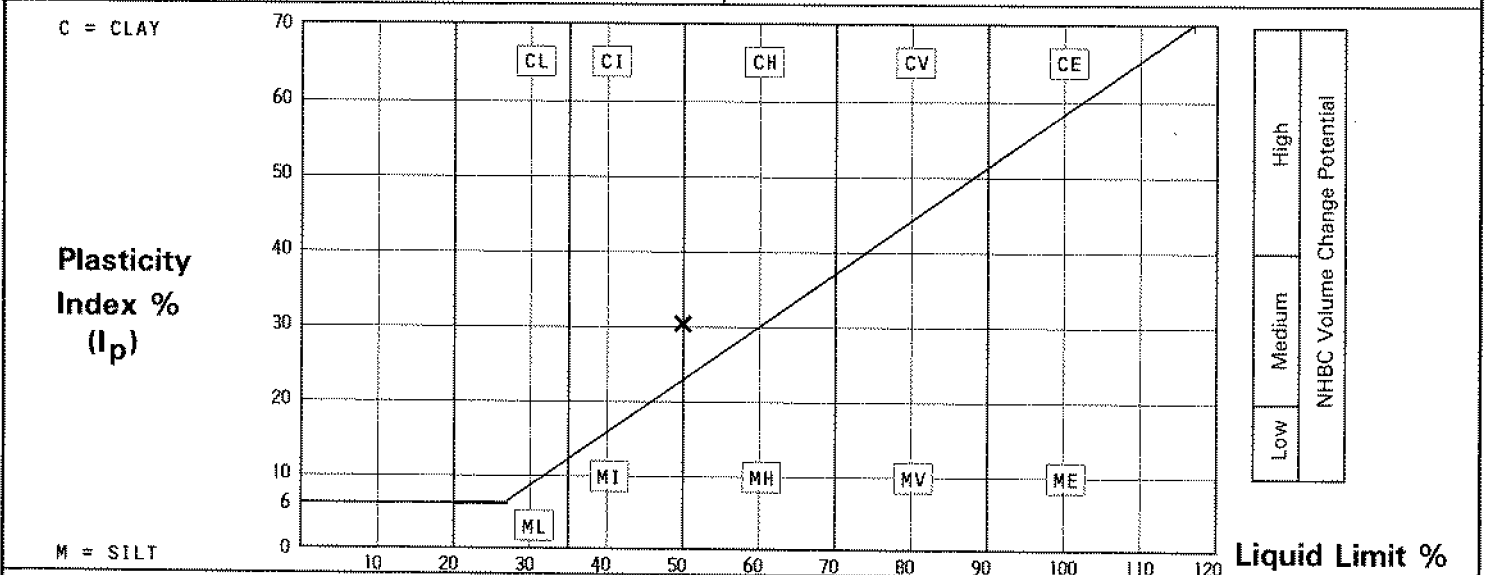
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DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole/ Pit No.	Depth m.	Sample	Moisture Content %	Description	Remarks
TP31	0.70	B1	20	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse chalk and rare flint	NHBC Modified I'p = 28% (Medium Volume Change Potential)

PREPARATION				Liquid Limit	50 %
Method of Preparation	Sieved Specimen			Plastic Limit	20 %
Sample retained 0.425 sieve	(Measured)	8 %		Plasticity Index	30 %
Corrected moisture content for material passing 0.425mm		22 %		Liquidity Index	0.07
Curing Time		72 Hours		Clay Content	Not analysed. %
				Derived Activity (PI/CC)	Not analysed.



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.4 & PART 2:1990:4.2

METHOD OF TEST : BS 1377:PART 2:1990:3.2, 4.4, 5.3, 5.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS : PLASTICITY CHART BS5930:1999:Figure 18
VOLUME CHANGE POTENTIAL: NHBC Standards Chapter 4.2 Unmodified Plasticity Index
NOTE: Modified Plasticity Index I'p = I_p × (% less than 425 microns/100)
6% retained on 2mm sieve.
Corrected moisture content and calculated liquidity index assume material greater than 0.425mm non porous. See BS1377:Part2:1990 Clause 3 Note 1.



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S28297

LABORATORY CALIFORNIA BEARING RATIO TESTS ADJUSTED FOR SEASONAL MOISTURE CONTENT CHANGES.

Due to seasonal variations of water content in near surface soils, many clients require CBR test samples to be subjected to sample preparation in the laboratory before testing. With Clay soils, liquid and plastic limits and moisture contents are carried out to classify them on material passing 20mm. The plastic limit is then compared against the moisture content with due regard to the proportion of material then retained on a 0.425mm sieve. If the moisture content is already 2% or more above the plastic limit, compaction may take place immediately. If this is not the case a calculated amount of water is added to the sample and cured for 24 hours before compaction. The samples are then cured for a further 24 hours before CBR tests are carried out at both the top and bottom of the sample.

CALCULATION OF ADJUSTED MOISTURE CONTENT FOR CBR TESTING

When a significant proportion of a basically clay material is >0.425mm, the adjusted moisture content (MC) for test shall be derived as follows:

Obtain test specimens for CBR, Limits and Moisture content from Material Passing 20mm. (If the sample is large enough a moisture content may also be carried out on a representative portion of the whole sample including material greater than 20mm, and reported for information)

The Plastic Limit (PL) for the fine fraction is obtained by testing material passing the 0.425mm sieve. A notional 5% Moisture Content is to be allowed for material passing 20mm, and retained on the 0.425mm sieve. The proportion passing the 0.425mm is obtained by the wet sieve preparation method.

If X% passes 0.425mm, (100-X) % is retained on 0.425mm and with the 5% MC required to be incorporated for the retained 0.425mm portion, the adjusted MC for test shall be at least:

$$\frac{X(PL+2) + (100-X)5\%}{100} \text{ for the sample passing 20mm}$$

CALCULATIONS:

S28297 – NW Haverhill.

TP24 B1 @ 0.20m

90% passing 0.425mm therefore X = 90

Plastic limit of specimen = 23.3%

Moisture content as received = 26.5%

$$\frac{90(23.3+2) + (100-90)5}{100} = 23.3\%$$

Therefore moisture content adjustment not required

Moisture Content after CBR Test (excluding +20mm) = 27%



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TP29 B1 @ 0.70m

92% passing 0.425mm therefore X = 92

Plastic limit of specimen = 17.9%

Moisture content as received (excluding +20mm) = 19.2%

1% of the original sample retained on 20mm sieve and excluded from tests

$$\frac{92(17.9+2) + (100-92)5}{100} = 18.7\%$$

Therefore moisture content adjustment not required

Moisture Content after CBR Test (excluding +20mm) = 19%

TP31 B1 @ 0.70m

92% passing 0.425mm therefore X = 92

Plastic limit of specimen = 20.3%

Moisture content as received (excluding +20mm) = 19.7%

1% of the original sample retained on 20mm sieve and excluded from tests

$$\frac{92(20.3+2) + (100-92)5}{100} = 20.9\%$$

Therefore moisture content adjustment required

Moisture Content after CBR Test (excluding +20mm) = 22%



TEST REPORT.

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S28297



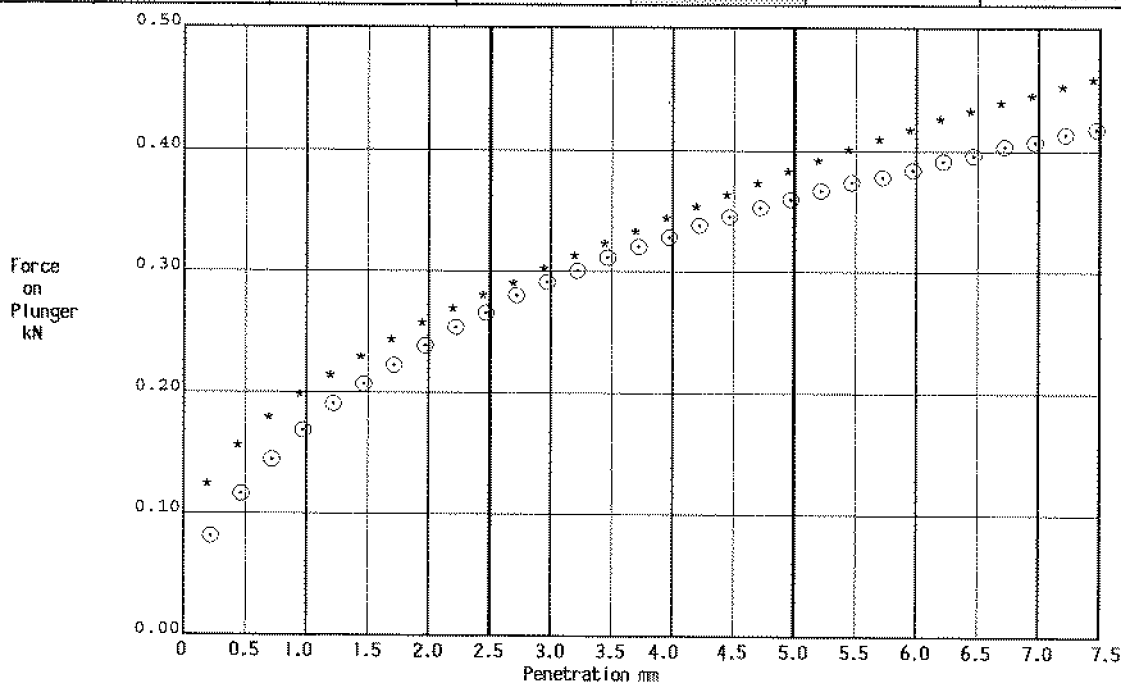
DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP24	0.20 -0.50	B1	Firm dark olive brown and light yellowish brown slightly gravelly slightly sandy CLAY with rare recently active roots. Gravel is fine and medium chalk	

Moisture Content % TOP: 27 BOTTOM: 27 Average: 27 Bulk Density Mg/m³ 1.93 Dry Density Mg/m³ 1.52

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 0
TOP *	2.5 5.0	0.28 0.38	2.1 1.9			METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
				2.1	2.1	
BOTTOM ⊙	2.5 5.0	0.27 0.36	2.0 1.8			Surcharge weights (kg) : 15
				2.0		SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



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DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

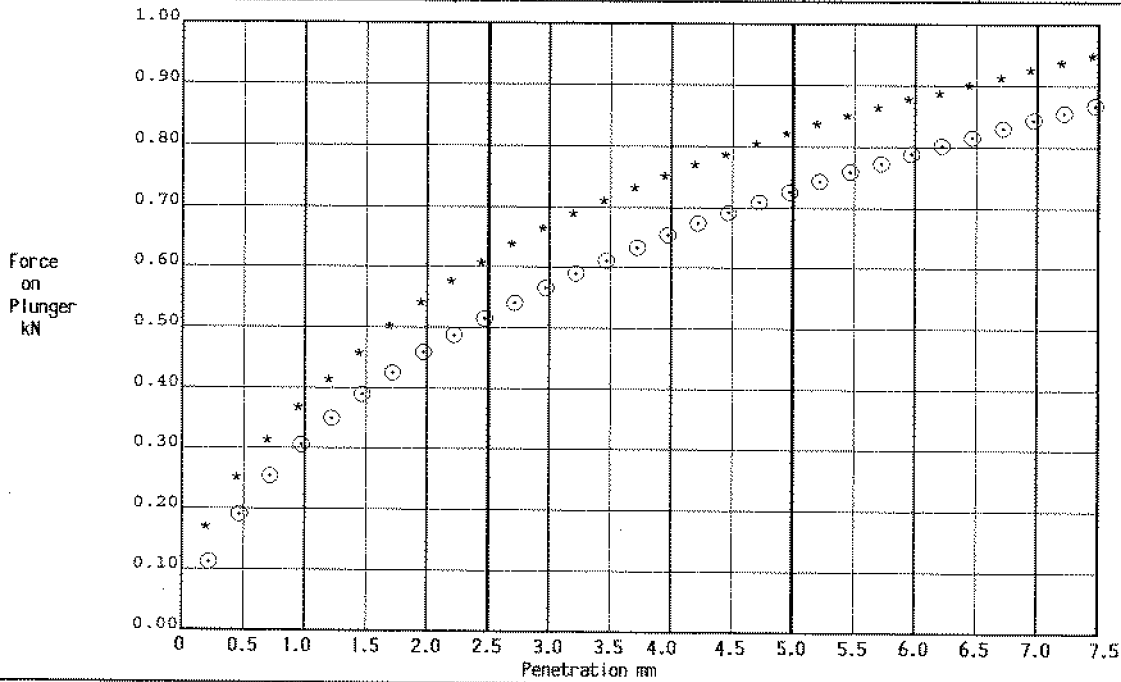
Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP29	0.70	B1	Stiff yellowish brown slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is fine to coarse chalk and rare flint	

Moisture Content % TOP: 19 BOTTOM: 19 Average: 19 Bulk Density Mg/m³ 2.05 Dry Density Mg/m³ 1.72

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 1
TOP *	2.5 5.0	0.60 0.82	4.5 4.1	4.5	4.2	METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
BOTTOM ⊙	2.5 5.0	0.52 0.73	3.9 3.6	3.9		

Surcharge weights (kg) : 15
SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.



TEST REPORT.

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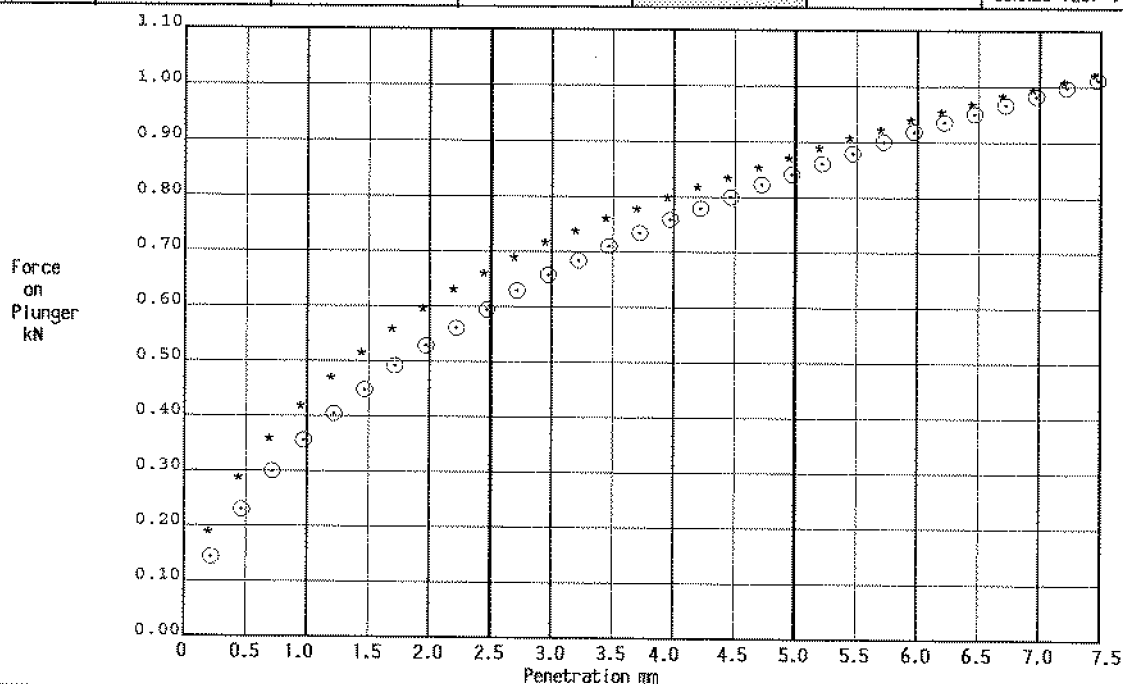
DETERMINATION OF CALIFORNIA BEARING RATIO (CBR)

Borehole/ Pit No./ Chainage	Depth m.	Sample	Description	Remarks
TP31	0.70	B1	Stiff mottled yellowish brown and grey slightly gravelly slightly sandy CLAY. Gravel is fine to coarse chalk and rare flint	

Moisture Content % TOP: 21 BOTTOM: 22 Average: 22 Bulk Density Mg/m³ 2.01 Dry Density Mg/m³ 1.66

CBR VALUES

Penetration mm	Force kN	Calculated CBR %	Corrected CBR %	Highest CBR %	Average CBR % (Shown if Top & Bottom CBR Values are within 10% of their Mean value)	% material retained on 20mm sieve and removed before test : 1
TOP *	2.5 5.0	0.65 0.86	4.9 4.3	4.9	4.7	METHOD OF PREPARATION BS 1377:Part 4:1990 7.2.4 2.5kg Rammer Method.
BOTTOM ⊙	2.5 5.0	0.60 0.84	4.5 4.2	4.5		
						Surcharge weights (kg) : 15
						SOAKED TEST : NO



METHOD OF PREPARATION: BS 1377:PART 1:1990:7.6.1 & 7.6.5 & PART 4:1990:7.2

METHOD OF TEST : BS 1377:PART 4:1990:7.4

TYPE OF SAMPLE KEY : U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

COMMENTS :

REMARKS TO INCLUDE : Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample. Oven drying temperature if not 105-110 deg C.

APPENDIX 11 – DRAWINGS

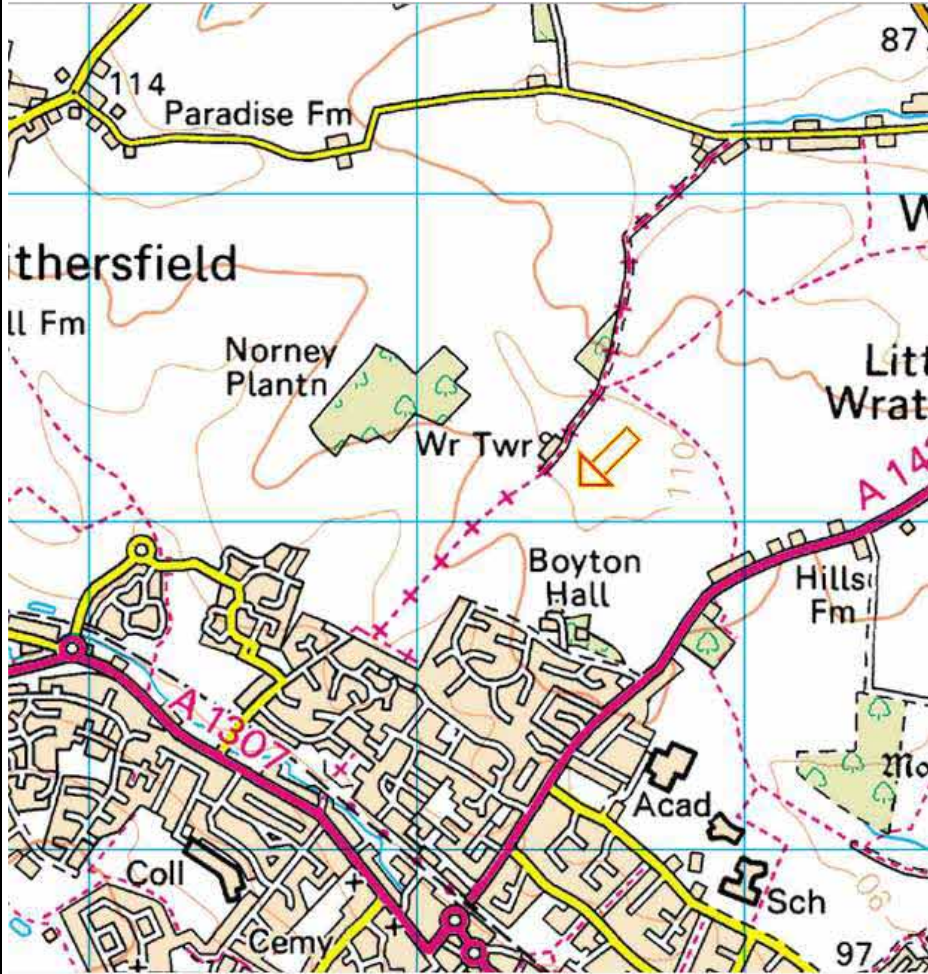
Site Location Plan – Drawing ref. 995,SI 001/Rev 0

Location Plan – Drawing ref. 995,SI 002/Rev 0


Proposed Development Plan – Drawing ref. 995,SI 003/Rev 0

Exploratory Hole Location Plan – Drawing ref. 995,SI 004/Rev 0

DRAFT



LEGEND:

 Site location



geosphere environmental ltd

Brightwell Barn, Ipswich Road,
 Brightwell, Suffolk, IP10 0BJ
 T 01603 298 076 F 01603 289 075
 E info@geosphere-environmental.co.uk

SITE
 Land to the north west of Haverhill, Suffolk

TITLE
 Site Location Plan
CLIENT
 c/o Savills

REPORT NO.
 995,SI
DRAWN BY
 SG

DRAWING NO.
 001 / Rev 0
CHECKED
 AD

DATE
 December 2014
SCALE
 Not to scale



LEGEND:

— Site boundary



geosphere environmental ltd

Brightwell Barn, Ipswich Road,
Brightwell, Suffolk, IP10 0BJ
T 01603 298 076 F 01603 289 075
E info@geosphere-environmental.co.uk

SITE
Land to the north west of Haverhill, Suffolk

TITLE
Site Plan
CLIENT
c/o Savills

REPORT NO.
995,SI
DRAWN BY
SG




DRAWING NO.
002 / Rev 0
CHECKED
AD

DATE
December 2014
SCALE
Not to scale

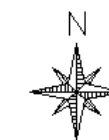


-  Primary Road Network
-  Public Open Space, including buffer areas, footways, footpaths and verges
-  Residential Areas (including access streets)
-  Local Centre
-  Primary School
-  Existing woodland areas



-  Density between 45 and 55 dwellings per hectares
-  Density between 35 and 45 dwellings per hectare
-  Below 35 dwellings per hectare

LEGEND:



geosphere environmental ltd

Brightwell Barns, Ipswich Road, Brightwell, Suffolk. IP10 0BJ
 T 01603 298 076 E info@geosphere-environmental.co.uk

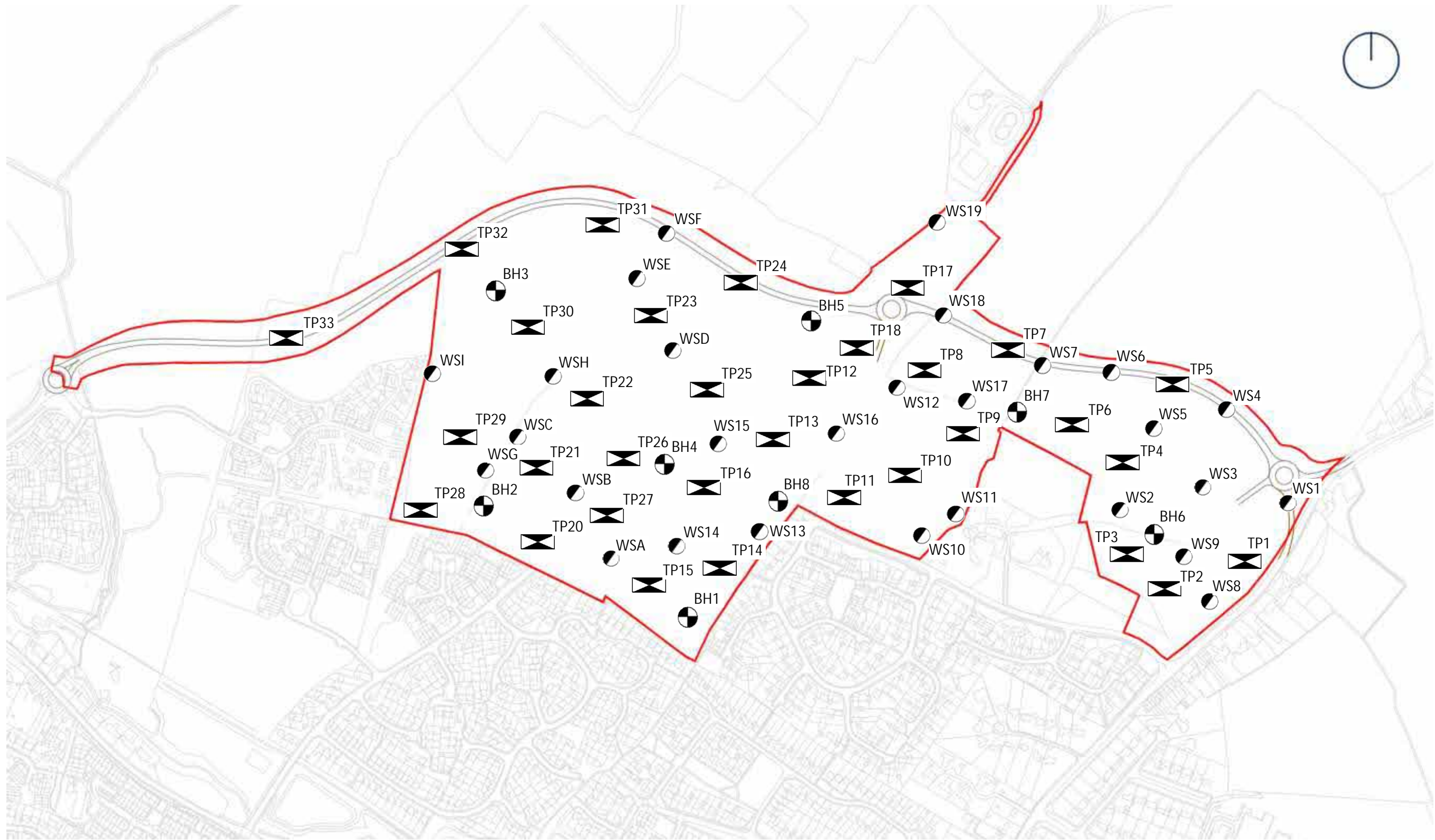
SITE
 Land to the north west of Haverhill, Suffolk

TITLE
 Proposed Development Plan
 CLIENT
 c/o Savills





REPORT NO.
 995,SI
 DRAWN BY
 SG

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 AD

DATE
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LEGEND:

-  Proposed borehole locations
-  Proposed Trial Pit Locations
-  Site Boundary
-  Proposed window sample locations



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 T 01603 298 076 E info@geosphere-environmental.co.uk

SITE
 Land to the north west of Haverhill, Suffolk

TITLE
 Exploratory Hole Location Plan
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 995,SI / Rev 0
 CHECKED
 AD

DATE
 December 2014
 SCALE
 Not to scale

APPENDIX 12 – PHOTOGRAPHS

DRAFT



Photograph 1

Looking east across the south west portion of the site



Photograph 2

Looking south west across the western most portion of the site



Photograph 3

Looking west at a wider view of the western portion of the site



Photograph 4

Looking north at the northern most portion of the site



Photograph 5

Looking east at a central portion of the site



Photograph 6

Looking north west at the southern most portion of the site



Photograph 5

Looking east at a portion of the site to the south east



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