



**Land off Duke's Park,  
Woodbridge**

Suffolk

**Ground Conditions Desk Study**

Final Report for



**November 2015**

Hydrock Ref: R/14106/001

This page has been left blank intentionally

**DOCUMENT CONTROL SHEET**

**Issued by:** Hydrock Consultants Limited  
3 Hawthorn Park  
Holdenby Road  
Spratton  
Northampton  
NN6 8LD  
  
Tel: 01604 842888  
Fax: 01604 842666  
www.hydrock.com

**Client:** GLADMAN DEVELOPMENTS LTD (GLADMAN)




**Project:** LAND OFF DUKE'S PARK, WOODBRIDGE

**Title:** GROUND CONDITIONS DESK STUDY REPORT

**Status:** FINAL

**Date:** NOVEMBER 2015

**Document Production Record**

Issue Number:	5	Name	Signature
Prepared		Rebecca Price MSci FGS	
Checked		Dr Scott Elliott BEng PhD	
Approved		Allan Bell BSc MSc FGS	

**Document Revision Record**

Issue Number	Date	Revision Details
1	26 <sup>th</sup> February 2014	Original issue.
2	28 <sup>th</sup> February 2014	Following updated Features Plan.
3	18 <sup>th</sup> July 2014	Updated Red Line Boundary.
4	5 <sup>th</sup> November 2015	Following updated Development Framework.
5	17 <sup>th</sup> November 2015	Minor amendments to text and updated study area boundary

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

This page has been left blank intentionally



## **CONTENTS**

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>2.0</b>	<b>PRELIMINARY INVESTIGATION (PHASE 1 STUDY).....</b>	<b>2</b>
<b>3.0</b>	<b>PRELIMINARY CONCEPTUAL SITE MODEL.....</b>	<b>11</b>
<b>4.0</b>	<b>DESK STUDY CONCLUSIONS.....</b>	<b>16</b>
<b>5.0</b>	<b>UNCERTAINTIES AND LIMITATIONS .....</b>	<b>18</b>
<b>6.0</b>	<b>RECOMMENDATIONS FOR FURTHER WORK .....</b>	<b>19</b>
<b>7.0</b>	<b>REFERENCES .....</b>	<b>20</b>

## **APPENDICES**

<b>Appendix A</b>	<b>DRAWINGS</b>
<b>Appendix B</b>	<b>SITE WALKOVER PHOTOGRAPHS</b>
<b>Appendix C</b>	<b>HISTORICAL ORDNANCE SURVEY MAPS</b>
<b>Appendix D</b>	<b>DESK STUDY RESEARCH INFORMATION</b>
<b>Appendix E</b>	<b>HYDROCK METHODOLOGY</b>

This page has been left blank intentionally

## Executive Summary and Conceptual Site Model

SITE INFORMATION AND SETTING	<b>Report Purpose</b>	Phase 1 desk study and preliminary risk assessment.
	<b>Client</b>	Gladman Developments Ltd (Gladman).
	<b>Site</b>	Land off Duke's Park, Woodbridge.
	<b>Site Location</b>	Off Top Street, Woodbridge, 10km northeast of Ipswich, Suffolk. The nearest postcode is IP12 4DD. The approximate National Grid Reference is 625694E, 247787N.
	<b>Current Land Use and Description</b>	<p>The land is predominantly of agricultural use. However, a car parking area with unwanted/clamped cars and dumped waste such as tyres, burnt household waste and vegetation is present in the west of the site and small allotment is present in the western corner.</p> <p>The site slopes to the south. The northern field has a steeper gradient than the south, with a track cut in along the centre of the site that runs from west to the east.</p> <p>A stream approximately 1.5m wide runs north to south in the east of the site.</p> <p>An electrical substation is present in the east of the site, alongside two disused wooden and corrugated metal structures. A borehole is present here, used for the abstraction of groundwater. Abandoned water pipes were observed in the buildings. Two underground tanks (unknown contents) are present in west of the site. One has its side open and visible along the steep slope in the centre of the site. Another is entirely underground and can be seen via an open manhole. Pipework is visible leading from the ground into the manhole.</p> <p>During the site walkover, soil was being excavated in the southwestern corner and was being moved to the southern boundary.</p>
	<b>Development</b>	The site is to be developed for residential properties and a small convenience store.
PHASE 1 (DESK STUDY)	<b>Site History</b>	<p>The historical map evidence indicates that the site has been in predominantly agricultural land use from the earliest mapping in 1881 onwards. A surface excavation (unspecified pit) has also been present on the site from the earliest 1881 mapping. In the 1960s several buildings were constructed in the location of this excavation. Only two of these buildings remained by 2012.</p> <p>A track has been present running from the western boundary to the centre of the site since the earliest mapping in 1881. There was an "in cut" north of the track in the 1980s, creating a short, steep slope.</p>
	<b>Unexploded Ordnance</b>	A desk based preliminary Unexploded Ordnance Risk Assessment indicates a low bomb risk. No further consideration of UXO is required.
	<b>Geology</b>	<p>The natural geology comprises:</p> <ul style="list-style-type: none"> <li>• <b>Kesgrave Subgroup</b> – fluvioglacial deposits of sands and gravels in the northeast of the site.</li> <li>• <b>Crag Formation</b> – of shelly sands in the north of the site.</li> <li>• <b>Thames Group (London Clay)</b> - of silts, clays and mudstone outcropping in the south of the site and underlying the Kesgrave and Crag deposits in the north.</li> </ul> <p>Made Ground is likely to be present beneath the developed area in the west.</p> <p>The above deposits are in turn underlain by the Cretaceous Upper Chalk.</p>
	<b>Mining/mineral extraction</b>	<p>A surface excavation (unspecified pit) was mapped on the earliest mapping in 1881. There were 2 sand pits in the vicinity of the site, worked in the 1800s. This indicates the excavation on site is related to sand deposits on site. Chalk mining is also known in the area. However, details of the on-site borehole recorded the Upper Chalk deposits as 20m below ground level so it is not thought that this surface excavation was related to chalk mining.</p>
	<b>Ground Stability</b>	<p>The Thames Group (London Clay) is likely to be of medium plasticity with potential for shrink/swell associated with changes in moisture content and in the vicinity of trees and vegetation.</p> <p>There are steep slopes on site, located along the track, in the location of the previous surface excavation and along the railway line. These may pose stability problems if changes in ground conditions occur.</p> <p>These risks will need to be assessed in a ground investigation.</p>

	<b>Hydrogeology</b>	<p>The Crag Formation is a Principal Aquifer. It provides water to a licenced groundwater abstraction on site for farming and domestic use.</p> <p>The Kesgrave Catchment is classified as a Secondary A Aquifer and the London Clay is classified as Unproductive Strata.</p> <p>There are 6 groundwater abstraction licenses for farming and domestic use and spray irrigation within 1000m of the site, located 300m and 320m southeast, 665m southwest, 690m and 730m northwest and 860m west of the site. The site is not within a Source Protection Zone.</p>	
	<b>Hydrology</b>	<p>A stream is present on site, flowing from the east of the site to the south. It drains to the River Fynn 500m south of the site. This flows into Martlesham Creek which then confluent with the River Deben.</p>	
	<b>Flood Risk</b>	<p>The site is in Flood Zone 1. No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regards to drainage and flooding.</p>	
	<b>Environmental Sensitivity</b>	<p>The site is within the Suffolk River Valleys, an Environmentally Sensitive Area.</p> <p>The site is within a Nitrate Vulnerable Zone (NVZ). However, this will only affect farming on site. Suffolk Coast and Heaths Area of Outstanding Natural Beauty is located 30m south of the site. Deben Estuary is located 350m south of the site and is a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) and a Ramsar site.</p>	
	<b>Radon</b>	<p>No radon protective measures are necessary according to current guidance.</p>	
<b>ASSESSMENT AND CONCLUSIONS</b>	<b>Geotechnical Hazards from Desk Study and Geotechnical Conclusions</b>	<p>Potential geotechnical hazards based on the expected ground conditions are listed below:</p> <ul style="list-style-type: none"> <li>• Uncontrolled Made Ground – excessive settlement (creep and inundation settlement or differential settlement of foundations, roads and infrastructure elements).</li> <li>• Shrink / swell of clay – settlement / heave of foundations when located within the influence of trees and vegetation.</li> <li>• Slope instability - a steep slope is present on site and along the southern boundary. Typical instability causes are inappropriate cutting at the toe or loading at the crest of marginally stable slopes or re-activation of relict slip surfaces.</li> <li>• Obstructions and buried foundations in the area of previous development restricting excavation.</li> </ul> <p>Based on the available desk study and walk-over information, the following geotechnical issues need to be addressed in exploratory investigation:</p> <ul style="list-style-type: none"> <li>• determine the depth and composition of Made Ground across the site;</li> <li>• determine the strata and soil strength profile beneath the site; and</li> <li>• assess the moisture content with depth.</li> </ul>	
	<b>Possible Contaminant Linkages of Moderate or Greater Risk Level - from Desk Study and Geo-environmental Conclusions</b>	<p>The possible pollutant linkages on an un-remediated site determined by desk study and walk-over are summarised below for risk levels of moderate or greater.</p>	
		Source(s)	◀ potential Impact on ▶ Receptor(s)
		PAH, petroleum hydrocarbons, metals and metalloids as a result of possible Made Ground associated with previous buildings, historical pit and infilled pond. Petroleum hydrocarbons associated with underground tanks on site. PAH associated with burnt waste in the west of the site.	Future occupiers Neighbours Groundwater Surface water Plant life
		PCB's associated with former transformers.	Future occupiers Groundwater
		Ground gas from putrescible materials in the Made Ground associated with previous buildings and surface excavation.	Future occupiers Neighbours Buildings

		<p>Based on historic land uses and its current operational use, the overall risk from land contamination at the site is considered to be <b>low</b> for the current development, and <b>moderate</b> for a re-developed site, but would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.</p> <p>It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.</p>
<b>FUTURE CONSIDERATIONS</b>	<b>Further Work</b>	<p>In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. Based on the current data, this site investigation is proposed to comprise:</p> <ul style="list-style-type: none"> <li>the excavation of trial pits to allow collection of samples for geotechnical and chemical analysis, to assess trench stability, over break potential and "diggability" and allow soil infiltration rate testing to be undertaken;</li> <li>the undertaking of soil infiltration rate testing;</li> <li>dynamic sampling to allow collection of samples for geotechnical and chemical analysis of shallow soils and allow in situ testing (SPTs) to be undertaken to assess density of the sands and gravel to allow foundation design, and allow the installation of gas and groundwater monitoring wells;</li> <li>cable percussive boreholes to allow collection of samples for geotechnical and chemical analysis of deeper soils and allow in-situ testing (SPTs) to be undertaken to assess density of the sands and gravel to allow foundation design, and allow the installation of gas and groundwater monitoring wells;</li> <li>gas and groundwater monitoring installations to allow gas concentrations and groundwater levels to be monitored;</li> <li>gas concentration and groundwater level monitoring;</li> <li>geotechnical testing of soils and rock; and</li> <li>contamination analyses of soil and groundwater.</li> </ul>

This Executive Summary forms part of Hydrock Consultants Limited report number R/14106/001 (Issue 5) and should not be used as a separate document.

This page has been left blank intentionally

## **1.0 INTRODUCTION**

### **1.1 Terms of Reference**

In February 2014, Hydrock Consultants Limited (Hydrock) was commissioned by Gladman Developments Ltd (Gladman) to undertake a desk study at Land off Duke's Park, Woodbridge, Suffolk.

The site covers approximately 12.67 ha and predominantly comprises agricultural land, with allotments and an area used for abandoned cars and dumped waste in the west of the site.

The proposed development is to comprise residential properties. No further information is available.

A Site Location Plan (Drawing 14106/D001) and a Site Features Plan (Drawing 14106/D002) are presented in Appendix A.

### **1.2 Objectives**

The objectives of this investigation are to assess the potential ground and groundwater conditions to provide an initial (desk based) assessment of potential contamination risks and geotechnical hazards.

### **1.3 Scope**

The scope of work for this commission comprises:

- a desk study and site walk-over reconnaissance to determine the nature of the site and its surroundings including current and former land uses, geology, hydrogeology, hydrology and geo-environmental data; and
- reporting on findings.

See Appendix E for detailed reporting methodology.

### **1.4 Provided Information**

The following has been provided to Hydrock by Gladman Developments Ltd (Gladman) for use in the preparation of this report:

- Gladman Developments Ltd. "Development Framework Plan".

## 2.0 PRELIMINARY INVESTIGATION (PHASE 1 STUDY)

A number of desk study sources have been used to assemble the following information, including a proprietary environmental data report which has been obtained for the site (dated 11<sup>th</sup> February 2014) and is presented in Appendix D. Please note this report supersedes reports referenced R/14458/001 Issues 1-4 and has been amended to compensate for changes in the study area boundary. It should be noted that the boundary lines depicted within the Historical Mapping, GroundSure and GeoInsight reports appended have not been altered to reflect this change. Please see drawing 14106.D002 Rev. C, for the correct study area boundary.

### 2.1 Site Referencing

The site is referenced in Table 2.1.

**Table 2.1: Site Referencing Information**

Item	Brief Description
Site name	Land off Duke's Park, Woodbridge.
Site location and grid reference	Off Top Street, Woodbridge, 10km northeast of Ipswich, Suffolk. The nearest postcode is IP12 4DD. The approximate National Grid Reference is 625694E, 247787N.

A site location plan is provided in Appendix A (Drawing 14106/D001).

### 2.2 Site Description and Walk-over Survey

A walk-over reconnaissance survey was undertaken on 18<sup>th</sup> February 2014 to confirm the findings of the desk study and visually assess any potential hazards and receptors. Photographs are presented in Appendix B. The basic description of the site conditions at the time of the walk-over survey is summarised in Table 2.2.

**Table 2.2: Site Description**

Item	Brief Description
Site access	Via Top Street, through a metal gate in the north of the site or via the buildings to the southwest of the site.
Land area	Approximately 12.67 ha.
Elevation, topography etc.	The elevation of the site is between approximately 30m OD in the north of the site to approximately 10m OD in the southeastern and southwestern corners of the site. The north of the site has steeper topography, with a track cut in to the slope along the centre of the site that runs west to east and creates a boundary between the northern and southern fields. Access from the north to the south of the site will be nearer the eastern boundary. The stream in the east of the site is located within a channel.
Site boundaries	The north of the site is bound by the B1438 and Top Street. The south of the site is bound by a railway line. The southeast of the site is bound by Sandy Lane. The northeast of the site is bound by residential properties on Duke's Park.



Item	Brief Description
Geomorphic features	<p>A stream runs in the east of the site from the north to the south and flows in a southerly direction.</p> <p>A steep slope is present running east to west in the centre of the site.</p> <p>The ground was excavated in the west of the site as a possible sand/gravel pit before 1881 with the hollow still present, never having been infilled.</p>
Present land use	<p>The land is predominantly of agricultural use. However, a car park area with unwanted/clamped cars and dumped waste such as tyres, burnt household waste and vegetation are present in the west of the site and a small allotment is present in the far west.</p> <p>A stream approximately 1.5m wide runs north to south in the east of the site and flows in a southerly direction.</p> <p>An electrical substation is present in the east of the site, alongside two disused wooden and corrugated metal buildings. A borehole is known to be present here, used for the abstraction of groundwater. Abandoned water pipes were observed in the buildings.</p> <p>Two possible disused underground tanks (of unknown contents) are present in the west of the site. One has its side open along the steep slope in the centre of the site. Another is entirely underground and can be seen via a manhole, which is open. Pipework is visible leading from the ground into the manhole.</p> <p>During the site walkover, soil was being excavated in the southwestern corner and was being moved to the southern boundary.</p> <p>There are several electricity pylons (wooden) on site with overhead electricity cables between (see Features Plan Appendix A).</p> <p>Despite the walkover being undertaken during a period of high rainfall, the site was relatively dry underfoot.</p>
Vegetation	<p>Grass and rough vegetation is predominant across the site. Trees are present along the majority of the site boundaries. Longer grass is present in places.</p>
General Site Sensitivity	<p>The site is situated between Woodbridge and Martlesham villages.</p> <p>The site is within Suffolk River Valleys, an Environmentally Sensitive Area.</p> <p>The site is within a Nitrate Vulnerable Zone (NVZ). However, this will only affect farming on site.</p> <p>Suffolk Coast and Heaths Area of Outstanding Natural Beauty is located 30m south of the site.</p> <p>Deben Estuary is located 350m south of the site and is a Site of Special Scientific Interest (SSSI), a Special Protection Area (SPA) and a Ramsar site.</p>
Surrounding Land	<p>Residential properties are located to the north and northeast of the site. An industrial area is present to the south of the site. A golf club is present to the northwest of the site, beyond that is farmland.</p>

## 2.3 Site History

A study of historical Ordnance Survey maps (Appendix C) has been undertaken to identify any former land uses at the site and surrounding areas which may have geotechnical or geo-environmental implications for the proposed development and is summarised in Table 2.3.

**Table 2.3: Key Features from Historical Mapping**

Map Edition and Scale	Key Features On Site	Key Features Off Site
1881 1:2,500 &	The site comprised several fields. Trees line	A railway line runs along the southern site boundary.

Map Edition and Scale	Key Features On Site	Key Features Off Site
1:10,560	<p>these field boundaries and the northern and eastern boundaries of the site.</p> <p>A track runs from the western boundary to the centre of the site. Rough grass is shown along the track.</p> <p>A stream springs in the east of the site, running to the south through a pond.</p> <p>An unspecified pit is present in the west of the site.</p>	<p>Sandy Lane runs along the southeastern site boundary.</p> <p>A main road runs along the northern site boundary.</p> <p>A well is present 10m west of the site.</p> <p>Sluice Farm is present 50m south of the site. Martlesham is present 50m west of the site and 250m southwest of the site.</p> <p>Residential properties of Woodbridge are present 250m northeast of the site.</p> <p>A sand pit is noted on Broom Hill 300m east of the site.</p> <p>The River Finn (later noted as the River Fynn) is present 400m south of the site, flowing to the east into Martlesham Creek 500m southeast of the site. Saltings are mapped either side of the creek.</p> <p>An old sand pit is present 600m northwest of the site.</p>
1902 – 1903 1:2,500 & 1:10,560	Trees are noted on the eastern site boundary and around the unspecified pit.	<p>A Nursery is present 200m north of the site.</p> <p>The sand pit 300m east of the site is no longer noted.</p>
1927 – 1928 1:2,500 & 1:10,560	<p>The central field running through the site is noted as rough grassland with trees.</p> <p>A building has been constructed just east of the unspecified pit.</p>	<p>A nursery is mapped 10m southeast and 10m north of the site.</p> <p>The wells in Martlesham are no longer mapped.</p> <p>Mudflats are mapped along Martlesham Creek 400m south of the site.</p>
1938 1:10,560	No significant change.	Residential properties of Woodbridge have been constructed 500m northeast of the site.
1953 1:10,560	Rough grass is no longer noted on site.	Rough grass and woodland are mapped northeast of the site.
1968 – 1971 1:2,500 & 1:10,000	<p>A track has been constructed in the south of the site and along the stream.</p> <p>Piggeries have been constructed on the southwestern site boundary.</p> <p>A group of buildings have been constructed in the unspecified pit. It is unclear whether these are associated with the piggery.</p> <p>A drain has been constructed in the south of the site. The pond in the east of the site has likely been infilled.</p>	<p>Two cottages have been constructed along the eastern site boundary.</p> <p>Piggeries have been constructed 100m south of the site.</p> <p>A sewage works has been constructed 100m southeast of the site.</p> <p>Duke's Hall has been constructed in the woodland 100m northeast of the site.</p> <p>Woodbridge residential development has been constructed 250m northeast of the site.</p>
1989 – 1992 1:2,500 & 1:10,000	<p>The track and drain in the south of the site have been removed. A track has been constructed from the northern boundary to the central track.</p> <p>Several more buildings have been constructed in the area of the unspecified pit.</p> <p>The buildings along the southern boundary are no longer noted as piggeries.</p> <p>Symbols indicate that the track traversing across the centre of the site was cut into the slope of the high side and may have been filled on the low side.</p>	<p>Residential properties have been constructed to the east of the site.</p> <p>The main road along the northern boundary has been expanded (now labelled the B 1438).</p>
1994 1:2,500	Several buildings have been removed from the area of the pit.	n/a
2002 1:10,000	The track from the northern boundary to the central boundary has been removed.	<p>Residential development has been constructed 10m north of the site.</p> <p>The piggeries 100m south of the site are no longer noted and</p>

Map Edition and Scale	Key Features On Site	Key Features Off Site
		several further buildings have been constructed in the area. A football ground has been constructed 200m north of the site.
2012 1:2,500 & 1:10,000	Only two buildings are present in the west of the site. The buildings along the southwestern boundary have been demolished and larger buildings have replaced them.	No significant change.

In summary, the map evidence indicates that the site has predominantly been in agricultural land use from the earliest mapping in 1881. A surface excavation (unspecified pit) has also been present on the site from the earliest mapping in 1881. Surface evidence suggests it was not infilled but shallow infill could have occurred. In the 1960s several buildings (possibly associated with the piggery) were constructed in the location of the excavation and several more were constructed in the 1980s. In the 2000s most of the buildings were demolished, just leaving two structures in this area.

A track has been present running from the western boundary to the centre of the site since the earliest mapping in 1881. The track was cut into the slope on the high side to the north of the track forming a steeper slope about 3m high. It is possible that the cut material may have been used to fill the lower southern side of the track. A track was constructed in the south of the site, with an associated drain, in the 1960s and they were both removed in the 1980s. A track was constructed in the 1980s from the northern boundary to the central track and was removed in the 1990s.

A stream has been present in the east of the site from the earliest mapping in 1881. It flowed through a pond in the central east of the site until the 1960s when the pond was no longer annotated suggesting that it had likely been infilled.

A piggery was constructed on and adjacent to the southwestern boundary of the site from the 1960s to the 1980s. In the 2000s several of these buildings were demolished and new buildings constructed in their place, which now forms part of the Bridge Business Centre.

A railway line along the southern boundary and two roads along the eastern and northern boundaries have been present since the earliest mapping in 1881. The road along the northern boundary was expanded in the 1980s.

Martlesham has been present to the southwest of the site since before the earliest mapping in 1881. Woodbridge residential development expanded to within 10m of the north of the site in the 1990s.

## 2.4 Unexploded Ordnance / Bombs

In general accordance with CIRIA report C681 (Stone *et al* 2009), a desk based preliminary Unexploded Ordnance Risk Assessment has been acquired for the site from BACTEC and is included in Appendix D. This Indicates:

- That although there is a WWII airfield within 5km of the site the risk from British unexploded ordnance is low; and
- The risk from air-delivered unexploded bombs is also low.

In summary the preliminary assessment indicates an overall low risk from Unexploded Ordnance (UXO) and this suggests no further consideration of UXO is required.

## 2.5 Geology

The general geology of the site area is shown on the 1:50,000 geological map of Ipswich (Sheet 207) and is summarised in Table 2.4.

**Table 2.4: Geology**

Location	Age	Stratigraphic Name	Description
On site (north)	Quaternary	Kesgrave Catchment Subgroup	Encompasses fluvial, lacustrine and organic deposits of the pre-diversionary River Thames, and the pre-glacial soils developed on such deposits. Most of the surviving deposits are fluvial gravels.
	Pliocene	Crag Formation	Coarse-grained, poorly sorted, cross-bedded, abundantly shelly sands and well sorted fine- to medium-grained micaceous, glauconitic, locally shelly sands.
On site (outcrops in the south)	Eocene	Thames Group (London Clay)	Silty clay/mudstone, sandy silts and sandy clayey silts of marine origin.
On site (subcrops beneath the entire site)	Palaeocene	Woolwich and Reading Beds Formation	Glauconitic sands at base (Bottom Bed), overlain by grey clays and sands with brackish fauna (Woolwich Beds), and interleaved red and variegated clays and sands (Reading Beds).
On Site (subcrops beneath the entire site)	Cretaceous	Upper Chalk	Chalk, with or without flint and discrete limestone, marl (calcareous mudstone), sponge, calcarenite, phosphatic, hardground and fossil-rich beds.

River Terrace Deposits are shown as superficial deposits mainly to the south of the site, and may locally extend into the site itself. Due to the previous development of the site some Made Ground is anticipated across the site area, with potentially deep Made Ground infilling the previous buildings, pit and pond on site.

## 2.6 BGS Borehole Archive

A borehole log (from a water well) from the BGS archive has been obtained on site, of TM24NE35 (NGR 625820, 247770). This recorded Topsoil to 0.8m below ground level (bgl), over sand and gravel (superficial Kesgrave Subgroup of Crag Formation) to 2.1m bgl, over London Clay and Woolwich and Reading Beds (of brown and blue to red occasionally sandy clays) to 20.7m bgl, over the Upper Chalk Group to 52m bgl.

## 2.7 Mining or Mineral Extraction

A surface excavation (unspecified pit) was mapped on the earliest mapping in 1881. Buildings were constructed in this excavation in the 1960s and 1980s and some were demolished to leave two small buildings adjacent to the allotments.

There were two sand pits in the vicinity of the site, worked in the 1800s. This indicates the excavation on site is related to sand deposits on site. Chalk mining is also known in the area. However, this on-site borehole recorded the chalk as 20m below ground level so it is not thought that this excavation was related to chalk mining.

## 2.8 Ground Stability

The Thames Group (London Clay) is likely to be of medium plasticity with potential for shrink/swell associated with changes in moisture content and in the vicinity of trees and vegetation.

There are steep slopes on site, located where the track was cut in along the centre of the site, in the location of the previous surface excavation and along the railway line. Made Ground may have been deposited along the road from the excavated material to create the in cut. These may pose stability problems if changes in ground conditions occur.

These risks will need to be assessed in a ground investigation.

## 2.9 Hydrogeology

The aquifer designations given in Table 2.5 are based on the Environment Agency interactive aquifer designation map. Additional information on the hydraulic characteristics of the geological units has been abstracted from Jones *et al* (2000).

**Table 2.5: Hydraulic Characteristics of Strata**

Stratum	Aquifer Designation	Hydraulic Characteristics
Kesgrave Catchment Subgroup	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.
Crag Formation	Principal	High intergranular permeability deposits, in hydraulic continuity with the Upper Chalk when unconformable in the west of the outcrop or providing a water resource when the Chalk is saline and confined beneath the London Clay.
Thames Group (London Clay)	Unproductive	Rock layers with low permeability that have negligible significance for water supply or river base flow.

The site is located in an area where the Upper Chalk (Principal Aquifer) is confined beneath the Thames Group and may be saline. As such, the Crag Formation Aquifer may be used for local water demands such as agricultural and horticultural use. The unconsolidated nature and poor sorting of the deposits restrict development as a groundwater resource.

Reference to the Environment Agency website shows the following groundwater body beneath the site and the current chemical status (Table 2.6).

**Table 2.6: Groundwater Body**

Category	Label / Status
Waterbody ID	GB40501G400600
Waterbody Name	Waveney and East Suffolk Chalk & Crag
River Basin District	Anglian
Current Quantitative Quality	Good
Current Chemical Quality	Poor
Upward Chemical Trend	No
2015 Predicted Quantitative Quality	Good
2015 Predicted Chemical Quality	Poor
Overall Risk	At Risk
Protected Area	Yes

The site is not within a Source Protection Zone (SPZ).

There are 7 licensed groundwater abstractions from the Crag Formation Aquifer within 1000m of the site. They are:

- Located on site for general farming and domestic use. The licence number is 7/3/07/\*G/0049 and the start date was 1/11/1998.
- Located 300m and 320m southeast of the site at Creek Farm, Woodbridge for spray irrigation. The licence number is 7/35/10/\*G/0018 and the start date was 1/2/1966.
- Located 665m southwest of the site at well near Martlesham for general farming and domestic supply. The licence number is 7/35/07/\*G/0043 and the start date was 1/8/1992.
- Located 690m and 730m northwest of the site at Seckford Hall, Great Bealings for spray irrigation. The licence number is 7/35/07/\*G/0042 and the start date was 1/10/1991.
- Located 860m west of the site at Cherry Tree Farm, Great Bealings for general farming and domestic use. The licence number is 7/35/07/\*G/0005 and the start date was 1/1/1966.

## 2.10 Hydrology and Flooding

The surface water features in the vicinity of the site are listed in Table 2.7 and, where appropriate, are marked on the Site Zonation Plan in Appendix A.

**Table 2.7: Surface Water Features**

Feature	Location Relative to Site
Unnamed stream	A stream issues in the east of the site running south. It is culverted beneath the railway and

Feature	Location Relative to Site
	flows into a series of drain to the south of the site, ultimately into the River Fynn.
Drains	Many drains are present 250m south of the site in the area south of the sluice farm. These drain into the River Fynn.
River Fynn	This flows from 500m west of the site to Martlesham Creek 500m southeast of the site.
Martlesham Creek	Located from 500m southeast of the site. This forms the confluence of the River Fynn and River Deben which ultimately flows into the North Sea 12km south of the site.

There are 6 surface water abstractions within 1000m of the site. They are:

- Located 100m northeast and 160m east of the site at Marsh Drain, Sandy Lane for spray irrigation. The licence number is 7/35/10/\*S/0067 and the start date was 18/4/1967.
- Located 100m, 180m and 220m west of the site at Stream north of railway, Martlesham for general farming and domestic use. The licence number is 7/35/07/\*S/0025 and the start date was 1/3/1967.
- Located 680m west of the site at the River Fynn for spray irrigation. The licence number is 7/35/07/\*S/0050 and the start date was 1/2/2001.
- Located 680m west of the site at the River Fynn for spray irrigation. The licence number is 7/35/07/\*S/0044 and the start date was 1/10/1992.

The site is in Flood Zone 1<sup>1</sup>, with low probability of flooding.

No further consideration of flood risk is undertaken in this report. Specialist flood risk advice should be sought with regards to drainage and flooding.

## 2.11 Waste Management and Hazardous Substances

There are no waste management sites recorded within 1500m of the site.

There are 8 Licensed Discharge Consents within 500m of the site. They are:

- Located 90m and 120m west of the site at Hideaway Brock lane, Martlesham for final/treated effluent into a tributary of the River Fynn. The permit number is PRENF00342 and the most recent issue date was 23/1/1992.
- Located 160m and 380m south of the site at Woodbridge Sewage Treatment Works for final/treated effluent into Martlesham Creek. The permit numbers are ASETS1250, with the latest issue date of 1/4/2009, AW4TS205X revoked on 14/8/1992 and AW4TS209X issued on 23/9/1960.

<sup>1</sup> Note that the probabilities of flooding and the risk designations differ between the Environment Agency and the Technical Guidance to the National Planning Policy Framework, DCLG March 2012) and that the published flood map only relates to flooding from rivers, estuaries and the sea and does not include other potential sources such as surface water, groundwater, sewers, canals and reservoirs. Note also that the presence on the map of flood defences, or areas benefiting from flood defences, should not be taken to imply that a proposed development in these areas is acceptable, see Appendix E for details.

- Located 160m west of the site at Home Meadows Nurseries for agriculture arable farming into the groundwater. The permit number is GWELF50507 and the effective date was 1/4/1999.
- Located 400m south of the site at Martlesham Pumping Station for sewer storm overflow into the River Fynn. The permit numbers are ASEN2160 with a latest issue date of 3/9/2010 and AW4NF1828 issued on 24/2/1989.
- Located 410m southeast of the site at Creek Farm Sewage Treatment Works for final/treated effluent into Martlesham Creek. The permit number is AW4NF226X and was revoked on 14/8/1992.

There are no records relating to the storage of radioactive materials within 1km of the site.

There are no records of prosecutions relating to authorised processes in the vicinity of the site.

There is no Local Authority Pollution Prevention and Controls, COMAH sites, NIHHS sites, explosive sites, or Planning Hazardous Substance consents or enforcements within 1km of the site.

## 2.12 Natural Soil Chemistry

Information contained within the environmental data report (Appendix D) gives indicative natural concentration values (estimated) for the natural soils at the site for a selection of Contaminants of Potential Concern (CoPC). These have been reproduced in Table 2.8 below.

Table 2.8: Natural Soil Chemistry

CoPC	Arsenic	Cadmium	Chromium	Lead	Nickel
Estimated Concentrations (mg/kg)	<15	<1.8	20 – 40	<150	<15

## 2.13 Radon

Reference to the *Indicative Atlas of Radon in England and Wales* (Miles *et al* 2007) indicates that the site is not in a Radon Affected Area.

Reference to the Annex A maps in BR 211 (Scivyer 2007) indicates that no radon protection is required for new buildings at this location in line with current guidance.



### **3.0 PRELIMINARY CONCEPTUAL SITE MODEL**

#### **3.1 Preliminary Ground Model**

The findings of the Phase 1 investigation indicate that the site predominantly comprises agricultural land. However, an area comprising allotments and dumped waste is present in the west of the site. Two underground tanks were present in the west of the site. One was empty, observed through an open manhole, and the other is unknown. A borehole is present in the east of the site, used for the abstraction of groundwater. Two structures are in the location of the borehole, with abandoned water pipes in them. This indicates the borehole is no longer in use. An electricity substation is present in this area. Overhead cables run over the site, with several wooden pylons on the site.

A stream runs to the south in the east of the site to the River Fynn 500m south of the site. Until the 1960s it ran through a pond in the central east of the site, when it was likely infilled as the stream was subsequently not mapped in this location. The site slopes to the south, with a steep slope in the centre of the site. Drainage is likely to flow to the south. South of the railway line are many drains which flow to the River Fynn. This flows east to Martlesham Creek where it confluences with the River Deben.

The natural geology comprises superficial deposits of the Kesgrave Subgroup (sands and gravels) in the northeast of the site. These overlie the Crag Formation (of shelly sands) in the north of the site. In the south of the site the London Clay (of silts, clays and mudstone) outcrops. A borehole on site records the Reading and Woolwich Formation beneath the London Clay. Beneath these formations lies the Upper Chalk.

The Crag Formation is a Principal Aquifer. It provides water to a groundwater abstraction on site for farming and domestic use. The Kesgrave Catchment is classified as a Secondary A Aquifer and the Thames Group is classified as Unproductive Strata. There are 6 other groundwater abstraction licenses for farming and domestic use and spray irrigation within 1000m of the site, located 300m and 320m southeast, 665m southwest, 690m and 730m northwest and 860m west of the site. The site is not within a Source Protection Zone.

Historical sand/gravel pits have been excavated on the site (unknown source). Infilling may have taken place.

The proposed development is to comprise residential properties. No further details are available.

The main details of the site and potential hazards are summarised on the Site Features Plan (Appendix A).

#### **3.2 Preliminary Exposure Model**

The preliminary exposure model is used for geo-environmental hazard identification and establishing potential contaminant linkages in line with the Statutory Guidance to Part 2A of the Environmental Protection Act 1990, also known as 'potential pollution linkages' in the Model

Procedures of CLR11 (Environment Agency, 2004). This is based on the contaminant-pathway-receptor linkage approach.

### **3.2.1 Potential Contaminants**

For the purpose of this assessment the potential contaminants have been separated according to whether they are likely to have originated from on-site or off-site sources.

#### ***Potential on-site sources of contamination***

- PCBs associated with former transformers.
- Made Ground and pit backfill possibly including metals, metalloids, asbestos, PAH and petroleum hydrocarbons.
- Petroleum hydrocarbons associated with underground tanks on site.
- PAHs associated with the burnt waste on site.
- Ground gases (gases carbon dioxide and methane) from organic materials present in the Made Ground.
- Elevated metals within natural soils.
- Pesticides from agricultural use.

#### ***Potential off-site sources of contamination***

- Off-site backfilled sandpits, as a potential source of ground gases.

### **3.2.2 Potential Receptors**

- Humans (neighbours, site end users).
- Development end use (buildings, utilities and landscaping).
- Groundwater: Principal aquifer status of the Crag Formation.
- Surface water: onsite stream draining to the River Fynn.

It should be noted that health and safety risks to Contractors have not been assessed during these works and will need to be considered separately.

### **3.2.3 Potential Pathways**

- Humans: ingestion, skin contact, inhalation of dust and outdoor air.
- Buildings: methane ingress via permeable soils and/or construction gaps.
- Plant life: root uptake.
- Underlying groundwater: migration of contaminant via leachate dispersion through the unsaturated zone in the superficial deposits.
- Underlying groundwater: migration of contaminant into the Crag Formation aquifer.
- Surface water: overland flow.

- Surface water: drainage discharge.
- Surface water: base flow from groundwater.

### **3.2.4 Summary of Potential Contaminant Linkages**

Table 3.1 lists the plausible contaminant linkages which have been identified. These are considered as potentially unacceptable risks in line with guidelines published in CLR 11 and additional risk assessment is required.

Linkages have been assessed in general accordance with guidance in CIRIA Report C552 (Rudland *et al* 2001) but with the addition of a 'no linkage' category. More details are given in Appendix E including descriptions of typical examples of probability and consequences.

It should be noted that whilst the risk assessment process undertaken in this report may identify potential risks to site demolition and redevelopment workers, consideration of occupational health and safety issues is beyond the scope of this report and need to be considered separately in the Construction Phase Health and Safety Plan.

This page has been left blank intentionally

**Table 3.1: Exposure model – preliminary risk assessment of source-pathway-receptor contaminant linkages**

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments	
<b>PAH, petroleum hydrocarbons, metals and metalloids</b> as a result of possible Made Ground associated with previous buildings, the historical pit and infilled pond. <b>Petroleum hydrocarbons</b> associated with underground tanks on site. <b>PAH</b> associated with burnt waste in the west of the site.	Ingestion, inhalation or direct contact.	End users of the site.	Likely.	Medium.	Moderate Risk.		-
	Inhalation of fugitive dust.	Neighbours.				Given the known site history it is considered likely that Made Ground is locally present on site. The nature of the Made Ground is unknown and will need to be confirmed by intrusive ground investigation and chemical testing.	Residential properties are located northeast of the site and occupiers might be affected by airborne migration of dust, particularly during development.
	Root uptake.	Vegetation.					-
	Leaching through unsaturated zone.	Groundwater and abstractions.					A Principal Aquifer is present on site.
	Surface overland flow, drainage discharge and base flow from groundwater.	Surface water and possible abstractions.	Low Likelihood.	Medium.	Low Risk.	Risk needs to be quantified by laboratory testing as part of intrusive ground investigation.	The site is likely to drain to the River Fynn to the south of the site, which would be vulnerable to any contaminants draining from the site and would provide an effective migration path. However, it is assumed any residual discharge would be low in volume and diluted.
<b>PCB's</b> associated with former transformers.	Ingestion, inhalation or direct contact.	End users of site.	Low Likelihood.	Severe.	Moderate Risk.	High concentrations may be present in the topsoil, around the electrical substation on site. Further ground investigation and chemical testing is needed.	
	Leaching through unsaturated zone.	Groundwater and abstractions.				A Principal Aquifer and licenced groundwater abstraction are present on site.	
	Surface overland flow, drainage discharge and base flow from groundwater.	Surface water and possible abstractions.		Medium.	Low Risk.	The site is likely to drain to the River Fynn to the south of the site, which would be vulnerable to any contaminants draining from the site and would provide an effective migration path. However, it is assumed any residual discharge would be low in volume and diluted.	

Source(s)	Possible Pathway(s)	Receptor(s)	Probability	Consequence	Risk Level	Comments	
<b>Ground gas</b> from putrescible materials in the Made Ground associated with previous buildings, the surface excavation and infilled pond and off-site backfilled sand pits.	Migration through soils or groundwater to indoor air.	End users of new buildings.	Low Likelihood.	Severe.	Moderate Risk.	Ground gases may be generated from any biodegradable materials in the Made Ground on site. Gas monitoring and risk assessment are required to confirm this assessment.	
		Neighbours.					
		New buildings.					
		Neighbouring buildings.					
<b>Possible elevated levels of metals and metalloids</b> in the natural soils.	Ingestion, inhalation or direct contact.	End users of the site.	Low Likelihood.	Medium.	Low Risk.	Levels of metals in the natural soils may exceed the GAC. Risk needs to be quantified by laboratory testing as part of intrusive ground investigation.	-
	Inhalation of fugitive dust.	Neighbours.					Residential properties are located northeast of the site and occupiers might be affected by airborne migration of dust, particularly during development.
	Root uptake.	Vegetation.					-
	Leaching through unsaturated zone.	Groundwater and abstractions.					A Principal Aquifer and licenced groundwater abstraction are present on site.
	Surface overland flow, drainage discharge and base flow from groundwater.	Surface water and possible abstractions.					The site is likely to drain to the River Fynn to the south of the site, which would be vulnerable to any contaminants draining from the site and would provide an effective migration path. However, it is assumed any residual discharge would be low in volume and diluted.
<b>Pesticides</b> associated with possible agricultural site use.	Ingestion, inhalation or direct contact.	End users of the site.	Low Likelihood.	Mild.	Low Risk.	The presence of pesticides from agricultural use is possible and will need to be confirmed by ground investigation and chemical testing.	
	Inhalation of fugitive dust.	Neighbours.					
	Leaching through unsaturated zone.	Groundwater and possible abstractions.					
	Surface overland flow and discharge drainage.	Surface water and possible abstractions.					

## 4.0 DESK STUDY CONCLUSIONS

### 4.1 Geotechnical Conclusions

Potential geotechnical hazards based on the expected ground conditions are listed below:

- Uncontrolled Made Ground – excessive settlement (creep and inundation settlement or differential settlement of foundations, roads and infrastructure elements).
- Shrink / swell of clay – settlement / heave of foundations when located within the influence of trees and vegetation.
- Slope instability - a steep slope is present on site and along the southern boundary. Typical instability causes are inappropriate cutting at the toe or loading at the crest of marginally stable slopes or re-activation of relict slip surfaces.
- Running sands/difficult excavation due to granular soils and the potential for shallow groundwater.
- Attack of buried concrete by aggressive ground conditions – the development site may contain unknown Made Ground and potentially sulfate bearing soils.
- Obstructions and buried foundations in the area of previous development restricting excavation.

Based on the available desk study and walk-over information, the following geotechnical issues need to be addressed in exploratory investigation:

- determine the depth of Made Ground across the site;
- determine the strata and soil strength profile beneath the site; and
- assess the sulfate concentration with depth.

### 4.2 Geo-environmental Conclusions

Table 3.1 is a summary of the geo-environmental risks identified and the overall risk associated with the site has been designated using qualitative judgement according to the risk categories given in Table 4.1.

Based on historic land uses and its current operational use, the overall risk from land contamination at the site is considered to be **low** for the current development, and **moderate** for a re-developed site, but would need to be confirmed by appropriate intrusive investigation, testing and assessment of the results of the investigation.

It is considered that it is unlikely that the site would be classified as Contaminated Land under Part 2A of the EPA 1990.

**Table 4.1: Assessed Overall Risk Categories for the Site from Land Contamination**

<b>Risk Category</b>	<b>Definition</b>
Very High Risk	A significant contaminant linkage, including actual evidence of significant harm or significant possibility and significant harm, is clearly identifiable at the site (e.g. from visual or documentary evidence) under current conditions, with potential for legal and/or financial consequences for the site owner or other Responsible Person. Remediation advisable based on acute impacts being likely. Immediate action should be considered.
High Risk	A contaminant linkage is identifiable at the site under current and future use conditions. Although likely, there is no obvious actual evidence of significant harm or significant possibility and significant harm under current conditions. Extent of risk is therefore subject to confirmation by investigation and risk assessment and most likely to be deemed significant. Realisation of the risk is likely to present a substantial liability to the site owner or other Responsible Person. Remediation required for redevelopment and may also be required under Part 2A for existing receptors.
Moderate Risk	A contaminant linkage is identifiable at the site under current and future use conditions. However, it is not likely to be a significant linkage under current conditions. It is either relatively unlikely that any such harm would be severe, and if any harm were to occur it is more likely, that the harm would be relatively mild. Actual extent of risk subject to confirmation by additional investigation and risk assessment and most likely to lie between no possibility of harm (under current conditions) and significant possibility of significant harm (under conditions created by new use). Remediation may be required for redevelopment.
Low Risk	Potential pathways and receptors exist but history of contaminative use or site conditions indicates that contamination is likely to be of limited extent and below the level of possibility of harm. It is unlikely that the site owner or other Responsible Person would face substantial liabilities from such a risk. Precautionary investigations and risk assessment advisable on change of use. Any subsequent remedial works are likely to be relatively limited.
Very Low Risk	No contaminant linkage likely to exist under current or future conditions, but this cannot be completely discounted. If harm is realised, it is likely at worst to be mild or minor. Site not capable of being determined under Part 2A (in accordance with PPS23) where the Local Authority inspects the site. No further action recommended.
No Risk	No contaminant linkage exists.



## 5.0 UNCERTAINTIES AND LIMITATIONS

This report details the findings of work carried out in February 2014. The report has been prepared by Hydrock on the basis of available information obtained during the study period. Although every reasonable effort has been made to gather all relevant information, all potential environmental constraints or liabilities associated with the site may not have been revealed.

The report has been prepared for the exclusive benefit of Gladman Developments Ltd (Gladman) and those parties designated by them for the purpose of providing geotechnical and geo-environmental recommendations for the site. The report contents should only be used in that context. Furthermore, new information, changed practices or new legislation may necessitate revised interpretation of the report after the date of its submission.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock cannot guarantee its accuracy or completeness.

The work has been carried out in general accordance with recognised best practice as detailed in guidance documents such as the CLR 11 Model Procedures (Environment Agency 2004), BS5930:1999 +A2:2010 and BS10175:2011

The rationale behind the assessments carried out for this report is given in Appendix E.

Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance.

Where the phrase "suitable for use" is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock.

Unless otherwise stated, the chemical testing carried out for this report was not scoped to comply with the requirements of the water supply company and further work may be required.

The preliminary risk assessment process may identify potential risks to site demolition and redevelopment workers. However, consideration of occupational health and safety issues is beyond the scope of this report.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds such as Japanese knotweed, this report does not constitute a formal survey of these potential hazards.

Any site boundary line depicted on plans does not imply legal ownership of land.

## **6.0 RECOMMENDATIONS FOR FURTHER WORK**

In order to confirm the actual risks to receptors and confirm the ground conditions with respect to potential geotechnical and geo-environmental risks, an appropriate intrusive investigation will need to be undertaken. Based on the current data, this site investigation is proposed to comprise:

- the excavation of trial pits to allow collection of samples for geotechnical and chemical analysis, to assess trench stability, over break potential and “diggability” and allow soil infiltration rate testing to be undertaken;
- the undertaking of soil infiltration rate testing;
- dynamic sampling to allow collection of samples for geotechnical and chemical analysis of shallow soils and allow in situ testing (SPTs) to be undertaken to assess density of the sands and gravel to allow foundation design, and allow the installation of gas and groundwater monitoring wells;
- cable percussive boreholes to allow collection of samples for geotechnical and chemical analysis of deeper soils and allow in-situ testing (SPTs) to be undertaken to assess density of the sands and gravel to allow foundation design, and allow the installation of gas and groundwater monitoring wells;
- gas and groundwater monitoring installations to allow gas concentrations and groundwater levels to be monitored;
- gas concentration and groundwater level monitoring;
- geotechnical testing of soils and rock; and
- contamination analyses of soil and groundwater.

## 7.0 REFERENCES

BRITISH STANDARDS INSTITUTION. 1999. Code of practice for Site Investigations. *BS 5930 Incorporating Amendment No.2:2010*. BSI, London.

BRITISH STANDARDS INSTITUTION. 2011. Code of Practice for Investigation of Potentially Contaminated sites. *BS 10175*. BSI, London.

DCLG. March 2012. National Planning Policy Framework. DCLG, London.

DCLG. March 2012. Technical Guidance top the National Planning Policy Framework. DCLG, London.

ENVIRONMENT AGENCY. 2004. Model procedures for the management of land contamination. *Contaminated Land Report 11*. The Environment Agency.

MILES, J. C. H., APPLETON, J. D., REES, D. M., GREEN, B. M. R., ADLAM. K. A. M. and MYRES. A. H. 2007. Indicative Atlas of Radon in England and Wales. Health Protection Agency and British Geological Survey. Report HPA-RPD-033.

JONES, H. K., MORRIS, B. L., CHENEY, C. S., BREWERTON, L. J., MERRIN, P. D., LEWIS, M. A., MACDONALD, A. M., COLEBY, L. M., TALBOT, J. C., MCKENZIE, A. A., BIRD, M. J., CUNNINGHAM, J. and ROBINSON, V. K. 2000. The physical properties of minor aquifers in England and Wales. *British Geological Survey Technical Report WD/00/04*. 234pp. Environment Agency R&D Publication 68.

RAWLINS, B. G., McGRATH, S. P., SCHEIB, A. J., CAVE, N., LISTER, T. R., INGHAM, M., GOWING, C. and CARTER, S. 2012 .*The advanced geochemical atlas of England and Wales*. British Geological Survey, Keyworth.

RUDLAND, D. J., LANCEFIELD, R. M. and MAYELL, P. N. 2001. Contaminated land risk assessment. A guide to good practice. *CIRIA Report C552*. CIRIA, London. 158 pp.

SCIVYER, C. 2007. Radon: Guidance on protective measures for new buildings, extensions, conversions and refurbishment (2007 edition). Building Research Establishment Report BR 211. BRE, Garston.

STONE, K., MURRAY, A., COOKE, S., FORAN, J. and GOODERHAM, L. 2009. Unexploded ordnance (UXO), a guide to the construction industry. *CIRIA Report C681*. CIRIA, London. 141 pp.

WILSON, S., OLIVER, S., MALLETT, H., HUTCHINGS, H. and CARD, G. 2007. Assessing risks posed by hazardous ground gases to buildings. *CIRIA Report C665*. CIRIA, London. 182pp.

This page has been left blank intentionally

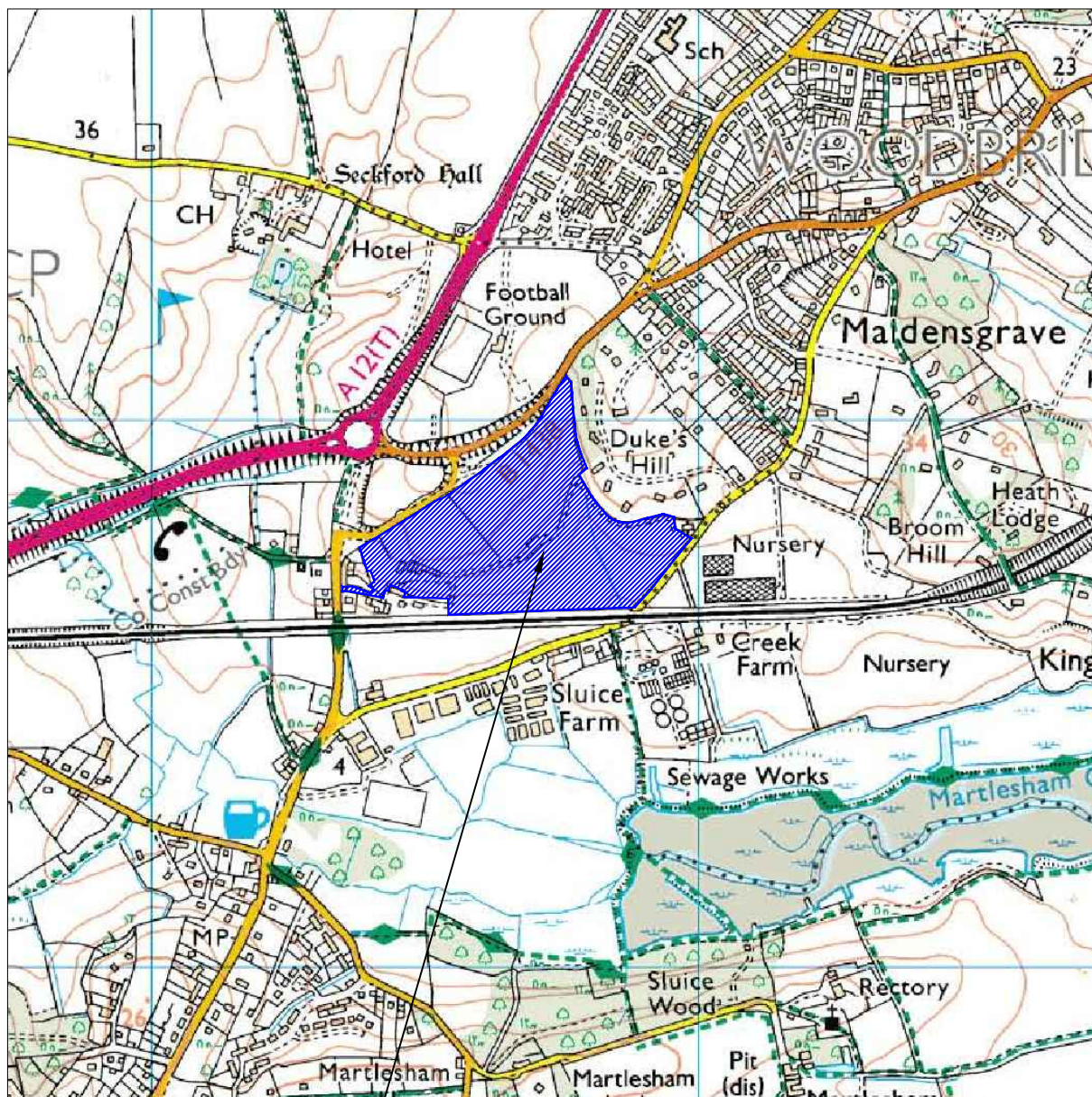
## **Appendix A**

### **DRAWINGS**

Drawings Included in this report:



- 14106/D001 – Site Location Plan
- 14106/D002 – Site Features Plan

This page has been left blank intentionally



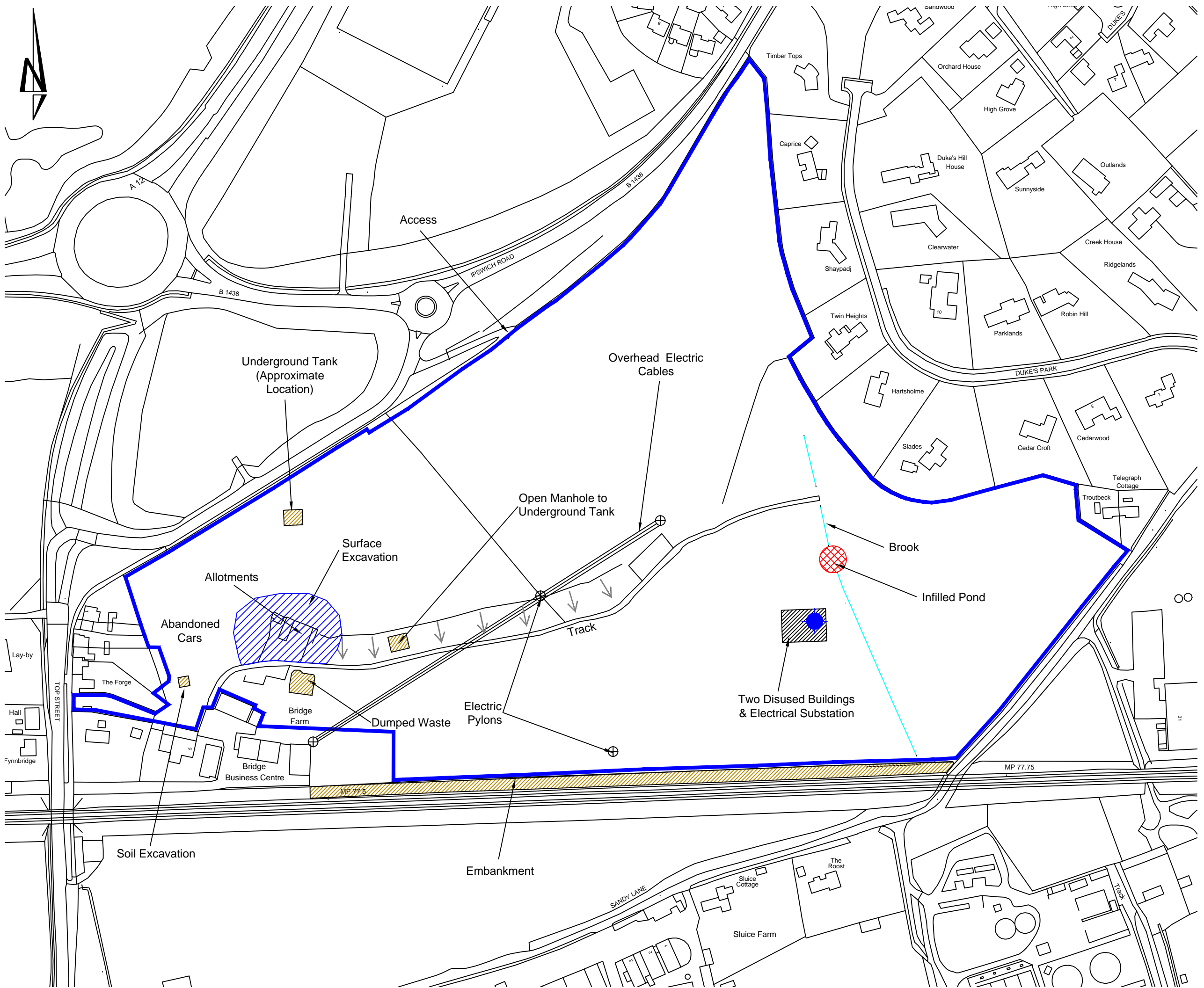
The Site




Contains Ordnance Survey data © Crown  
copyright and database right 2013

<table><tr><td>C</td><td>17/11/15</td><td>Updated study area boundary</td><td>WS</td><td>TW</td></tr><tr><td>B</td><td>05/11/15</td><td>Updated study area boundary</td><td>CH</td><td>AB</td></tr><tr><td>A</td><td>18/07/14</td><td>Updated red line boundary</td><td>RP</td><td>AB</td></tr><tr><td>Rev</td><td>Date</td><td>Description</td><td>By</td><td>Ckd</td></tr></table>					C	17/11/15	Updated study area boundary	WS	TW	B	05/11/15	Updated study area boundary	CH	AB	A	18/07/14	Updated red line boundary	RP	AB	Rev	Date	Description	By	Ckd	Project		Client		<div>GLADMAN DEVELOPMENTS LIMITED</div> <div> Unit 3, Hawthorn Park Holdenby Road Spratton Northampton NN6 8LD TEL: 01604 842 888 FAX: 01604 842 666 E-Mail: northampton@hydrock.com or visit www.hydrock.com</div>	
					C	17/11/15	Updated study area boundary	WS	TW																					
					B	05/11/15	Updated study area boundary	CH	AB																					
					A	18/07/14	Updated red line boundary	RP	AB																					
Rev	Date	Description	By	Ckd																										
Title		Drawing Status		INFORMATION																										
		Job No.		C14106																										
DUKE'S PARK, WOODBIDGE		Site Location Plan		Drawn	Checked	Scale at A4	Date	Issue Date	Drawing No.	Revision																				
				RP	AB	1:12,500	18/02/14	18/02/14	14106/D001	C																				

This page has been left blank intentionally





-  Railway Embankment
-  Borehole for Groundwater Extraction for Farm and Domestic Supply
-  Study Area Boundary

C	17/11/15	Amended study area boundary	TW	WS
B	05/11/15	Amended study area boundary	CH	RP
A	18/07/14	Change to site boundary	AC	RP
Rev	Date	Description	Ckd	By



Unit 3, Hawthorn Park  
Holdenby Road  
Spratton  
Northampton NN6 8LD  
TEL: 01604 842 888  
FAX: 01604 842 666  
E-Mail: northampton@hydrock.com  
or visit www.hydrock.com

Client



Project

LAND OFF DUKE'S PARK,  
WOODBIDGE

Title

Site Features  
Plan

Drawing Status

INFORMATION

Job No.

C14106

Drawn	Checked	Scale at A3	Date	Issue Date
SD	AB	NTS	18/02/14	18/02/14
Drawing No.				Revision
14106/D002				C

This page has been left blank intentionally

## **Appendix B**

### SITE WALKOVER PHOTOGRAPHS

This page has been left blank intentionally



Figure 1: Looking from the site access in the north of the site to the southeast.



Figure 2: Looking from the top of the slope in the centre of the site looking south.

This page has been left blank intentionally





Figure 3: Looking south from the centre of the site.



Figure 4: Looking from the track in the east of the site to the east.

This page has been left blank intentionally





Figure 5: Two disused buildings and electricity substation.



Figure 6: The brook running north to south in the east of the site.

This page has been left blank intentionally



Figure 7: Looking east with the steep slope to the north.



Figure 8: Looking south in the west of the site, onto the stockpiled excavated soil.

This page has been left blank intentionally





Figure 9: Open manhole leading to an underground tank.



Figure 10: An underground tank situated on the side of the steep slope.

This page has been left blank intentionally



Figure 11: Abandoned/clamped cars in the west of the site.



Figure 12: Dumped waste materials.

This page has been left blank intentionally





Figure 13: Dumped waste materials.



Figure 14: Allotments in the west of the site.

This page has been left blank intentionally

## **Appendix C**

### **HISTORICAL ORDNANCE SURVEY MAPS**

This page has been left blank intentionally



#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

**Client Ref:** C14106/S14047  
**Report Ref:** HYD-1287013  
**Grid Ref:** 625694, 247787

**Map Name:** National Grid

**Map date:** 2012

**Scale:** 1:10,000

**Printed at:** 1:10,000

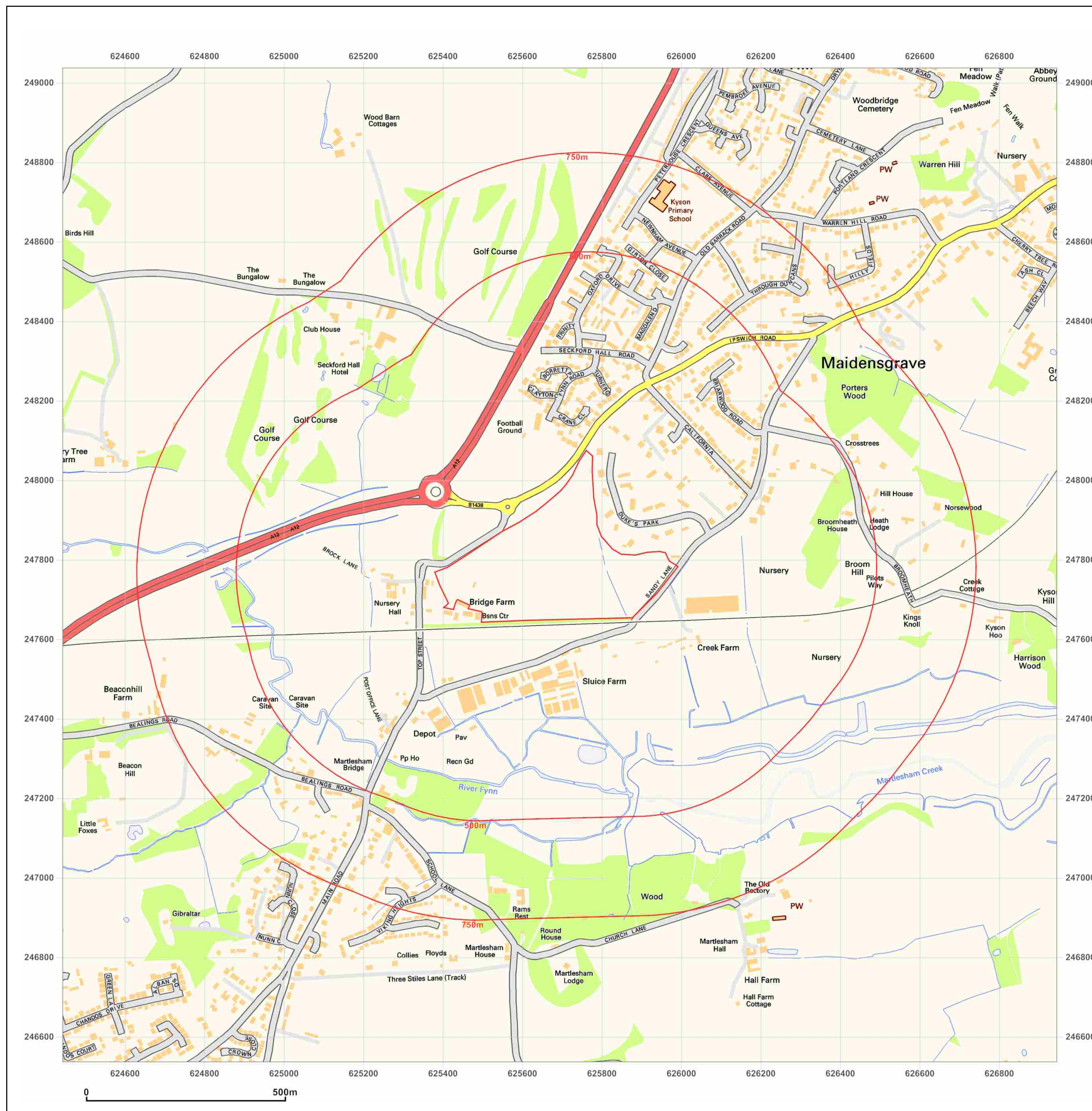


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

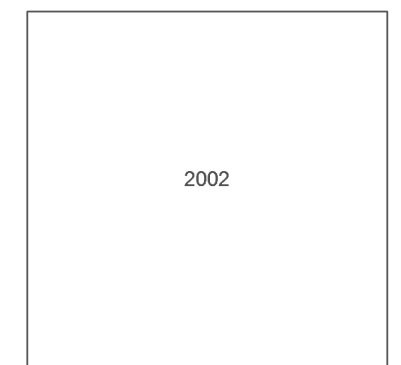
Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625694, 247787

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)









#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

**Client Ref:** C14106/S14047  
**Report Ref:** HYD-1287013  
**Grid Ref:** 625694, 247787

**Map Name:** National Grid

**Map date:** 1982

**Scale:** 1:10,000

**Printed at:** 1:10,000



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

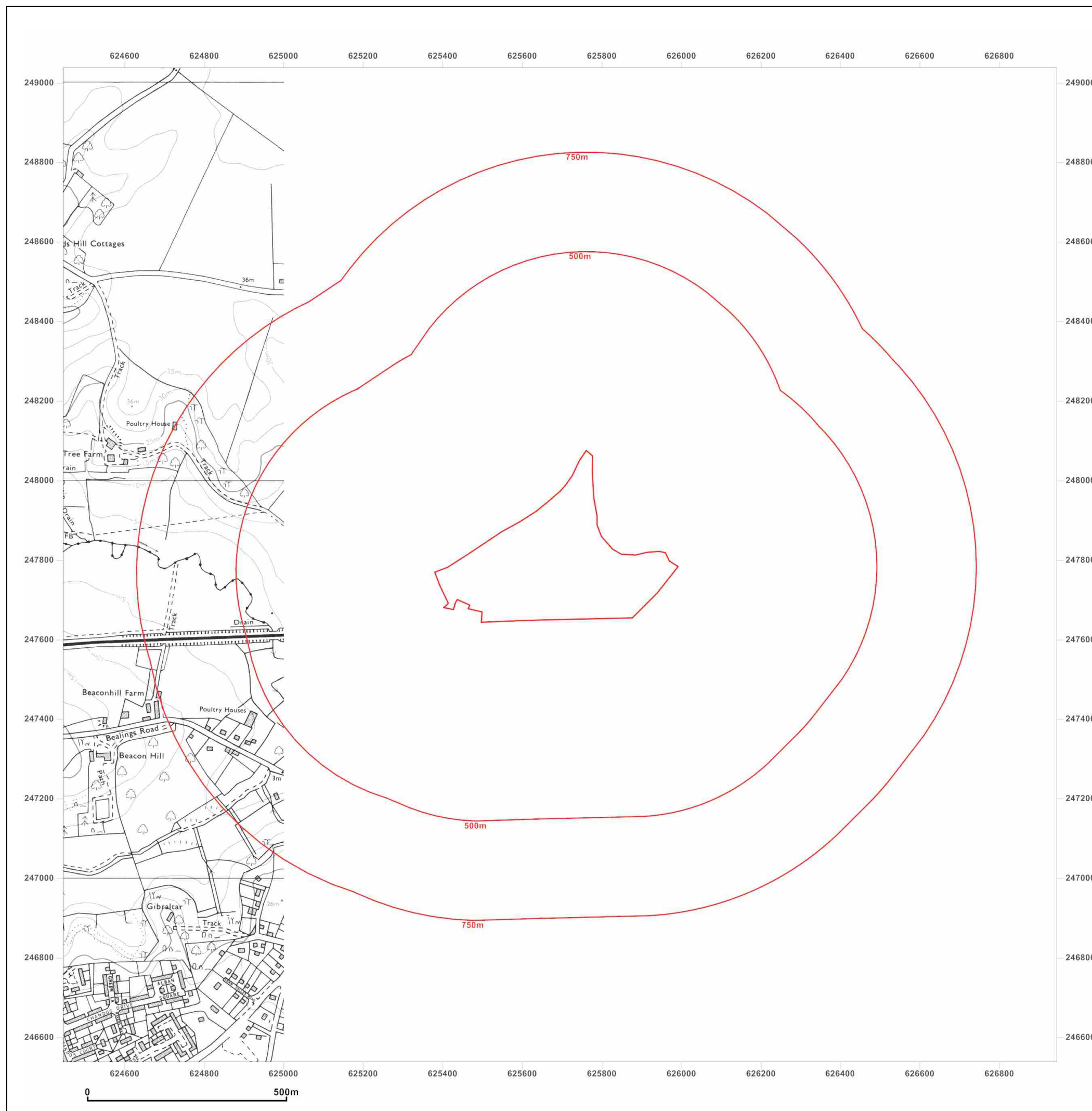


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

**Client Ref:** C14106/S14047  
**Report Ref:** HYD-1287013  
**Grid Ref:** 625694, 247787

**Map Name:** National Grid

**Map date:** 1980

**Scale:** 1:10,000

**Printed at:** 1:10,000



Surveyed 1970  
Revised 1980  
Edition N/A  
Copyright N/A  
Levelled N/A

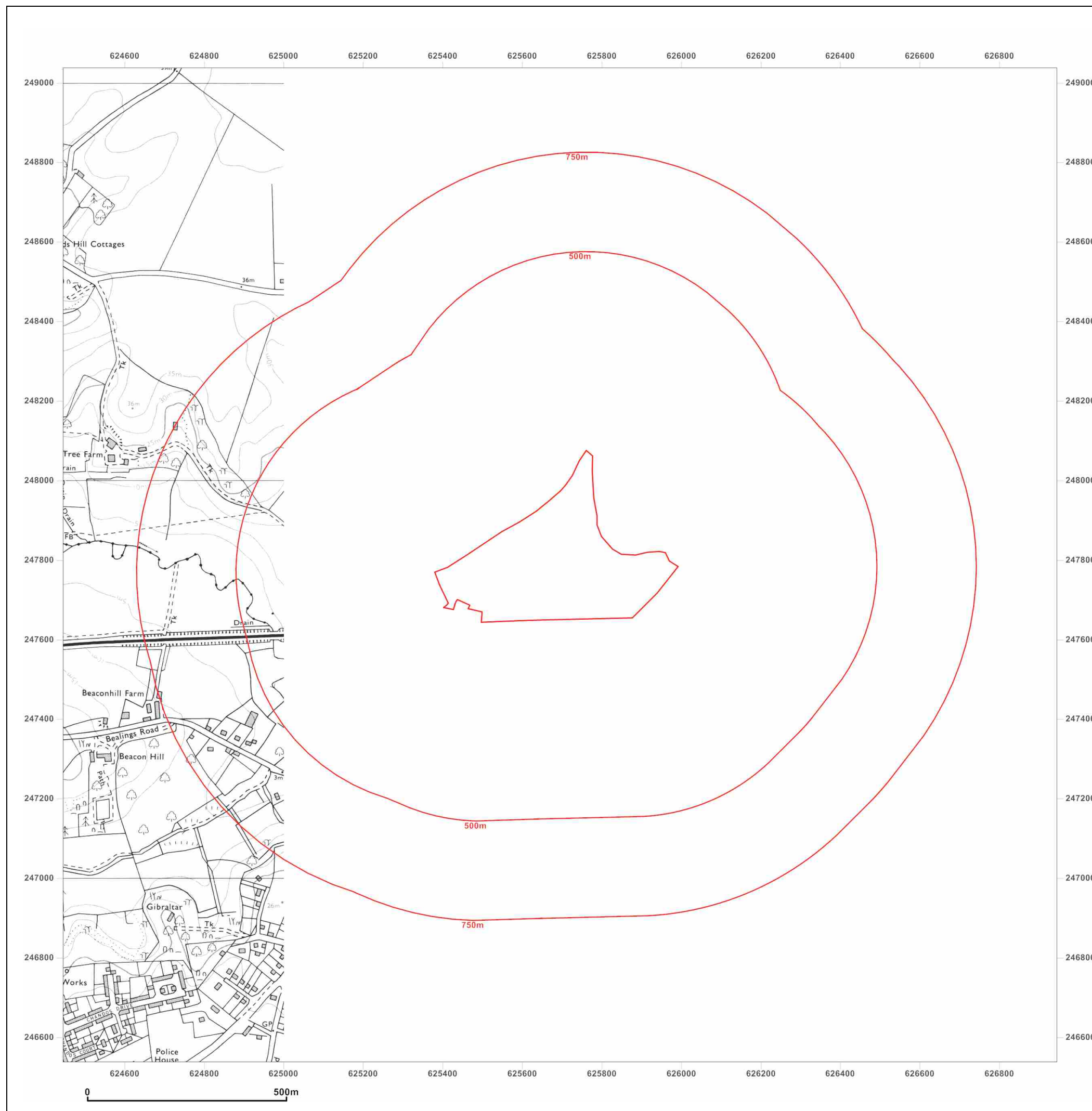


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625694, 247787

Map Name: National Grid

Map date: 1971

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1970  
Revised 1971  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1971  
Revised 1971  
Edition N/A  
Copyright N/A  
Levelled N/A

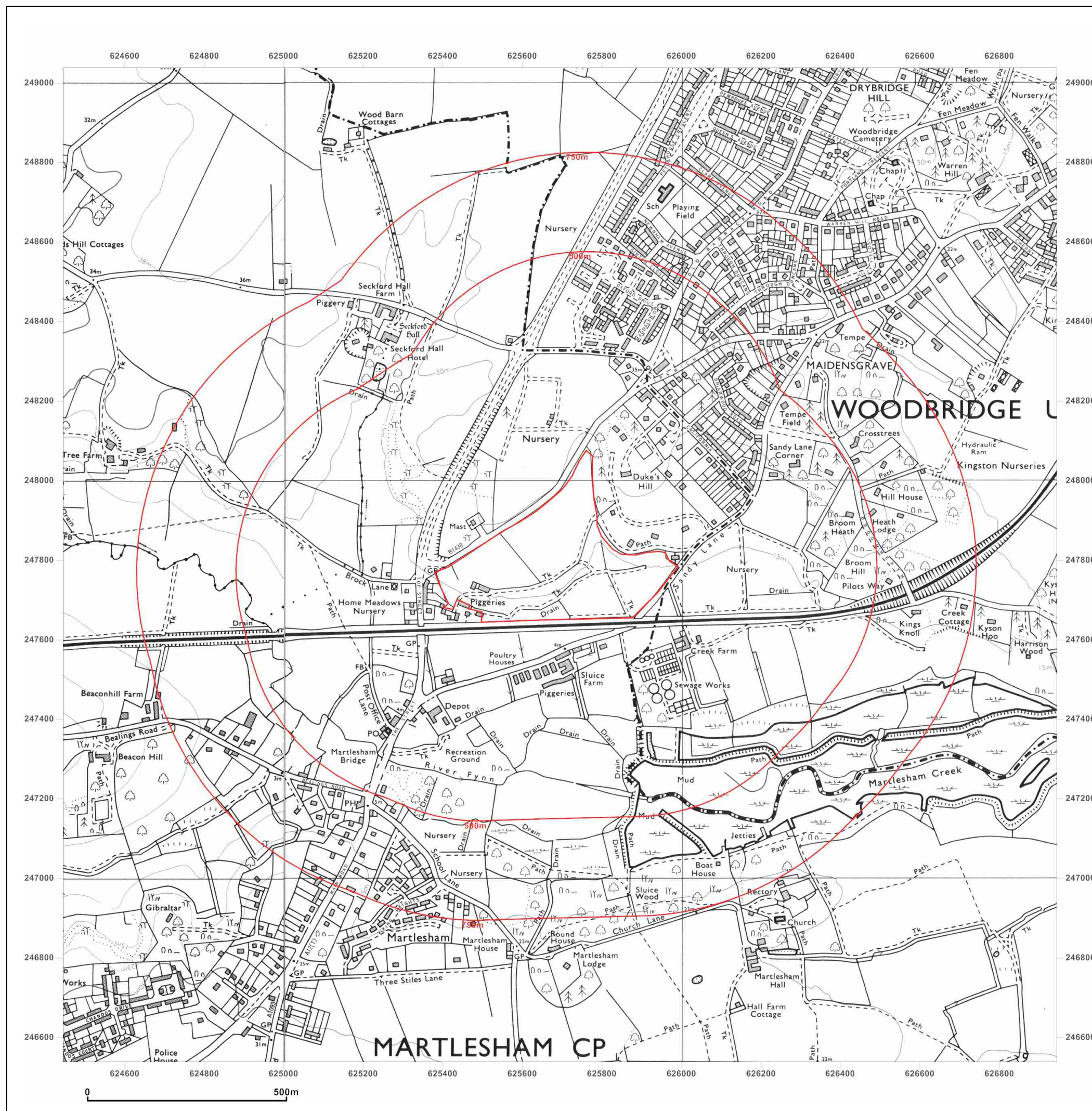


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625694, 247787

Map Name: Provisional

Map date: 1953

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1953  
Revised 1953  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1953  
Revised 1953  
Edition N/A  
Copyright N/A  
Levelled N/A



Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047

Report Ref: HYD-1287013

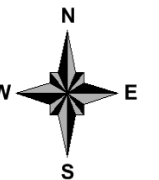
Grid Ref: 625694, 247787

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881  
Revised 1938  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1880  
Revised 1938  
Edition N/A  
Copyright N/A  
Levelled N/A

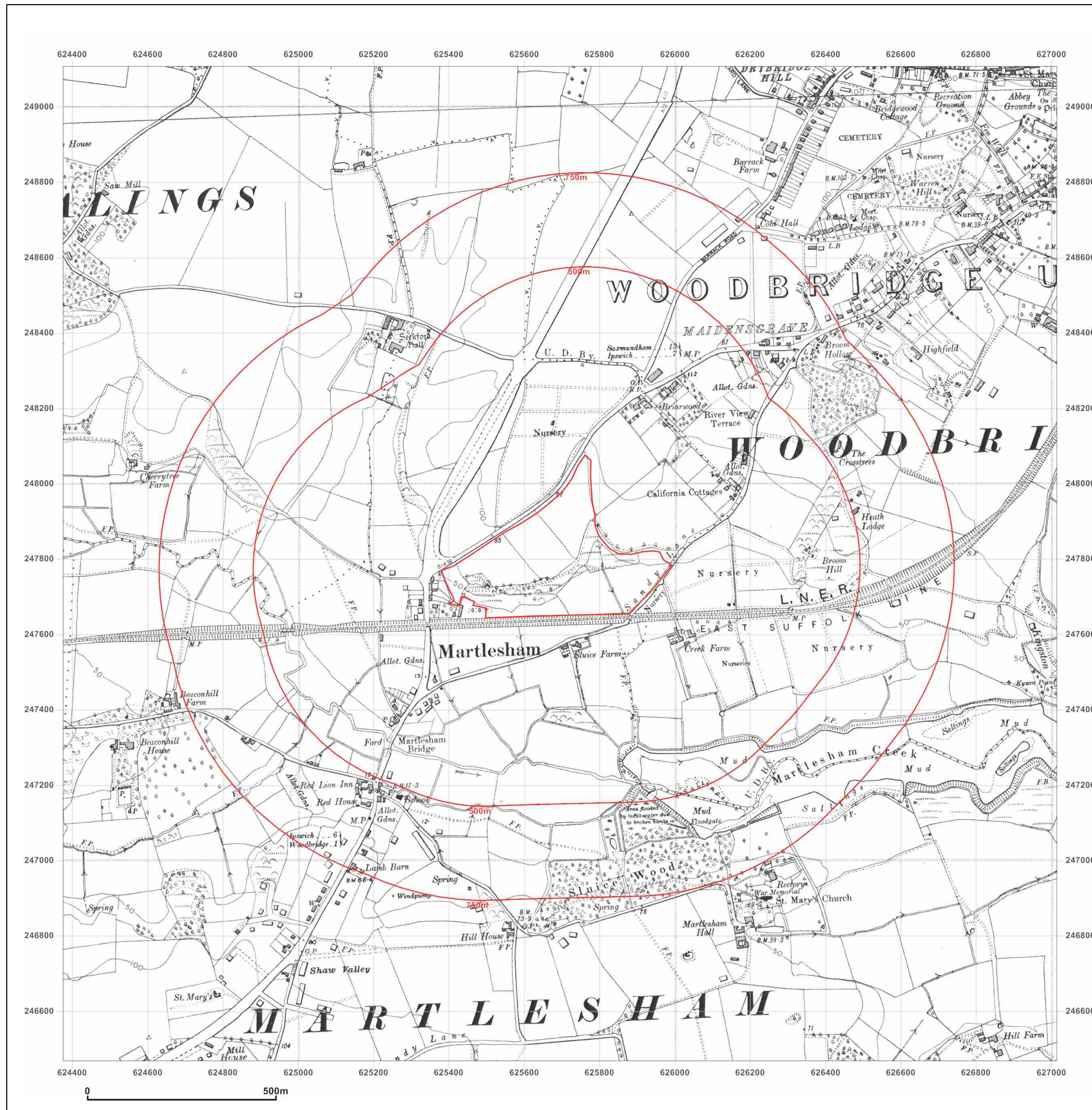


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047

Report Ref: HYD-1287013

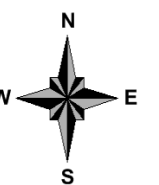
Grid Ref: 625694, 247787

Map Name: County Series

Map date: 1928

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881  
Revised 1928  
Edition 1928  
Copyright N/A  
Levelled N/A

Surveyed 1880  
Revised 1928  
Edition 1928  
Copyright N/A  
Levelled N/A

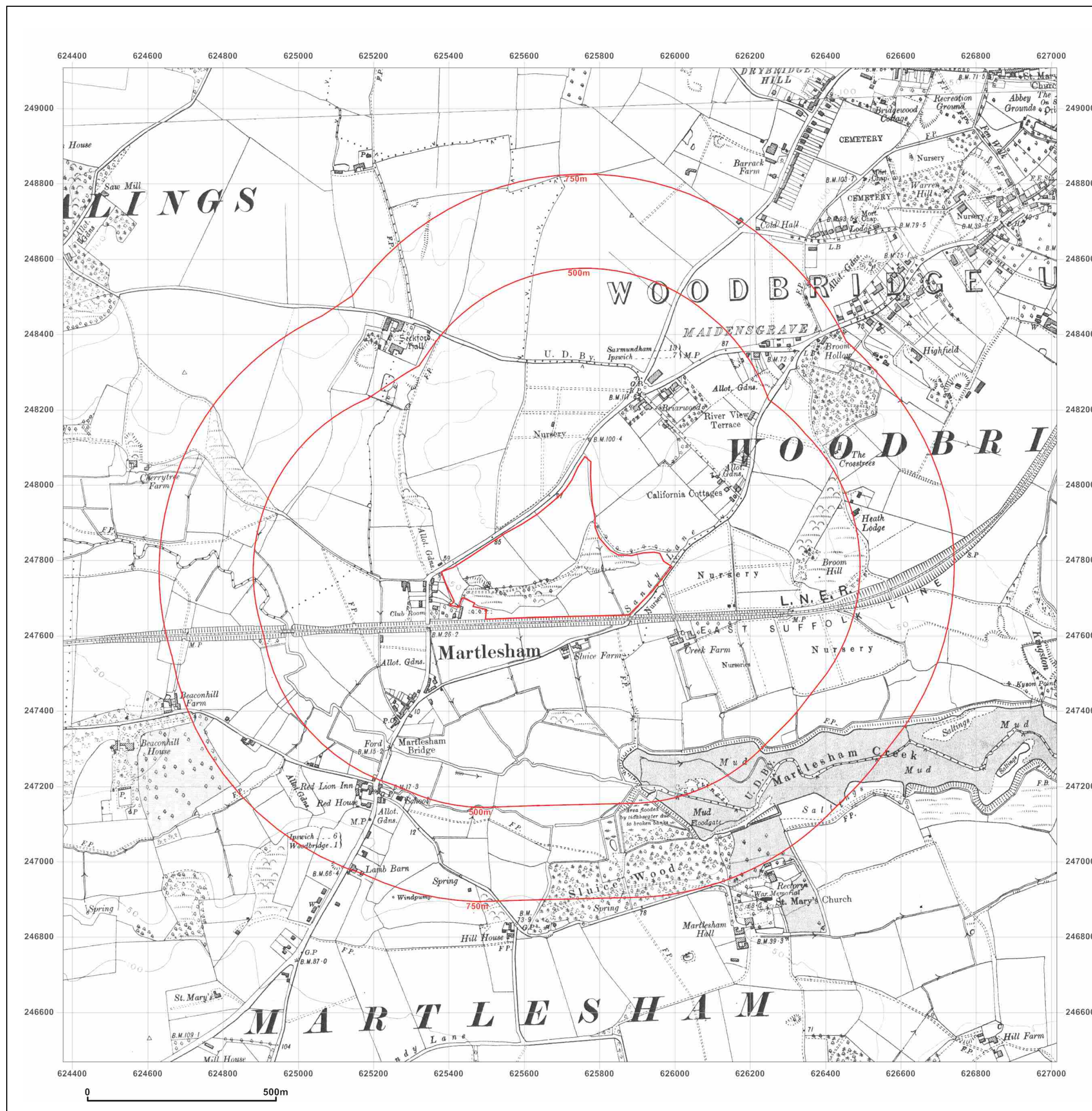


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625694, 247787

Map Name: County Series

Map date: 1902-1903

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881  
Revised 1903  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1880  
Revised 1902  
Edition N/A  
Copyright N/A  
Levelled N/A



Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625694, 247787

Map Name: County Series

Map date: 1881

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1881  
Revised 1881  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1881  
Revised 1881  
Edition N/A  
Copyright N/A  
Levelled N/A

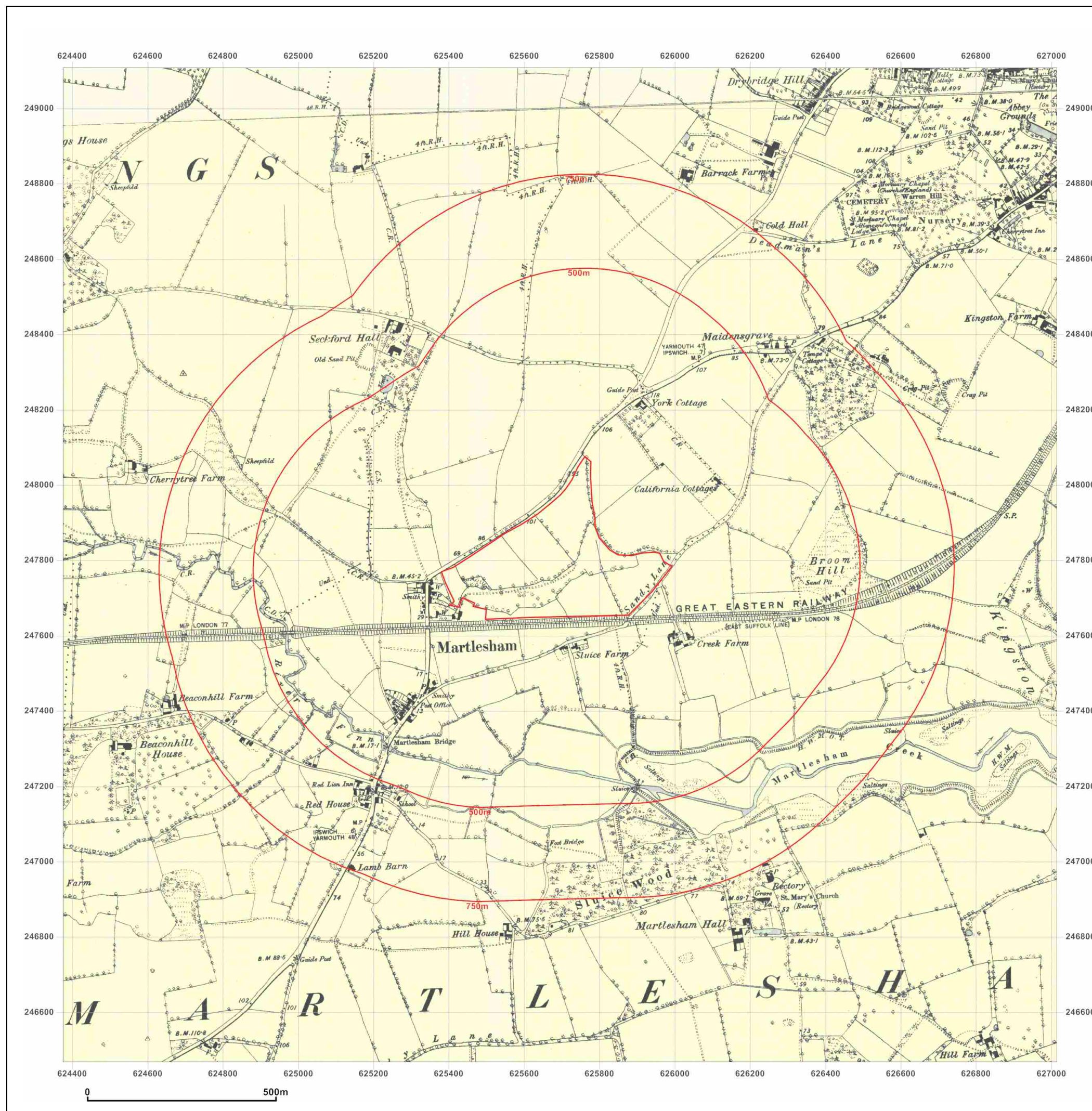


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

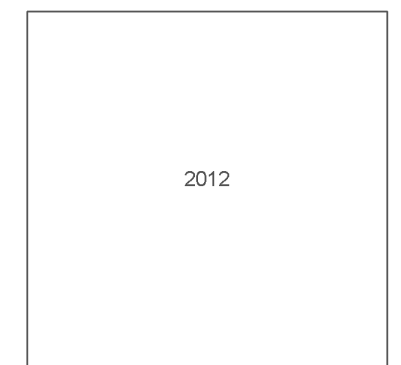
**Client Ref:** C14106/S14047  
**Report Ref:** HYD-1287013  
**Grid Ref:** 625685, 247787

**Map Name:** MasterMap

**Map date:** 2012

**Scale:** 1:1,250

**Printed at:** 1:2,500

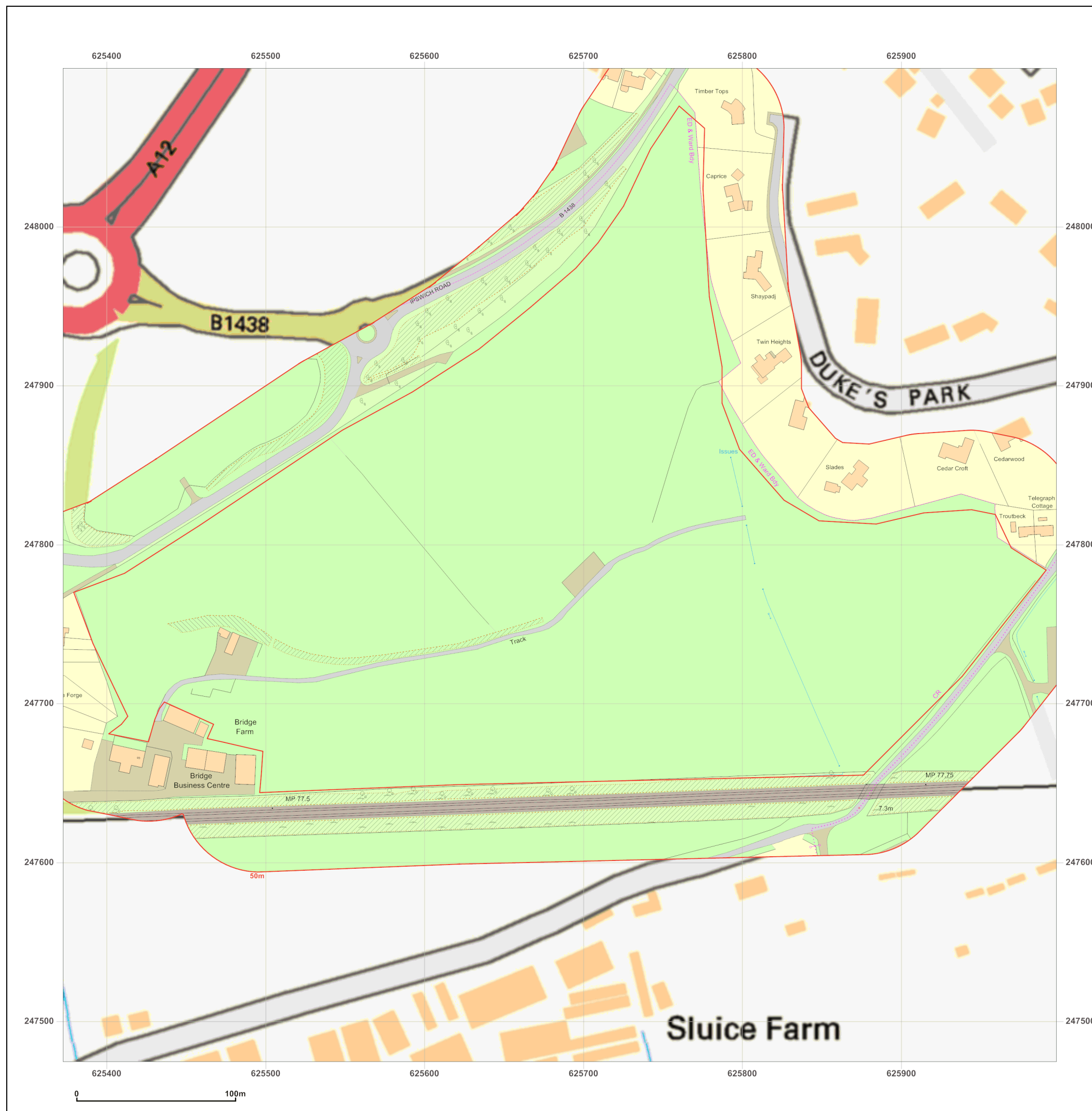


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 12 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625685, 247787

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



Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625685, 247787

Map Name: National Grid

Map date: 1989

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1971  
Revised 1989  
Edition N/A  
Copyright 1989  
Levelled 1971

Surveyed 1967  
Revised 1989  
Edition N/A  
Copyright 1989  
Levelled 1967

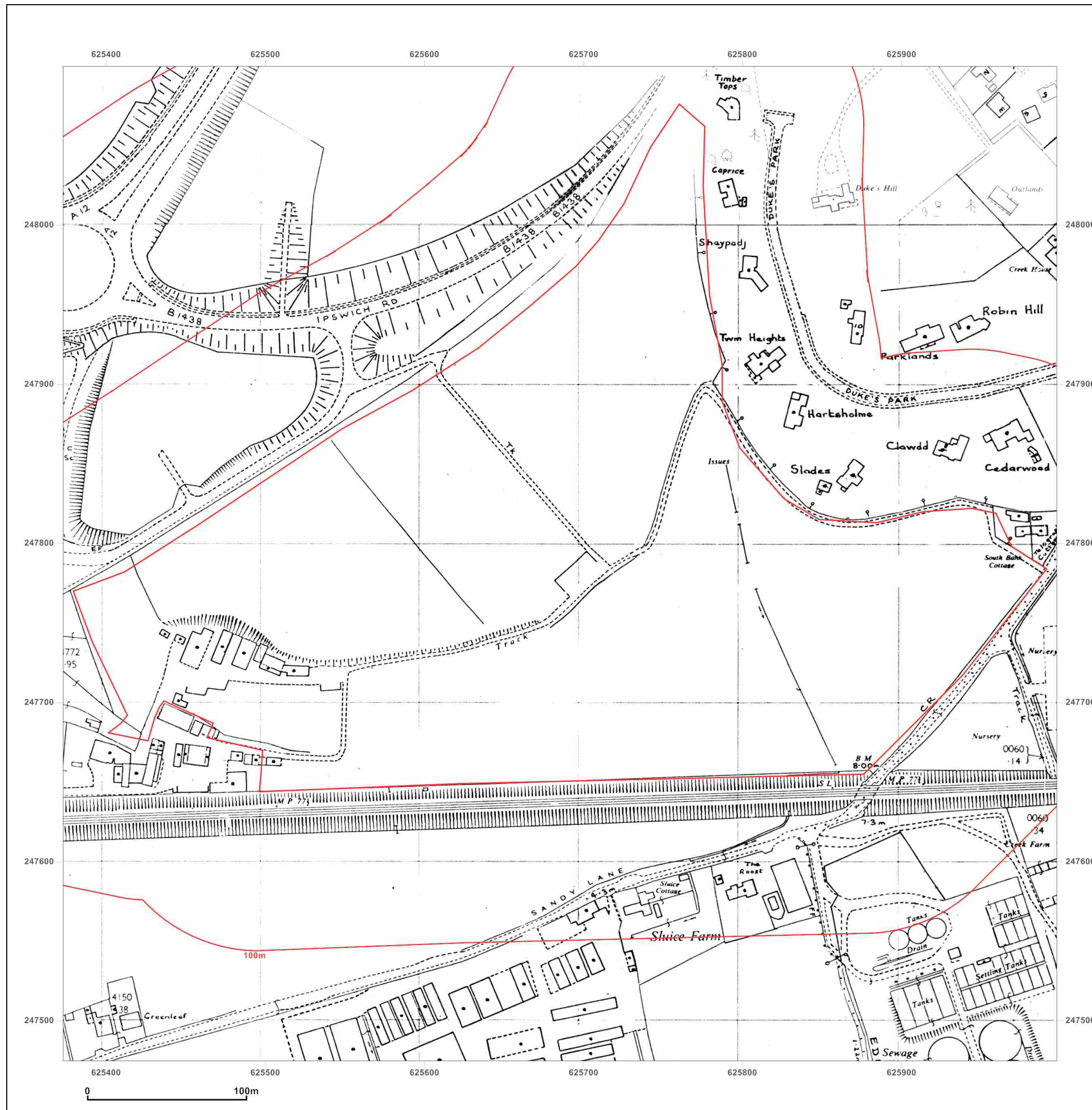


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)









#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047  
Report Ref: HYD-1287013  
Grid Ref: 625685, 247787

Map Name: National Grid

Map date: 1969

Scale: 1:2,500

Printed at: 1:2,500



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 N/A  
Levelled N/A

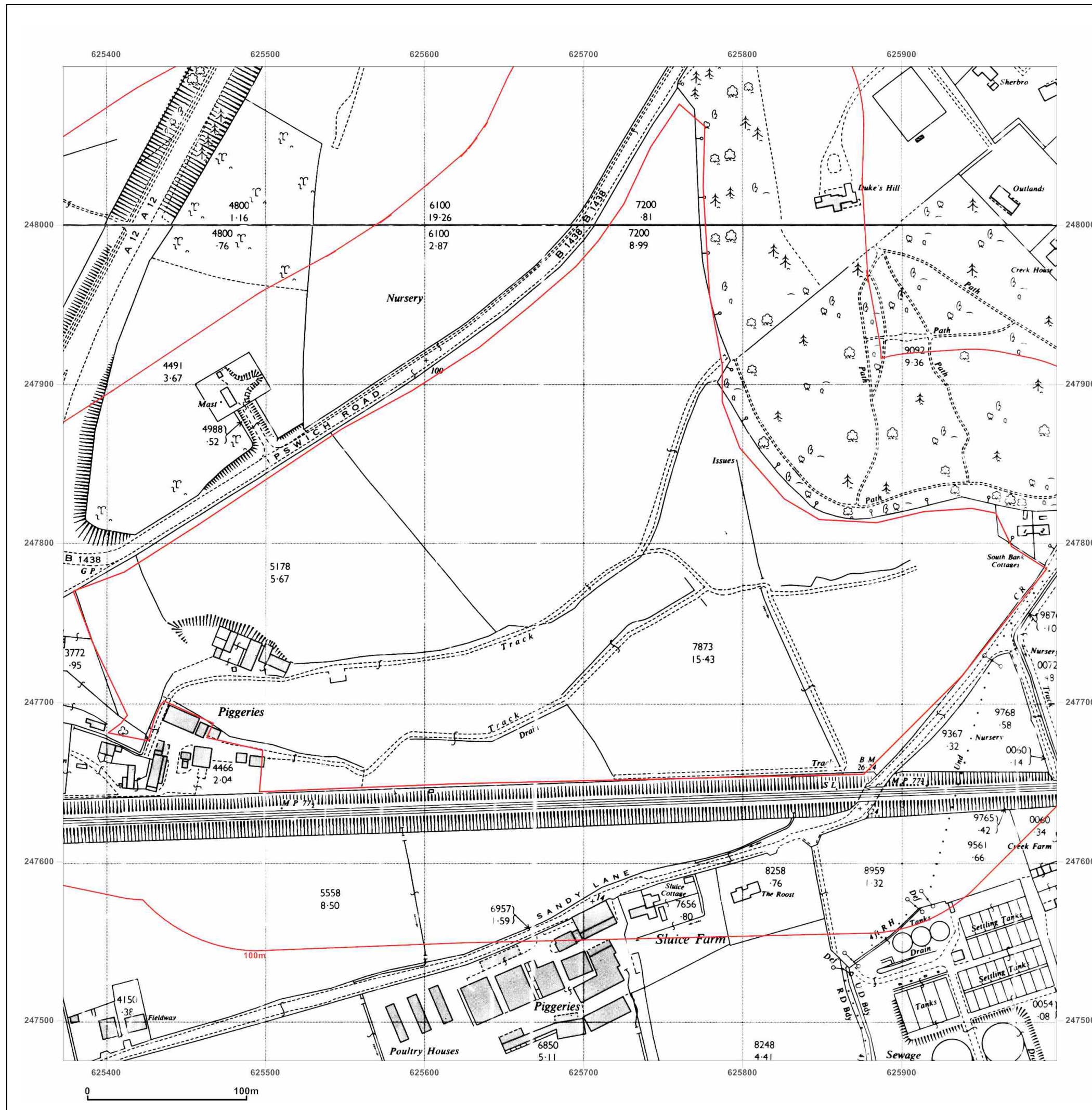


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

**Client Ref:** C14106/S14047  
**Report Ref:** HYD-1287013  
**Grid Ref:** 625685, 247787

**Map Name:** National Grid

**Map date:** 1968

**Scale:** 1:2,500

**Printed at:** 1:2,500



Surveyed 1968  
Revised 1968  
Edition N/A  
Copyright 1969  
Levelled 1950

Surveyed 1968  
Revised 1968  
Edition N/A  
Copyright 1969  
Levelled 1967



Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047

Report Ref: HYD-1287013

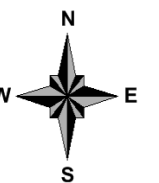
Grid Ref: 625685, 247787

Map Name: County Series

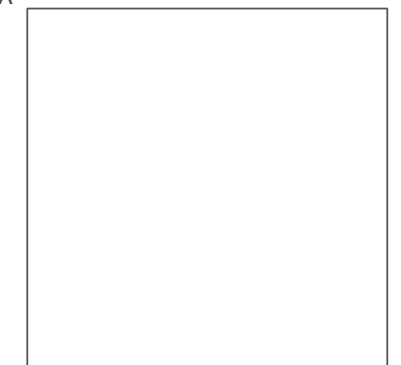
Map date: 1927

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1927  
Revised 1927  
Edition N/A  
Copyright N/A  
Levelled N/A

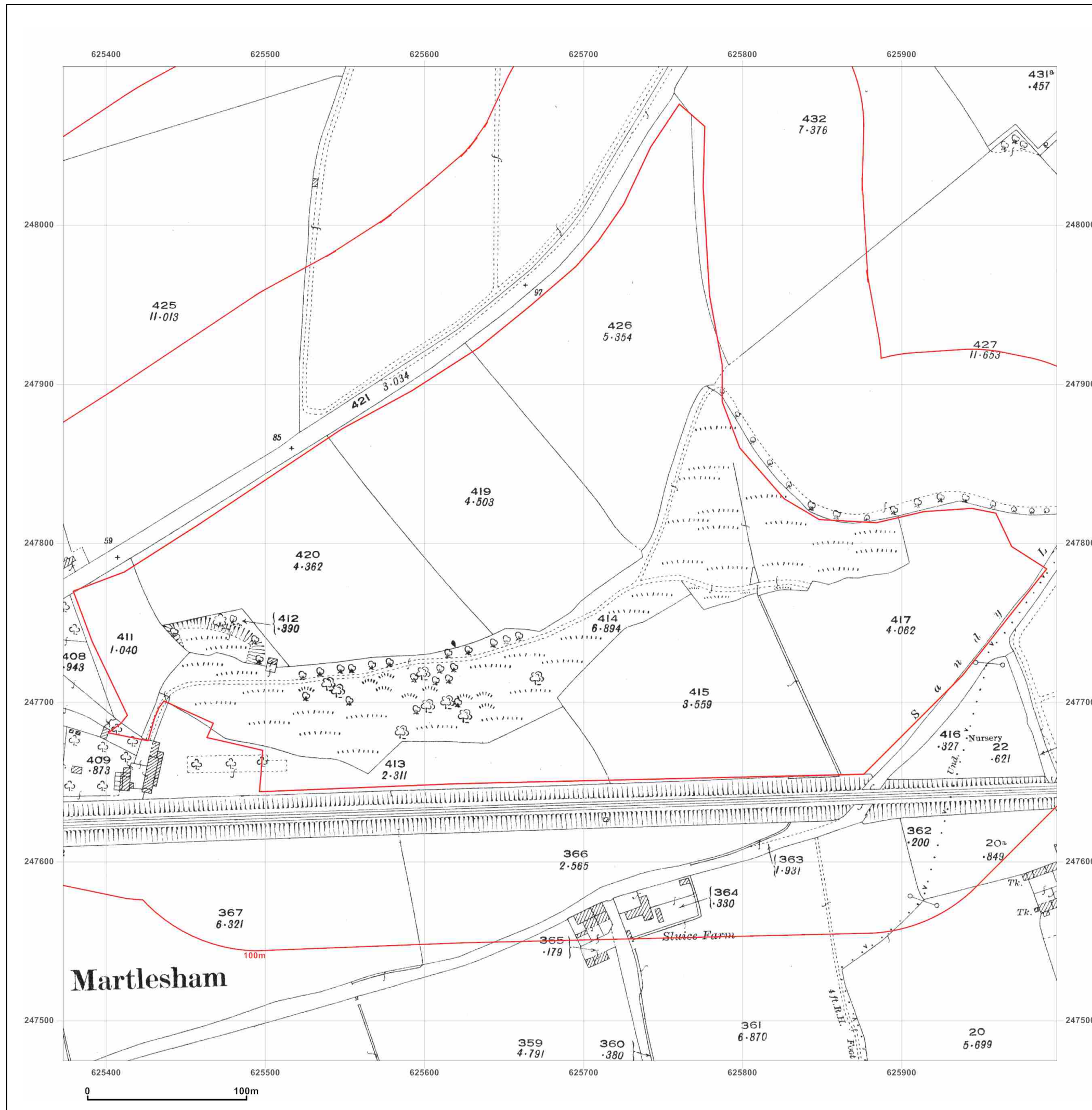


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)



#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047

Report Ref: HYD-1287013

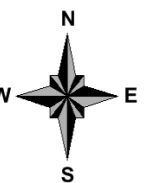
Grid Ref: 625685, 247787

Map Name: County Series

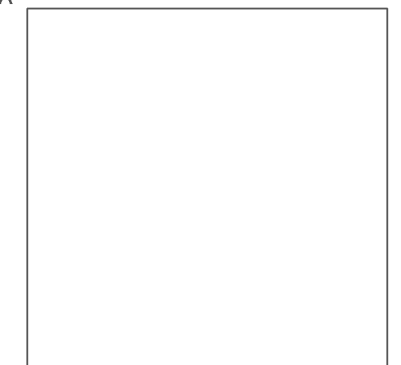
Map date: 1902

Scale: 1:2,500

Printed at: 1:2,500



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

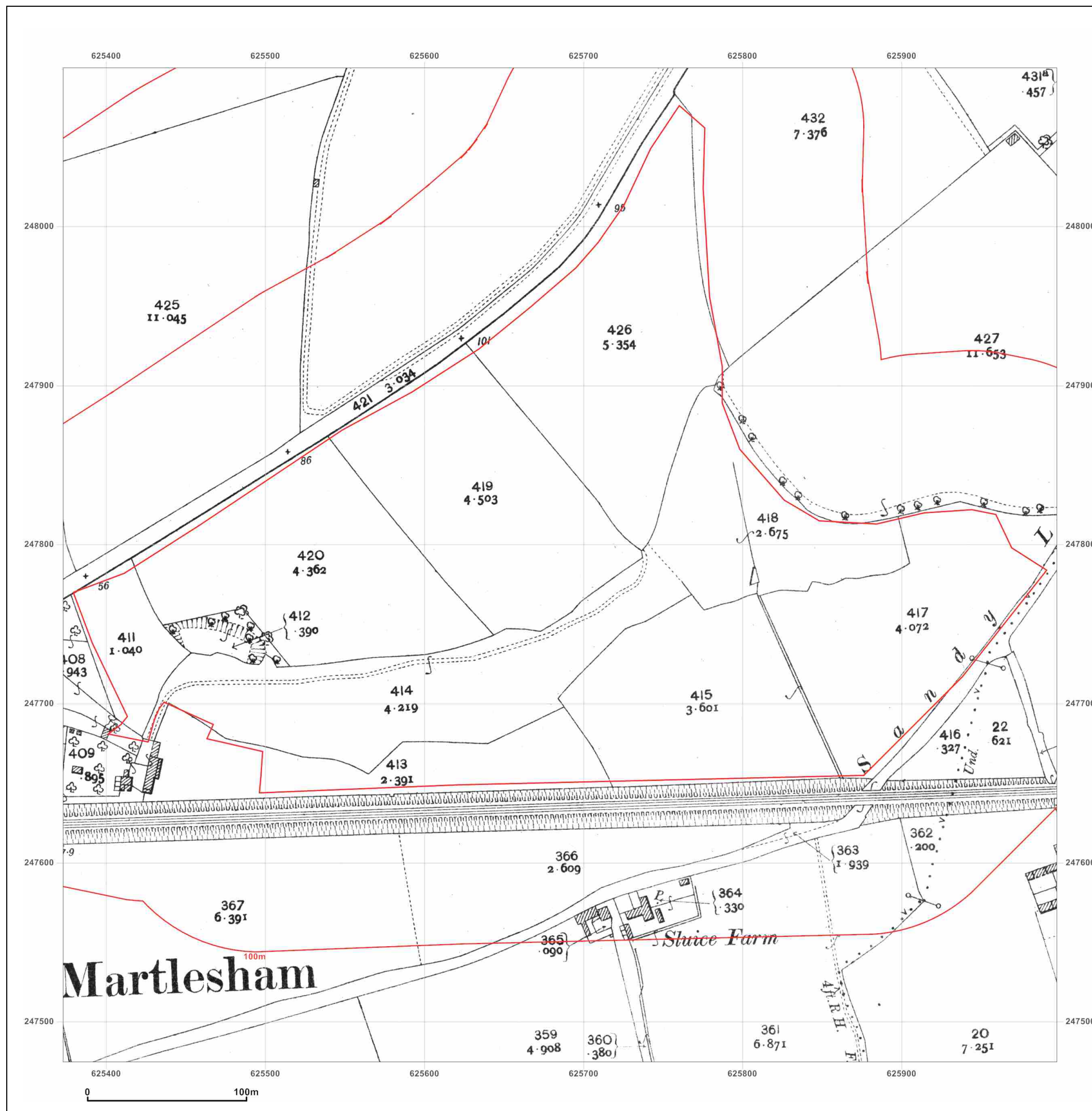


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsure.com](mailto:info@groundsure.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





#### Site Details:

DUKES PARK, WOODBRIDGE,  
IP12 4DD

Client Ref: C14106/S14047

Report Ref: HYD-1287013

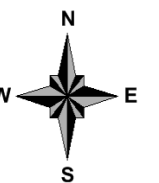
Grid Ref: 625685, 247787

Map Name: County Series

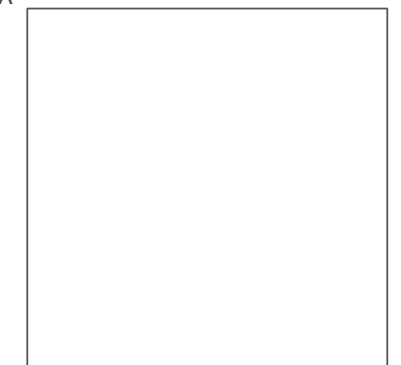
Map date: 1881

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1881  
Revised 1881  
Edition N/A  
Copyright N/A  
Levelled N/A

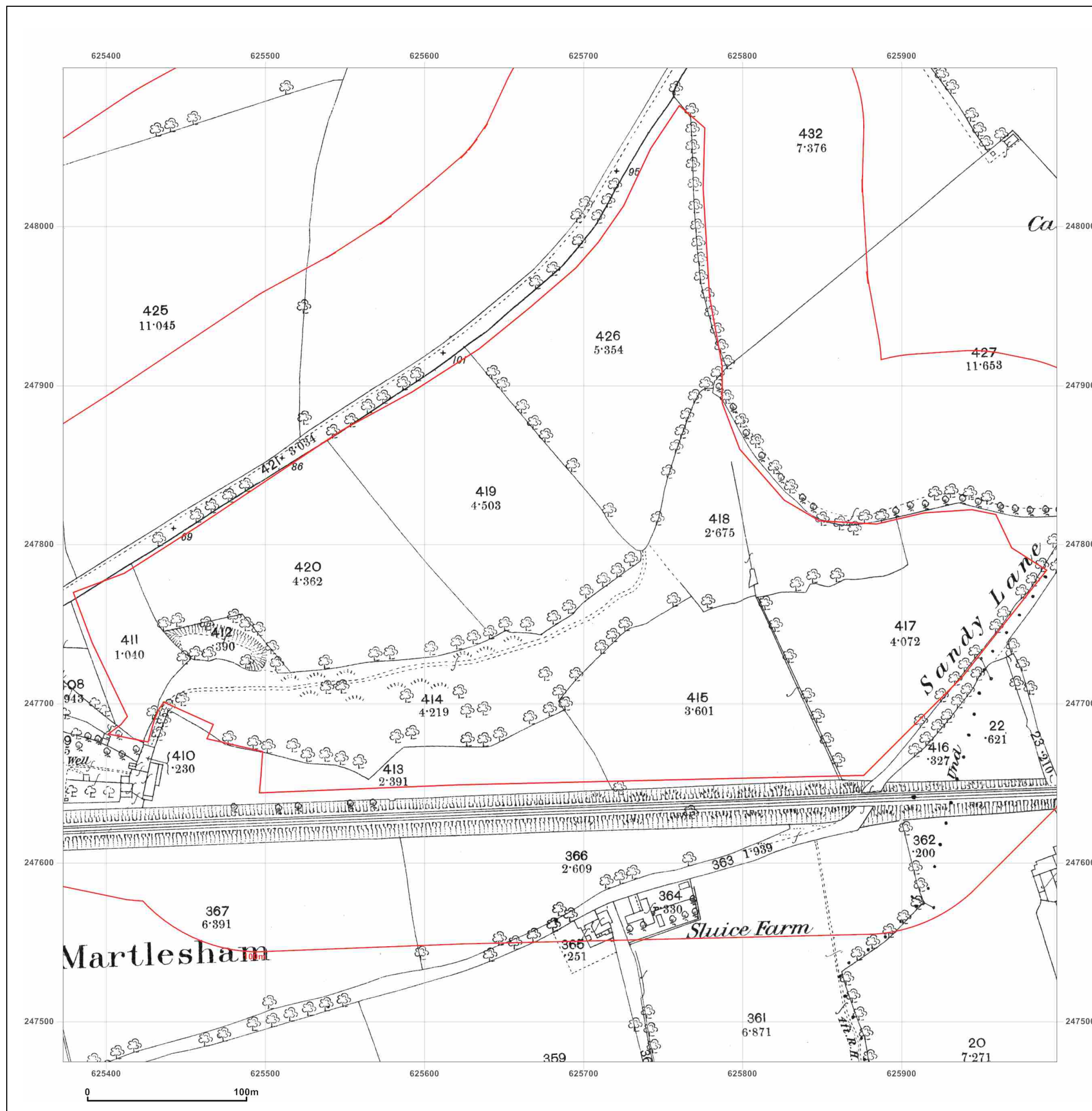


Produced by  
GroundSure Environmental Insight  
T: 08444 159000  
E: [info@groundsurre.com](mailto:info@groundsurre.com)  
W: [www.groundsure.com](http://www.groundsure.com)

© Crown copyright and database rights 2013 Ordnance Survey 100035207

Production date: 11 February 2014

To view map legend click here [Legend](#)





## **Appendix D**

### DESK STUDY RESEARCH INFORMATION

This page has been left blank intentionally



Hydrock Consultants Ltd

Over Court Barns, Over Lane,  
Almondsbury, BS32 4DF

GroundSure  
Reference:

HYD-1287014

Your Reference:

C14106/S14047

Report Date

11 Feb 2014

Report Delivery  
Method:

Email - pdf

## GroundSure EnviroInsight

Address: DUKES PARK, WOODBRIDGE, IP12 4DD

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 01752 347 515 quoting the above report reference number.

Yours faithfully,

Hydrock

Enc.

GroundSure EnviroInsight



# GroundSure Envirolnsight

Address: DUKES PARK, WOODBRIDGE, IP12 4DD

Date: 11 Feb 2014

Reference: HYD-1287014

Client: Hydrock Consultants Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 26-Mar-2007  
Grid Reference: 625694,247787  
Site Size: 12.37ha

# Contents Page

Contents Page .....	3
Overview of Findings.....	5
Using this report.....	8
1 Environmental Permits, Incidents and Registers Map.....	9
1 Environmental Permits, Incidents and Registers.....	10
1.1 Industrial Sites Holding Licences and/or Authorisations.....	10
1.1.1 Records of historic IPC Authorisations within 500m of the study site:.....	10
1.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site:.....	10
1.1.3 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site:.....	10
1.1.4 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site:.....	10
1.1.5 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site:.....	10
1.1.6 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site:.....	11
1.1.7 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site: .....	11
1.1.8 Records of Category 3 or 4 Radioactive Substances Authorisations:.....	11
1.1.9 Records of Licensed Discharge Consents within 500m of the study site:.....	12
1.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site:.....	14
1.2 Dangerous or Hazardous Sites.....	14
1.3 Environment Agency Recorded Pollution Incidents.....	15
1.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site:.....	15
1.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site:.....	15
1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990.....	15
2 Landfill and Other Waste Sites Map.....	16
2 Landfill and Other Waste Sites.....	17
2.1 Landfill Sites.....	17
2.1.1 Records from Environment Agency landfill data within 1000m of the study site: .....	17
2.1.2 Records of Environment Agency historic landfill sites within 1500m of the study site: .....	17
2.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site:.....	17
2.1.4 Records of Local Authority landfill sites within 1500m of the study site:.....	17
2.2 Other Waste Sites.....	18
2.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site: .....	18
2.2.2 Records of Environment Agency licensed waste sites within 1500m of the study site: .....	18
3 Current Land Use Map.....	19
3 Current Land Uses.....	20
3.1 Current Industrial Data.....	20
3.2 Petrol and Fuel Sites.....	21
3.3 Underground High Pressure Oil and Gas Pipelines.....	21
4 Geology.....	22
4.1 Artificial Ground and Made Ground.....	22
4.2 Superficial Ground and Drift Geology .....	22
4.3 Bedrock and Solid Geology .....	22
5 Hydrogeology and Hydrology.....	23
5a Aquifer Within Superficial Geology.....	23
5b Aquifer Within Bedrock Geology and Abstraction Licenses.....	24
5c Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses.....	25
5d Hydrology – Detailed River Network and River Quality.....	26
5 Hydrogeology and Hydrology.....	27
5.1 Aquifer within Superficial Deposits.....	27
5.2 Aquifer within Bedrock Deposits.....	28
5.3 Groundwater Abstraction Licences.....	28
5.4 Surface Water Abstraction Licences.....	30

5.5 Potable Water Abstraction Licences.....	32
5.6 Source Protection Zones.....	33
5.7 River Quality.....	33
5.7.1 Biological Quality.....	33
5.7.2 Chemical Quality.....	33
5.8 Detailed River Network.....	34
5.9 Surface Water Features .....	38
6 Environment Agency Flood Map.....	39
6 Flooding.....	40
6.1 Zone 2 Flooding.....	40
6.2 Zone 3 Flooding.....	40
6.3 Flood Defences.....	40
6.4 Areas benefiting from Flood Defences.....	40
6.5 Areas benefiting from Flood Storage.....	41
6.6 Groundwater Flooding Susceptibility Areas.....	41
6.6.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site?.....	41
6.6.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?.....	41
6.7 Groundwater Flooding Confidence Areas.....	41
7 Designated Environmentally Sensitive Sites Map.....	42
7 Designated Environmentally Sensitive Sites.....	43
7.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	43
7.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	43
7.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	43
7.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	43
7.5 Records of Ramsar sites within 2000m of the study site:.....	44
7.6 Records of Ancient Woodland within 2000m of the study site: .....	44
7.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	44
7.8 Records of World Heritage Sites within 2000m of the study site:.....	44
7.9 Records of Environmentally Sensitive Areas within 2000m of the study site: .....	45
7.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site: .....	45
7.11 Records of National Parks (NP) within 2000m of the study site: .....	45
7.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	45
7.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	45
8 Natural Hazards	
Findings.....	47
8.1 Detailed BGS GeoSure Data.....	47
8.1.1 Shrink Swell.....	47
8.1.2 Landslides.....	47
8.1.3 Soluble Rocks.....	48
8.1.4 Compressible Ground.....	48
8.1.5 Collapsible Rocks.....	48
8.1.6 Running Sand.....	49
9 Mining.....	50
9.1 Coal Mining.....	50
9.2 Shallow Mining.....	50
9.3 Brine Affected Areas .....	50
Contact Details.....	51
Standard Terms and Conditions.....	52

# 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	7		
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	11	15		
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	3	0		
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	0	0	1
2.1.3	BGS/DoE Landfill Site Survey	0	0	0	0	0	0
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	1	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	0	14	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 Productive Strata in the Superficial Geology within 500m of the study site?	Yes					
5.2 Are there any records of Productive Strata 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)	1	0	0	2	5	4
5.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	5	0	2	8
5.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
5.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
5.7 Is there any Environment Agency information on river quality within 1500m of the study site?	No	No	No	No	No	Yes
5.8 Detailed River Network entries within 500m of the site	2	1	13	54	Not searched	Not searched
5.9 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 indicative Zone 2 floodplains within 250m of the study site?	Yes
6.2 Are there any Environment Agency indicative Zone 3 floodplains within 250m of the study site?	Yes
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?	Very High
6.7 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate



## 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	1	0	1
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	1	0	0
7.5 Records of Ramsar sites	0	0	0	1	0	0
7.6 Records of Ancient Woodlands	0	0	0	0	0	3
7.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
7.8 Records of World Heritage Sites	0	0	0	0	0	0
7.9 Records of Environmentally Sensitive Areas	1	0	0	0	0	2
7.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	1	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	1

## Section 8: Natural Hazards

8.1 What is the maximum risk of natural ground subsidence?

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.

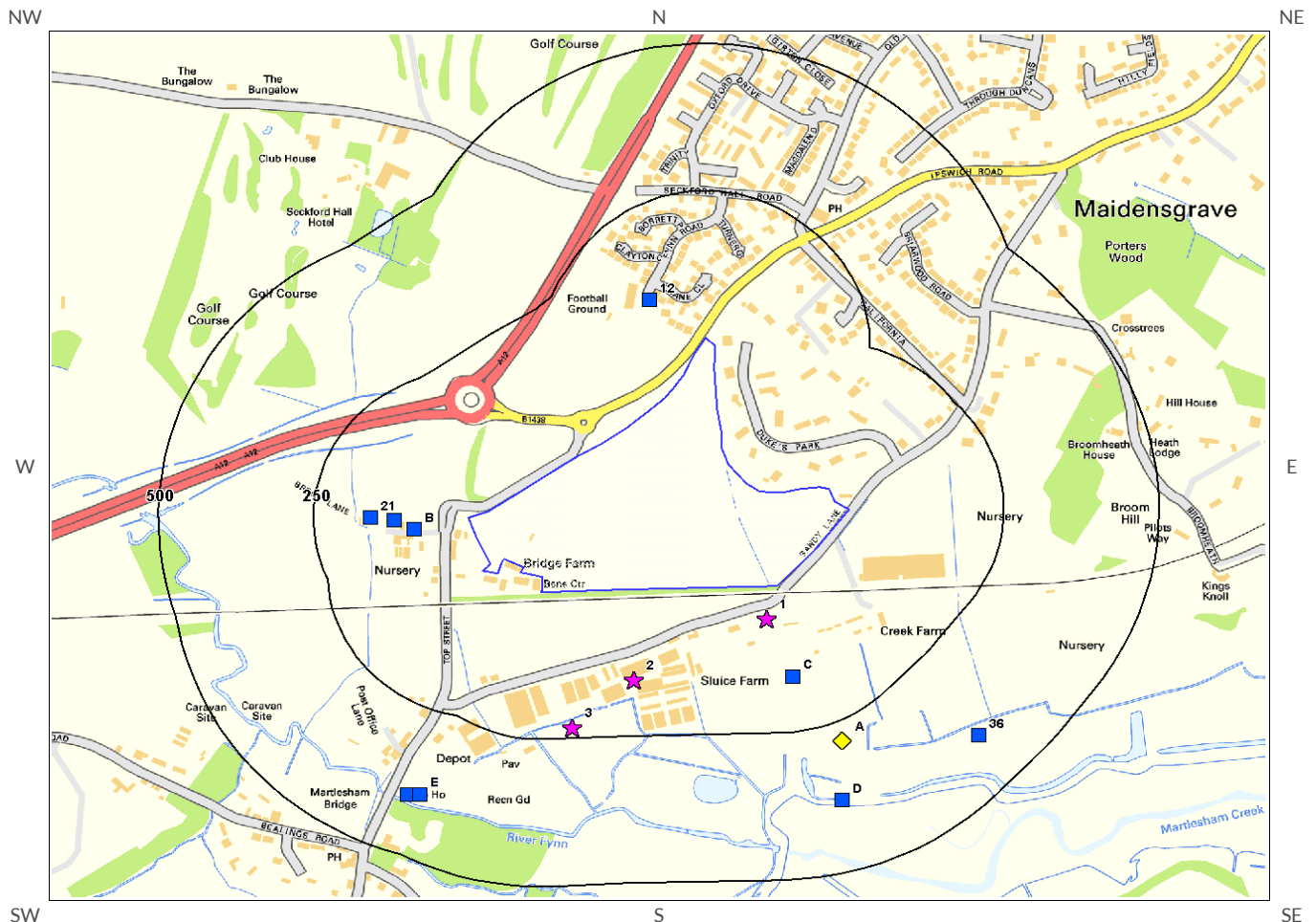
### Note: Maps

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



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.

- |  |   |  |
|--|---|--|
|  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 / NIHHS 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:

7

The following List 2 Dangerous Substance Inventory Site records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details
4A	285.0	S	625980 247390	Name: Centre For Integrated Photonics Ltd Status: Not Active Receiving Water: Na Authorised Substances: pH
5A	285.0	S	625980 247390	Name: Stephen Morgan - Woodbridge Launderette Status: Not Active Receiving Water: Na Authorised Substances: pH
6A	285.0	S	625980 247390	Name: Dhl Status: Not Active Receiving Water: Na Authorised Substances: pH
7A	285.0	S	625980 247390	Name: The Laundry Premises Status: Not Active Receiving Water: Na Authorised Substances: pH
8A	285.0	S	625980 247390	Name: British Gas Plc (eastern) Status: Not Active Receiving Water: Na Authorised Substances: pH
9A	285.0	S	625980 247390	Name: Martlesham Heath Squash Club Limited Status: Not Active Receiving Water: Na Authorised Substances: pH
10A	285.0	S	625980 247390	Name: Woodbridge Stw Status: Active Receiving Water: R. Deben Authorised Substances: Copper

### 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:

26

The following Licensed Discharge Consents records are represented as points on the Authorisations, Incidents and Registers map:

ID	Distance	Direction	NGR	Details	
11 B	91.0	W	625290 247750	Address: Hideaway Brock Lane, Martlesham, Nr Ipswich, Suffolk, IP12 4RA Effluent Type: Sewage Discharges - Final/treated Effluent - Not Water Company Permit Number: PRENF00342 Permit Version: 1	Receiving Water: Trib River Fynn Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 24/1/1989 Effective Date: 24/1/1989 Revocation Date: 22/1/1992
12	110.0	NW	625670 248140	Address: Land Off Ipswich Road, Martlesham, Woodbridge, Suffolk Effluent Type: Unspecified Permit Number: PRELF03207 Permit Version: 1	Receiving Water: - Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 20/7/1990 Effective Date: 20/7/1990 Revocation Date: 1/10/1996
13 B	121.0	W	625258 247766	Address: Hideaway Brock Lane, Martlesham, Nr Ipswich, Suffolk, IP12 4RA Effluent Type: Sewage Discharges - Final/treated Effluent - Not Water Company Permit Number: PRENF00342 Permit Version: 2	Receiving Water: Trib River Fynn Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 23/1/1992 Effective Date: 23/1/1992 Revocation Date: -
14 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 1	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: - Revocation Date: 30/9/1992
15 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 5	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 13/1/2006 Effective Date: 13/1/2006 Revocation Date: 7/12/2006
16 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 2	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/10/1992 Revocation Date: 31/3/1993
17 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 4	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/1/2001 Revocation Date: 12/1/2006
18 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: AW4TS205X Permit Version: 1	Receiving Water: Martlesham Beck River Deben Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 23/9/1960 Effective Date: 23/9/1960 Revocation Date: 14/8/1992
19 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: AW4TS209X Permit Version: 1	Receiving Water: River Deben Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: 23/9/1960 Effective Date: 23/9/1960 Revocation Date: -

ID	Distance	Direction	NGR	Details	
20 C	157.0	S	625900 247500	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 3	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/4/1993 Revocation Date: -
21	159.0	W	625220 247770	Address: Home Meadows Nurseries, Top Street, Martlesham, Woodbridge, Suffolk, IP12 4RD Effluent Type: Agriculture - Arable Farming Permit Number: GWELF50507 Permit Version: 1	Receiving Water: Groundwater Status: Deemed Groundwater Regs Authorisation Issue date: 17/5/2000 Effective Date: 1/4/1999 Revocation Date: -
22 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 7	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/4/2009 Revocation Date: -
23 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 6	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 8/12/2006 Revocation Date: 31/3/2009
24 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 4	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/1/2001 Revocation Date: 12/1/2006
25 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: ASETS1250 Permit Version: 8	Receiving Water: Martlesham Creek Status: Varied Under Epr 2010 Issue date: - Effective Date: - Revocation Date: -
26 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 6	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 8/12/2006 Revocation Date: 31/3/2009
27 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 5	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 13/1/2006 Effective Date: 13/1/2006 Revocation Date: 7/12/2006
28 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 3	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/4/1993 Revocation Date: -
29 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 8	Receiving Water: Martlesham Creek Status: Varied Under Epr 2010 Issue date: - Effective Date: - Revocation Date: -
30 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 7	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/4/2009 Revocation Date: -

ID	Distance	Direction	NGR	Details	
31 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 1	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: - Revocation Date: 30/9/1992
32 D	380.0	S	625980 247290	Address: Woodbridge Stw, Sandy Lane, Martlesham, Woodbridge, Suffolk, IP12 4SB Effluent Type: Sewage Discharges - Stw Storm Overflow/storm Tank - Water Company Permit Number: ASETS1250 Permit Version: 2	Receiving Water: Martlesham Creek Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: - Effective Date: 1/10/1992 Revocation Date: 31/3/1993
33 E	394.0	S	625300 247300	Address: Martlesham Bridge Ps, Martlesham Bridge, Woodbridge, Suffolk, IP12 4RH Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: ASEN2160 Permit Version: 2	Receiving Water: R Flynn Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 3/9/2010 Effective Date: 3/9/2010 Revocation Date: -
34 E	394.0	S	625300 247300	Address: Martlesham Bridge Ps, Martlesham Bridge, Woodbridge, Suffolk, IP12 4RH Effluent Type: Sewage Discharges - Sewer Storm Overflow - Water Company Permit Number: ASEN2160 Permit Version: 1	Receiving Water: R Flynn Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 2/1/1990 Effective Date: 2/1/1990 Revocation Date: 2/9/2010
35 E	400.0	S	625280 247300	Address: Martlesham Ps, Main Road, Martlesham, Woodbridge, Suffolk, IP12 4RJ Effluent Type: Sewage Discharges - Pumping Station - Water Company Permit Number: AW4NF1828 Permit Version: 1	Receiving Water: River Fynn Status: Post Nra Legislation Where Issue Date > 31-aug-89 (historic Only) Issue date: 24/2/1989 Effective Date: 24/2/1989 Revocation Date: -
36	409.0	SE	626200 247400	Address: Creek Farm Stw, Martlesham Effluent Type: Sewage Discharges - Final/treated Effluent - Water Company Permit Number: AW4NF226X Permit Version: 1	Receiving Water: Martlesham Creek Status: Pre Nra Legislation Where Issue Date < 01-sep-89 (historic Only) Issue date: - Effective Date: - Revocation Date: 14/8/1992

#### 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:

3

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

ID	Distance	Direction	NGR	Details
1	56.0	S	625858 247599	Incident Date: 27/06/2003 Incident Identification: 171463 Pollutant: Specific Waste Materials:Specific Waste Materials Pollutant Description: Metal Wastes:Tyres:Vehicles and Vehicle Parts Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
2	156.0	S	625644 247494	Incident Date: 29/04/2003 Incident Identification: 154681 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	233.0	S	625544 247413	Incident Date: 07/11/2002 Incident Identification: 119446 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)

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

0

Database searched and no data found.

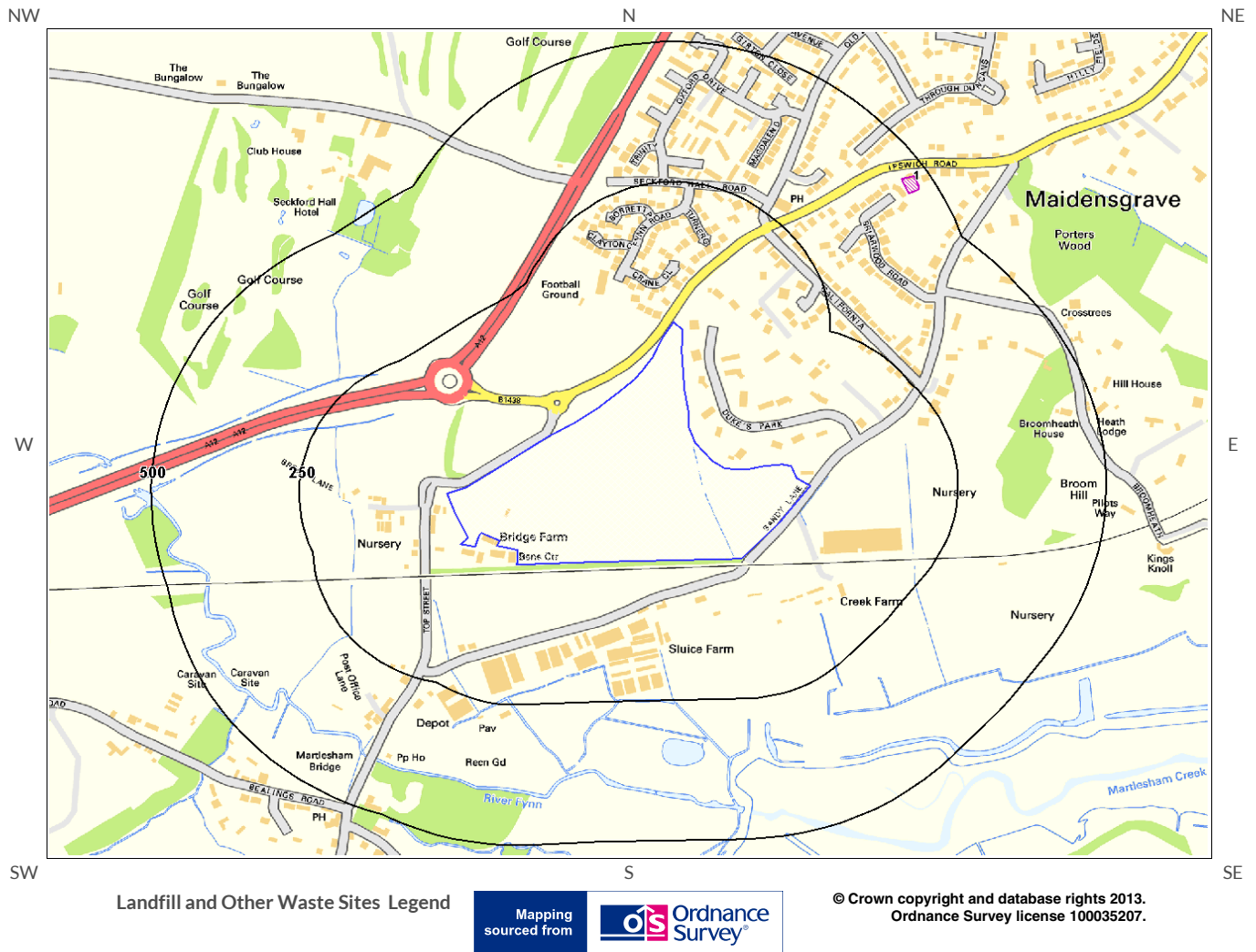
## 1.4 Sites Determined as Contaminated Land under Part 2A EPA 1990




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



- |   |                    |   |                          |   |                                  |
|---|--------------------|---|--------------------------|---|----------------------------------|
|  | Site Outline       |  | E.A. Active Landfill     |  | Historic and Planned Waste Sites |
|  | Search Buffers (m) |  | 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:

1

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
Not shown	1191.0	SW	624300 246800	<div> <div>Site Address: Bloomfield's Farm, Black Tiles Lane, Martlesham</div> <div>Waste Licence: Yes</div> <div>Site Reference: 907/01/16/27, FSSC 15</div> <div>Waste Type: Inert</div> <div>Environmental Permitting Regulations (Waste) Reference: -</div> </div> <div> <div>Licence Issue: 08-Nov-1988</div> <div>Licence Surrendered:</div> <div>Licence Hold Address: Bloomfield Farm, Black Tiles Lane, Martlesham, Ipswich</div> <div>Operator: K Kerridge</div> </div>

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

0

Database searched and no data found.

### 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:

1

The following waste treatment, transfer or disposal sites records are represented as points on the Landfill and Other Waste Sites map:

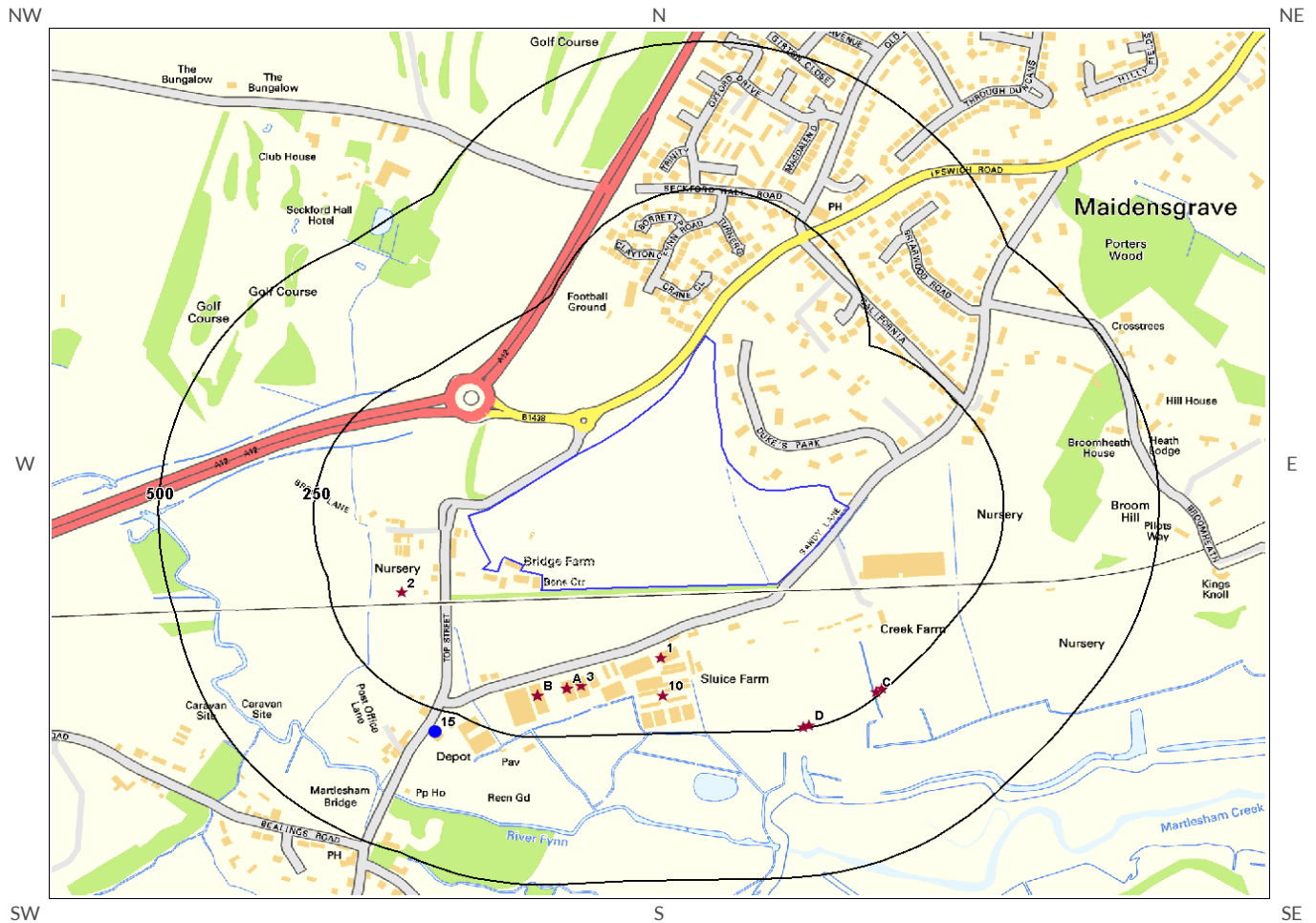
ID	Distance (m)	Direction	NGR	Details		
1	453.0	NE	626160 248321	Type of Site: Refuse Pit Site Address: N/A	Planning Application Reference: N/A Date: 1927	Further Details: N/A Data Source: Historic Mapping Data Type: Polygon

### 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



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.





## 3 Current Land Uses

### 3.1 Current Industrial Data

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

14

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	121.0	S	Touchwood UK	625688 247529	Unit 1-4 Sluice Farm, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Furniture	Consumer Products
2	137.0	W	Electricity Sub Station	625270 247640	IP12	Electrical Features	Infrastructure and Facilities
3	165.0	S	A12 Refrigeration	625559 247481	Units 9 And 13, Martlesham Creek Industrial Estate, Martlesham, Woodbridge, IP12 4SD	Cooling and Refrigeration	Industrial Products
4A	168.0	S	Whickens Engineering	625537 247477	Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Structural Engineers	Engineering Services
5A	168.0	S	N & A Engineering	625537 247477	Unit 8 Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Civil Engineers	Engineering Services
6A	168.0	S	Martlesham Body Repair Centre	625537 247477	Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Vehicle Repair, Testing and Servicing	Repair and Servicing
7B	179.0	S	Tecnisis Ltd	625489 247465	Unit 3 Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Measurement and Inspection Equipment	Industrial Products
8B	179.0	S	Landypart UK Ltd	625489 247465	Unit 4 Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Vehicle Repair, Testing and Servicing	Repair and Servicing
9B	179.0	S	M & M Signs Ltd	625489 247465	Unit 2 Martlesham Creek Industrial Estate, Sandy Lane, Martlesham, Woodbridge, IP12 4SD	Signs	Industrial Products
10	186.0	S	Hoppers	625691 247465	IP12	Hoppers and Silos	Farming
11C	243.0	SE	Works	626035 247471	IP12	Unspecified Works Or Factories	Industrial Features
12D	245.0	S	Sewage Works	625927 247415	IP12	Waste Storage, Processing and Disposal	Infrastructure and Facilities
13C	245.0	SE	Sewage Works	626045 247477	IP12	Waste Storage, Processing and Disposal	Infrastructure and Facilities
14D	247.0	S	Works	625917 247411	IP12	Unspecified Works Or Factories	Industrial Features

### 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
15	288.0	S	625324 247404	Uk	Spencers Garage, The Street, The Street, Martlesham, Woodbridge, Suffolk, IP12 4RF	No	Closed

---

### 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
KGCA-SAGR	KESGRAVE CATCHMENT SUBGROUP	SAND AND GRAVEL
RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL

---

### 4.3 Bedrock and Solid Geology

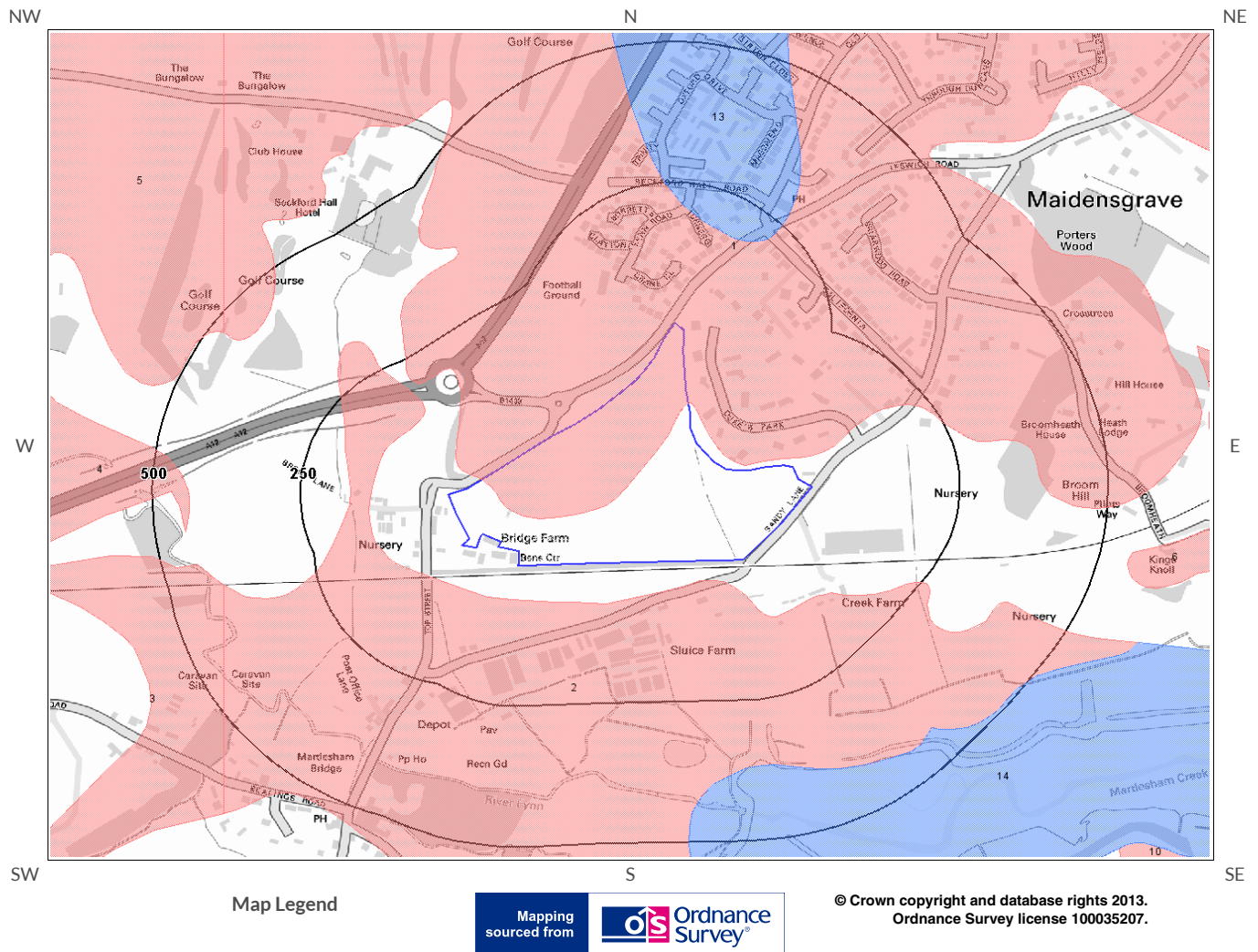
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
THAM-SICL	THAMES GROUP	SILTY CLAY
RCG-SAND	RED CRAG FORMATION	SAND

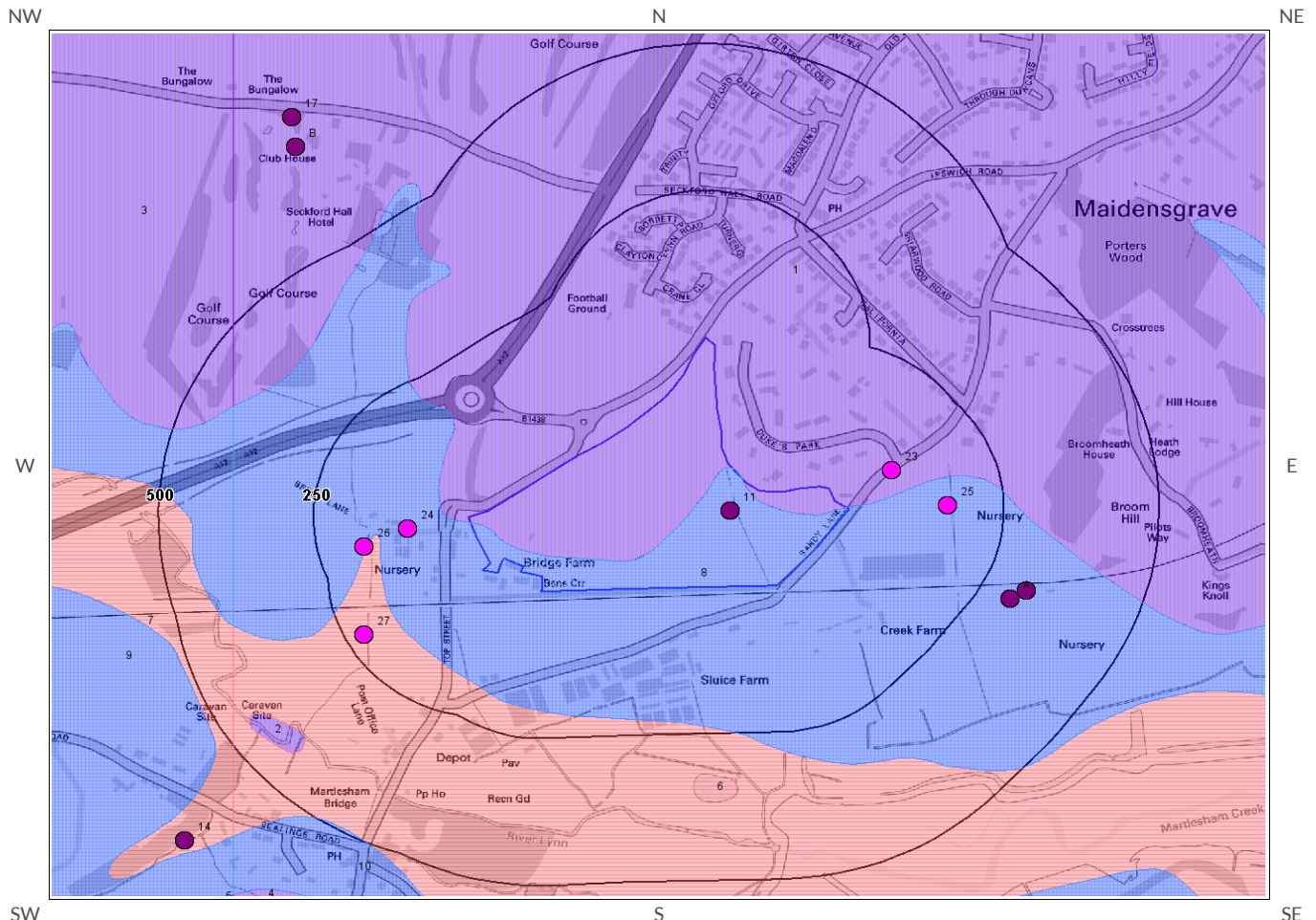
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

# 5 Hydrogeology and Hydrology

## 5a Aquifer Within Superficial Geology



# 5b Aquifer Within Bedrock Geology and Abstraction Licenses

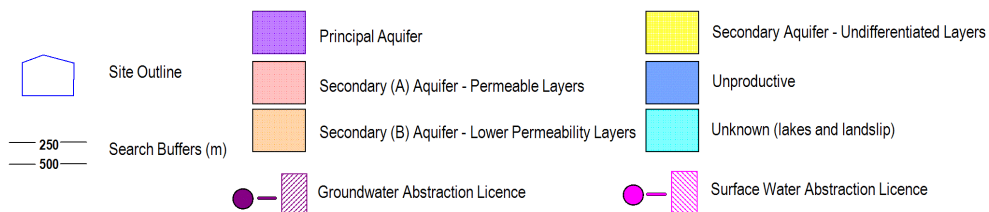


Map Legend

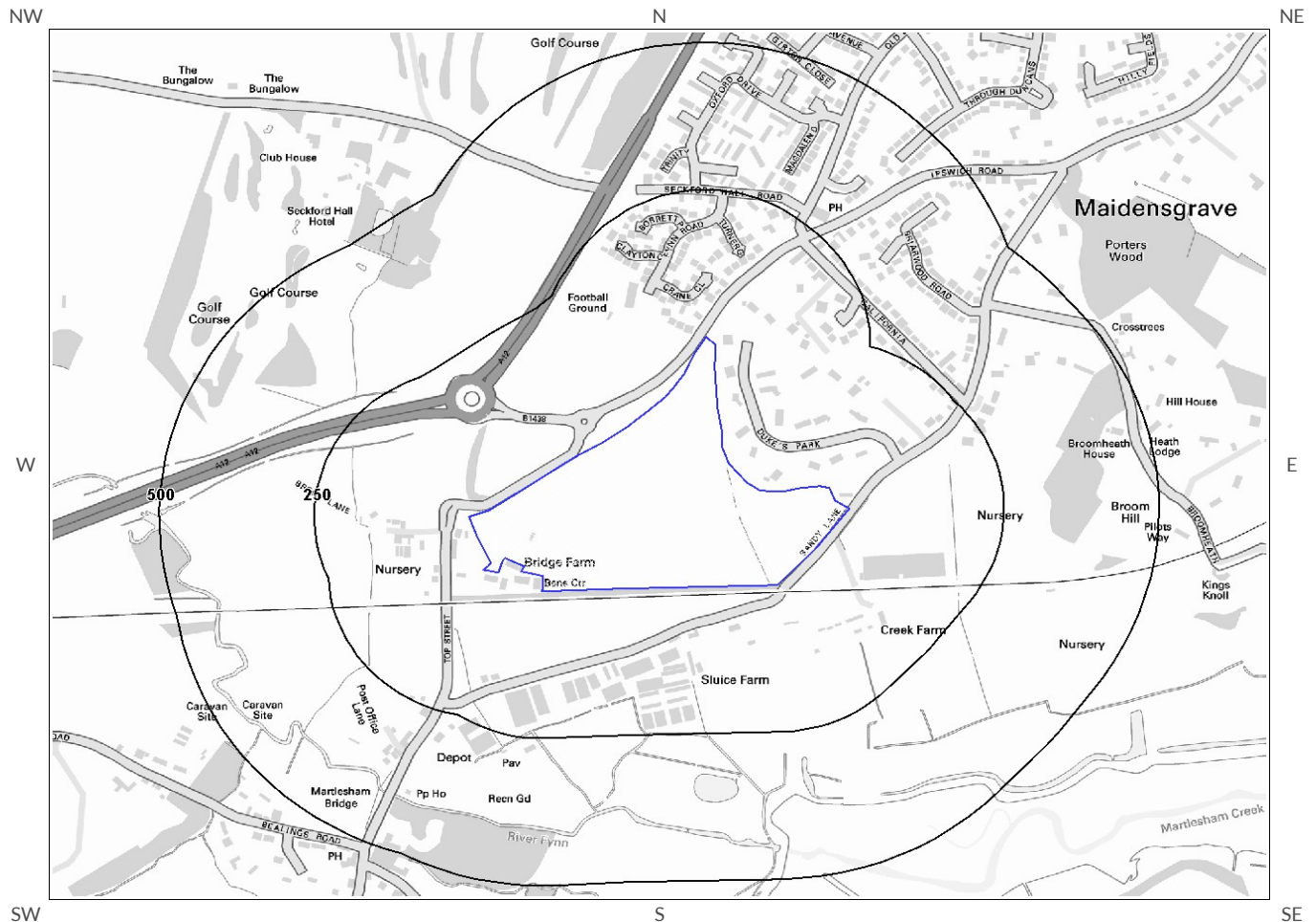
Mapping  
sourced from



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



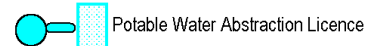
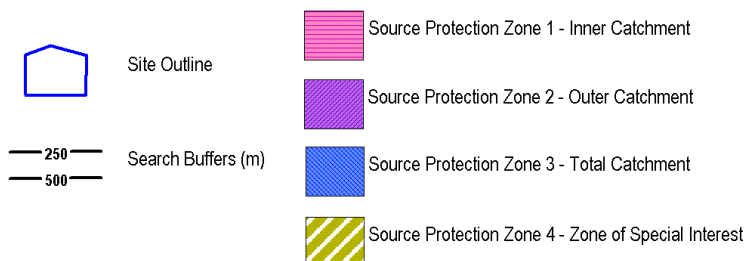
# 5c Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



Map Legend



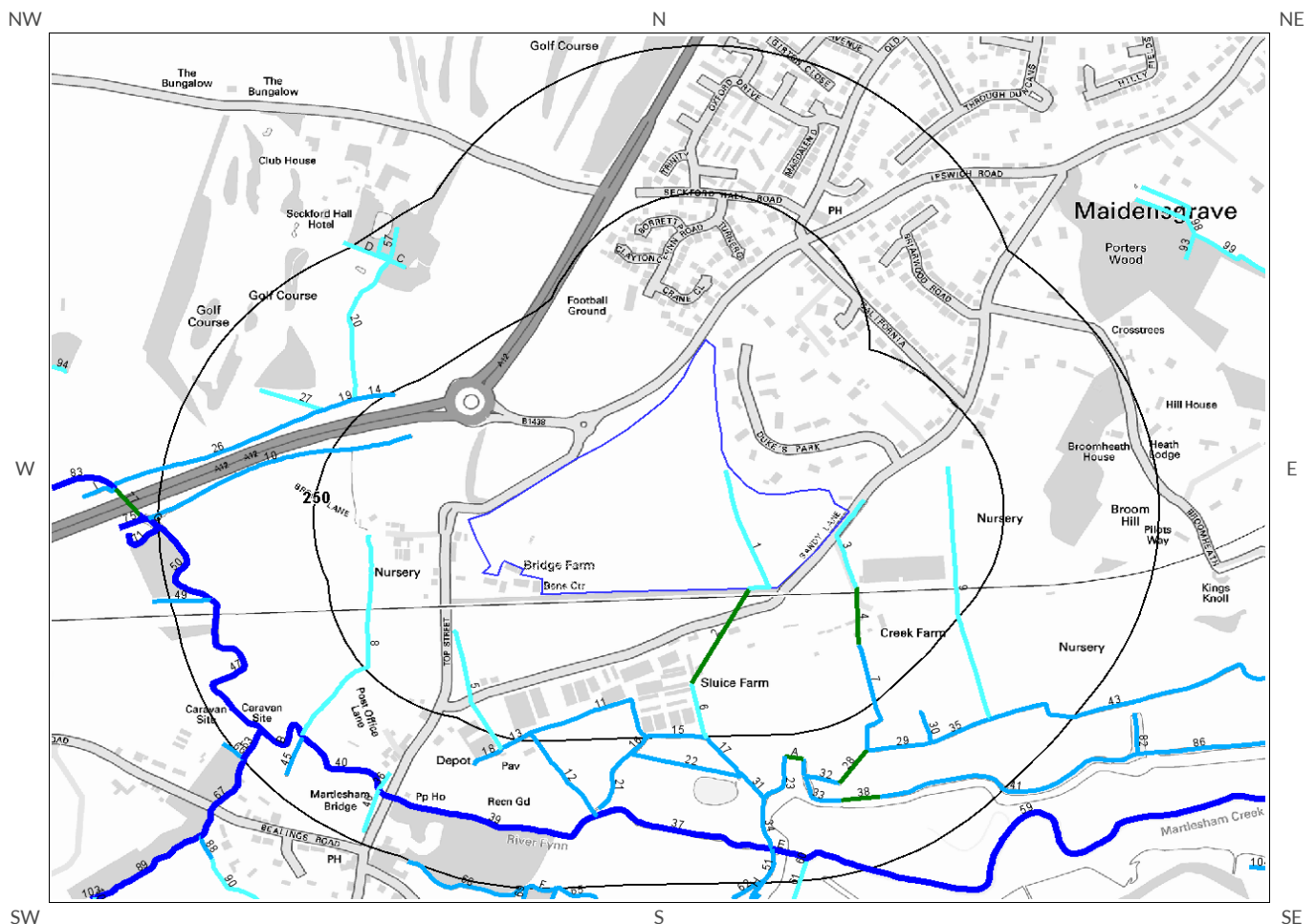
© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



Potable Water Abstraction Licence



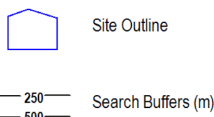
# 5d Hydrology – Detailed River Network and River Quality



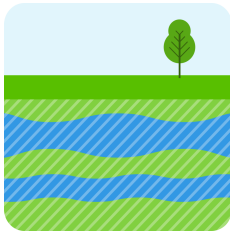
Map Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



- Primary River
- Secondary River
- Tertiary River
- Lake/Reservoir
- Underground River (inferred)
- Underground River (Potential Sewer)
- Underground River (local knowledge)
- Canal
- Canal Tunnel
- Culvert
- Multiple Channel Culvert
- ▲ General Quality Assessment: Biology
- ▲ General Quality Assessment: Chemistry



# 5 Hydrogeology and Hydrology

## 5.1 Aquifer within Superficial Deposits

Are there records of productive strata 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
1	0.0	On Site	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
2	35.0	S	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
13	180.0	NE	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
14	367.0	S	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
3	407.0	W	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
4	437.0	W	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	477.0	NW	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 productive strata 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
8	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
6	148.0	W	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
9	379.0	W	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	400.0	SW	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
7	412.0	W	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
3	424.0	NW	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
10	494.0	SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

## 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
11	0.0	On Site	625800 247780	Licence No: 7/35/07/*G/0049 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Borehole At Martlesham Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/11/1998 Expiry Date: - Issue No: 100 Version Start Date: 1/11/1998 Version End Date:



ID	Distance (m)	Direction	NGR	Details	
12A	301.0	SE	626250 247630	Licence No: 7/35/10/*G/0018 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Bore E Of Creek Fm,woodbridge Data Type: Point	Annual Volume (m³): 16300 Max Daily Volume (m³): 545 Original Application No: - Original Start Date: 1/2/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/2/1997 Version End Date:
13A	318.0	SE	626277 247644	Licence No: 7/35/10/*G/0018 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Bore At Creek Farm, Woodbridge Data Type: Point	Annual Volume (m³): 16300 Max Daily Volume (m³): 1100 Original Application No: NPS/WR/009691 Original Start Date: 1/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 20/3/2012 Version End Date:
14	666.0	SW	624920 247220	Licence No: 7/35/07/*G/0043 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Well Nr Martlesham Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/8/1992 Expiry Date: - Issue No: 100 Version Start Date: 1/8/1992 Version End Date:
15B	688.0	NW	625100 248400	Licence No: 7/35/07/*G/0042 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Borehole At Seckford Hall Road, Gt Bealings Data Type: Point	Annual Volume (m³): 8000 Max Daily Volume (m³): 86 Original Application No: - Original Start Date: 25/10/1991 Expiry Date: - Issue No: 102 Version Start Date: 1/11/2008 Version End Date:
16B	688.0	NW	625100 248400	Licence No: 7/35/07/*G/0042 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Bore Sackford Hall,gt.bealings Data Type: Point	Annual Volume (m³): 12000 Max Daily Volume (m³): 86 Original Application No: EV 1653 Original Start Date: 1/10/1991 Expiry Date: - Issue No: 101 Version Start Date: 14/12/2001 Version End Date:
17	733.0	NW	625093 248450	Licence No: 7/35/07/*G/0042 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Borehole At Seckford Hall Road, Gt Bealing Data Type: Point	Annual Volume (m³): 8000 Max Daily Volume (m³): 86 Original Application No: NPS/WR/008731 Original Start Date: 25/10/1991 Expiry Date: - Issue No: 103 Version Start Date: 5/3/2013 Version End Date:
Not shown	862.0	W	624560 248040	Licence No: 7/35/07/*G/0005 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Well At Cherry Tree Fm,gt.beal Data Type: Point	Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/1/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1972 Version End Date:
Not shown	1260.0	SE	626930 246940	Licence No: 7/35/10/*G/0019 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Bore At Hill Fm,martlesham Data Type: Point	Annual Volume (m³): 45463 Max Daily Volume (m³): 800 Original Application No: LV 16 Original Start Date: 1/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 8/8/2002 Version End Date:

ID	Distance (m)	Direction	NGR	Details
Not shown	1260.0	SE	626930 246940	Licence No: 7/35/10/*G/0019 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Bore At Hill Fm, martlesham Data Type: Point Annual Volume (m³): 45463 Max Daily Volume (m³): 800 Original Application No: LV 16 Original Start Date: 1/2/1966 Expiry Date: - Issue No: 101 Version Start Date: 8/8/2002 Version End Date:
Not shown	1262.0	NE	626800 248800	Licence No: 7/35/10/*G/0067 Details: Spray Irrigation - Direct Direct Source: Ground Water Source Of Supply Point: Well At Home Nursery, woodbr. Data Type: Point Annual Volume (m³): 2450 Max Daily Volume (m³): 36 Original Application No: - Original Start Date: 1/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/2/1997 Version End Date:
Not shown	1975.0	S	626580 245810	Licence No: 7/35/10/*G/0062 Details: General Farming & Domestic Direct Source: Ground Water Source Of Supply Point: Well At Howes Fm, Martlesham Data Type: Point Annual Volume (m³): - Max Daily Volume (m³): - Original Application No: - Original Start Date: 1/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/9/1980 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
23	95.0	NE	626060 247850	Licence No: 7/35/10/*S/0067 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Marsh Drain At Sandy Lane, Maidensgrave Data Type: Point Annual Volume (m³): 2450 Max Daily Volume (m³): 36 Application No: - Original Start Date: 18/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
24	101.0	W	625280 247750	Licence No: 7/35/07/*S/0025 Details: General Farming & Domestic Direct Source: Surface Water Source Of Supply Point: Stream N Of Railway, martlesham Data Type: Point Annual Volume (m³): 6137 Max Daily Volume (m³): 86.38 Application No: ES2774 Original Start Date: 1/3/1967 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2008 Version End Date:
25	159.0	E	626150 247790	Licence No: 7/35/10/*S/0067 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Marsh Drain , Creek Field, Maidensgrave Data Type: Point Annual Volume (m³): 2450 Max Daily Volume (m³): 36 Application No: - Original Start Date: 18/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
26	176.0	W	625210 247720	Licence No: 7/35/07/*S/0025 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Stream N Of Railway,martlesham Data Type: Point	Annual Volume (m³): 6137 Max Daily Volume (m³): 86.38 Application No: ES2774 Original Start Date: 1/3/1967 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2008 Version End Date:
27	221.0	SW	625210 247570	Licence No: 7/35/07/*S/0025 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Stream S Of Railway,martlesham Data Type: Point	Annual Volume (m³): 6137 Max Daily Volume (m³): 86.38 Application No: ES2774 Original Start Date: 1/3/1967 Expiry Date: - Issue No: 101 Version Start Date: 1/4/2008 Version End Date:
Not shown	683.0	W	623700 247500	Licence No: 7/35/07/*S/0050 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: River Finn & Tributary Data Type: Line	Annual Volume (m³): 9050 Max Daily Volume (m³): 250 Application No: ES2300 Original Start Date: 1/2/2001 Expiry Date: - Issue No: 1 Version Start Date: 1/2/2001 Version End Date:
Not shown	683.0	W	623700 247500	Licence No: 7/35/07/*S/0044 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: River Finn & Tributary Data Type: Line	Annual Volume (m³): 9050 Max Daily Volume (m³): 250 Application No: - Original Start Date: 1/10/1992 Expiry Date: - Issue No: 101 Version Start Date: 1/2/2001 Version End Date:
Not shown	1193.0	NE	626790 248690	Licence No: 7/35/10/*S/0067 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Stream At Home Nursery, Woodbr Data Type: Point	Annual Volume (m³): 2450 Max Daily Volume (m³): 36 Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 18/2/1997 Version End Date:
Not shown	1193.0	NE	626790 248690	Licence No: 7/35/10/*S/0067 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Stream At Home Nursery, Woodbridge Data Type: Point	Annual Volume (m³): 2450 Max Daily Volume (m³): 36 Application No: - Original Start Date: 18/4/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:
Not shown	1311.0	W	623360 248350	Licence No: 7/35/07/*S/0026 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: R Lark S Of Great Bealings Data Type: Line	Annual Volume (m³): - Max Daily Volume (m³): - Application No: - Original Start Date: 1/8/1979 Expiry Date: - Issue No: 100 Version Start Date: 1/2/1998 Version End Date:

ID	Distance (m)	Direction	NGR	Details	
Not shown	1311.0	W	623360 248350	Licence No: 7/35/07/*S/0026 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: R Lark S Of Great Bealings Data Type: Line	Annual Volume (m³): 31800 Max Daily Volume (m³): 1161 Application No: EV1884 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 101 Version Start Date: 18/5/2004 Version End Date:
Not shown	1565.0	W	623510 247510	Licence No: 7/35/07/*S/0026 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: R Finn D/s Of Bealings Bridge Data Type: Line	Annual Volume (m³): 31800 Max Daily Volume (m³): 1161 Application No: EV1884 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 101 Version Start Date: 18/5/2004 Version End Date:
Not shown	1642.0	W	623755 248010	Licence No: 7/35/07/*S/0024 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Manor Farm Reservoir Data Type: Point	Annual Volume (m³): 47700 Max Daily Volume (m³): 546 Application No: NPS/WR/013683 Original Start Date: 1/3/1967 Expiry Date: - Issue No: 102 Version Start Date: 12/7/2013 Version End Date:
Not shown	1656.0	W	623740 248010	Licence No: 7/35/07/*S/0026 Details: Spray Irrigation - Storage Direct Source: Surface Water Source Of Supply Point: R Lark E Of Manor House Fm Data Type: Point	Annual Volume (m³): 31800 Max Daily Volume (m³): 1161 Application No: EV1884 Original Start Date: 1/8/1979 Expiry Date: - Issue No: 101 Version Start Date: 18/5/2004 Version End Date:
Not shown	1935.0	E	627900 248100	Licence No: 7/35/10/*S/0024 Details: Spray Irrigation - Direct Direct Source: Surface Water Source Of Supply Point: Res By Imp'g At Ferry Fm,sut'n Data Type: Point	Annual Volume (m³): 90800 Max Daily Volume (m³): 2718 Application No: - Original Start Date: 1/4/1966 Expiry Date: - Issue No: 100 Version Start Date: 1/3/1987 Version End Date:

## 5.5 Potable Water Abstraction Licences

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

No

Database searched and no data found.



## 5.6 Source Protection Zones

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

No

Database searched and no data found.

## 5.7 River Quality

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

Yes

### 5.7.1 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	1079.0	W	624300 247800	River Name: Fynn Reach: Playford Bridge...little Bealings End/Start of Stretch: End of Stretch NGR	A	A	B	B	B

### 5.7.2 Chemical Quality:

Database searched and no data found.

## 5.8 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: Tertiary River Main River Status: Currently Undefined
2	0.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
3	8.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
4	89.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
5	109.0	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	159.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	161.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
8	163.0	W	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
9	165.0	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
10	170.0	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
11	185.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
12	237.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
13	237.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
14	244.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
15	246.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
16	249.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
17	253.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
18	271.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
19	276.0	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
20	276.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
21	276.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
22	276.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
23	286.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
24 A	286.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
25 A	294.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
26	299.0	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
27	299.0	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
28	311.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
29	311.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
30	311.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
31	317.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
32	324.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
33	324.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
34	358.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
35	362.0	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
36	370.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
37	371.0	S	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
38	375.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
39	379.0	S	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
40	385.0	SW	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
41	391.0	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
42 B	396.0	SW	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined



ID	Distance (m)	Direction	Details	
43	400.0	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
44 B	402.0	SW	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
45	402.0	SW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
46	405.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
47	414.0	W	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
48 C	422.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
49	437.0	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
50	437.0	W	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
51	444.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
52 E	444.0	S	River Name: River Fynn Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
53	445.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
54 C	446.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
55 D	446.0	NW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
56 D	449.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
57	449.0	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
58 E	451.0	S	River Name: Martlesham Creek Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
59	455.0	S	River Name: Martlesham Creek Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
60	461.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
61	468.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
62	495.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
63 H	495.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

ID	Distance (m)	Direction	Details	
64 F	496.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
65	499.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
66	499.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
67	499.0	SW	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Primary River Main River Status: Currently Undefined
68	499.0	S	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
69	499.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
70 F	500.0	S	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined

## 5.9 Surface Water Features

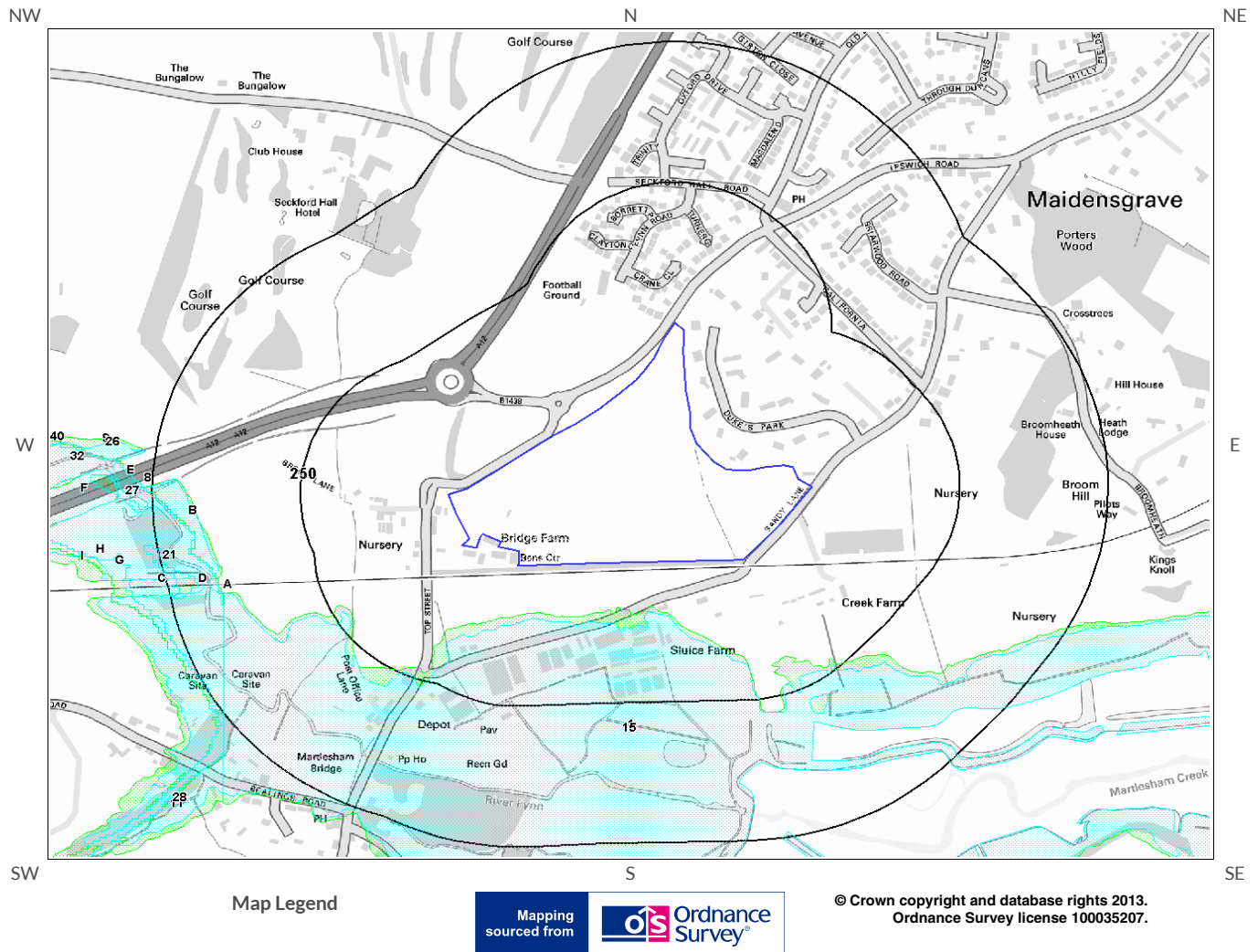
Are there any surface water features within 250m of the study site?

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
8.0	SE
45.0	SE
109.0	SW
159.0	S
161.0	SE
163.0	W
164.0	E
164.0	W
169.0	NW
182.0	W
184.0	S
198.0	W
215.0	SW
216.0	S
233.0	SE
244.0	NW

# 6 Environment Agency Flood Map





# 6 Flooding

## 6.1 Zone 2 Flooding

Zone 2 floodplain estimates the annual probability of flooding as one in one thousand (0.1%) or greater from rivers and the sea but less than 1% from rivers or 0.5% from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 2 floodplain?

Yes

The following floodplain records are represented as green shading on the Flood Map:

ID	Distance (m)	Direction	Update	Type
1	80.0	S	17-Dec-2013	Zone 2 - (Tidal Models )

## 6.2 Zone 3 Flooding

Zone 3 estimates the annual probability of flooding as one in one hundred (1%) or greater from rivers and a one in two hundred (0.5%) or greater from the sea. Alternatively, where information is available they may show the highest known flood level.

Is the site within 250m of an Environment Agency indicative Zone 3 floodplain?

Yes

The following floodplain records are represented as blue shading on the Flood Map:

ID	Distance (m)	Direction	Update	Type
15	88.0	S	17-Dec-2013	Zone 3 - (Tidal Models )

## 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

---

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

Very High

---

## 6.7 Groundwater Flooding Confidence Areas

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

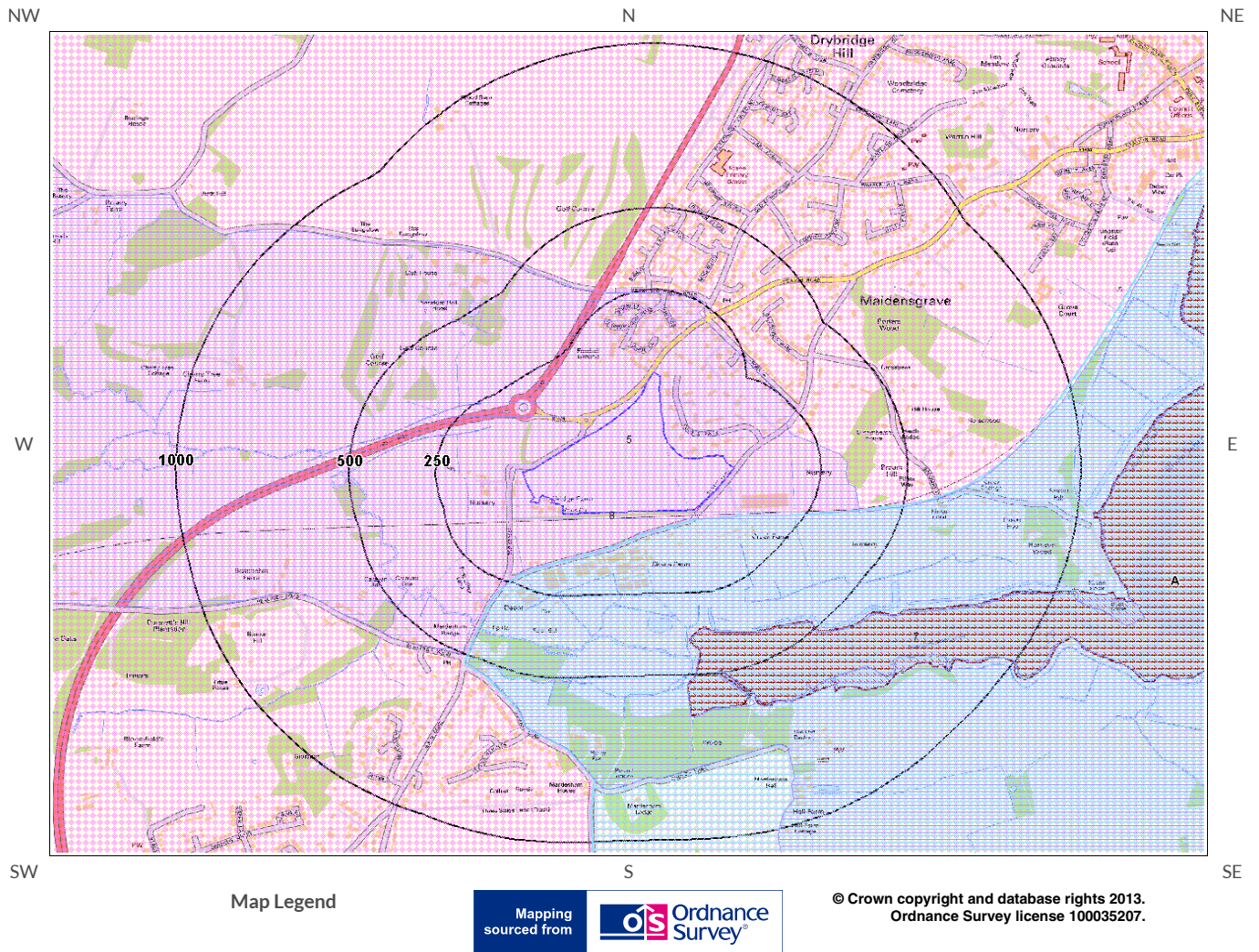
Moderate















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:

2

The following Site of Special Scientific Interest (SSSI) 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	SSSI Name	Data Source
2A	356.0	S	Deben Estuary	Natural England
Not shown	1851.0	NE	Ferry Cliff, Sutton	Natural England

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:

1

The following Special Protection Area (SPA) 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	SPA Name	Data Source
1A	356.0	S	Deben Estuary	Natural England

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

1

The following Ramsar site 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	Ramsar Site Name	Data Source
4A	356.0	S	Deben Estuary	Natural England

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

3

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
Not shown	1238.0	SE	LUMBER WOOD	Ancient and Semi-Natural Woodland
Not shown	1300.0	NW	BLUNTS WOOD	Ancient Replanted Woodland
Not shown	1393.0	NW	BLUNTS WOOD	Ancient and Semi-Natural Woodland

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

0

Database searched and no data found.

#### 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:

3

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

ID	Distance (m)	Direction	ESA Name	Data Source
8	0.0	On Site	Suffolk River Valleys	Natural England
Not shown	1523.0	E	Suffolk River Valleys	Natural England
Not shown	1737.0	NE	Suffolk River Valleys	Natural England

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

1

The following Area of Outstanding Natural Beauty (AONB) records and Scottish National Scenic Area (NSA) records provided by Natural England/Countryside Council for Wales/Scottish Government are represented as polygons on the Designated Environmentally Sensitive Sites Map:

ID	Distance (m)	Direction	AONB/NSA Name	Data Source
7	27.0	S	Suffolk Coast and Heaths	Natural England

#### 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:

2

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
5	0.0	On Site	NVZ Area	DEFRA

ID	Distance (m)	Direction	NVZ Name	Data Source
Not shown	1924.0	N	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?

Null - Negligible

Soluble rocks are not present in the search area. 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.

---

### 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?

Low

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

---

### Hazard

---

Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property no significant increase in insurance risk due to running sand problems is likely.

---



---

\* 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

Hydrock  
Telephone: 01752 347 515  
marcushaes@hydrock.com



## British Geological Survey Enquiries

Kingsley Dunham Centre  
Keyworth, Nottingham NG12 5GG  
Tel: 0115 936 3143.  
Fax: 0115 936 3276.  
Email: [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)  
Web: [www.bgs.ac.uk](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries



## Environment Agency

National Customer Contact Centre, PO Box 544  
Rotherham, S60 1BY  
Tel: 08708 506 506  
Web: [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)  
Email: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)



## Public Health England

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



## The Coal Authority

200 Lichfield Lane  
Mansfield  
Notts NG18 4RG  
Tel: 0845 762 6848  
DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)



## Ordnance Survey

Romsey Road  
Southampton SO16 4GU  
Tel: 08456 050505



## Local Authority

Authority: Suffolk Coastal District Council  
Phone: 01394 383789  
Web: [www.suffolkcoastal.gov.uk](http://www.suffolkcoastal.gov.uk)  
Address: Melton Hill, Woodbridge, Suffolk, IP12 1AU

## 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](http://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 the 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 the 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. © GroundSure Limited June 2013



Hydrock Consultants Ltd

Over Court Barns, Over Lane,  
Almondsbury, BS32 4DF

Report Reference: HYD-1287015

Your Reference: C14106/S14047

Report Date 11 Feb 2014

Report Delivery Method: Email - pdf

## GroundSure Geoinsight

Address: DUKES PARK, WOODBRIDGE, IP12 4DD

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 01752 347 515 quoting the above report reference number.

Yours faithfully,

Hydrock

Enc.  
GroundSure GeoInsight



# GroundSure GeoInsight

Address: DUKES PARK, WOODBRIDGE, IP12 4DD

Date: 11 Feb 2014

Reference: HYD-1287015

Client: Hydrock Consultants Ltd



Aerial Photograph Capture date: 26-Mar-2007  
Grid Reference: 625694,247787  
Site Size: 12.37ha



# Contents Page

Contents Page .....	3
Overview of Findings.....	4
1 Geology.....	6
1.1 Artificial Ground Map.....	6
1.1 Artificial Ground.....	7
1.1.1 Artificial/ Made Ground.....	7
1.1.2 Permeability of Artificial Ground.....	7
1.2 Superficial Deposits and Landslips Map.....	8
1.2 Superficial Deposits and Landslips.....	9
1.2.1 Superficial Deposits/ Drift Geology.....	9
1.2.2 Permeability of Superficial Ground.....	9
1.2.3 Landslip.....	9
1.2.4 Landslip Permeability.....	9
1.3 Bedrock and Faults Map.....	10
1.3 Bedrock, Solid Geology & Faults.....	11
1.3.1 Bedrock/ Solid Geology.....	11
1.3.2 Permeability of Bedrock Ground.....	11
1.3.3 Faults.....	11
1.4 Radon Data.....	12
1.4.1 Radon Affected Areas.....	12
1.4.2 Radon Protection.....	12
2 Ground Workings Map.....	13
2 Ground Workings.....	14
2.1 Historical Surface Ground Working Features derived from Historical Mapping.....	14
2.2 Historical Underground Working Features derived from Historical Mapping.....	14
2.3 Current Ground Workings.....	15
3 Mining, Extraction & Natural Cavities Map.....	16
3 Mining, Extraction & Natural Cavities.....	17
3.1 Historical Mining.....	17
3.2 Coal Mining.....	17
3.3 Johnson Poole and Bloomer.....	17
3.4 Non-Coal Mining.....	17
3.5 Non-Coal Mining Cavities.....	18
3.6 Natural Cavities.....	18
3.7 Brine Extraction.....	18
3.8 Gypsum Extraction.....	18
3.9 Tin Mining.....	19
3.10 Clay Mining.....	19
4 Natural Ground Subsidence.....	20
4.1 Shrink-Swell Clay Map.....	20
4.2 Landslides Map.....	21
4.3 Ground Dissolution Soluble Rocks Map.....	22
4.4 Compressible Deposits Map.....	23
4.5 Collapsible Deposits Map.....	24
4.6 Running Sand Map.....	25
4 Natural Ground Subsidence.....	26
4.1 Shrink-Swell Clays.....	26
4.2 Landslides.....	26
4.3 Ground Dissolution of Soluble Rocks.....	27
4.4 Compressible Deposits.....	27
4.5 Collapsible Deposits.....	27
4.6 Running Sands.....	28
5 Borehole Records Map.....	29
5 Borehole Records.....	30
6 Estimated Background Soil Chemistry.....	33

# 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	4	2	4	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	0	0

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
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	0	0	3	3	1
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

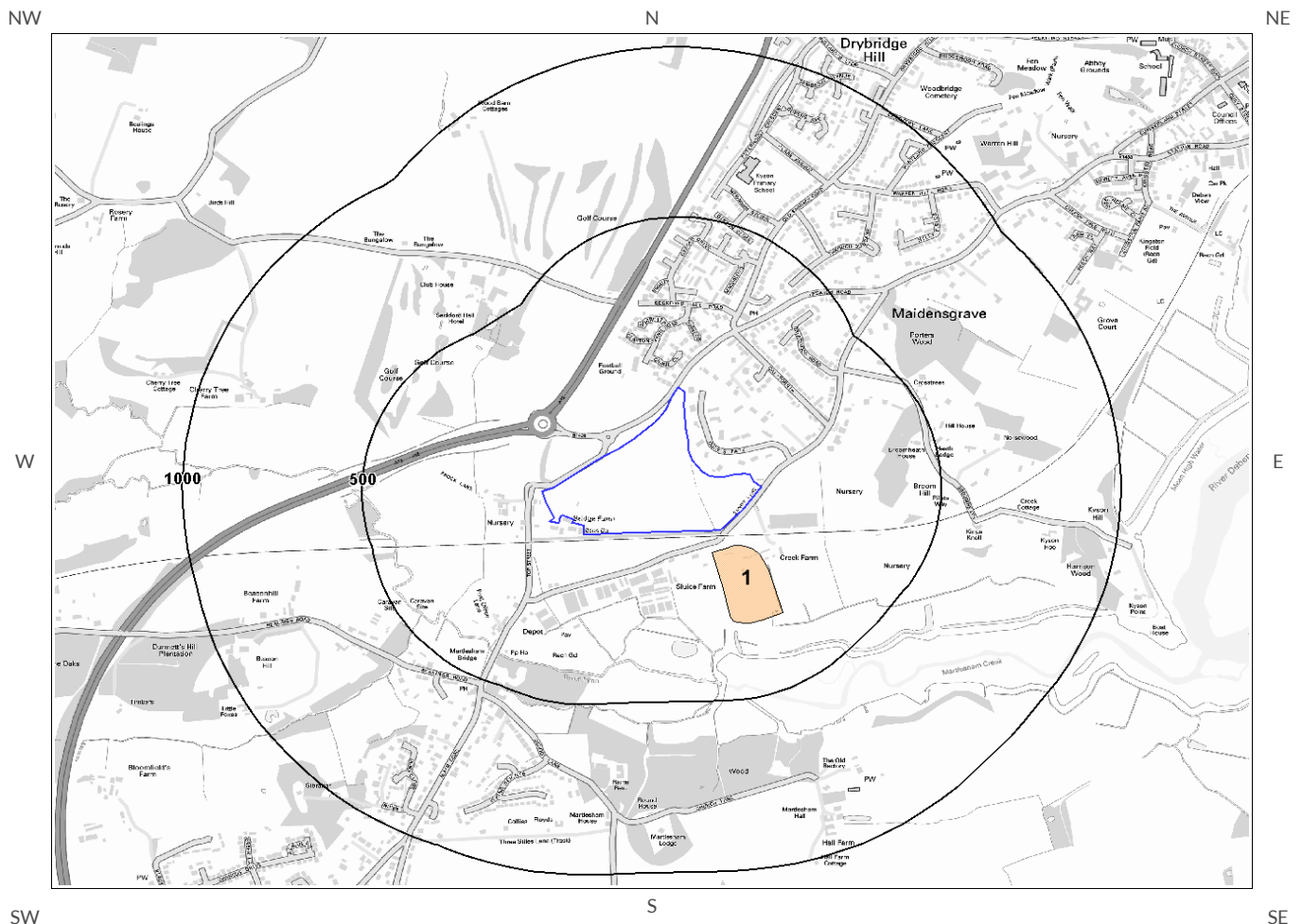
Section 4: Natural Ground Subsidence	On-site
4.1 Shrink Swell Clay	Low
4.2 Landslides	Low
4.3 Ground Dissolution of Soluble Rocks	Null
4.4 Compressible Deposits	Negligible
4.5 Collapsible Deposits	Very Low
4.6 Running Sand	Low

Section 5: Borehole Records	On-site	0-50m	51-250
5 BGS Recorded Boreholes	1	2	26

Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	5	4	7

# 1 Geology

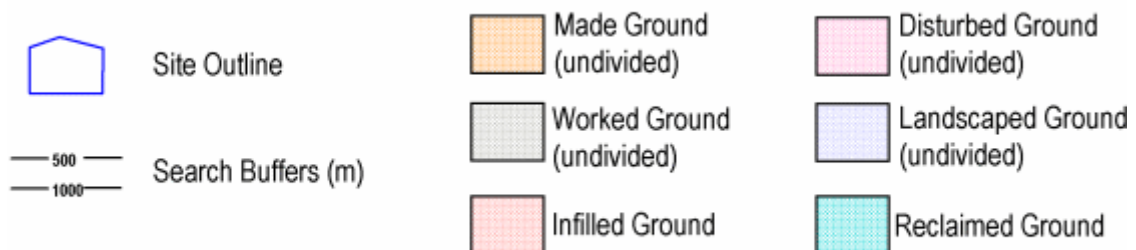
## 1.1 Artificial Ground Map



Artificial Ground Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.







# 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:207

Are there any records of Artificial/Made Ground within 500m of the study site boundary? Yes

ID	Distance (m)	Direction	LEX Code	Description	Rock Description
1	53.0	S	LSGR-UNKN	LANDSCAPED GROUND (UNDIVIDED)	UNKNOWN/UNCLASSIFIED ENTRY

---

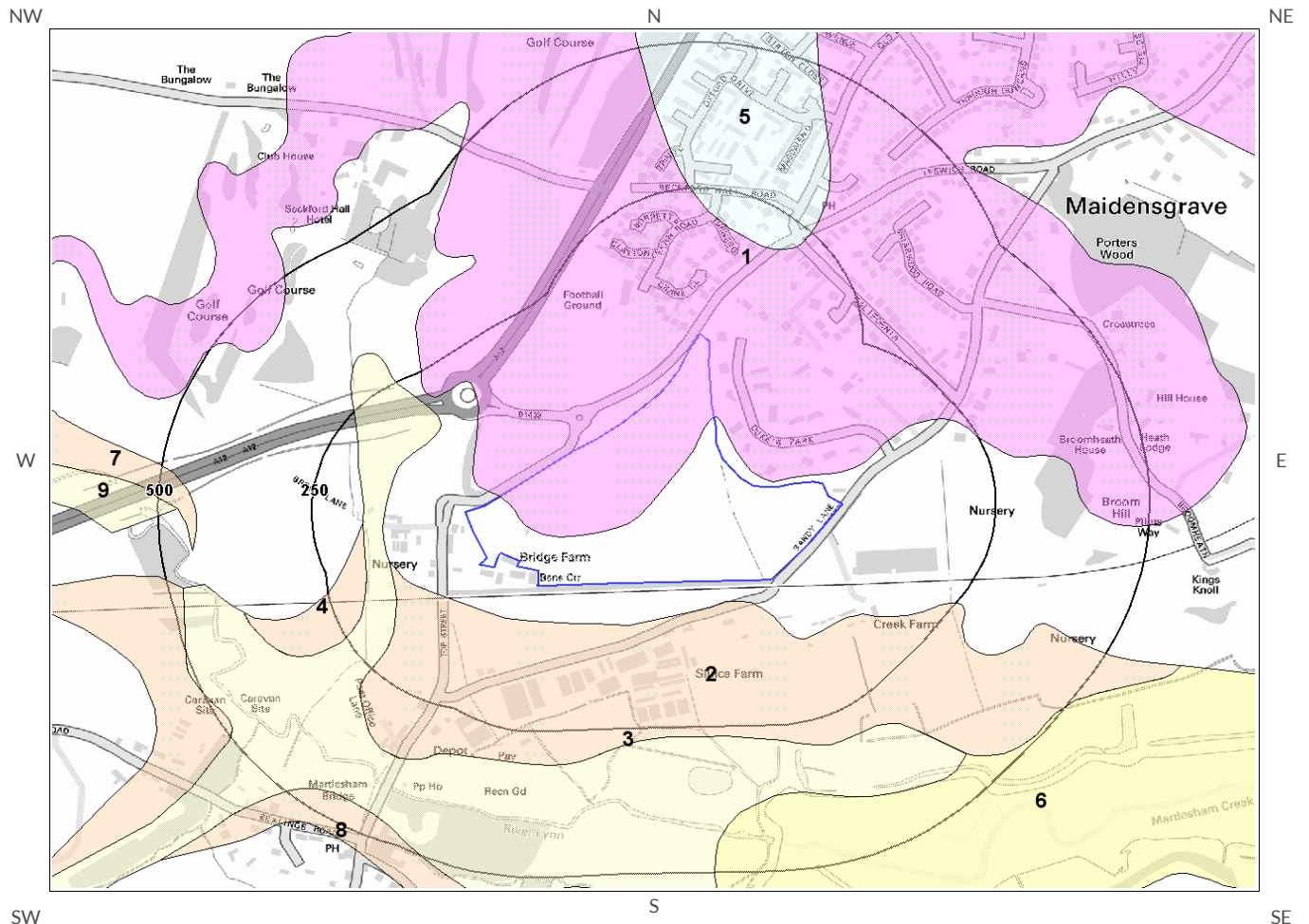
### 1.1.2 Permeability of Artificial Ground

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 Map



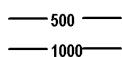
Superficial Deposits and Landslips Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

# 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	KGCA-SAGR	KESGRAVE CATCHMENT SUBGROUP	SAND AND GRAVEL
2	35.0	S	RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
3	128.0	W	ALV-SICL	ALLUVIUM	SILTY CLAY
4	168.0	W	RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
5	180.0	NE	LOFT-DMTN	LOWESTOFT FORMATION	DIAMICTON
6	367.0	S	TFD-CLSI	TIDAL FLAT DEPOSITS	CLAY AND SILT
7	437.0	W	RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
8	456.0	SW	RTDU-SAGR	RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)	SAND AND GRAVEL
9	468.0	W	ALV-SICL	ALLUVIUM	SILTY CLAY
10	477.0	W	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	Intergranular	Very High	High
35.0	S	Intergranular	Very High	High

## 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.

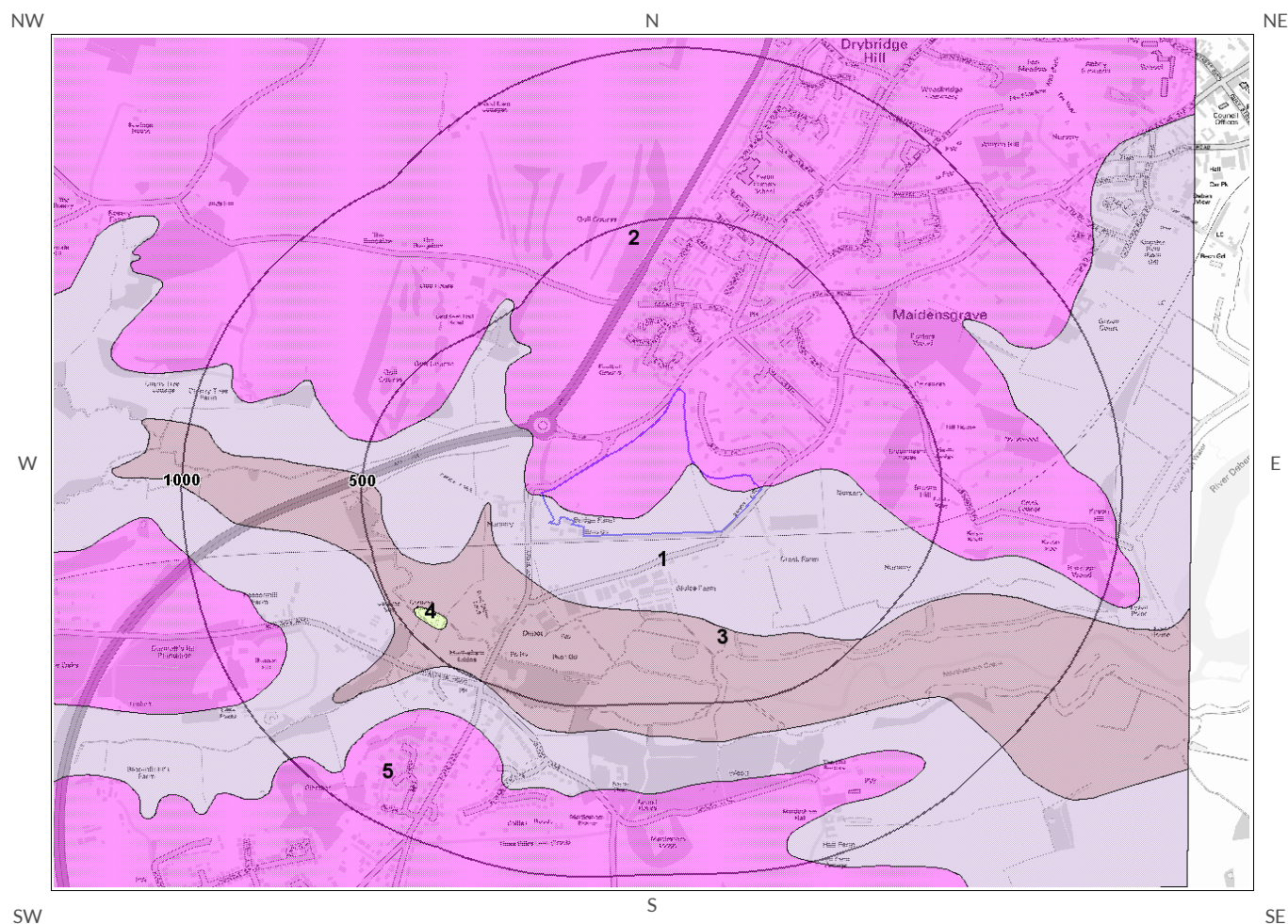
## 1.2.4 Landslip Permeability

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



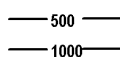
Bedrock and Faults Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



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:207

## 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	THAM-SICL	Thames Group - Silty Clay	Eocene
2	0.0	On Site	RCG-SAND	Red Crag Formation - Sand	Thurnian / Piacenzian (waltonian)
3	148.0	W	TALM-SACL	Thanet Sand Formation And Lambeth Group (undifferentiated) - Sand And Clay	Paleocene
4	400.0	SW	CUCK-CHLK	Culver Chalk Formation - Chalk	Campanian

## 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	Intergranular	High	High
0.0	On Site	Fracture	Low	Very Low

## 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

---





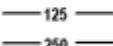
# 2 Ground Workings Map



## Ground Workings Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.

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



## 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	625471 247741	Unspecified Pit	1953
2A	0.0	On Site	625469 247737	Unspecified Pit	1938
3A	0.0	On Site	625469 247737	Unspecified Pit	1881
4A	0.0	On Site	625469 247737	Unspecified Pit	1902
5	14.0	NW	625583 247958	Cuttings	1992
6B	45.0	SE	625946 247496	Sewage Works	1992
7B	90.0	S	625951 247487	Sewage Works	1971
8C	155.0	NW	625474 248098	Cuttings	1953
9C	164.0	NW	625467 248100	Cuttings	1992
10C	166.0	NW	625476 248101	Cuttings	1971

### 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

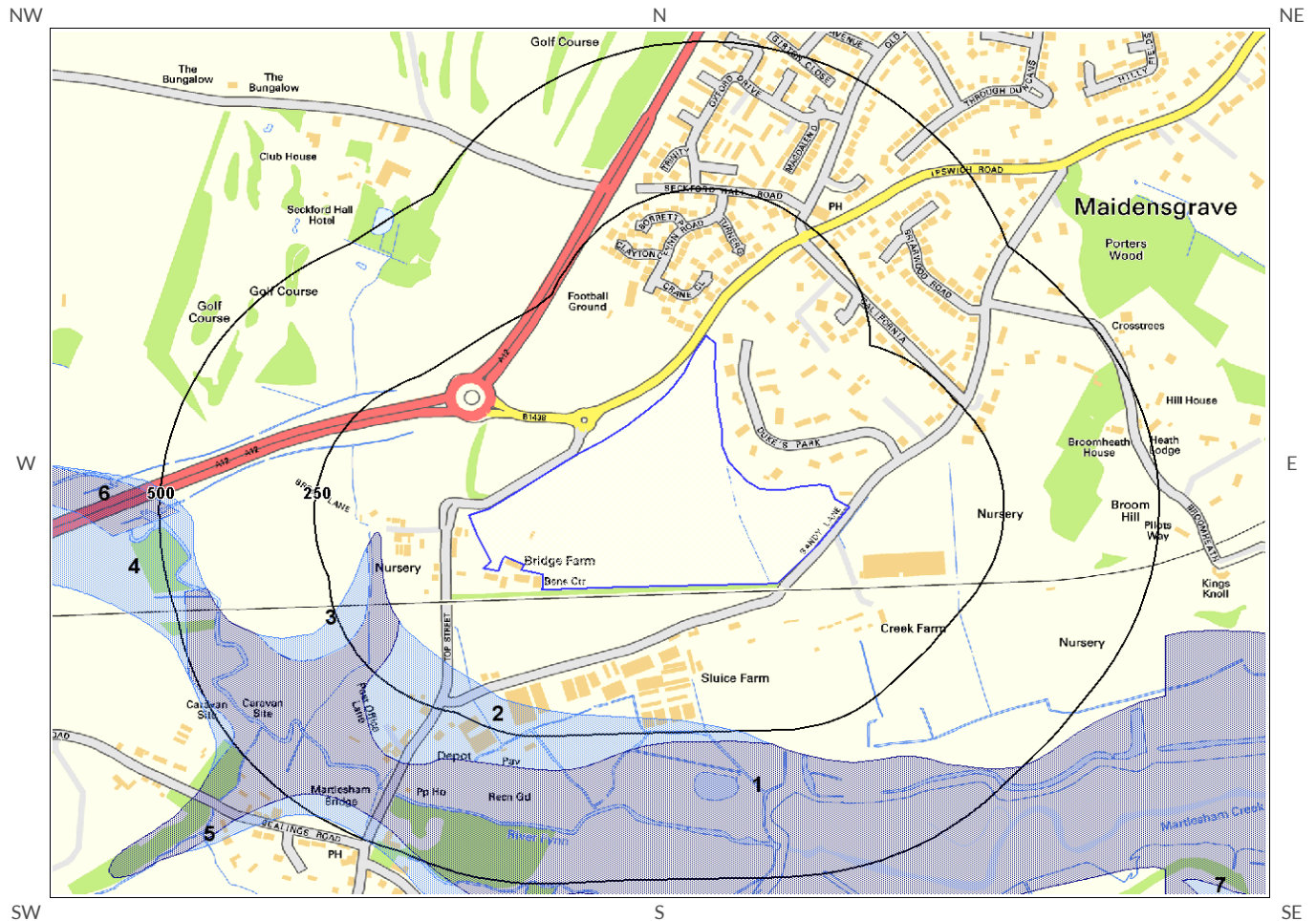
This dataset is derived from the BGS BRITPITS database covering active; inactive mines; quarries; oil wells; gas wells and mineral wharves; and rail deposits throughout the British Isles.

Are there any BGS Current Ground Workings within 1000m of the study site boundary? No

Database searched and no data found.

---


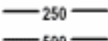
# 3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and Natural Cavities Legend






Mapping sourced from 

© Crown copyright and database rights 2013. Ordnance Survey license 100035207.

 Site Outline  
 Search Buffers (m)  
— 250 —  
— 500 —

 Historical Mining  
 Non-Coal Mining Cavities  
 Natural Cavities

## Non-Coal Mining

 Highly likely  
 Likely  
 Unlikely  
 Highly unlikely  
 Rare





## 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	148.0	W	Not available	Chalk	Rare - Infrequent minor mining may have occurred but restricted in extent.
2	161.0	SW	Not available	Chalk	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
3	173.0	W	Not available	Chalk	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
4	442.0	W	Not available	Chalk	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
5	456.0	SW	Not available	Chalk	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
6	468.0	W	Not available	Chalk	Rare - Infrequent minor mining may have occurred but restricted in extent.
7	819.0	SE	Not available	Chalk	Highly Unlikely - Localised small scale mining may have occurred but restricted in 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 dataset provides information from the Brine Compensation Board which has been discontinued and is now covered by the Coal Authority.

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.

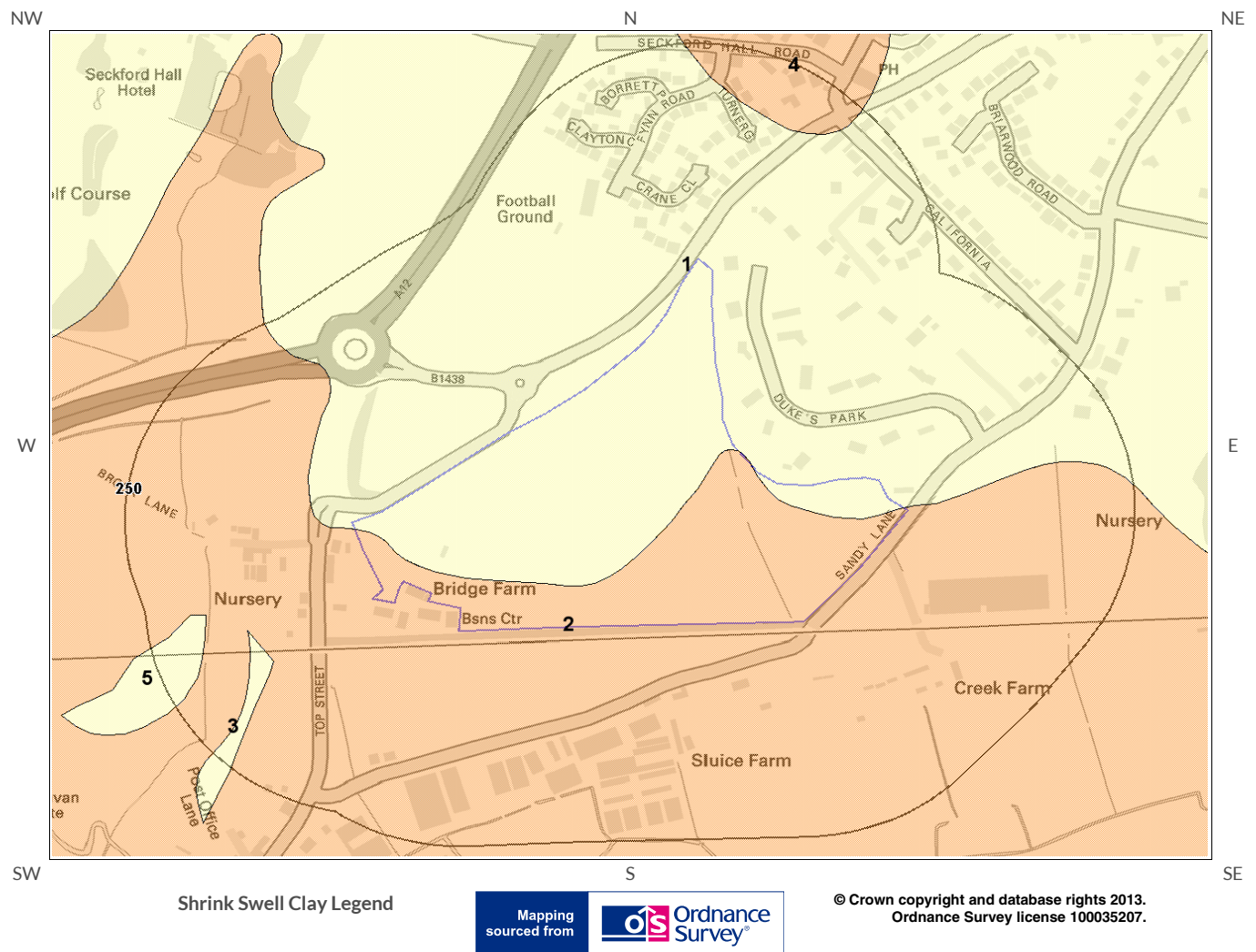
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

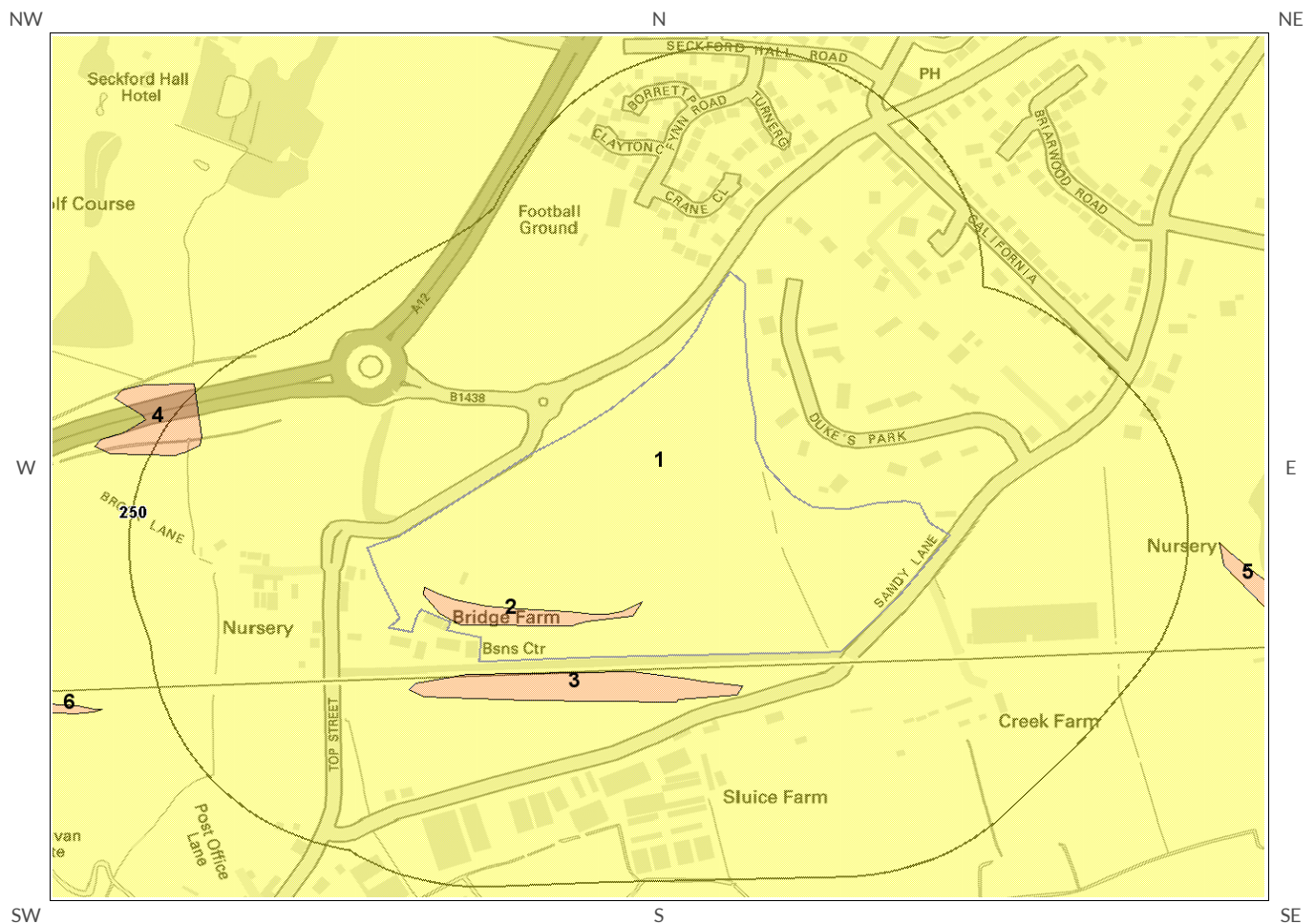
---

# 4 Natural Ground Subsidence

## 4.1 Shrink-Swell Clay Map



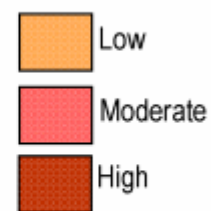
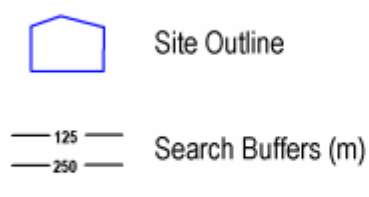
# 4.2 Landslides Map



Landslides Legend

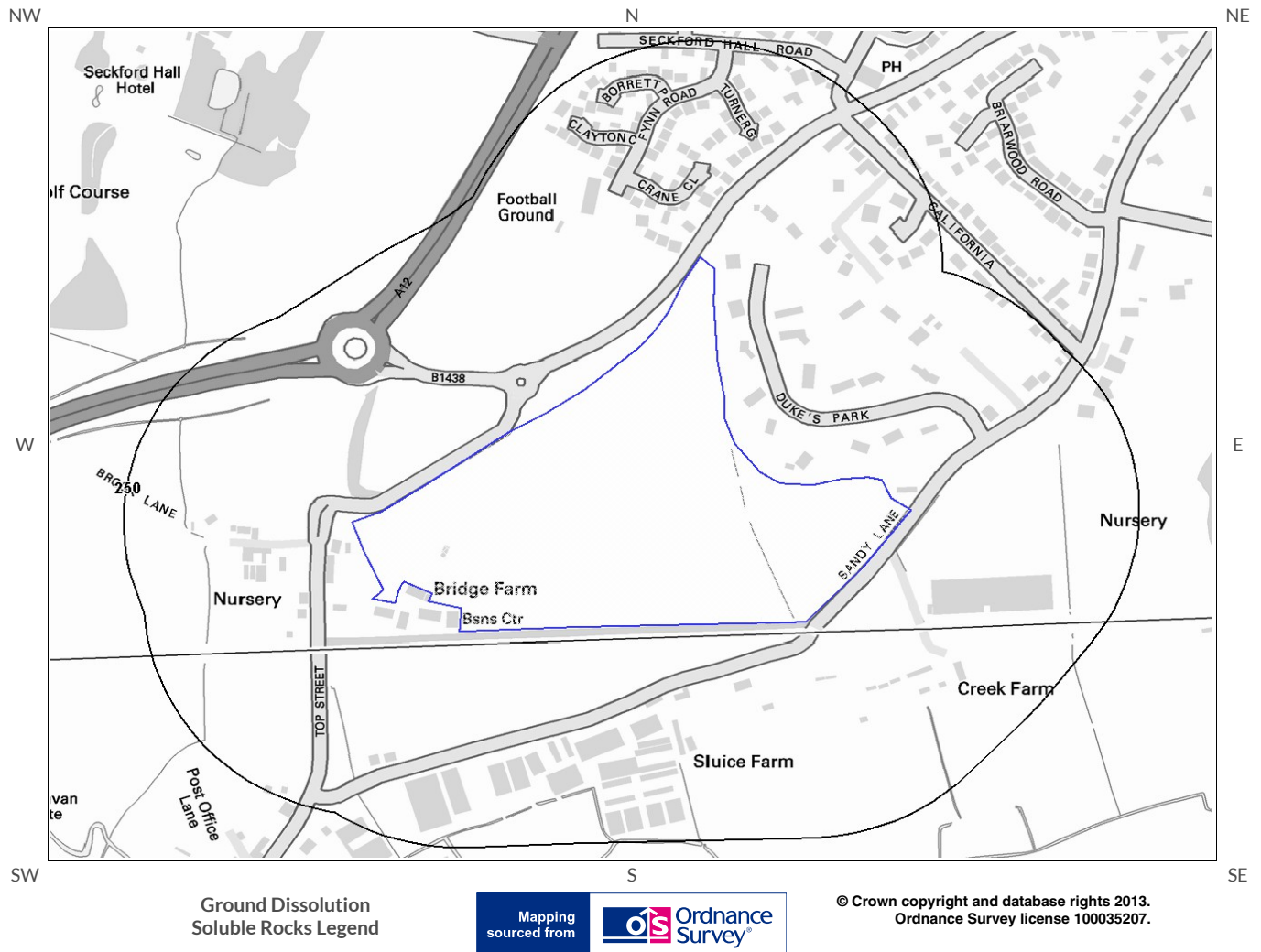



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.







# 4.3 Ground Dissolution Soluble Rocks Map



 Site Outline


 125 Search Buffers (m)


 250


 No Data / Null

 Negligible

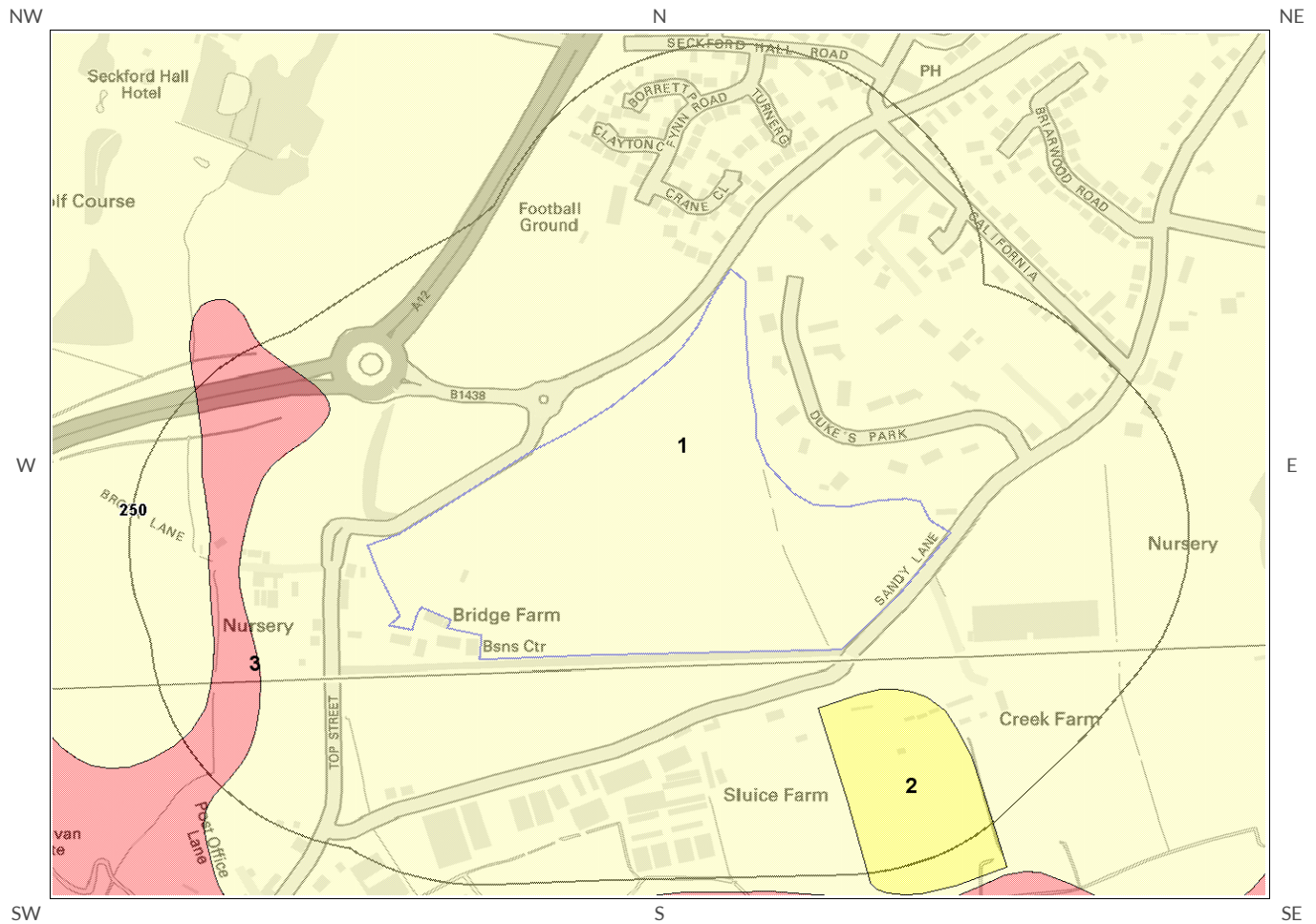
 Very Low

 Low

 Moderate

 High

# 4.4 Compressible Deposits Map



Compressible Deposits Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.



# 4.5 Collapsible Deposits Map



Collapsible Deposits Legend

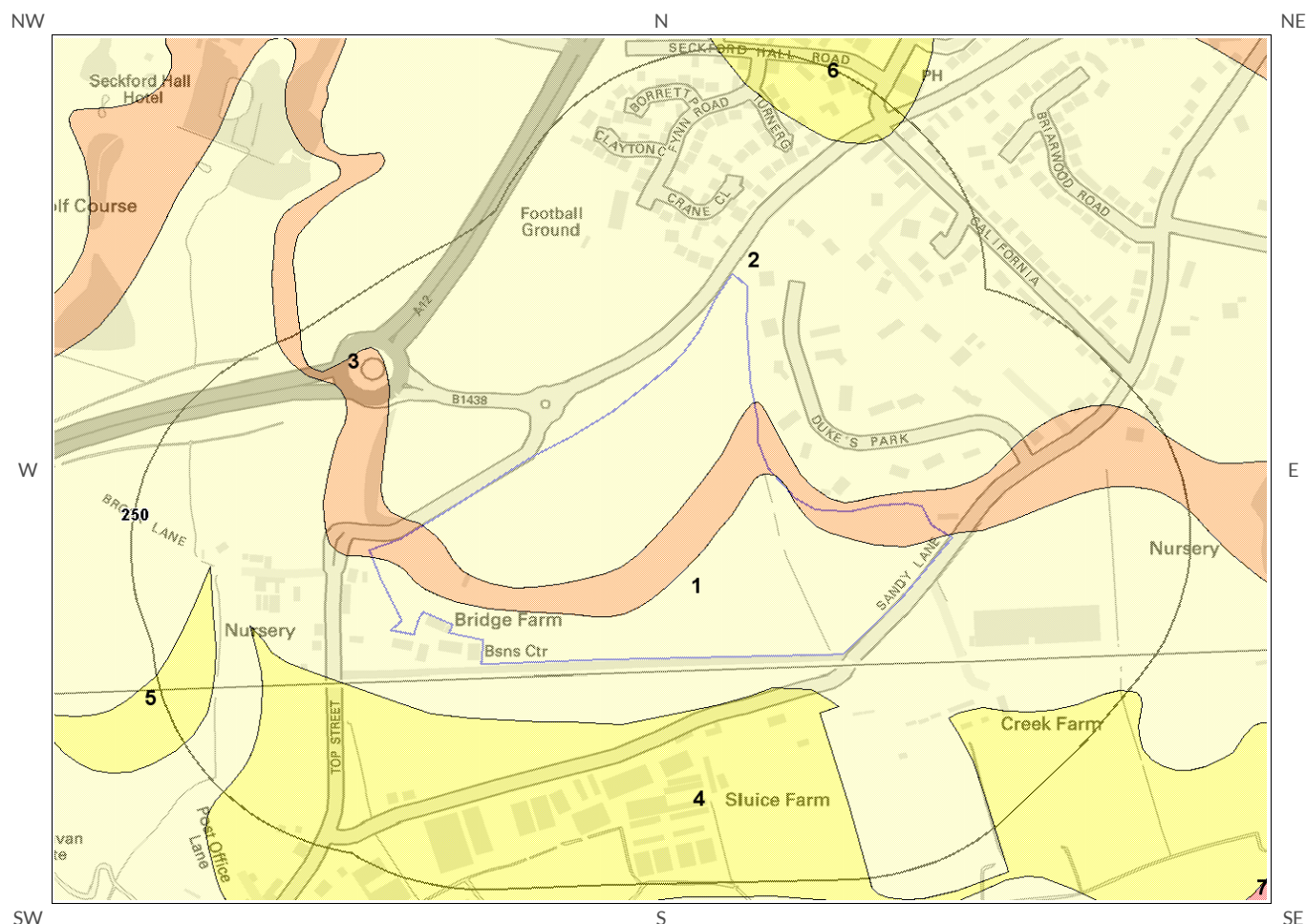


© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.





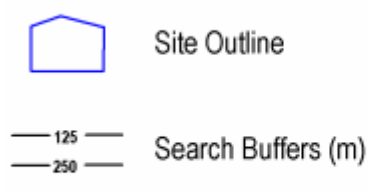
# 4.6 Running Sand Map



Running Sand Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.





# 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	Negligible	Ground conditions predominantly non-plastic. No special actions required to avoid problems due to shrink-swell clays. No special ground investigation required, and increased construction costs or increased financial risks are unlikely likely due to potential problems with shrink-swell clays.
2	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	0.0	On Site	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.

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



ID	Distance (m)	Direction	Hazard Rating	Details
3	15.0	S	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 Compressible Deposits information provided by the British Geological Survey:

Distance (m)	Direction	Hazard Rating	Details
0	On site	Null-Negligible	Soluble rocks are not present in the search area. 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:

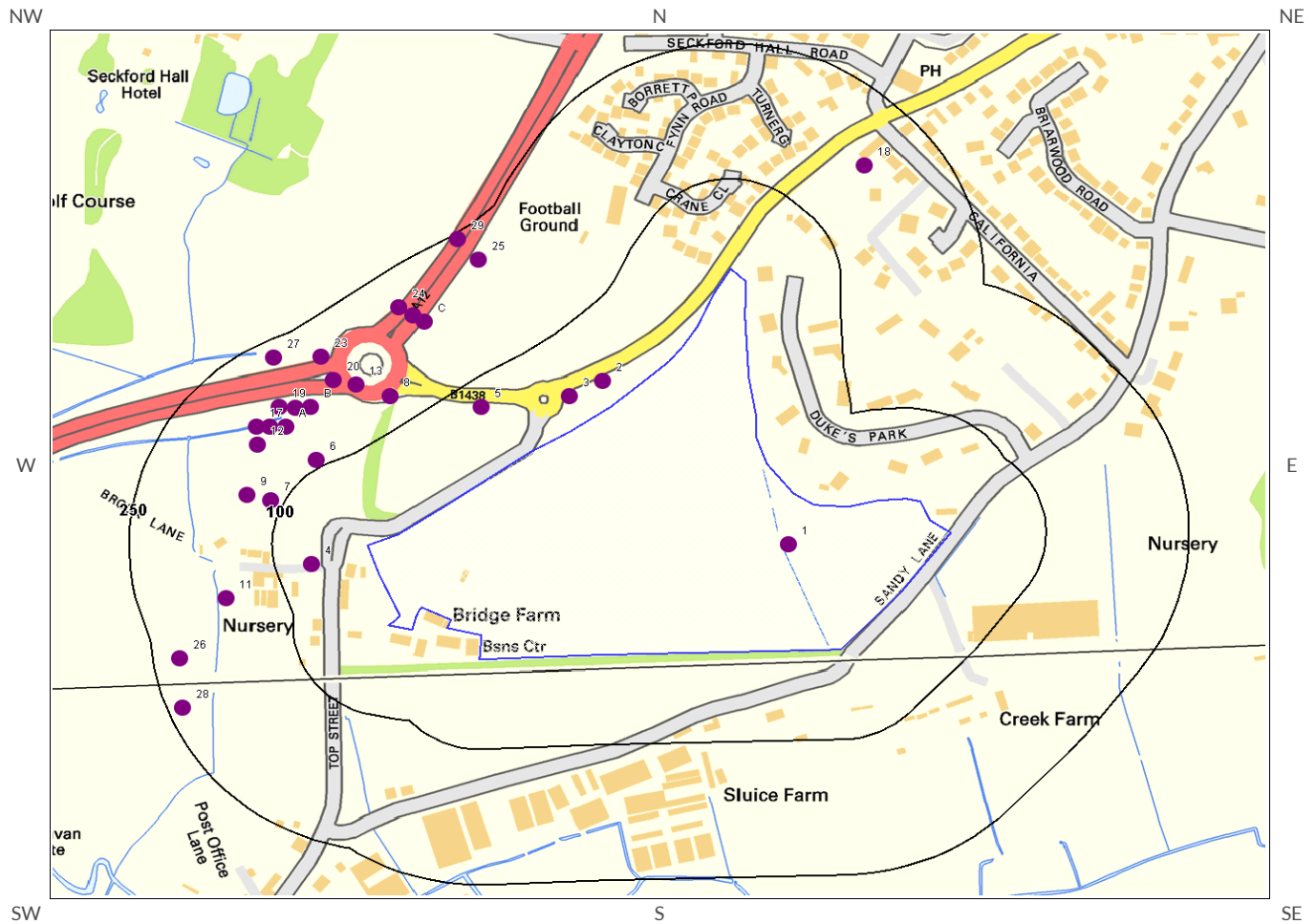
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible 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	Negligible	No indicators for running sand identified. 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.
2	0.0	On Site	Negligible	No indicators for running sand identified. 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.
3	0.0	On Site	Low	Possibility of running sand problems after major changes in ground conditions. Normal maintenance to avoid leakage of water-bearing services or water bodies (ponds, swimming pools) should reduce likelihood of problems due to running sand. For new build - consider possibility of running sand into trenches or excavations if water table is high or sandy strata are exposed to water. Avoid concentrated water inputs to site. Unlikely to be an increase in construction costs due to potential for running sand. For existing property - no significant increase in insurance risk due to running sand problems is likely.
4	35.0	S	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.

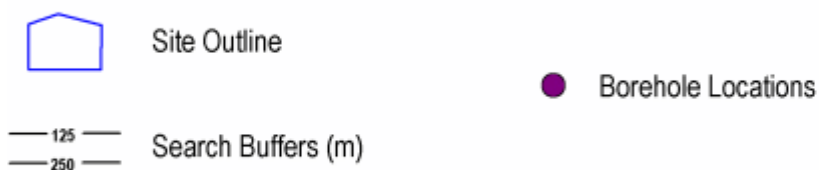
# 5 Borehole Records Map



Borehole Records Legend



© Crown copyright and database rights 2013.  
Ordnance Survey license 100035207.





## 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:

29

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	0.0	On Site	625820 247770	TM24NE35	51.81	BRIDGE FARM MARTLESHAM
2	28.0	NW	625625 247952	TM24NE49	10.0	MARTLESHAM A12 BY PASS 33
3	34.0	NW	625590 247935	TM24NE97	5.0	A12 MARTLESHAM TP 11
4	63.0	W	625320 247749	TM24NE64	5.0	A12 KESGRAVE/MARTLESHA M 124
5	70.0	NW	625498 247923	TM24NE50	10.0	MARTLESHAM A12 BY PASS 35
6	108.0	NW	625325 247864	TM24NE67	5.0	A12 KESGRAVE/MARTLESHA M 127
7	113.0	NW	625277 247819	TM24NE65	10.0	A12 KESGRAVE/MARTLESHA M 125
8	133.0	NW	625402 247935	TM24NE71	5.75	A12 KESGRAVE/MARTLESHA M 132
9	138.0	NW	625252 247825	TM24NE66	5.0	A12 KESGRAVE/MARTLESHA M 126
10A	157.0	NW	625293 247901	TM24NE78	2.0	A12 KESGRAVE/MARTLESHA M 145
11	160.0	W	625230 247711	TM24NE63	13.0	A12 KESGRAVE/MARTLESHA M 122
12	161.0	NW	625263 247881	TM24NE77	1.0	A12 KESGRAVE/MARTLESHA M 144
13	164.0	NW	625367 247948	TM24NE70	17.0	A12 KESGRAVE/MARTLESHA M 131
14B	164.0	N	625319 247923	TM24NE81	1.0	A12 KESGRAVE/MARTLESHA M 148
15A	167.0	NW	625276 247901	TM24NE68	3.0	A12 KESGRAVE/MARTLESHA M 129
16B	170.0	NW	625303 247922	TM24NE80	2.0	A12 KESGRAVE/MARTLESHA M 147
17	176.0	NW	625262 247901	TM24NE79	1.0	A12 KESGRAVE/MARTLESHA M 146

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
18	178.0	NE	625900 248190	TM24NE119	70.71	WEST BRIARWOOD, MARTLESHAM
19	179.0	NW	625286 247923	TM24NE82	2.0	A12 KESGRAVE/MARTLESHA M 149
20	181.0	NW	625343 247953	TM24NE69	5.0	A12 KESGRAVE/MARTLESHA M 130
21C	182.0	NW	625438 248017	TM24NE73	3.0	A12 KESGRAVE/MARTLESHA M 134
22C	194.0	NW	625426 248024	TM24NE72	3.0	A12 KESGRAVE/MARTLESHA M 133
23	209.0	NW	625330 247978	TM24NE48	6.0	MARTLESHAM A12 BY PASS 32
24	210.0	NW	625411 248033	TM24NE74	9.0	A12 KESGRAVE/MARTLESHA M 135
25	212.0	NW	625495 248086	TM24NE51	8.0	MARTLESHAM A12 BY PASS 36
26	222.0	W	625182 247644	TM24NE62	20.0	A12 KESGRAVE/MARTLESHA M 121
27	229.0	NW	625280 247977	TM24NE47	10.0	MARTLESHAM A12 BY PASS 31
28	235.0	SW	625185 247589	TM24NE61	20.0	A12 KESGRAVE/MARTLESHA M 120
29	244.0	NW	625473 248109	TM24NE76	3.0	A12 KESGRAVE/MARTLESHA M 137



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

#1: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564420](https://scans.bgs.ac.uk/sobi_scans/boreholes/564420)  
#2: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564434](https://scans.bgs.ac.uk/sobi_scans/boreholes/564434)  
#3: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564482](https://scans.bgs.ac.uk/sobi_scans/boreholes/564482)  
#4: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564449](https://scans.bgs.ac.uk/sobi_scans/boreholes/564449)  
#5: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564435](https://scans.bgs.ac.uk/sobi_scans/boreholes/564435)  
#6: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564452](https://scans.bgs.ac.uk/sobi_scans/boreholes/564452)  
#7: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564450](https://scans.bgs.ac.uk/sobi_scans/boreholes/564450)  
#8: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564456](https://scans.bgs.ac.uk/sobi_scans/boreholes/564456)  
#9: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564451](https://scans.bgs.ac.uk/sobi_scans/boreholes/564451)  
#10A: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564463](https://scans.bgs.ac.uk/sobi_scans/boreholes/564463)  
#11: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564448](https://scans.bgs.ac.uk/sobi_scans/boreholes/564448)  
#12: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564462](https://scans.bgs.ac.uk/sobi_scans/boreholes/564462)  
#13: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564455](https://scans.bgs.ac.uk/sobi_scans/boreholes/564455)  
#14B: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564466](https://scans.bgs.ac.uk/sobi_scans/boreholes/564466)  
#15A: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564453](https://scans.bgs.ac.uk/sobi_scans/boreholes/564453)  
#16B: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564465](https://scans.bgs.ac.uk/sobi_scans/boreholes/564465)  
#17: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564464](https://scans.bgs.ac.uk/sobi_scans/boreholes/564464)  
#18: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564504](https://scans.bgs.ac.uk/sobi_scans/boreholes/564504)  
#19: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564467](https://scans.bgs.ac.uk/sobi_scans/boreholes/564467)  
#20: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564454](https://scans.bgs.ac.uk/sobi_scans/boreholes/564454)  
#21C: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564458](https://scans.bgs.ac.uk/sobi_scans/boreholes/564458)  
#22C: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564457](https://scans.bgs.ac.uk/sobi_scans/boreholes/564457)  
#23: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564433](https://scans.bgs.ac.uk/sobi_scans/boreholes/564433)  
#24: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564459](https://scans.bgs.ac.uk/sobi_scans/boreholes/564459)  
#25: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564436](https://scans.bgs.ac.uk/sobi_scans/boreholes/564436)  
#26: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564447](https://scans.bgs.ac.uk/sobi_scans/boreholes/564447)  
#27: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564432](https://scans.bgs.ac.uk/sobi_scans/boreholes/564432)  
#28: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564446](https://scans.bgs.ac.uk/sobi_scans/boreholes/564446)  
#29: [scans.bgs.ac.uk/sobi\\_scans/boreholes/564461](https://scans.bgs.ac.uk/sobi_scans/boreholes/564461)

---



## 6 Estimated Background Soil Chemistry

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

16

For further information on how this data is calculated and limitations upon its use, please see the GroundSure GeolInsight 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 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
0.0	On Site	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
9.0	E	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
14.0	E	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
36.0	SE	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
43.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
75.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
106.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
157.0	NW	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
186.0	N	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
202.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	20 - 40 mg/kg	<15 mg/kg	<150 mg/kg
213.0	SW	RuralSoil	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	30 - 45 mg/kg	<150 mg/kg
240.0	NE	RuralSoil	<15 mg/kg	<1.8 mg/kg	40 - 60 mg/kg	15 - 30 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.

# Contact Details



Hydrock  
Telephone: 01752 347 515  
marcushaes@hydrock.com



## British Geological Survey Enquiries

Kingsley Dunham Centre  
Keyworth, Nottingham NG12 5GG  
Tel: 0115 936 3143.  
Fax: 0115 936 3276.  
Email: [enquiries@bgs.ac.uk](mailto:enquiries@bgs.ac.uk)  
Web: [www.bgs.ac.uk](http://www.bgs.ac.uk)

BGS Geological Hazards Reports and general geological enquiries



**British Geological Survey**  
NATURAL ENVIRONMENT RESEARCH COUNCIL

## British Gypsum

British Gypsum Ltd  
East Leake  
Loughborough  
Leicestershire  
LE12 6HX



## The Coal Authority

200 Lichfield Lane  
Mansfield  
Notts NG18 4RG  
Tel: 0845 762 6848  
DX 716176 Mansfield 5  
[www.coal.gov.uk](http://www.coal.gov.uk)



The Coal  
Authority

## Public Health England

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



Public Health  
England

## Johnson Poole & Bloomer Limited

Harris and Pearson Building, Brettell Lane  
Brierley Hill, West Midlands  
DY5 3LH  
Tel: +44 (0) 1384 262 000  
Email: [enquiries.gs@pb.co.uk](mailto:enquiries.gs@pb.co.uk)  
Website: [www.jpb.co.uk](http://www.jpb.co.uk)



## Ordnance Survey

Romsey Road  
Southampton SO16 4GU  
Tel: 08456 050505  
Website: <http://www.ordnancesurvey.co.uk/>



## Getmapping PLC

Virginia Villas, High Street, Hartley Witney,  
Hampshire RG27 8NW  
Tel: 01252 845444  
Website: <http://www1.getmapping.com/>



## Peter Brett Associates

Caversham Bridge House  
Waterman Place  
Reading  
Berkshire RG1 8DN  
Tel: +44 (0)118 950 0761 E-mail: [reading@pba.co.uk](mailto:reading@pba.co.uk)  
Website: <http://www.peterbrett.com/home>



Acknowledgements: 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.

Report Reference: HYD-1287015  
Client Reference: C14106/S14047

## 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](http://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 the 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 the 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

## Preliminary Unexploded Ordnance Risk Assessment



**Project:** Land adjacent to Duke's Park, Woodbridge  
**Prepared for:** Hydrock  
**Client ref:** C14106

**Preliminary Unexploded Ordnance Risk Assessment**  
**in respect of**  
**Land adjacent to Duke's Park, Woodbridge**

**Contents**

	Page
1. Introduction	2
2. Search Results	4
3. Conclusions	6
4. Risk of UXO based on bombing density	7

This document was written by, belongs to and is copyright to BACTEC International Limited. It contains valuable BACTEC proprietary and confidential information which is disclosed only for the purposes of the client's assessment and evaluation of the project which is the subject of this report. The contents of this document shall not, in whole or in part (i) be used for any other purposes except such assessment and evaluation of the project; (ii) be relied upon in any way by the person other than the client (iii) be disclosed to any member of the client's organisation who is not required to know such information nor to any third party individual, organisation or government, or (iv) be copied or stored in any retrieval system nor otherwise be reproduced or transmitted in any form by photocopying or any optical, electronic, mechanical or other means, without prior written consent of the Managing Director, BACTEC International Limited, 9 Waterside Court, Galleon Boulevard, Crossways Business Park, Dartford, Kent, DA2 6NX to whom all requests should be sent. Accordingly, no responsibility or liability is accepted by BACTEC towards any other person in respect of the use of this document or reliance on the information contained within it, except as may be designated by law for any matter outside the scope of this document.



## 1. Introduction

Established in 1991, BACTEC International Limited supports the UK construction industry by assessing the risk of encountering items of unexploded ordnance (UXO) during intrusive works. BACTEC's specialist advice provides essential information for risk assessment, improves safety, enhances reputation and helps contractors to avoid costly delays.

The risk of encountering UXO on most sites in the UK is low. However, where a site is at increased risk it will be necessary to take measures to mitigate that risk. The factors affecting risk assessment are based upon the history and previous usage of a site and its surroundings.

In 2009, the Construction Industry Research and Information Association (CIRIA) established a set of guidelines to assist industry professionals. CIRIA recommends a four stage risk management process:

- Preliminary risk assessment
- Detailed risk assessment
- Risk mitigation
- Implementation

The preliminary risk assessment enables a non-UXO specialist to place a site in context and to identify where a more detailed assessment is necessary. The assessment is based upon data obtained from desktop reviews of the site's history and its proximity to potential indicators for UXO contamination.

There are two principal sources of UXO risk within the UK:

- Ministry of Defence (MoD) activities
- Bombs and projectiles from WWI and WWII

MoD activities include munitions deposited during training exercises, munitions dumped or disposed of ineffectively, Allied wartime activities, defensive installations etc.

- Abandoned Bombs
- Historic Army Camps
- Army Explosive Ordnance Clearance Tasks/Recces
- Bombing Decoy Sites
- Heavy Anti-Aircraft Batteries
- Military Airfield Sites

- Press Articles regarding UXO Finds
- Military Training Areas and Firing Ranges
- BACTEC Desk-top Threat Assessments
- Prisoner of War Camps
- Sites related to the Manufacture of Explosives and Explosive Ordnance
- BACTEC Unexploded Ordnance
- WWII Bombing Density
- WWII Defence Related Positions & Pillboxes
- Pipe Mined WWII Airfields
- Miscellaneous WWII Pipe Mined Locations
- BACTEC On-Site Support Services

Established in 2006, FIND Maps Limited is a pioneering web mapping and spatial data technology company offering online mapping and consultancy services.

[www.findmaps.co.uk](http://www.findmaps.co.uk) is an excellent example of what FIND can deliver. The portal currently provides detailed mapping and a wealth of data sets to hundreds of the UK's top property, environmental and design/build companies.

FIND's consultancy services provide bespoke internet mapping solutions to a range of businesses, enabling them to manage their spatial data more effectively.

While working closely with a wide range of reputable data providers including Ordnance Survey and the Environment Agency, FIND works independently of these organisations. A similar arm's-length relationship is maintained in terms of software and hardware providers. This enables the team at FIND to offer truly independent advice.

## **Methodology**

BACTEC and FIND have compiled a geo-referenced database of potential sources of UXO risk within the UK. From this information a range of risk zones have been defined. The weighting of these zones is based upon the influence of all relevant factors. An airfield, for example, has a far greater zone of influence than a single anti-aircraft battery.

An online preliminary automated UXO risk assessment will determine the potential level of UXO risk relating to a site. The assessment will list all factors contributing to this weighting. Importantly, it will also give appropriate recommendations for further action where this is indicated.



## 2. Search Results

Within 10km of the site the following potential sources of explosive ordnance have been recorded:

Source	Number within 10km
Military Airfield Sites	5
Bombing Decoy Sites	7
Abandoned Bombs	1
Press Articles regarding UXO Finds	1
WWII Defence Related Positions & Pillboxes	60
Historic Army Camps	5
Prisoner of War Camps	1
Military Training Areas and Firing Ranges	1
Heavy Anti-Aircraft Batteries	7
Army Explosive Ordnance Clearance Tasks/Recess	21
BACTEC Desk-top Threat Assessments	3
Pipe Mined WWII Airfields	None recorded
Miscellaneous WWII Pipe Mined Locations	None recorded
Sites Related to the Manufacture of Explosives and Explosive Ordnance	None recorded
BACTEC Unexploded Ordnance Finds	None recorded
BACTEC On-Site Support Services	None recorded

Of these sources, the following are deemed significant enough to be a risk and therefore warrant further research:

### Military Airfield Sites

Facility Name	Approximate distance (km) from site
Martlesham Heath	2.8

The risk of encountering UXO at the site of an airfield is highly dependent upon the history of the site. Factors to be considered include the type of airfield and its role before, during and after WWII. Additional factors affecting the site include records of aerial attacks, test firing butts, bomb stores, remote wooded training areas, practice bomb areas, ammunition storage locations, defensive positions, aircraft crash sites etc.

The 'housekeeping' of such sites, especially those which were active and operational during WWII, was often poor. Experience has shown that on and around many such facilities, ordnance was lost, burnt, buried or otherwise discarded. Live and expended munitions are regularly encountered on such sites.

The proximity of the site to the recorded location of military airfield facilities increases the risk that there may be unexploded ordnance in the area. This should be more fully investigated.

### Pipe Mined WWII Airfields

Facility Name	Approximate distance (km) from site
Martlesham Heath	2.8

Pipe mines (demolition charges) were measures designed to impede invading forces by destroying infrastructure. The mines comprised long steel pipes packed with explosives. An entire array of these mines could be detonated simultaneously.

At a limited number of strategic WWII airfields in the UK, pipe mines were installed beneath runways and key structures. BACTEC's records indicate that the site of the proposed works falls on or in proximity to one of these facilities.

Efforts were made at the end of WWII and again in the 1980s to remove all pipe mines from airfields. Unfortunately, these removal operations were not always 100% effective.

These charges are dangerous and sensitive. It is therefore recommended that research is undertaken to ascertain the risk that such items may be encountered in the site area.

### **3. Conclusions**

#### **Risk levels - British unexploded ordnance**

##### **Low**

There are potential sources of UXO recorded in BACTEC's historical database in the general area surrounding the site. However, they are not considered close enough to the site or significant enough to warrant further research. If there is any empirical evidence of actual or potential contamination, BACTEC should be contacted for advice. Otherwise, the risk on site from UXO is considered to be Low.

#### **Risk levels – UXB based on bombing density**

##### **Low**

Historical records indicate that the area was subjected to a low level of bombing density. If there is empirical evidence of UXB risk (i.e. anecdotal evidence) then please contact BACTEC for further advice.

This preliminary assessment has identified a Low risk from air-delivered unexploded bombs at this site.

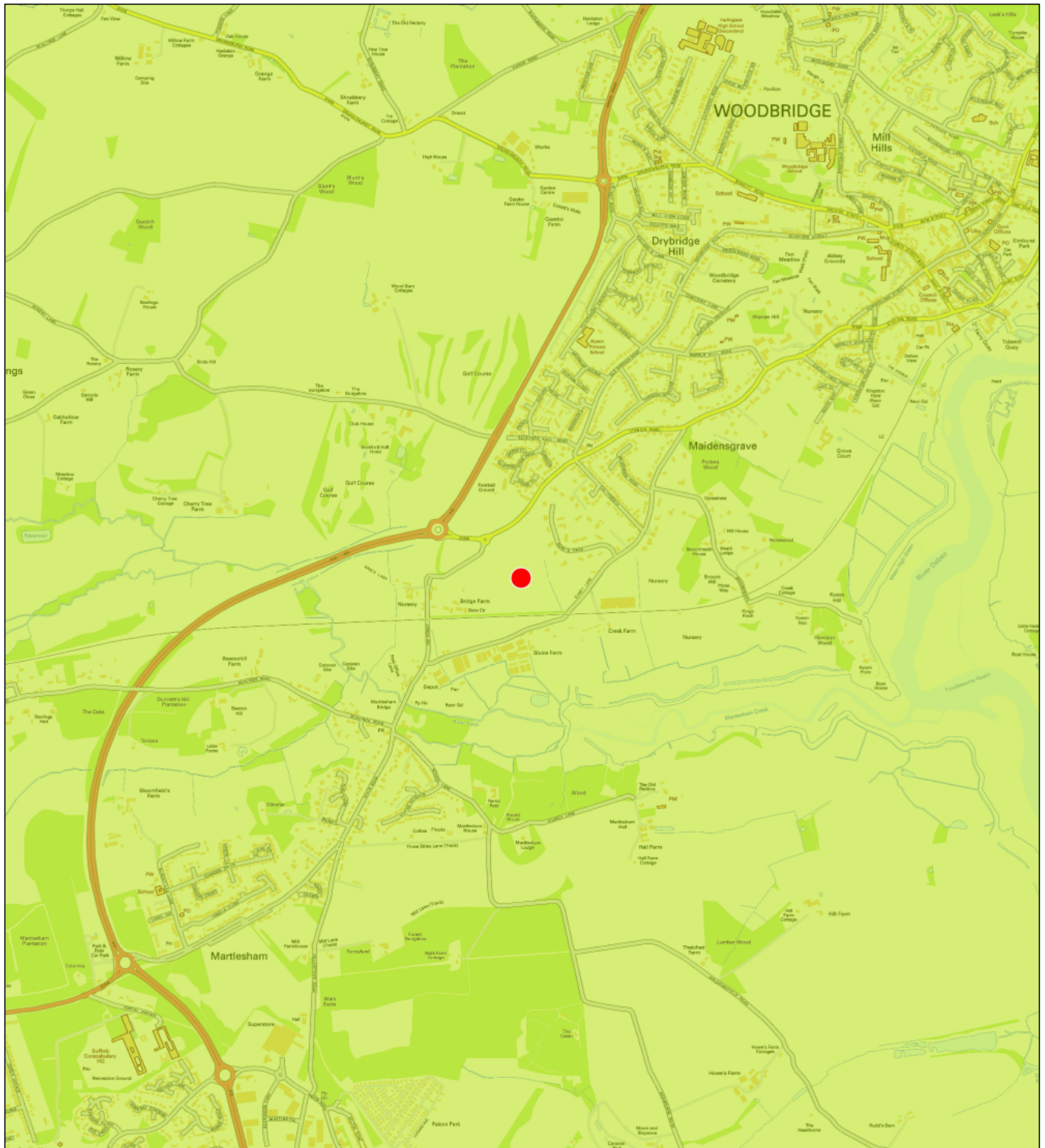
#### **Recommendation - based on highest risk**

##### **Low**

This preliminary assessment has resulted in an overall Low risk from UXO. Unless any empirical evidence of actual or potential UXO contamination is available, BACTEC do not consider a full Explosive Ordnance Desktop Study necessary for this site. It is recommended that an Explosive Ordnance Safety Awareness briefing is provided by a suitably experienced UXO Specialist.

# Risk of UXO based on bombing density

## Land adjacent to Duke's Park, Woodbridge



Crown Copyright 2012. All rights reserved. Licence Number 1000047514



**FIND**  
PROFESSIONAL MAPPING INTELLIGENCE



**BombRisk.com**

- Negligible
- Low
- Medium
- High

Report reference: 500535

1:20000



0 400 800  
Metres

This page has been left blank intentionally



## **Appendix E**

### HYDROCK METHODOLOGY

**Hydrock Report Appendix on Hydrock Methodology, version 02 updated 21-12-12** applies to this report.

This appendix may not be included in the printed report to reduce the document size.

It is presented in the PDF version of the report on the CD enclosed with the printed report. Alternatively, it can be supplied on request by quoting the version number and date.

This page has been left blank intentionally

