
Phase I Desk Study & Site Reconnaissance Report

at Kingsfold Close,
Billingshurst, West Sussex

for Horsham District
Council

Report Reference : LP 00697

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EXECUTIVE SUMMARY

This report presents the results of a desk study, walkover survey and geo-environmental risk assessment of a 1980's housing development known as Kingsfold Close Billingshurst, West Sussex. This work forms the first phase of detailed inspection being carried out by Horsham District Council pursuant to their duties under part 2a of the Environment Act 1990.

The site has a history of use as a prisoner of war camp during the Second World War and later as a riding school. There are also records of a landfill on the western side of the site.

The site is underlain by Weald Clay, including limestone within the Weald Clay. The site is mapped as Unproductive Strata. There is a drainage ditch along the western edge of the site, along Marringdean Road.

Potential pollutant linkages have been established involving human health and controlled waters. The risk of significant pollutant linkages involving controlled waters is rated as low and of those involving human health is rated as moderate.

Recommendations are given for an intrusive investigation of the site including gas monitoring in the location of the historic landfill.

This report has been prepared by Leap Environmental Ltd on the basis of information received from a variety of sources which Leap Environmental Ltd believes to be accurate. Nevertheless, Leap Environmental Ltd cannot and does not guarantee the authenticity or reliability of the information it has obtained from others.

Leap Environmental Ltd has used all reasonable skill, care and diligence in the design and execution of this report, taking into account the manpower and resources devoted to it in agreement with the Client. Although every reasonable effort has been made to obtain all relevant information, all potential contamination, environmental constraints or liabilities associated with the site may not necessarily have been revealed.

The conclusions reached in this report are necessarily restricted to those which can be determined from the information consulted, and may be subject to amendment in the light of additional information becoming available. These conclusions may not be appropriate for alternative schemes.

This report is confidential to the Client, and Leap Environmental Ltd accepts no responsibility whatsoever to third parties to whom this report, or any part thereof, is made known, unless formally agreed by Leap Environmental Ltd beforehand. Any such party relies upon the report at their own risk.

Signed :	 Sarah Cook MSci
Countersigned :	 Richard Brinkworth BEng
Date :	19 th March 2014
Revision:	Issue I- Final

A INTRODUCTION

I Authority

Leap Environmental Ltd (hereafter referred to as **LEAP**) has been appointed by Horsham District Council to undertake a Phase I Desk Study of a site referred to Kingsfold Close, Billingshurst, West Sussex. The instruction was given in an email dated 19th February 2014 from Lee Money of Horsham District Council.

I.1 Regulatory Background

The Government recognises that Britain's industrial past has left the country with a legacy of contaminated land. The Government has introduced various statutory instruments to deal with and prevent future contamination and others to deal with past contamination. It is the Local Authority's (in this case Horsham DC) responsibility to identify where contaminated land exists within its district and to deal with it in accordance with the Statutory Regulations.

The Government's objectives with regard to contaminated land are:

1. To identify and remove unacceptable risks to human health and the environment
2. To seek to bring damaged land back into beneficial use: and
3. To seek to ensure that the cost burdens faced by individuals, companies and society as a whole are proportionate, manageable and economically sustainable.

These three objectives underlie the Government's "Suitable for Use" approach to the remediation of contaminated land.

The suitable for use approach means that any land where contamination is causing unacceptable risks to human health and the environment must be identified; assessed on the basis of the current use and circumstances of the land; and if necessary remediated to ensure that it is reinstated to a position where such risks no longer exist. The suitable for use approach also means requirements for remediation must be limited to the work actually necessary to prevent unacceptable risks to human health and the environment in relation to the current use of the land. In other words the above works must not be over engineered, over remediated or indeed guesses made as to what might constitute contaminated land.

The critical question is "what constitutes contaminated land?"

Contaminated Land is defined by statute as:

"any land which appears to the local authority in whose area it is situated to be in such a condition, by reason of substances in, on or under the land, that-

- a) Significant harm is being caused or there is the possibility of such harm being caused;
- or

- b) Pollution of controlled waters is being, or is likely to be caused.”

This then introduces the question of “what constitutes significant harm?”

Again Statutory Guidance clearly sets out how the local authority must go about first identifying land that may be affected by contamination, assessing whether or not there is actual significant harm being caused, the possibility of significant harm or pollution to controlled waters and finally determining land as contaminated or not.

The definition of contaminated land is based upon the principles of risk assessment. Underpinning that risk assessment is the concept that, for there to be a risk of significant harm, then there must exist a pollutant linkage. For a pollutant linkage to exist then there must be in place a source of contamination, a receptor, and a means of transmitting the source to the receptor – known as a pathway. In the case of a residential development, the source may be a contaminant within the garden soil, for example, the receptor might be a child playing in the garden and the pathway direct ingestion of soil by that child. Having established that there exists at least one pollutant linkage then for land to be determined as contaminated, the concentration of the contaminant must be such that the linkage would lead to significant harm or the possibility of significant harm. In which case, this linkage is then referred to as a significant pollutant linkage. The issue of what concentration of a particular contaminant within soil presents an unacceptable risk to human health via ingestion, for example, remains a complex one. At the time of writing, no definitive technical guidance, is available in this respect.

1.2 The role of the Local Authority

The local authority has a duty to inspect its area from time to time. In carrying out its inspection duty, the local authority is required to take a strategic approach to the identification of land which merits detailed individual inspection.

Horsham DC has, following its own strategic plan, and based on a district-wide study of sources of information available to it through its own offices, identified land that may be potentially contaminated and lying within its district and has prioritised these sites for further investigation. This is one such site that has been prioritised for inspection during 2014.

This report forms the first phase of the inspection.

2 Objective

The objectives of this report are to:

- To assess whether or not there are any potential pollutant linkages that merit further or intrusive investigation.
- If such potential pollutant linkages are identified then to establish the boundary of the site or zone of the site that requires investigation and the range of potential contaminants of concern.
- Where further investigations are required, to provide costed options for statistically robust intrusive investigations.

3 Scope of Works

This report describes a process whereby the site is investigated and risks assessed. The term geoenvironmental is referred to throughout the report.

Geoenvironmental refers principally to the chemical nature of the ground and the degree of soil, water and/or land gas contamination and the impact that contamination may have on current or future development and also on the wider environment.

3.1 Phase I Scope

This report presents the results of a desk study and site reconnaissance. It provides a review of previous site investigation and remediation validation reports where they have been made available by the Client or where LEAP has been able to locate that information from third party sources. The previous reports referred to are detailed above. The following sources of information have been reviewed also

- Groundsure database report
- Groundsure historical map search
- Interrogation of the Environment Agency Web site on 21/02/2014
- Interrogation of the World Wide Web on 21/02/2014 for general information pertaining to the site history
- Interrogation of Horsham District Council Planning records for the site

A site reconnaissance was carried out on 26/02/2014.

B PHASE I – DESK STUDY

4 Environmental Setting

4.1 Site Location and Description

The extent of the study area was initially defined by Horsham DC and is shown in Figure 1. The site is located on the eastern side of Marringdean Road, approximately 1.5km south of Billingshurst town centre, West Sussex. The site covers an area of approximately 2.15ha and covers the residential road of Kingsfold Close. The approximate national grid reference of the site is 508747 124558.

The site is roughly triangular narrowing down to a point at the southern end of the housing estate. The site is located to the east of Marringdean Road and there is a ditch along the northern part of this boundary. There is a field to the south and east of the site and woodland to the north. On the opposite side of Marringdean Road a new housing development is in the process of being built.

The buildings on site comprise detached properties with large front and rear gardens. There are also some areas of soft landscaping around the site. All the vegetation appears to be growing well with no obvious signs of distress.

The site is relatively flat with a slight slope into the site from Marringdean Road. The landscaping across the site appears to have resulted in areas of cut and fill.

4.2 Geology

The geology of the site has been ascertained by reference to the 1:50,000 British Geological Survey sheet 317 - solid and drift edition. The site is mapped as being underlain by Weald Clay with a layer of Paludina Limestone running through the centre of the site.

4.2.1 Wealden Beds

The Wealden Beds are Lower Cretaceous deposits. They comprise mostly shales and mudstones known as the Weald Clay with subordinate beds of siltstones, sandstones, shelly limestones and clay ironstones. When fresh the beds are normally dark grey but weather to yellow and brown. Conspicuous bands of red clay also occur usually in close association with sandstone beds.

The Groundsure report indicates there are historic records of a brick yard 76m north west of the site and an unspecified pit 136m north west. There are a further six historic pits recorded within 250m.

4.3 Hydrogeology

The Hydrogeology of the site has been ascertained from the Groundsure data report. The source of the data is reported to be the Environment Agency Groundwater Vulnerability mapping.

The soils which underlie the majority of the site, are classified as a Unproductive Strata with a Secondary A Aquifer across the north east corner of the site.

The site is not situated within a source protection zone and there are no abstraction boreholes located within a 1km radius of the site.

4.4 Hydrology and Surface Water Resources

4.4.1 Discharge Consents

There are two discharge consents located within 250m of the site. The nearest is 138m south east of the site and is for the discharge of final treated effluent to a freshwater river. There are a further 23 discharge consents between 250 – 500m of the site.

4.4.2 Pollution incidents

There are no pollution incidents recorded within a 250m radius of the site.

4.4.3 Flooding

There are no surface water features within the site or adjoining the site boundary. The closest surface water feature is a stream located 189m north of the site.

According to the Environment Agency website, the site is not situated within an area that has a significant chance of flooding.

4.5 Ecology

The site is located within a nitrate vulnerable zone. There is an ancient woodland located immediately north of the site.

5 Site Usage

5.1 Current Land Use

The site is currently occupied by a residential development with 12 detached properties.

5.2 Evidence of onsite Contamination

A walkover survey was carried out on 24th February 2014. The walkover survey did not reveal evidence of existing sources of contamination nor of potential land contamination. The vegetation appears to be flourishing.

5.3 Neighbouring Land Use

The site is on the outskirts of Billingshurst and is surrounded by residential properties and open fields. There is an industrial estate to the north west of the site and as such there are 10 current industrial land uses listed within 250m of the site. The nearest is an air and water filtration company 146m north east and also within 250m of the site are vehicle repair and serving, electrical component manufacturing and a number of unspecified works.

5.4 Site History

The history of the site and surrounding area has been deduced from historical maps and planning records for the site. In summary the maps show a field located on the site until it was used as a prisoner of war camp during the Second World War and then a riding school in 1966, with a landfill on the north west corner of the site. The site was redeveloped for housing in 1988 by Cala Housing.

5.4.1 Historical Map Evidence

Historical maps have been studied as follows:

1876, 1896, 1914, 1947 and 1961 at 1:10,560 scale

1973, 1981, 2002, and 2012 at 1:10,000 scale

1876, 1897, 1911, 1938, 1966, 1970, 1982, 1993 and 2012 at 1:2,500 scale

1876 – 1:2,500/1880 – 1:2,500

The site is located within a field with a road running along the western boundary of the site. There are woods located off site to the north west and a pond is located immediately off site along the northern boundary. Little Gillmans Farm is located 100m north west of the site. Kingsfold Farm is located to the south of the site.

1897 – 1:2500

There have been no changes to the site. There is a brick yard and pit located 150m north east of the site.

1911 – 1:2,500

There have been no significant changes to the site or surrounding area.

1938 – 1:2,500

The site remains unchanged. There has been some residential development 100m north of the site.

1952 – 1:10,560

The site shows a number of buildings located in the centre of the site with a track running around the boundary of the buildings.

1966 – 1:2,500

The site is now labelled as Kingsfold Riding School with a number of buildings located across the site. There is an outline on the north west side of the site, which tallies with the outline of the landfill recorded on site.

The brick yard to the north west is no longer shown and has been replaced by a works and a number of warehouses.

1982 – 1:2,500

The site and surrounding area remain largely unchanged.

1993 – 1:2,500

The site has been redeveloped with housing.

5.4.2 Aerial Photographs

The 1947 map shows a number of buildings located in rows across the site with roads running around the buildings and this is likely to be showing the prisoner of war camp. The 1959 photograph shows that the majority of the buildings have now been removed with just a few buildings located in the southern part of the site. The 2000 and 2002 aerial photographs show the current housing development across the site.

5.4.3 Horsham DC Planning Records

A search of Horsham DC planning records was carried by Horsham District Council and provided lists of applications relevant to the site.

Those which help to elucidate the history of the site and/or the location of potential sources of contamination are summarised below:

Table 2: Summary of Planning Records

Year	Planning Reference	Description	Status/ notes
1965	BL/94/65	Proposed change of use to provide storage for non flammable chlorinated solvents and chemicals	Appeal dismissed
1988	BL/33/88	Erection of 12 Houses and Garages	Application Permitted

Details of planning applications up to 1990 were available to view at Horsham DC's planning office. Planning records from 1990 to date were available to view on Horsham DC's website.

There was very limited planning information on the site relative to any historic potentially contaminative uses, with most of the planning applications relating to changes to the riding school. There was a record referring to the incorrect storage of electrical equipment linked to one of the riding school planning applications.

5.5 Waste Planning and Landfill Records

There are no active landfills recorded within a 1km radius of the site.

The EA website details a historic landfill underlying the western half of the site. This landfill is recorded as receiving inert, commercial and household waste. The license issue is dated 1st January 1976 however the recorded first input as 31st December 1962 and the last input date of 31st December 1965. The historic maps show an outline on the site which corresponds to the shape of the landfill between 1961 and 1981.

The location of the landfill on the Environment Agency plan indicates the landfilled area was located to the north west of the riding school.

There are no Horsham District Council planning records related to the landfill.

5.6 Fuel Storage

There are no records of fuel storage sites within 500m of the site.

C PRELIMINARY CONCEPTUAL SITE MODEL

6 Environmental Risk Assessment

6.1 Conceptual Site Model

A risk based approach is used to assess contaminated or potentially contaminated land within the UK. For a potential risk to exist then there must be in place a pollutant linkage. I.e. there must be a source of contamination, a potential receptor and a pathway linking the two. In order to quantify the magnitude of the risk then it is necessary to first calculate the potential exposure of the receptor as a result of all the individual active pollutant linkages affecting that receptor. Secondly it is necessary to ascertain “what is an acceptable exposure level for each of the identified receptors and contaminants?”.

The purpose of the Conceptual Site Model, in this instance, is to identify all of the potential pollutant linkages, by considering in turn, the potential sources, receptors and pathways. The conceptual site model is illustrated schematically in Figure 2 in Appendix A.

6.2 Sources

The following potential sources of contamination have been identified on site:-

6.2.1 Onsite Sources

The following potential sources of contamination have been identified on site:-

Source	Contaminants of Concern
Landfill	Heavy metals, PAH TPH, land gas
Prisoner of War Camp	Heavy metals, PAH, Asbestos

A former landfill is located in the north west part of the site, this has a last input date of 1965 however the historic maps show the outline of the landfill on the site from 1961 to 1981 and a license relating to the landfill is dated 1976.

Guidance on the generation potential and risk of lateral / vertical migration is provided in the Chartered Institute of Environmental Health - The Local Authority Guide to Ground Gas (CIEH, September 2008). This is summarised below:

Source	Generation Potential	Level of Risk for On-site Development (i.e. vertical migration)	Risk of Lateral Migration (i.e. affecting the subject site)
Landfill 1945 to mid 1960's	Low to moderate	Low to moderate	Low to moderate (geology dependant)
Landfill mid 1960's to early 1990's, inc. Municipal landfill sites	Moderate to very high	Moderate to very high	Moderate to very high (geology dependant)

Given the possibility that land filling occurred beyond 1965 and the types of waste deposited, there is considered to be a moderate to high risk of gas generation and migration.

6.2.2 Offsite Sources

The site is surrounded by agricultural land and woodland, there are a number of industrial land uses within an industrial estate 150 – 200m away and as such are unlikely to have a significant impact on the site.

6.3 Pathways and Potential Pollutant Linkages

6.3.1 On site Receptors

The occupants of the houses are potential receptors of any contamination within the existing topsoil and subsoil. The most sensitive receptors are young females. Potential pollutant linkages exist as a result of the following pathways:

- Ingestion/inhalation of outdoor soil/dust
- Ingestion of home grown fruit/vegetables and the soil attached to them
- Ingestion/inhalation of dust tracked back into house.
- Inhalation of vapours and gases both outdoors and indoors arising from volatile contaminants.
- Migration, ingress and accumulation of land gas in confined spaces

There are 12 residential properties on site that may potentially be exposed for the above pollutant linkages.

The risk of significant pollutant linkages, involving human health, is rated as MODERATE.

The site is underlain by unproductive strata with a Secondary A Aquifer across the north east corner of the site. There is therefore a limited potential pathway for leachate from soil

pollutants and for mobile liquid contaminants to enter the groundwater. There is potential for leachate from the landfill to enter the groundwater. Overall the risk of significant pollutant linkages, involving the groundwater resource is rated as LOW.

There is a landfill on the site therefore there is a risk to the properties situated over the landfill (No.1, 2, 10, 11 and 12) from vertical migration of land gas and to the remainder of the site from lateral migration of land gas, however the site is situated on the fairly impermeable Weald Clay which may limit the potential for land gas migration therefore the risk of significant pollutant linkages involving land gas is rated as MODERATE.

6.3.2 Offsite Receptors

The site is surrounded by woodland and fields with limited residential development to the north west of the site therefore the risk of significant pollutant linkages involving offsite residential receptors is rated as LOW.

The ditch on the western boundary of the site is a potential receptor for any contaminant leachate however the risk of significant pollutant linkages involving controlled waters is rated as MODERATE.

7 Conclusions and Recommendations for further work

The statutory guidance which accompanies Part 2a of the Environment Act, clearly sets out the steps that the Local Authority must take and the evidence it must have before carrying out an intrusive investigation using statutory powers of entry. The evidence for actual pollutant linkages involving human health is not particularly strong. LEAP cannot and does not seek to give any legal advice. Horsham DC must take appropriate legal advice in this respect.

Prior to the development the site comprised a prisoner of war camp and then subsequently a riding school, there was also landfill on the north western corner of the site. At the time of writing LEAP has not been able to establish if any remedial works were undertaken with regard to the landfill prior to the housing development. There may also be a possibility of made ground on site resulting from changes to the prisoner of war camp and riding school.

The fact that the site would be highlighted as a former landfill when potential purchasers solicitors carry out environmental check as part of their conveyancing procedure is an issue which could cause the Council some concerns. Horsham DC are seeking to reach a position whereby they can, with some confidence declare that either the site is clean and fit for its current use or that it may not be. If it may be then they have the option of seeking to determine whether or not it is contaminated land using their statutory powers.

7.1 Intrusive Investigation

The following recommendations are given on the basis that risks to controlled waters are not considered to merit further intrusive investigation. If the Environment Agency advise otherwise then further investigations will be required.

7.1.1 Phase II Investigation

The first phase of soil investigation could be targeted at areas where historic plans show the landfill (the gardens of No 1, 2, 9, 10, 11 and 12). A separate table indicating levels of coverage for an investigation of both the landfill area and the wider site is also set out below for information.

It is recommended that samples be tested of the topsoil and the underlying subsoil and that three monitoring wells are installed across the site. Budget costs are given below for various sampling strategies, assuming that all holes will be excavated by hand auger or similar and that all samples will be tested for the full range of contaminants listed in section 7.2 below. Budget costs are rough estimates designed to allow Horsham DC to prioritise budgets and must not be relied upon by anyone. Clearly market forces may have an influence on actual costs, as may other factors which LEAP are not aware of at the time of writing this report. LEAP takes no responsibility for any losses incurred by Horsham DC or any other third party who relies on these figures. Costs include for gas monitoring.

The following table presents the number of samples that would be required to provide a specified degree of confidence of hitting a specified hotspot size. In each case (based on the site mapping provided) the average plot size is assumed to be 1300m². The first table refers to investigations just within the former landfill, and the subsequent table refers to investigations of both the landfill and wider site.

Investigation for 125m² 250m² and 500m² hotspots across the area of landfill only (Gardens of No1, 2, 9, 10,11 and 12)

	Light Investigation 150m ²		Medium Investigation 150m ²		Heavy Investigation 150m ²	
	Number of sample locations	% Hot spot hit	Number of sample locations	% Hot spot hit	Number of sample locations	% Hot spot hit
	6	16	14	33	29	80
Budget Cost £	12.5K		18K		24K	
Notes	The % probability of a hot spot hit is calculated assuming hot spot size of 150m ²		The % probability of a hot spot hit is calculated assuming hot spot size of 150m ²		The % probability of a hot spot hit is calculated assuming hot spot size of 150m ²	

Investigation for 125m² 250m² and 500m² hotspots in all soft landscaping open space and all gardens

	Light Investigation 650m ²		Medium Investigation 650m ²		Heavy Investigation 650m ²	
	Number of sample locations	% Hot spot hit	Number of sample locations	% Hot spot hit	Number of sample locations	% Hot spot hit
	8	36	16	74	29	98
Budget Cost £	12K		18K		24K	
Notes	The % probability of a hot spot hit is calculated assuming hot spot size of 650m²		The % probability of a hot spot hit is calculated assuming hot spot size of 650m²		The % probability of a hot spot hit is calculated assuming hot spot size of 650m²	

A light investigation would enable coverage across the site however it is targeting a larger hot spot size and as such would not give the plot specific detail of a more detailed investigation.

The above is based on a regular grid of samples across the site as shown in Figures 3a - 3f, Appendix A.

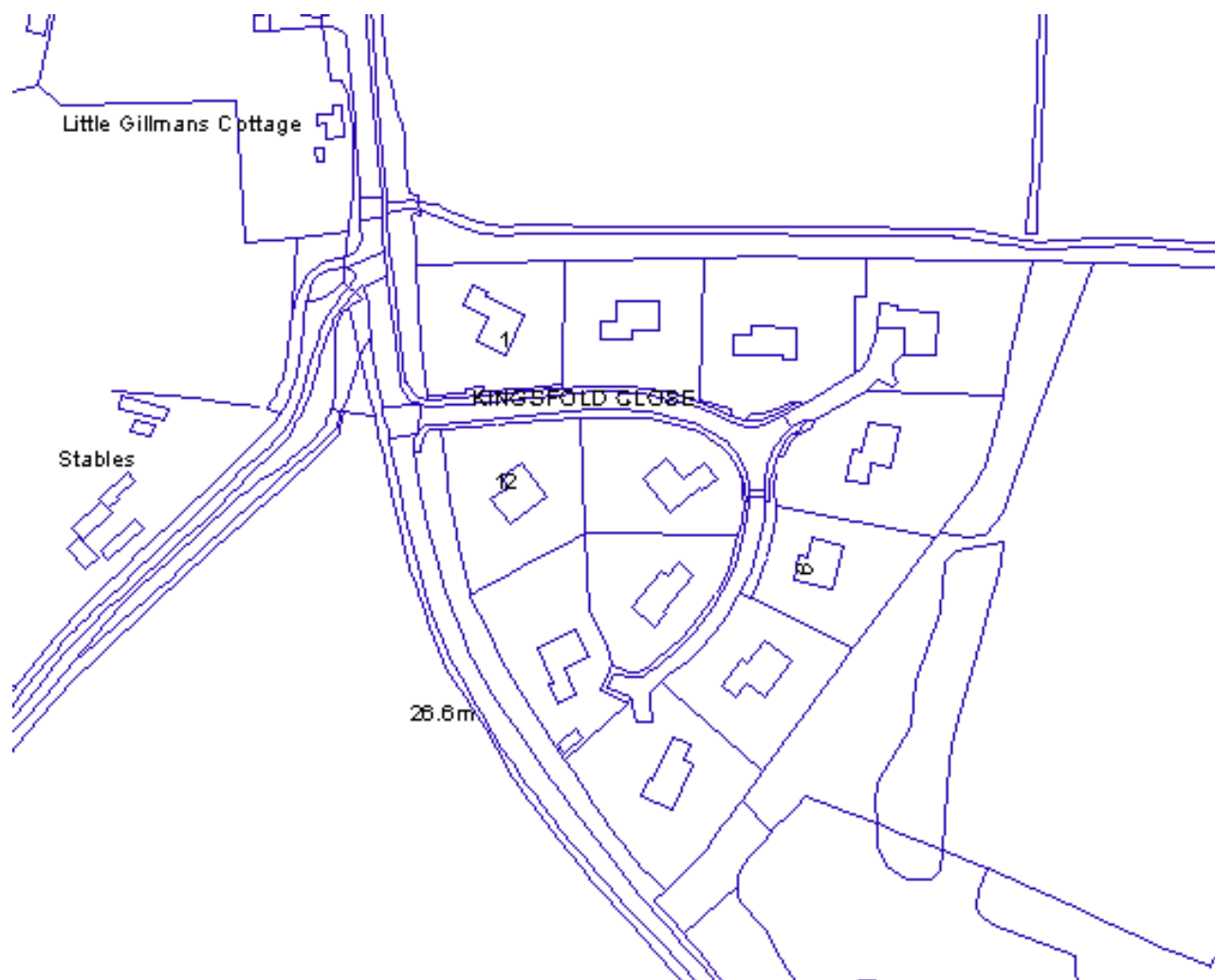
7.2 Laboratory Testing

The following contaminants are considered to represent the main contaminants of concern for this site, based on the findings of this report. This list is not exhaustive and Horsham DC may wish to extend the range.

- CLEA heavy Metals i.e. As, Hg, Ni, Cu, Zn, Pb, Cd, Cr, Sb, Be, V,
- Polyaromatic Hydrocarbons – speciated by GCMS
- Petroleum hydrocarbons
- Asbestos

APPENDIX A

Figures



Site

Kingsfold Close Billingshurst

Project ID
LP006967

Figure: 1

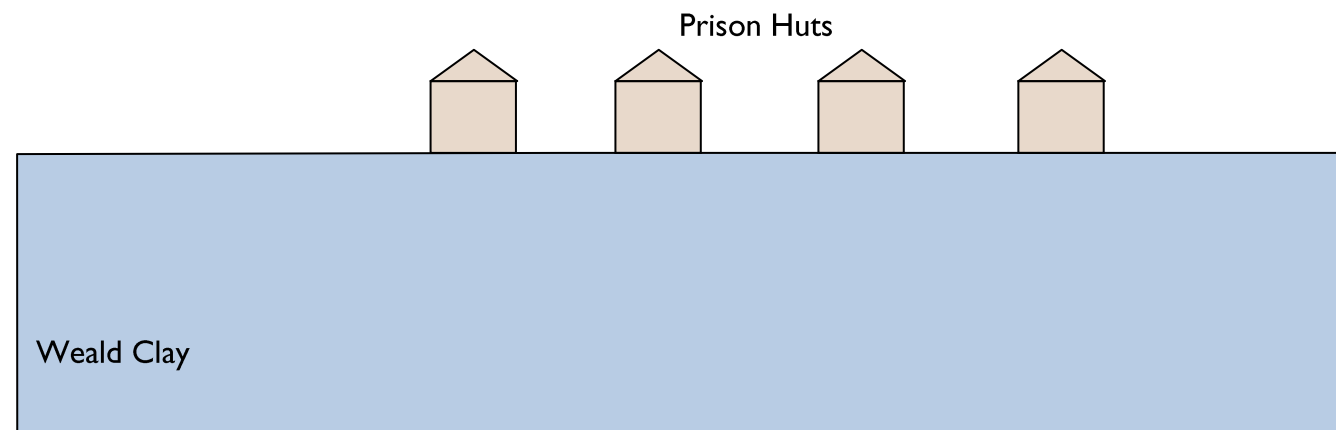
Client:

Horsham DC

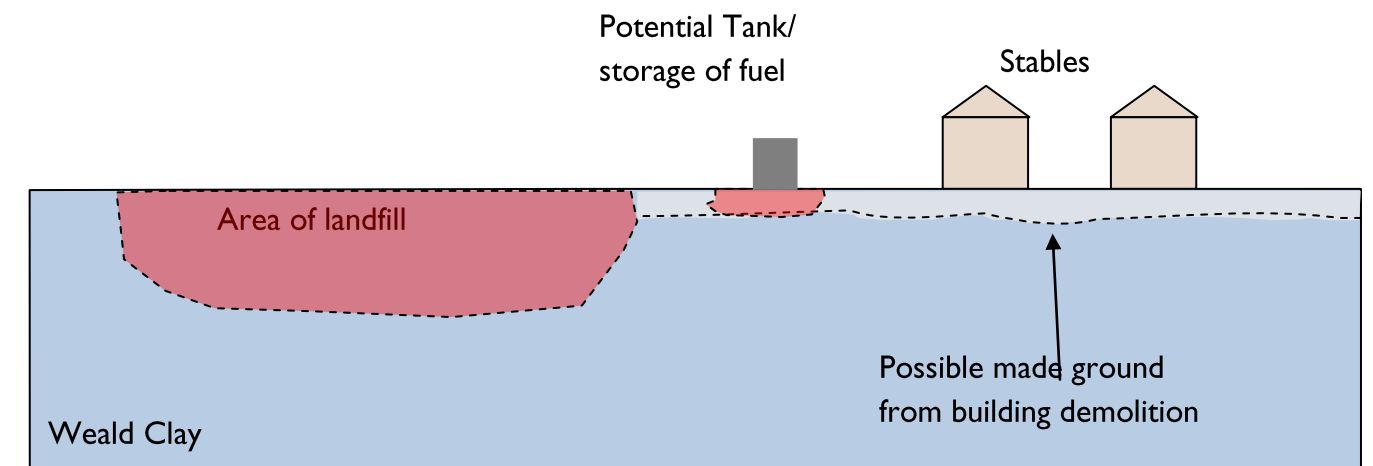
Title

Current Layout

1. Prison Camp

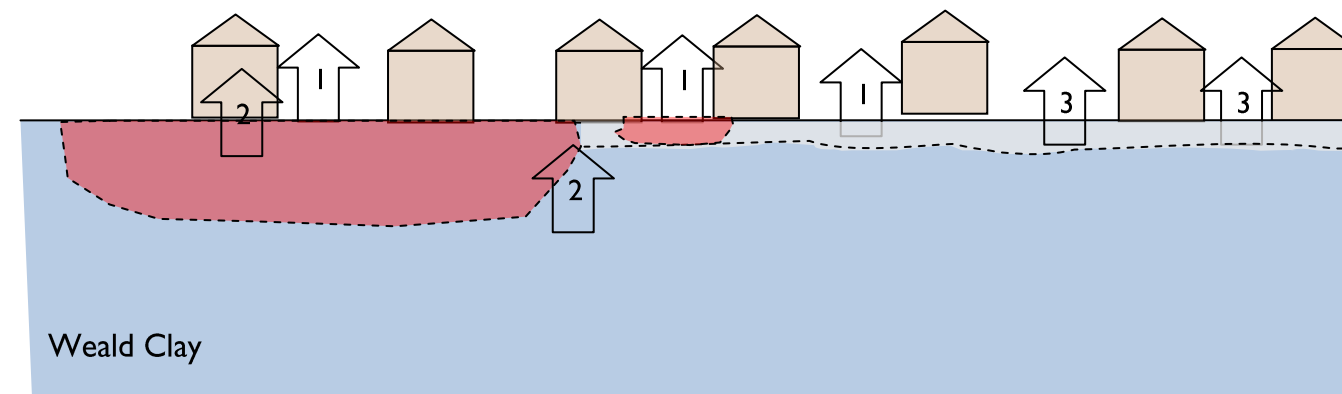


2. Landfill and Riding School



3. Current Status – Potential Pollutant Linkages

- 1) Ingestion, inhalation & dermal contact via soft landscaping
- 2) Ingress and accumulation of landgas
- 3) Inhalation of vapours





Number of sample locations	% Hot spot hit
14	33
Budget Cost - £5,000	
The 33% probability of a hot spot hit is calculated assuming hot spot size of 150m ²	



Site:

Kingsfold Close, Billingshurst

Client:

Horsham District Council

Project ID: LP00697

Figure:
2

Title: Proposed Sample Locations For
Medium Investigation Landfill Only



Number of sample locations	% Hot spot hit
6	16
Budget Cost - £5,000	
The 16% probability of a hot spot hit is calculated assuming hot spot size of 150m ²	



Site:
Kingsfold Close, Billingshurst

Client:
Horsham District Council

Project ID: LP00697

Figure:
1

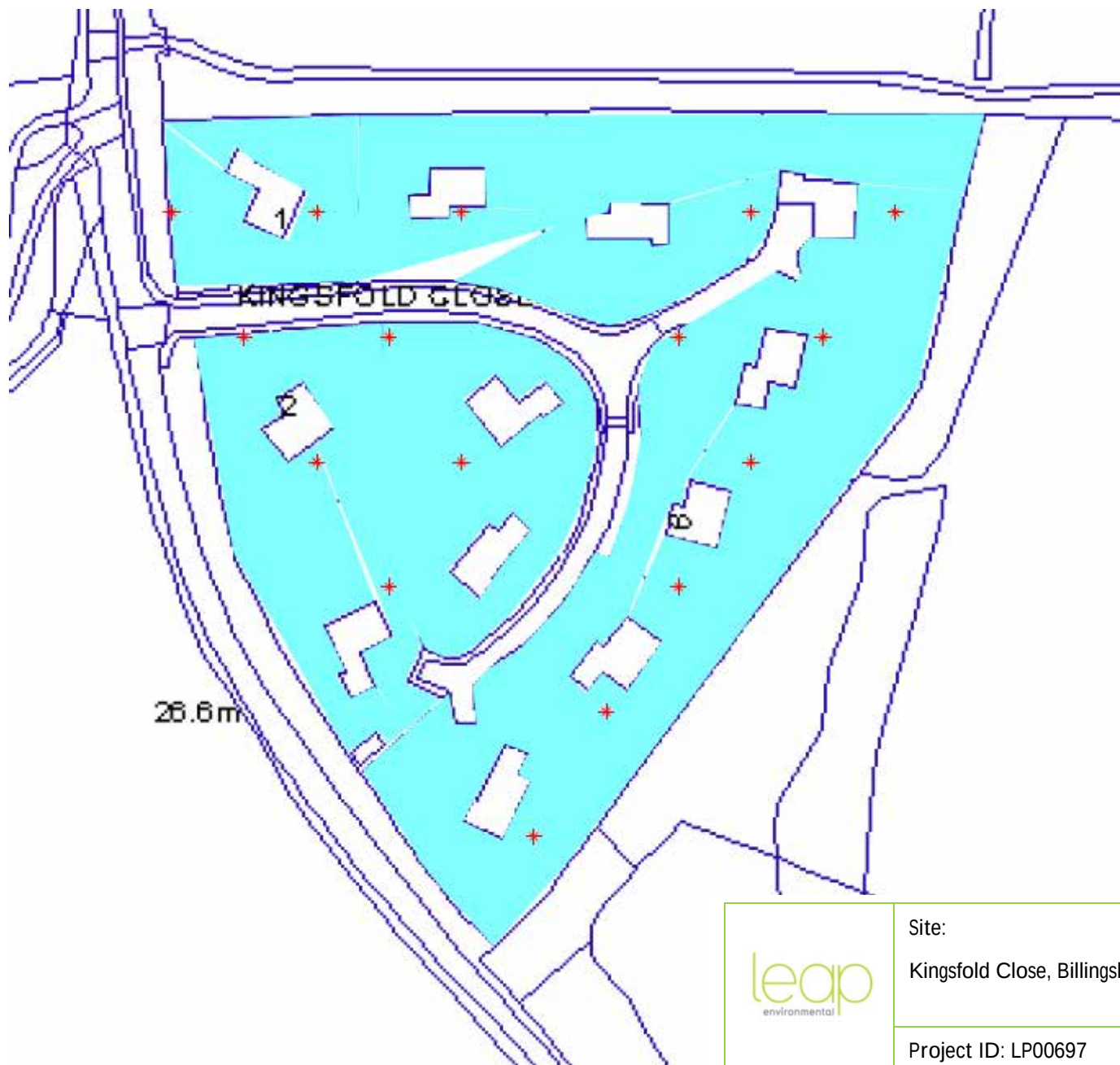
Title: Proposed Sample Locations For Light Investigation Landfill Only



Number of sample locations	% Hot spot hit
29	80
Budget Cost - £5,000	
The 80% probability of a hot spot hit is calculated assuming hot spot size of 150m ²	



Site: Kingsfold Close, Billingshurst		Client: Horsham District Council
Project ID: LP00697	Figure: 3	Title: Proposed Sample Locations For Heavy Investigation Landfill Only



Number of sample locations	% Hot spot hit
16	74
Budget Cost - £5,000	
The 74% probability of a hot spot hit is calculated assuming hot spot size of 650m ²	



Site: Kingsfold Close, Billingshurst		Client: Horsham District Council
Project ID: LP00697	Figure: 2	Title: Proposed Sample Locations For Medium Investigation



Number of sample locations	% Hot spot hit
8	36
Budget Cost - £5,000	
The 36% probability of a hot spot hit is calculated assuming hot spot size of 650m ²	

	Site: Kingsfold Close, Billingshurst		Client: Horsham District Council	
	Project ID: LP00697	Figure: 1	Title: Proposed Sample Locations For Light Investigation	



Number of sample locations	% Hot spot hit
29	98
Budget Cost - £5,000	
The 98% probability of a hot spot hit is calculated assuming hot spot size of 650m ²	

	Site:	Client:
	Project ID: LP00697	Title: Proposed Sample Locations For Heavy Investigation
	Figure: 3	

Kingsfold Close, Billingshurst

Horsham District Council



	Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project :	Kingsfold Close, Billingshurst	Title :	2012 Ariel Photograph	Fig. No.	I



	Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project :	Kingsfold Close, Billingshurst	Title :	2007 Ariel Photograph	Fig. No.	I



	Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project :	Kingsfold Close, Billingshurst	Title :	2002 Ariel Photograph	Fig. No.	I



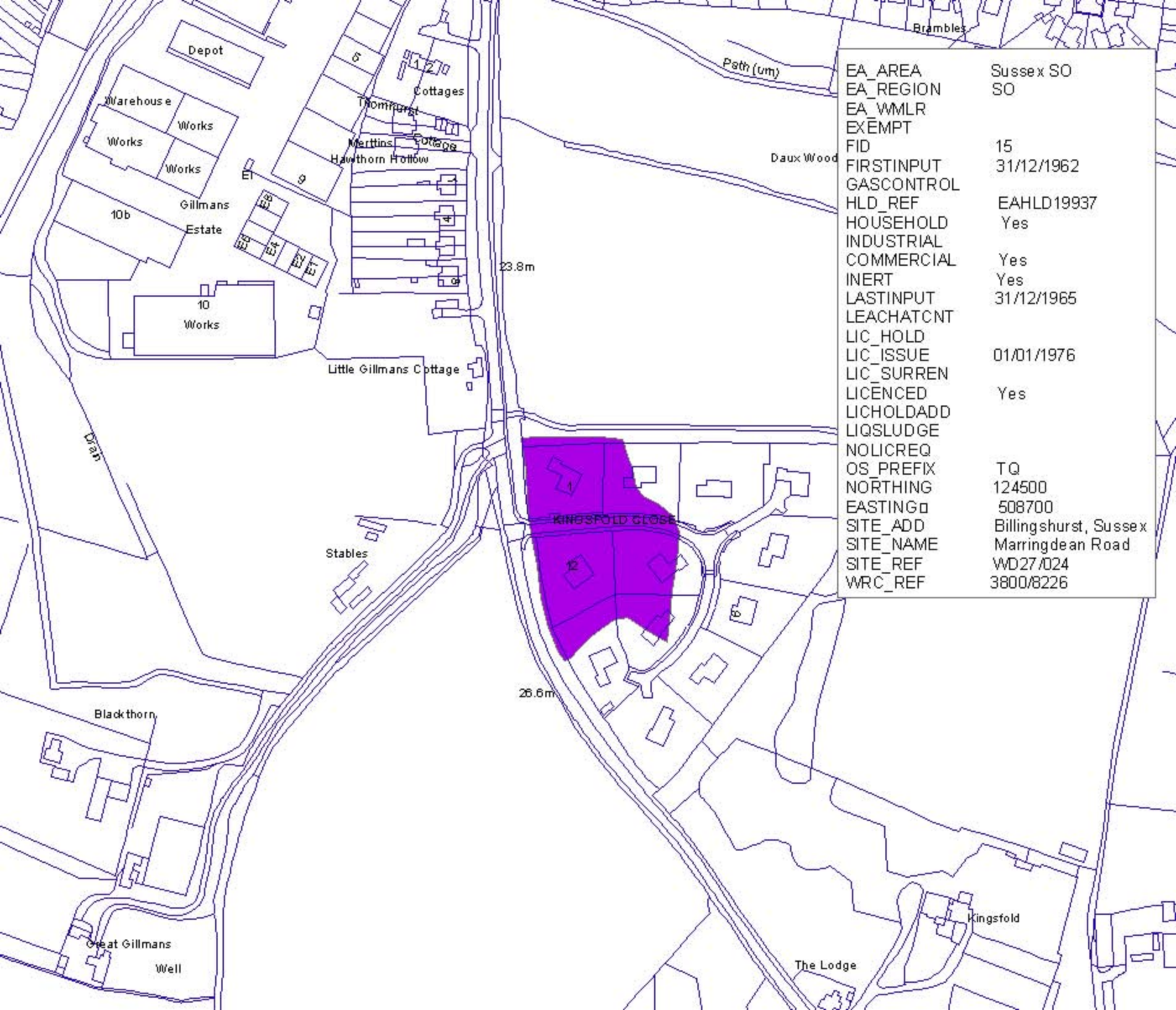
Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project : Kingsfold Close, Billingshurst		Title : 2000 Ariel Photograph		Fig. No. 1



	Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project :	Kingsfold Close, Billingshurst	Title :	1959 Ariel Photograph	Fig. No.	I



	Client :	Horsham District Council	Date :	17/03/2014	Project ID:	LP00697
	Project :	Kingsfold Close, Billingshurst	Title :	1947 Ariel Photograph	Fig. No.	I



EA_AREA	Sussex SO
EA_REGION	SO
EA_WMLR	
EXEMPT	
FID	15
FIRSTINPUT	31/12/1962
GASCONTROL	
HLD_REF	EAHLD19937
HOUSEHOLD	Yes
INDUSTRIAL	
COMMERCIAL	Yes
INERT	Yes
LASTINPUT	31/12/1965
LEACHATCNT	
LIC_HOLD	
LIC_ISSUE	01/01/1976
LIC_SURREN	
LICENCED	Yes
LICHOLDADD	
LIQSLUDGE	
NOLICREQ	
OS_PREFIX	TQ
NORTHING	124500
EASTING	508700
SITE_ADD	Billingshurst, Sussex
SITE_NAME	Marringdean Road
SITE_REF	WD27/024
WRC_REF	3800/8226

APPENDIX B

Historic Maps and
Environmental
Database Searches



Leap Environmental
THE ATRIUM BUSINESS CENTRE, CURTIS
ROAD,
DORKING, RH4 1XA

GroundSure Reference: GS-1306187

Your Reference: LPO2172

Report Date 21 Feb 2014

Report Delivery Method: Email - pdf

GroundSure Geoinsight

Address: KINGSFOLD CLOSE, BILLINGSHURST, RH14 9HG

Dear Sir/ Madam,

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

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

Yours faithfully,

A handwritten signature in black ink, appearing to be "J. O.", followed by a comma.

Managing Director
Groundsure Limited

Enc.
GroundSure GeoInsight



GroundSure GeoInsight

Address: KINGSFOLD CLOSE, BILLINGSHURST, RH14 9HG
Date: 21 Feb 2014
Reference: GS-1306187
Client: Leap Environmental



Aerial Photograph Capture date: 13-Sep-2012
Grid Reference: 508747,124558
Site Size: 2.15ha

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Overview of Findings

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

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

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

Section 1:Geology

1.1 Artificial Ground	1.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	1.1.2 Are there any records relating to permeability of artificial ground within the study site* boundary?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?	No
	1.2.2 Are there any records relating to permeability of superficial geology within the study site boundary?	No
	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 in a Radon Affected Area, as between 3 and 5% 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?	Basic 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	0	0	8	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	1	0

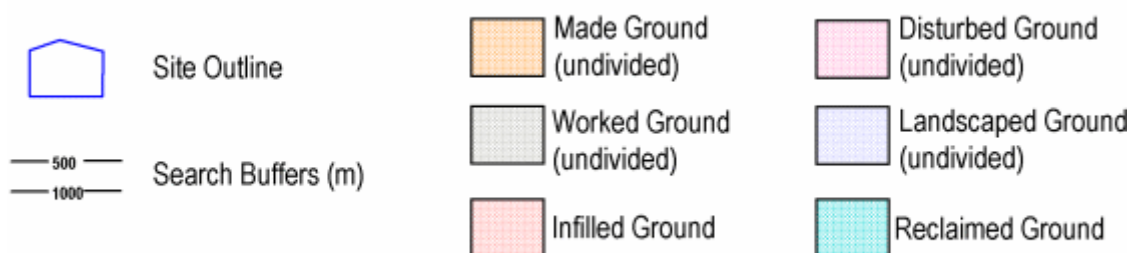
Section 3: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
3.1 Historical Mining	0	0	0	0	0
3.2 Coal Mining	0	0	0	0	0
3.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
3.4 Non-Coal Mining	1	0	0	1	0
3.5 Non-Coal Mining Cavities	0	0	0	0	0
3.6 Natural Cavities	0	0	0	0	0
3.7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

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

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

Section 6: Estimated Background Soil Chemistry	On-site	0-50m	51-250
6 Records of Background Soil Chemistry	2	0	4

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1 Geology

1.1 Artificial Ground

1.1.1 Artificial/ Made Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:301

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

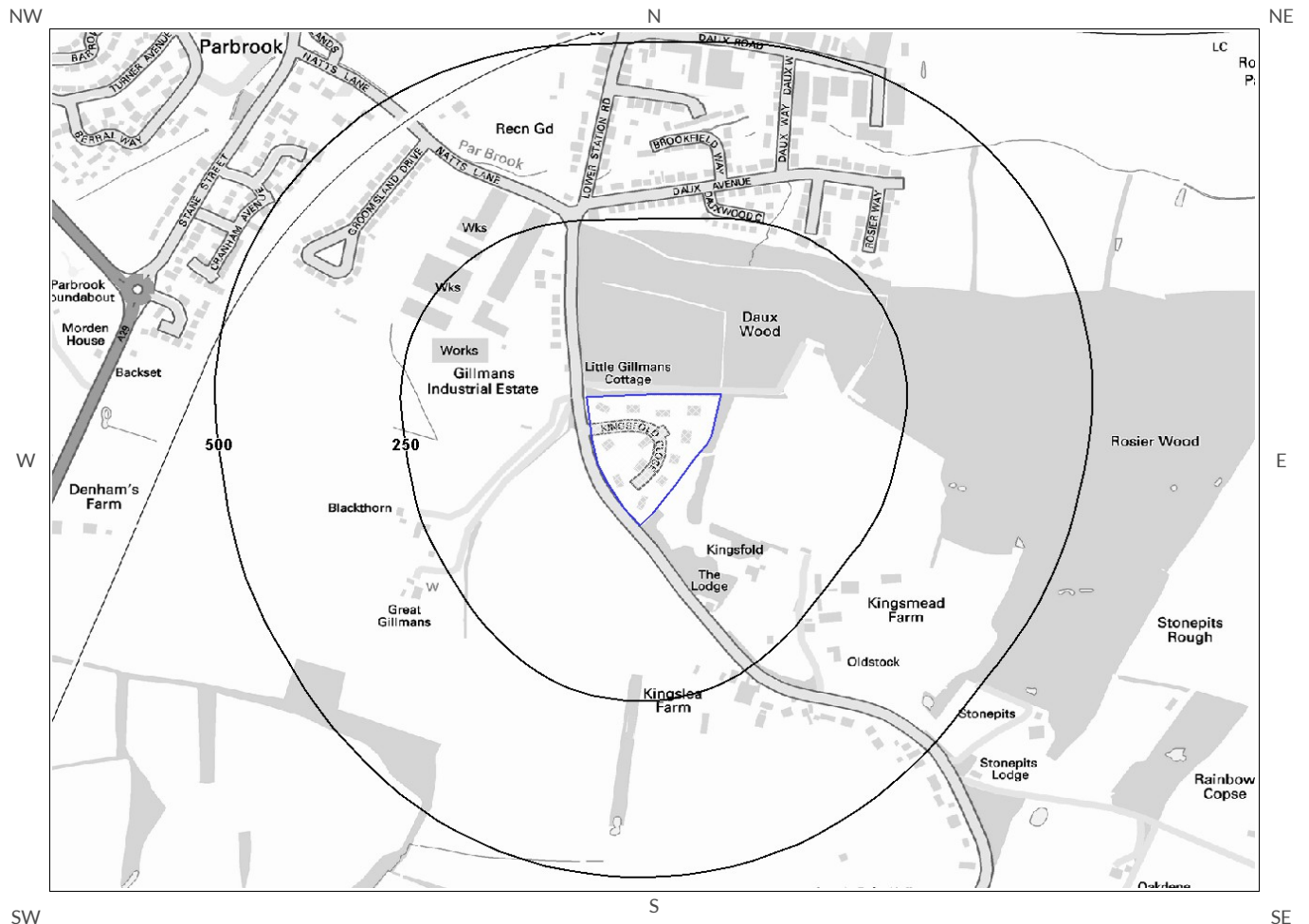
Database searched and no data found.

1.1.2 Permeability of Artificial Ground

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

Database searched and no data found.

1.2 Superficial Deposits and Landslips Map



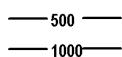
Superficial Deposits and Landslips
Legend



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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? No

Database searched and no data found.

1.2.2 Permeability of Superficial Ground

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

Database searched and no data found.

1.2.3 Landslip

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

Database searched and no data found.

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

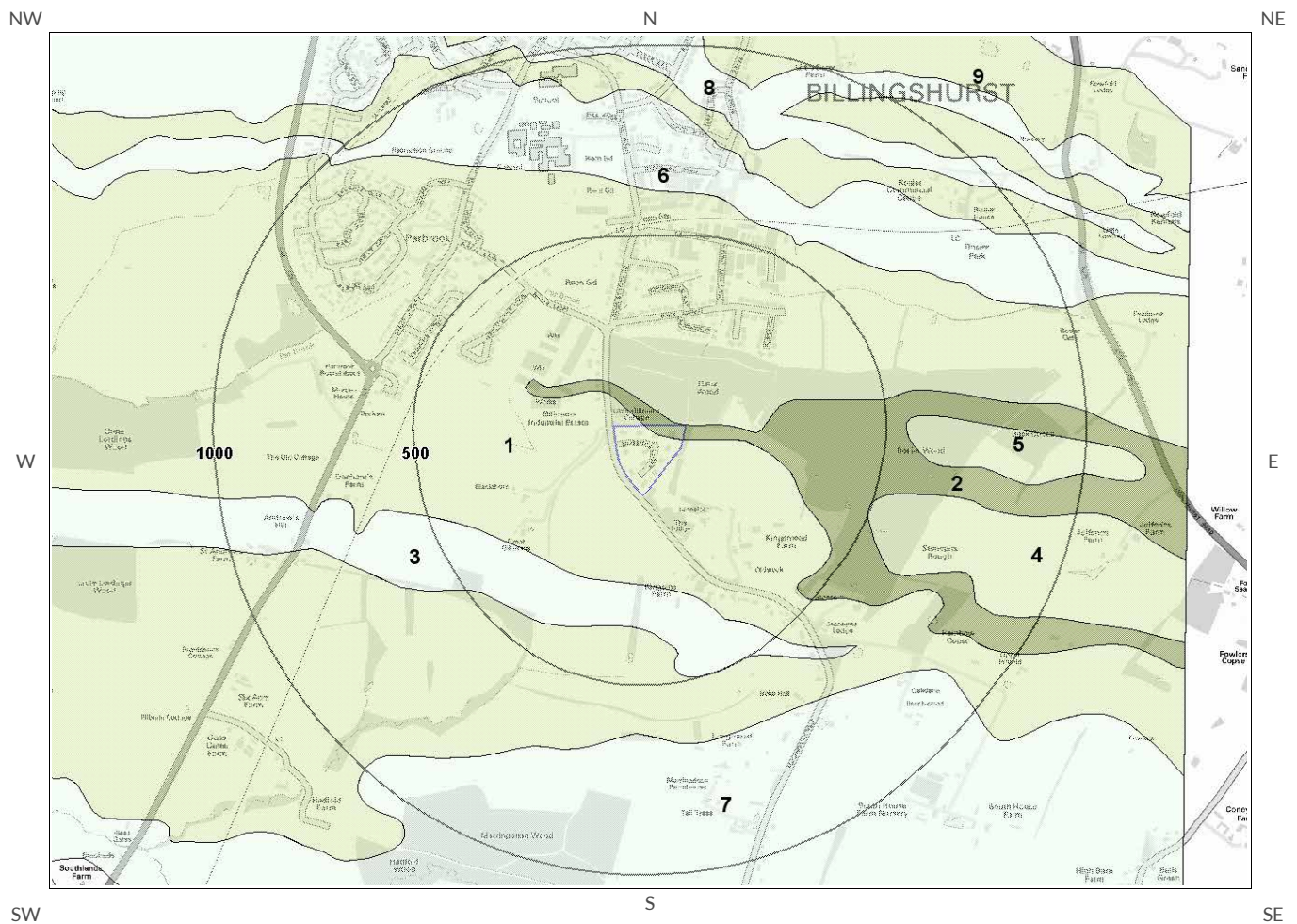
1.2.4 Landslip Permeability

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

Database searched and no data found.

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

1.3 Bedrock and Faults Map



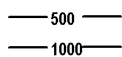
Bedrock and Faults Legend



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Site Outline



Search Buffers (m)

1.3 Bedrock, Solid Geology & Faults

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No:301

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	WC-MDST	Weald Clay Formation - Mudstone	Barremian / Hauterivian
2	0.0	On Site	WC-LMST	Weald Clay Formation - Limestone	Barremian / Hauterivian
3	234.0	S	WC-SDST	Weald Clay Formation - Sandstone	Barremian / Hauterivian
4	495.0	E	WC-MDST	Weald Clay Formation - Mudstone	Barremian / Hauterivian

1.3.2 Permeability of Bedrock Ground

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

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

1.3.3 Faults

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

Database searched and no data found.

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

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

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

1.4 Radon Data

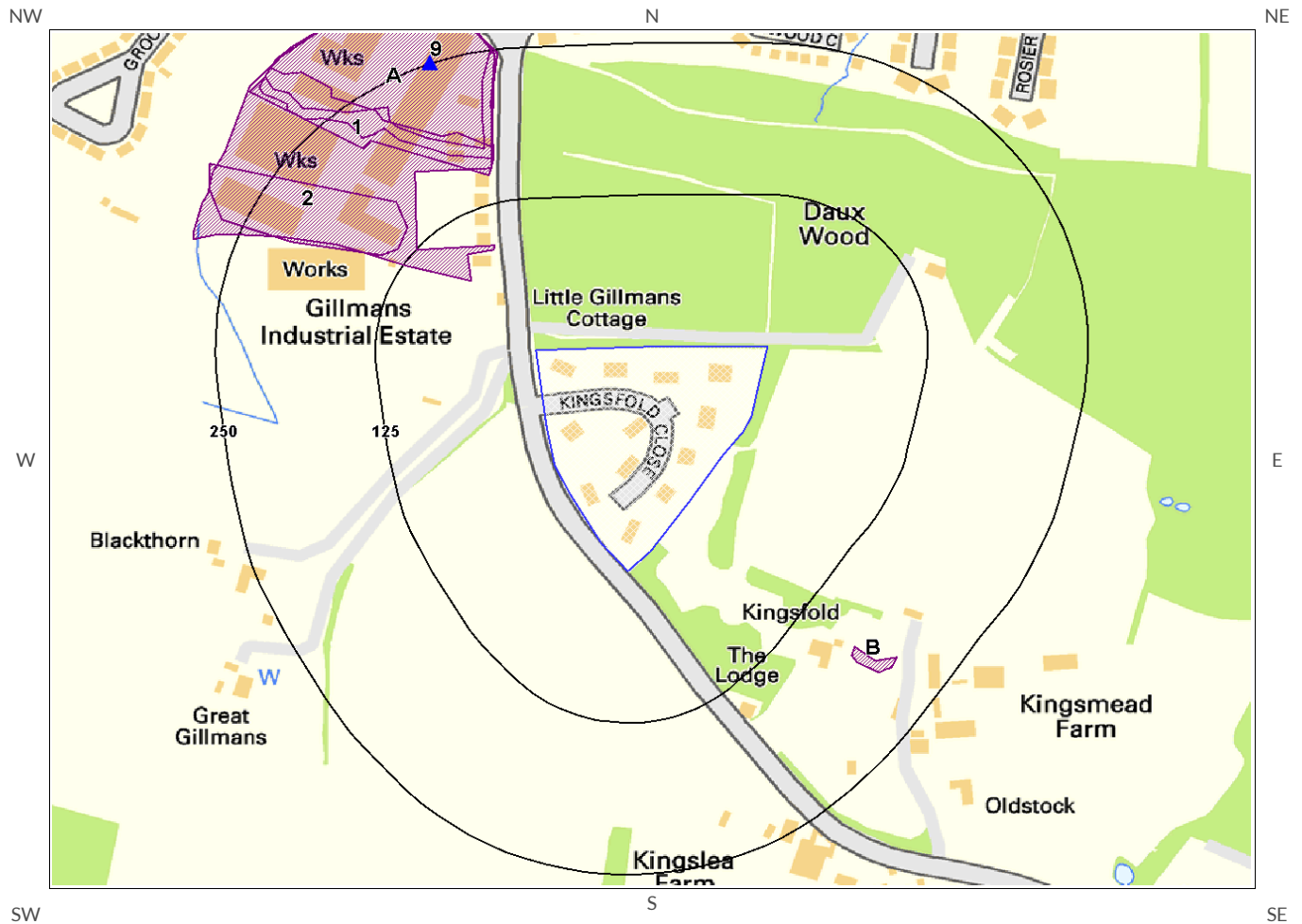
1.4.1 Radon Affected Areas

Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 3 and 5% 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? Basic radon protective measures are necessary

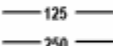
2 Ground Workings Map



Ground Workings Legend



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



2 Ground Workings

2.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1	76.0	NW	508575 124751	Brick Yard	1947
2	136.0	NW	508546 124689	Unspecified Pit	1957
3A	149.0	N	508596 124793	Brick Yard	1909
4	161.0	N	508534 124775	Unspecified Ground Workings	1909
5A	171.0	N	508604 124805	Brick Yard	1896
6B	175.0	SE	508980 124318	Pond	1896
7B	175.0	SE	508980 124318	Pond	1947
8B	175.0	SE	508980 124318	Pond	1909

2.2 Historical Underground Working Features derived from Historical Mapping

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

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

Database searched and no data found.

2.3 Current Ground Workings

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

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

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

ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
9	251.0	N	508640 124810	Clay & Shale	Parbrook Brickworks	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

3 Mining, Extraction & Natural Cavities Map



Mining, Extraction and
Natural Cavities Legend

Mapping
sourced from
 Ordnance
Survey®

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3 Mining, Extraction & Natural Cavities

3.1 Historical Mining

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

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

Database searched and no data found.

3.2 Coal Mining

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

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

Database searched and no data found.

3.3 Johnson Poole and Bloomer

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

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

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

3.4 Non-Coal Mining

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

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

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

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	0.0	On Site	Not available	Iron Ore	Highly Unlikely - Localised small scale mining may have occurred but restricted in extent.
2	424.0	N	Not available	Iron Ore	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.

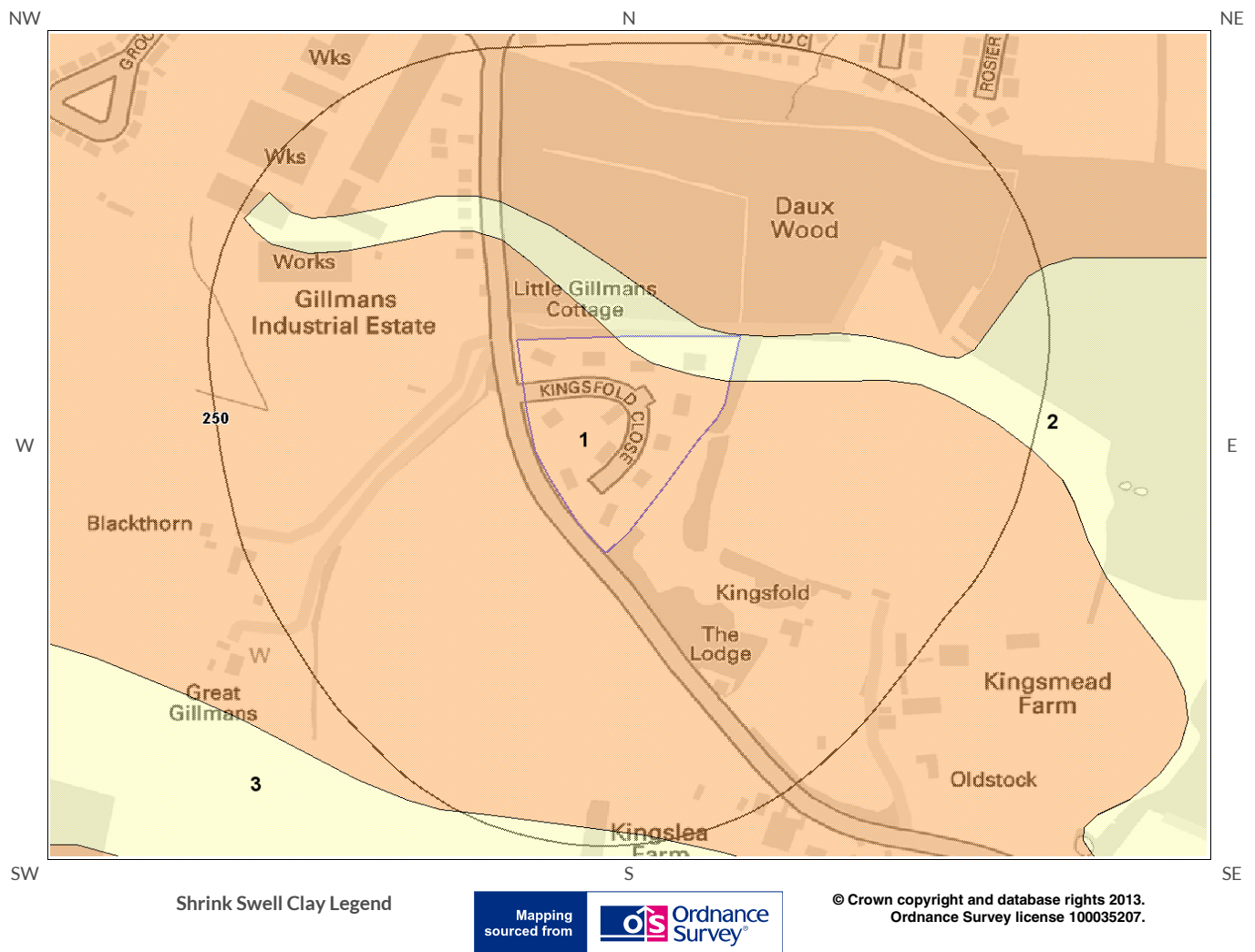
Are there any Clay Mining areas within 1000m of the study site boundary?

No

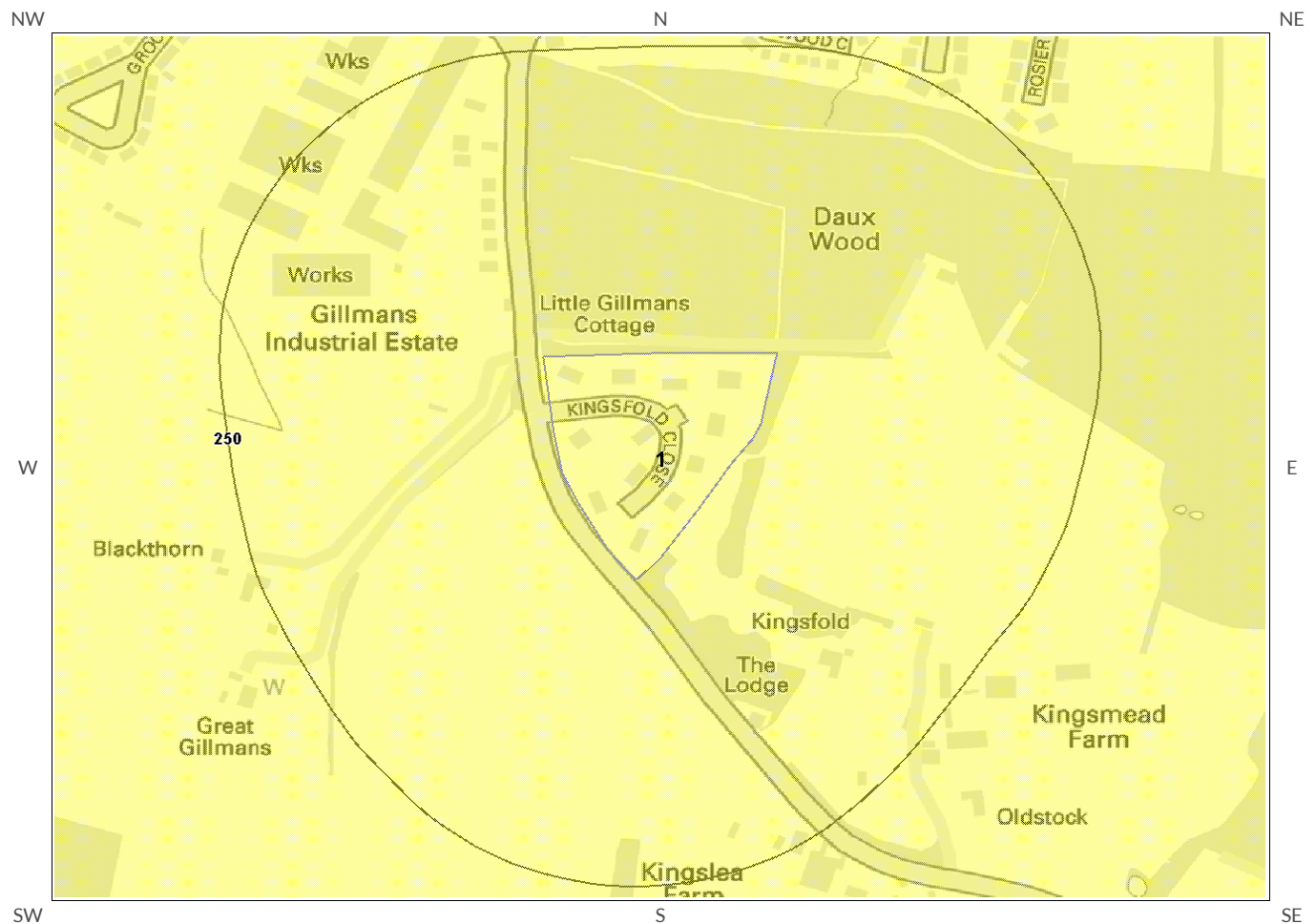
Database searched and no data found.

4 Natural Ground Subsidence

4.1 Shrink-Swell Clay Map



4.2 Landslides Map



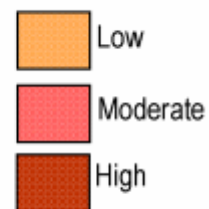
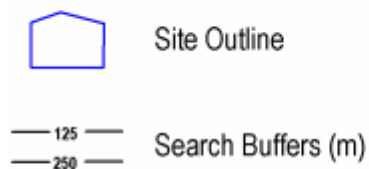
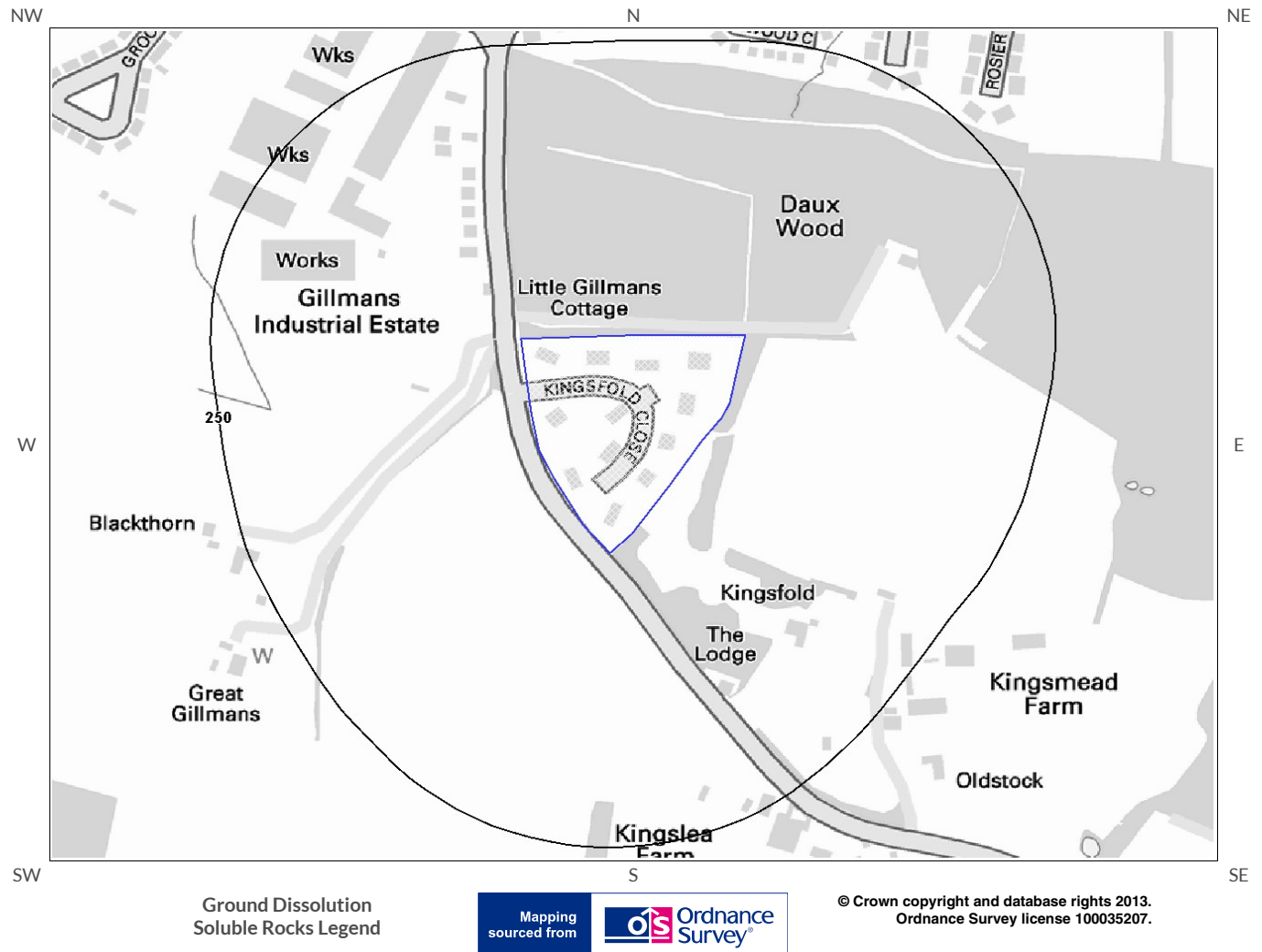
Landslides Legend



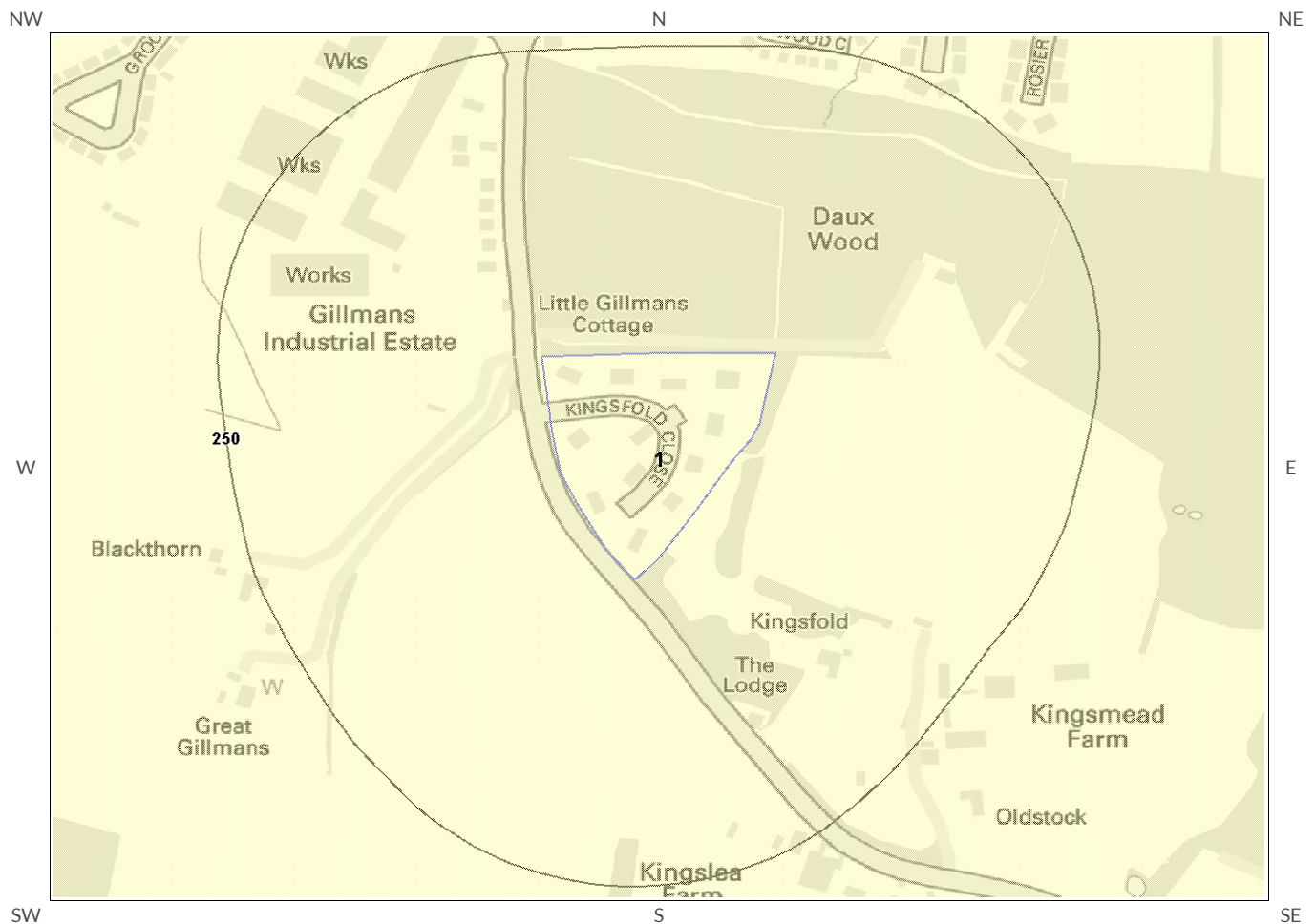
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4.3 Ground Dissolution Soluble Rocks Map



4.4 Compressible Deposits Map



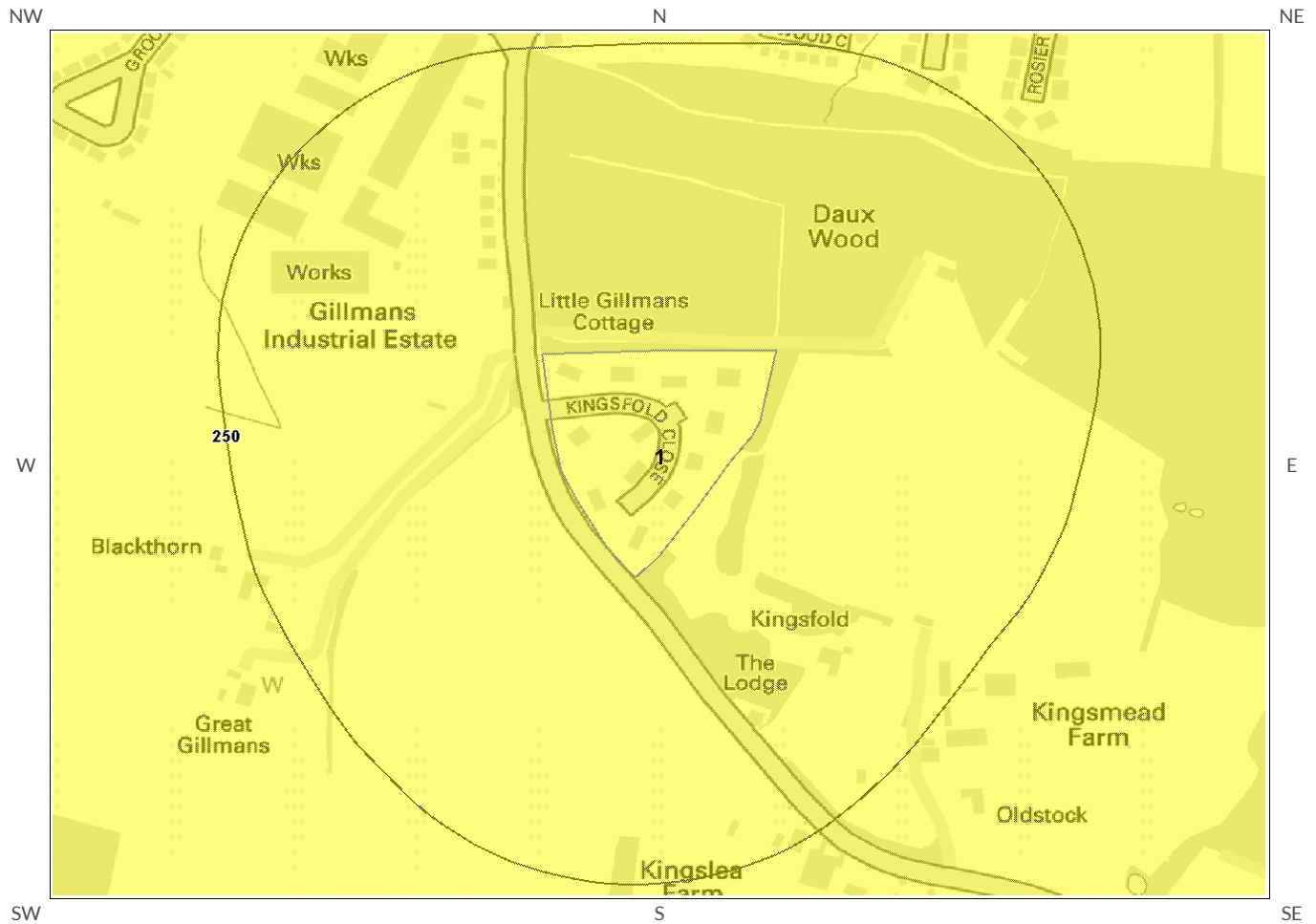
Compressible Deposits Legend



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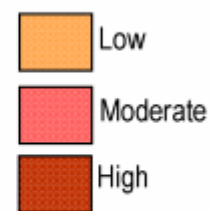
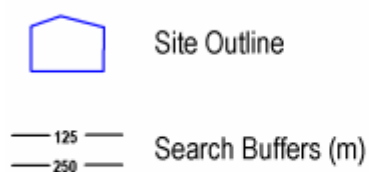
4.5 Collapsible Deposits Map



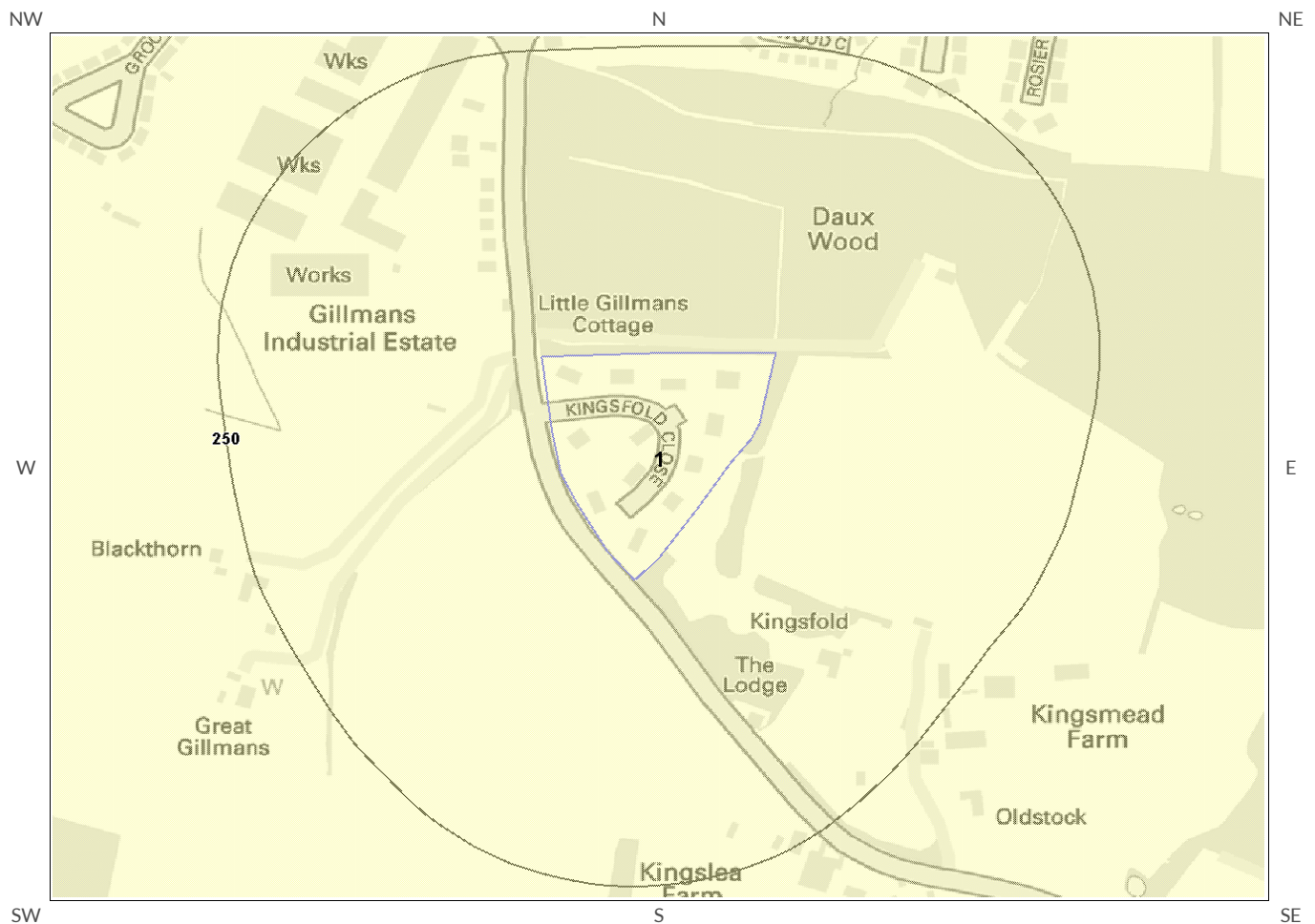
Collapsible Deposits Legend



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4.6 Running Sand Map



Running Sand Legend



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4 Natural Ground Subsidence

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

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

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

4.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Ground conditions predominantly medium plasticity. Do not plant trees with high soil moisture demands near to buildings. For new build, consideration should be given to advice published by the National House Building Council (NHBC) and the Building Research Establishment (BRE). There is a possible increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a possible increase in insurance risk, especially during droughts or where vegetation with high moisture demands is present.
2	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.

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.

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

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:

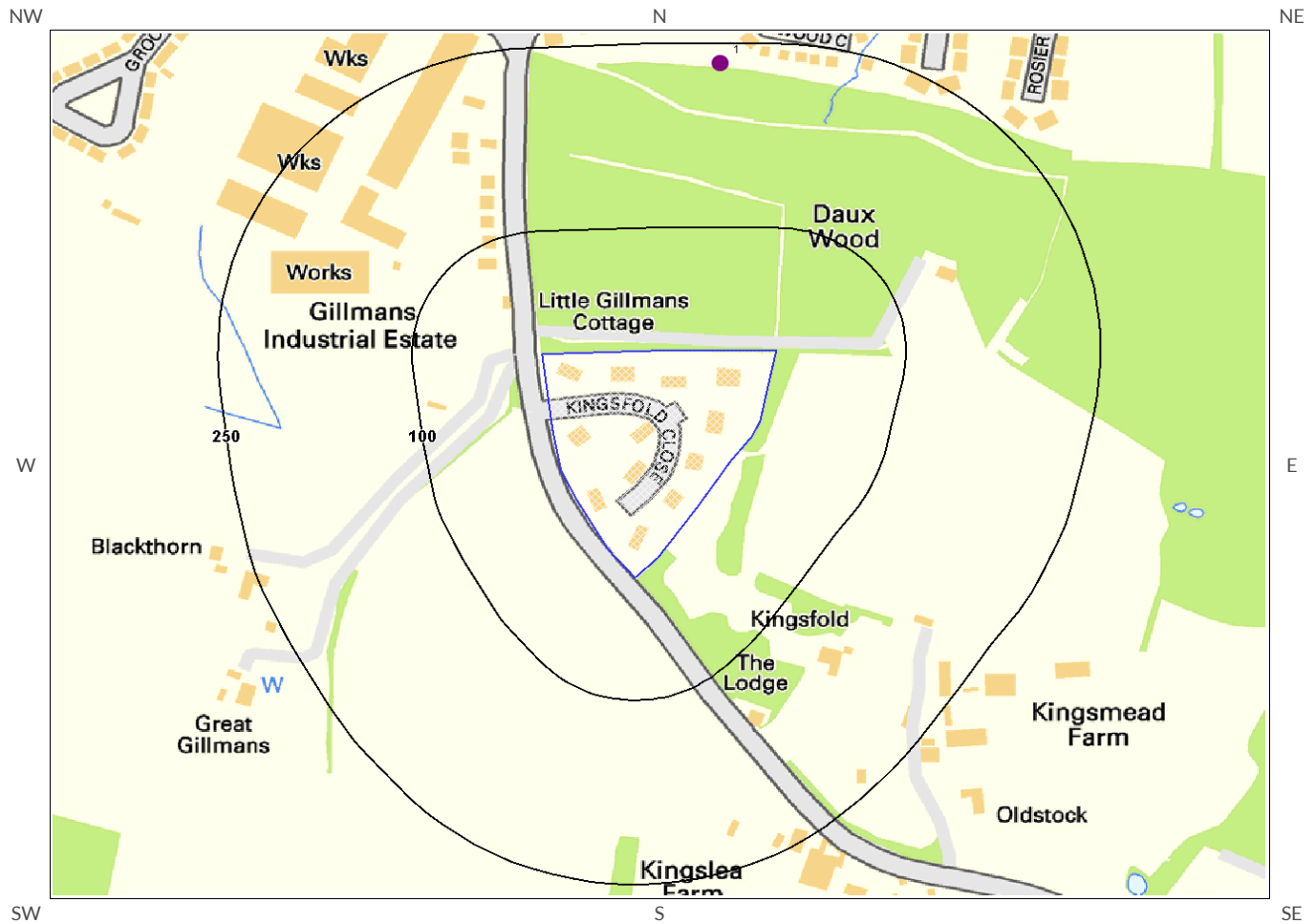
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible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

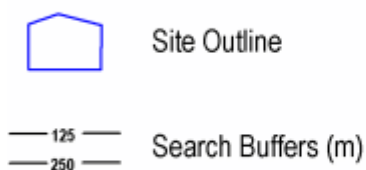
5 Borehole Records Map



Borehole Records Legend



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● Borehole Locations



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:

1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	234.0	N	508860 124810	TQ02SE7	64.01	BILLINGHURST WATERWORKS

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

#1: scans.bgs.ac.uk/sobi_scans/boreholes/570435



6 Estimated Background Soil Chemistry

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

6

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	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
96.0	E	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
96.0	E	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
102.0	E	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<150 mg/kg
234.0	S	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 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



GroundSure Helpline
Telephone: 08444 159 000
info@groundsure.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
Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries



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



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
Main switchboard: 020 7654 8000



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Ordnance Survey

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Report Reference: GS-1306187

Client Reference: LPO2172

Standard Terms and Conditions

1 Definitions

In these terms and conditions unless the context otherwise requires:

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

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

"Commercial" means any building or property which is not Residential.

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

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

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

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

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

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

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

"Fees" has the meaning set out in clause 5.1.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

3 The Client's obligations

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

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

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

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

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

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