

Kingfisher Resorts Studland Limited

Knoll House Hotel

Geotechnical and Geo-
Environmental Desk Study

REP/006/18

Issue | 27 March 2018

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 602075-66

Ove Arup & Partners Ltd
8 St. Thomas Street
Winchester SO23 9HE
United Kingdom
www.arup.com

ARUP

Document Verification

Job title		Knoll House Hotel		Job number		602075-66	
Document title		Geotechnical and Geo-Environmental Desk Study		File reference		6.1	
Document ref		REP/006/18					
Revision	Date	Filename	602075-66 Desk Study PD edits AF Update-fixed.docx				
Issue	27 Mar 2018	Description	First Issue				
			Prepared by	Checked by	Approved by		
		Name	Abby Fryett	Paul Dennis	Richard Patten		
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					
		Filename					
		Description					
			Prepared by	Checked by	Approved by		
		Name					
		Signature					

Issue Document Verification with Document



Contents

	Page
1 Introduction	3
1.1 General	3
1.2 Proposals	3
1.3 Sources of Information	3
2 The Site	4
2.1 Site Location and Topography	4
2.2 Site History	4
2.3 Geology	6
2.4 Structural Geology	7
2.5 Ecology	7
2.6 Hydrogeology	7
2.7 Hydrology	7
2.8 Flooding	8
2.9 Coastal Erosion	8
2.10 Ground Stability Hazards	8
2.11 Obstructions	8
2.12 Mining and Quarrying	8
3 Environmental Information	10
3.1 Designations	10
3.2 Radon	10
3.3 Surrounding Land Uses	10
3.4 Other Environmental Information	11
3.5 Unexploded Ordnance	11
4 Conceptual Site Model	12
4.1 Introduction	12
4.2 Outline Conceptual Model	12
4.3 Potential Contamination Sources	13
4.4 Pathways	13
4.5 Receptors	14
4.6 Conceptual Site Model	15
5 Preliminary Risk Assessment	16
5.1 Ground Conditions	16
5.2 Contaminated Land	16
5.3 Preliminary Risk Assessment Overview	19

6	Preliminary Geo-Environmental Conclusions and Recommendations	21
6.1	UXO Risk	21
6.2	Contamination	21
6.3	Buried Services	21
7	Preliminary Geotechnical Conclusions and Recommendations	22
7.1	Groundwater	22
7.2	Building Foundations	22
7.3	Earthworks	22
7.4	External works	22
7.5	Potential Reuse of Soils	22
8	Recommendations for Ground Investigation	24

Appendices

Appendix A

Groundsure Report

Appendix B

Historic Map Extracts

Executive Summary

Arup have undertaken a desk study on behalf of Kingfisher Resorts Studland Limited for their planned refurbishment and redevelopment of Knoll House Hotel, north-west of Studland, Dorset. The site for this redevelopment is approximately two hectares (ha) in area.

The site is at a local high point at about 25m above Ordnance Datum (mAOD), sloping downwards in all directions. There has been a large building on the site since 1925, which has been extended over the years to the current building configuration. The site is within the Dorset Area of Outstanding Natural Beauty, and the Studland and Godlingston Heaths Site of Special Scientific Interest (SSSI) and a National Nature Reserve are both 51m west of the site.

The geology of the area requires confirmation by ground investigation, but is expected to consist of the Parkstone Sand Member, underlain by the Broadstone Clay Formation. Assuming that the Parkstone Sand Member is present, it is expected that shallow foundations for the proposed development would be the optimum solution.

The Environment Agency (EA) website notes that the site is in a high groundwater vulnerability zone, which means that the groundwater is susceptible to impact by any pollutants released at or below ground level. The groundwater on site has also been classified as a Secondary A aquifer.

There is a moderate risk of contaminated land due to anecdotal evidence of buried waste and oil tanks on site; the close proximity of historic and more recent sewage works; a farm that historically was a brickworks workshop; and a large car park by Studland Bay. Ground gas should also be assessed due to the nearby wetlands.

The new surface water drainage system to be designed for the site will require careful consideration. Springs have been noted on the historic maps at about 20m AOD. The existing drainage system will need to be assessed for its capacity to cope with any additional demand.

Preliminary geotechnical and geo-environmental risk register

Risk	Description and potential impact	Mitigation/Management of risk
Lack of data available on ground conditions and the possible presence of chalk.	While it is likely that the ground conditions consist of the Parkstone Sand Member, there is only one local historic borehole record. There is therefore a possibility that alternative ground conditions are in place at the site, which may require different foundations that could affect the design and cost of the project.	A ground investigation will be required to verify the ground conditions for the site, allow selection of appropriate geotechnical design parameters and selection of an appropriate foundation solution.
Ground gas.	There is a possibility that ground gas is present on site, or has migrated from the nearby wetlands. Ground gas is a potential hazard to future guests and staff at the hotel.	Installation of ground gas monitoring boreholes as part of a ground investigation and monitoring the ground gas to assess whether any ground protection is necessary should be undertaken.
Unexploded Ordnance (UXO)	UXO risk mapping indicated that the site is within a negligible bomb risk area, however it is on the flight paths for two target cities of WW2.	It is recommended that a detailed UXO risk assessment is commissioned for the site prior to ground investigation works.
Possible contamination of soil and groundwater	There is a possibility that contaminants from activities on site or nearby have migrated to the site. These include metals, hydrocarbons, effluent, sewage, and possibly asbestos. While the likelihood of contaminants being present is low, the possible consequences mean that the risk is considered to be moderate.	Ground investigation should be specified and procured to provide precautionary guidance given the potential health hazards. This will include additional PPE and further sampling and analysis to ensure any contaminants are identified. Depending on the results of the analysis, alterations to the design or additional works may be necessary to ensure that the site is suitable for the proposed end use.

Introduction

1.1 General

Kingfisher Resorts Studland Limited are proposing to develop a series of new buildings following the demolition of the majority of the current buildings at Knoll House Hotel, Studland, south-west of Bournemouth. One of the buildings is to be retained and refurbished as part of the proposed development. Ove Arup & Partners Ltd (Arup) have been commissioned to carry out a geotechnical and geo-environmental desk study for the site to inform the design of the proposed development.

This report presents a review of the site settings, its history and anticipated ground conditions, as well as a preliminary identification of the potential ground hazards and risks. Recommendations for future ground investigations are also provided.

This desk study and preliminary risk assessment has been prepared for and on behalf of Kingfisher Resorts Studland Limited in response to their particular instructions. Except as for in our agreement with Kingfisher Resorts Studland Limited, any other party using this information for any purpose whatsoever does so at their own risk and any duty to that party is excluded. The following report is based largely on a review of publicly available historical and current information pertaining to the site and its surrounds, Arup accept no responsibility for the accuracy of these records.

1.2 Proposals

The current proposal involves the conversion of the current Knoll House Hotel into a new high-quality hotel. This will include restoration of the original house, demolition of surrounding buildings and the development of new front of house areas. These new buildings are expected to include reception; bars; restaurants; leisure facilities such as gym, pools, steam room and sauna; and guest accommodation of apartments, cottages and hotel rooms.

1.3 Sources of Information

This report is based on the review and interpretation of the following sources:

- Groundsure Report (Appendix A);
- Ordnance Survey website (Ordnance Survey, 2018);
- British Geological Survey (BGS) mapping (Sheet 299 1:50,000) and BGS website (British Geological Survey, 2017);
- EA website (Environment Agency, 2017);
- Regional UXO maps (Zetica, 2018);
- Magic Map Application (Natural England, 2018)
- Arup's own archives and internal database.

2 The Site

2.1 Site Location and Topography

The site is centred at National Grid reference SZ 03093 83314, to the north-west of Studland, Dorset. The site is approximately 2ha in area and is currently an active hotel.

The site is roughly rectangular in plan. From aerial photographs, there are trees to the west and north of the site, some of which form part of the Studland and Godlingston Heath Nature Reserve. To the east directly next to the hotel is Ferry Road which runs slightly north-west to south-east. On the other side of Ferry Road is a leisure area associated with the hotel, which includes tennis courts and a golf course. Further east are the beaches of Studland Bay. To the south are several fields and the town of the Studland.

There are several historical monuments nearby, including two tumuli and the Dragon's Teeth World War II anti-tank pimples to the south-east. Several notable mounds are present just over 750m to the west and south-west, such as Agglestone Rock, Puckstone and the mound at Black Down which are outcrops of Parkstone Sand Member.

The site is at a local high point at about 25m AOD, with the ground dipping in all directions. The crest of the hill is at the southwest of the site at above 30m AOD, with the steepest slope towards the north-west. The gradient is lowest towards the south.

2.2 Site History

The history of the site has been traced by reference to early editions of the Ordnance Survey mapping obtained as part of the Groundsure report, see Appendix A for an extract of historical maps for the site.

Historically, the site and local surroundings have seen little development. Studland, the small town to the south of the site, has grown, but the maps show no significant industry that might have affected the site.

Table 1 – Summary of site history.

Date	On Site	Off Site
1886	Woodland, sand dunes and heath shown to be present. The site itself is labelled as "Knowl Hill".	Two tumuli are present to the south-east, approximately 200m and 350m away. Agricultural fields are present predominantly to the south, but also in some areas to the west and north. The heath with several noted tracks is to the west, and the sand dunes and beaches of Studland Bay are present to the east. The series of isolated buildings and dwellings that comprise Studland is present just over 500m to the south-east. Piplely Bridge is noted approximately 180m to the north.

Date	On Site	Off Site
		The track that will become Ferry Road leads to Piplely Bridge from Studland running north-west to south-east
1889	No significant changes identified.	A spring is noted approximately 150m to the south-west. Brick works and kilns are labelled about 200m to the south-west, although some of these buildings were present in 1886. A reservoir is now also labelled 450m to the south west. Several tanks are present west and slightly south of the site just over 750m away, and an Old Clay Pit is labelled approximately 800m to the west.
1900 to 1901	No significant changes identified.	No significant changes identified.
1925 to 1926	Buildings on the site, now labelled as both “Knoll Hill” and “Knoll House”, are present. Two small roads joining the buildings to Ferry Road are present.	Several further buildings are present within 500m of the site, including three buildings neighbouring the site on the other side of the track that has become Ferry Road, and Studland Bay House to the south-east. The brickwork buildings are now labelled "Old Kilns". The town of Studland has grown 500m to the south-east.
1938	No significant changes identified.	No significant changes identified.
1954	Knoll House Hotel is now present on site, with additions and extensions to the original building.	Neighbouring the site to the east across Ferry Road is now a golf course and tennis court, associated with the hotel. Sewage works and a filter bed are noted approximately 75m to the north of the hotel. A drain is labelled 150m to the west of the site, however from observing the historic map several more drains may also be present but unlabelled in the area 100m to the north-west. A car park is present to the north-east of the site next to the beach 200m to the north-west.
1955	No significant changes identified.	A second drain is identified to the south-east, 150m from the site.
1963	No significant changes identified.	Several more drains have been identified to the north and east. The “Old Kilns” to the south-west now seem to be dwellings, with some further dwellings 200m directly south of the site. The reservoir is now labelled as “covered”.
1985-1986	Further extensions to the original building and additional buildings have been added. The road to the east of the site no longer exists, but the southern road on the site has been enlarged and extended, into what is assumed to be a car park.	A marsh 150m to the north and another 180m to the east are labelled in this map. A pond next to Studland Bay House is also labelled 210m to the south-east. The sewage works 75m north of the site are still shown but only a tank is labelled. Another larger sewage works is labelled 500m to the north-west of the site. A pond is now present 100m to the north-west of the site, possibly connected into the local drainage system. A pumping house is also present 70m to the south-west. The car

Date	On Site	Off Site
		park by the beach 400m to the north-east of the site has now been extended. There is now a pier 600m to the south-east. The buildings that were previously labelled as the “Old Kiln” are now labelled those of “Wadmore Farm” and “Wadmore Cottage”, with several surrounding fields. Wadmore Lane now adjoins Ferry Road 400m to the south. Studland has grown further with additional residential development shown.
1995	No significant changes identified.	No significant changes identified.
2002	No significant changes identified.	The assumed drain approximately 80m to the north-west of the site is now labelled. The reservoir to the south-west is now labelled as “covered”. Two small water bodies are shown approximately 450m to the north-west of the site. The car park by the beach has been extended and now also includes a boat park.
2010	No significant changes identified.	A third drain approximately 100m to the south-east is now also present.

2.3 Geology

The geology of the site has been reviewed using the online BGS mapping at a 1:50,000 scale. Superficial deposits are not expected to present on the site, although the site is surrounded by clay, silt, sand and gravel Head Deposits. This head was formed from slope processes, possibly originating from Knowl Hill itself. Locally, along the line of the drain 80m to the north-west of the site, is a thin alluvial band.

The site is shown to be underlain by the Parkstone Sand Member sedimentary bedrock. According to the BGS, this sandstone was formed in the Palaeogene Period, in an environment dominated by swamps, estuaries and deltas near the sea. This may be underlain by the Broadstone Clay Member, another sedimentary clay and silt bedrock formed in a similar environment. Lignite was also found to be present in a nearby historic borehole.

An historic borehole was found on the BGS website that indicated that a thin band of chalk was present. In the historic (1960) borehole approximately 270m to the south of the site, a 4m thickness of chalk was encountered at a depth of 4.5m below ground level (m bgl). This borehole is labelled as being associated with the Knowle House Hotel but is located to the south of the current red line site boundary. No chalk is present in any other historic boreholes, except at great depth (180m bgl) approximately a kilometre to the south of the site. It is assumed that the local chalk layer encountered in the 1960 borehole may be an infilled layer. No chalk is therefore expected to be present on the site.

Made Ground may be present on site from the historic second road joining the hotel and Ferry Road, and from any buildings or roads that will be demolished. Anecdotal evidence suggests burial of historic waste on site and above and below

ground fuel storage may have historically taken place on site. The car park 400m to the north-east is also likely to contain Made Ground. The closest area of infilled ground was noted to be over 1km from the site.

2.4 Structural Geology

There is a major syncline 285m to the south of the site, and a major anticline 369m to the south-east of the site. These are not expected to affect the site.

2.5 Ecology

The Preliminary Ecological Appraisal (Focus Ecology Ltd., 2017) notes that the proposed redeveloped is highly unlikely to cause any significant impact on the conservation of the local designated sites and protected species. An Ecological Impact Assessment is recommended for planning purposes and eventually to help inform an Ecological Mitigation and Enhancement Strategy that will need to be agreed with the Local Authority. A bat survey will also be required as there is evidence that the main hotel building is a bat roost.

There are however several trees that have been identified as highly desirable to maintain on the site, such as the tall Scots Pine trees and an oak tree. It will not be possible to building foundations within the Root Protection Areas (RPA) of the protected trees (Barton Hyett Associates, 2018). If any trees are removed, consideration of the effect on any surrounding silt or clay should also be included within the foundation design.

2.6 Hydrogeology

Maps from the EA website indicate that there are no groundwater protection zones near the site. The closest area of groundwater protection is 1.1km to the south-west. The bedrock at the site has been designated as a Secondary A aquifer. This indicates that the bedrock contains permeable layers capable of supporting local water supplies. The area around the site has been classified as having a high groundwater vulnerability, which means that pollutants released at ground level have a high chance of reaching the groundwater.

The Superficial Deposits near the site are designated by the EA as a Secondary (undifferentiated) aquifer. This means that the aquifer has been designated as both a secondary aquifer and a non-aquifer due to the variability of the soil.

2.7 Hydrology

Information on hydrology was obtained from the Groundsure report (Appendix A) and available aerial photographs.

The closest surface water feature is the small stream or drain 66m to the west of the site. There are also two small streams or drains 125m and 316m to the south-east of the site.

2.8 Flooding

According to the EA, the site is within Flood Zone 1, and will therefore have a less than 1 in 1,000 probability of flooding annually. The site is more than one hectare, so will however require a flood risk assessment. The flood risk assessment should investigate surface water drainage as a key potential issue.

Flooding is likely to occur approximately 450m to the north of the site and 300m to the east of the site from the sea.

2.9 Coastal Erosion

The EA anticipates that 25.4m to 38.8m of coastal erosion will take place in plan in the next 50 years along the local beach approximately 400m to the east of the hotel.

2.10 Ground Stability Hazards

Analysing the presented geology and topography of the site, the following assumptions can be made ().

Table 2 – Ground Stability Hazards

Ground Stability Hazard	Risk
Shrink Swell Clays	Moderate. The Parkstone Sand Member has a very low risk of shrink-swell clays, however the surrounding Broadstone Clay Member has a moderate risk.
Landslides	No hazard
Ground Dissolution of Soluble Rocks	No hazard
Compressible Deposits	No hazard
Collapsible Deposits	Very low
Running Sands	Low

This information is presented in the Groundsure Report (Appendix A).

2.11 Obstructions

Review of the site history indicates that the site has not been subject to previous development, therefore relic foundations are considered unlikely. However, demolition of the existing structures and associated historic infrastructure will need to be managed to ensure that all below ground obstructions are removed prior to the proposed development commencing.

A survey to prove the line, level and extent of any buried services will be obtained prior to any intrusive works on site.

2.12 Mining and Quarrying

From a review of available historical and geological mapping and the Groundsure report (Appendix A), there are no current or historic mining works in or around the site.

There are no records of natural cavities within 500m of the site boundary. There is a natural cavity noted 766m to the south-east, comprising three sea caves in chalk. The site is not expected to be underlain by chalk, so there will be a negligible risk of solution features.

3 Environmental Information

3.1 Designations

The hotel itself is part of the Dorset Area of Outstanding Natural Beauty. There are also several important environmental sites near the hotel. This includes:

- Studland and Godlingston Heaths SSSI is 51m west of the site, this is also a National Nature Reserve;
- The Dorset Heaths 51m to the west of the site and 100m north is a Special Area of Conservation, this is also a Special Protection Area and a Ramsar site;
- Studland Cliffs 618m to the south-east of the site are also a SSSI;
- There are two tumuli 150m and 210m to the south-east of the site, which are listed with Historic England;
- The Dragon's Teeth anti-tank pimples from World War II are present 500m to the south-east of the site, and are listed as Grade 2 with Historic England.

3.2 Radon

The data reviewed within the Groundsure Report (Appendix A) for the site indicates that the site is not in a radon affected area, or less than 1% of homes are above the 200 Bq/m³ Action Level for radon. No additional protection for new buildings is therefore necessary.

3.3 Surrounding Land Uses

The surrounding land has some arable activity, but apart from the sewage works to the north and the small town of Studland to the south, mostly consists of natural land. These and other notable local land uses are summarised in below.

Table 3 – Current Land Uses

Title	Category	Distance and Direction
Knoll House Hotel	Hospitality industry – redevelopment planned. Made Ground is likely to be present over some of the site.	On site.
Golf Course	Leisure.	30m east of the site.
Pumping House	Water provision.	70m to the south-west of the site.
Drains	Drainage and flood prevention.	100m west and 150m south-east of the site.
Wadmore Farm	Agricultural.	200m south-west of the site.
Studland Bay Car Park	Made Ground.	200m north-east of the site.
Three large residential houses	Residential.	150m south, 200m south-east and 450m south-east of the site.

Title	Category	Distance and Direction
Sewage Works	Industrial.	500m north-west of the site.
Studland	Town; includes residential areas, a town centre, car parks and leisure areas.	500m south-west of the site.

The historic details of local land uses are also shown in Table 4 below.

Table 4 – Historic Land Uses

Title	Distance and Direction	Date
Brick Works	150m south-west.	1889 – 1925
Reservoir	450m south-west	1889 – 1963
Allotment Gardens	150m south	1925 – 1954
Sewage Works	75m north	1954 – 1985*
*The outline of the sewage works exists in the most recent OS maps, 2002, but they are unlabelled. The sewage works may therefore still be active.		

3.4 Other Environmental Information

There are two Licensed Discharge Consents within 500m of the site (see the Groundsure Report, Appendix A). These belong to two sewage discharges at pumping stations 47m and 25m to the south-west of the site.

There are no current landfill sites within 500m of the area, nor is there any evidence of waste transfer near the site. There are no records of hazardous substances within 500m of the site.

There are no records of a Control Of Major Accident Hazards (COMAH) or Notification of Installations Handling Hazardous Substances (NIHHS) site within 500m of the site. The Envirocheck report lists no National Incidents Recording System (NIRS) within 500m of the site.

The report lists no Part A(1), Part A(2) or Part B activities within 500m of the site. Part A(1) activities are those regulated by the Environment Agency, A(2) activities are those regulated by Local Authorities, and B activities have only their air emissions regulated by the Local Authority.

Full details of the above are included in the Groundsure report (Appendix A).

3.5 Unexploded Ordnance

UXO risk mapping for Dorset was obtained from Zetica (Zetica, 2018), which indicated that the site is within a negligible bomb risk area. The area is in between Swanage and Poole, which both have a low bomb risk. It is recommended that a UXO desk study is undertaken by a specialist, however no further mitigation is expected to be necessary.

4 Conceptual Site Model

4.1 Introduction

A conceptual site model (CSM) describes the scenario in which the risks to human health and the environment (posed by contaminated land) are assessed. It describes the ground and surface conditions, the proposed ground works and the final form of the development. In particular the CSM identifies and describes the sources of potential contamination, the behaviour of the contamination in the environmental media such as soil and groundwater, surface water and air. It also identifies and characterises potential human health and environmental receptors, and plausible pathways.

The potential risks to human health and the environment have been considered in the context of a source contaminant-pathway-receptor (CPR) model of the site, identifying:

- The principal pollutant hazards associated with the site (the sources);
- The principal receptors at risk from the identified hazards; and
- The existence, or absence, of plausible pathways which may exist between the identified hazards and receptor.

For risks to be present at the site, all three elements (contaminant-pathway-receptor) of a plausible pollutant linkage must be present. Potential CPR linkages are described below based on the currently proposed site end use.

4.2 Outline Conceptual Model

The site currently consists of protected natural land and leisure areas associated with the hotel. There is a farm to the south-west, and three large residential buildings to the south. The small town of Studland is approximately 500m to the south.

The current site proposals include the demolition of some of the later, lower-quality hotel buildings to be replaced with the construction of several new buildings. The original existing building will be restored and refurbished to a high, luxury standard.

The geology is expected to be the Parkstone Sand Member, with a small thickness of Made Ground overlaying it. The Broadstone Clay Member may also be present.

The Parkstone Sand Member underlying the site is a Secondary A aquifer as identified by the EA. The site itself does not lie within any Source Protection Zones (SPZ), however the ground on and surrounding the site has a high groundwater vulnerability to pollutants and soil leaching.

In addition, there are no historical groundwater abstraction, potable water or active groundwater abstraction licenses within 500m.

4.3 Potential Contamination Sources

Based on the review of the site history and information presented in the Groundsure report (Appendix A), a number of potentially contaminative land uses and features have been identified in the vicinity (<500m) of the site. These are summarised in the table below.

Table 5 – Potential sources of contamination

Potential sources of contamination	Proximity to site	Main potential contaminants associated with land use
On Site		
Possible Made Ground, possible asbestos (Domestic and Commercial Energy Assessors Ltd, 2015) (Rightway Environmental Ltd., 2017), buried waste and fuel storage tanks	On site	Metals, asbestos, total petroleum hydrocarbons (TPHs) and polyaromatic hydrocarbons (PAHs), volatile organic compounds (VOCs) and semi volatile organic compounds (SVOCs), ground gas, benzene, toluene, ethylbenzene and xylenes (BTEX)
Off Site		
Sewage Works (historic and current)	75m and 500m to the north-west	Methane, carbon dioxide, nitrogen, sewage
Wadmore Farm	200m to the south-west	Metals, asbestos, TPHs, PAHs, VOCs, SVOCs, ground gas, slurry, pesticides, fertilizers, animal waste
Historic Brickworks	200m to the south-west	TPHs, PAHs, metals, lead, arsenic, asbestos, ground gas associated with backfill to any clay pits excavated for manufacture of bricks
Studland Bay Car Park	200m to the north-east	TPHs, PAHs
Marshland	150m to the north-west	Ground gas

4.4 Pathways

For a risk to exist the contaminant source and receptor must be connected by a viable pathway. Potential pathways by which human and environmental receptors may be impacted upon are as identified below:

Ingestion of contaminated soils and dust: Current users, construction workers and end users may ingest any contaminated soil through inhalation of dust, or contact with the soil.

Dermal contact with soils and dust: Similarly to the ingestion route above, workers and user representatives may come into skin contact with contaminated soils or dust, and site neighbours may also come into contact with contaminated dust. During site development, site workers who are engaged in ground works and handling of excavated soils/earthworks materials may come into skin contact with impacted soils. Post development should site soils be left exposed at the sites surface, site end users and neighbours may be exposed to dermal contact with contaminated soils and dust. In addition, site maintenance workers may also come into contact with potentially contaminated soil and dust.

Inhalation of fibres, vapours, dust and gases: Dust created from the soils present on the sites surface has the potential to contain contaminants and fibres

which might be inhaled by the current site users or site neighbours. Potential hydrocarbon products on the site surface or within the soil and groundwater have the potential to volatilise creating vapours which may be inhaled. These substances may migrate on and off site impacting existing site users and site neighbours. The emission of soil gases including carbon dioxide, methane, or other toxic and explosive gases may occur in the subsurface and be present in both indoor and outdoor air (particularly where organic contamination is present). Ground gas, potentially generated by any decomposing organic matter within the natural deposits beneath the site or migrating in from the nearby wetlands may migrate into confined spaces within existing and proposed buildings.

Lateral and vertical migration of contaminants: Contaminants released to the ground through spillage or leaks may migrate vertically and/or laterally through the underlying strata. Service corridors (existing and proposed) may provide preferential pathways for such contamination.

Should the proposed development require piled foundations, these may potentially create preferential flow paths for contamination into groundwater beneath the site.

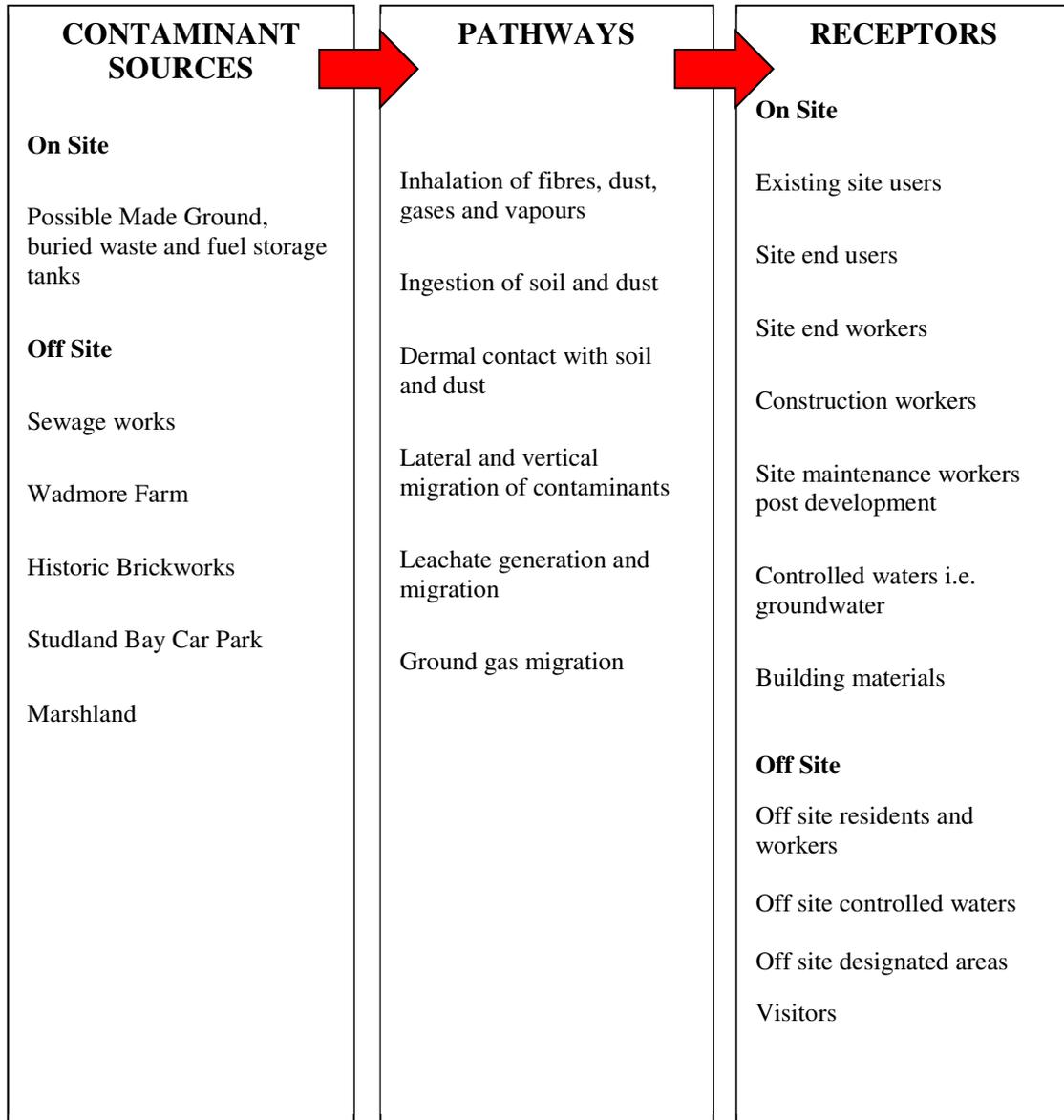
Leachate generation and migration: There is potential for the generation and migration of leachate from impacted soils, which may enter and migrate within underlying groundwater bodies and preferential pathways as identified above.

4.5 Receptors

The receptors considered to be relevant to any existing contamination are identified as follows:

- Site end users;
- Construction workers involved in the development;
- Site maintenance workers post development;
- On site controlled waters, i.e. groundwater;
- Building materials used in the proposed development;
- Off site residents and workers;
- Visitors (for example those visiting the SSSI);
- Off site controlled waters, i.e. groundwater and surface waters;
- Off site designated areas.

4.6 Conceptual Site Model



5 Preliminary Risk Assessment

The purpose of this section is to decide whether or not risks associated with the proposed development of this site are acceptable, and if not determine the need for further action. The key areas of risk are summarised below.

5.1 Ground Conditions

Records of nearby ground conditions are limited to the three nearby historic borehole records found within the BGS database and the geological maps and memoirs of the area. The BGS database indicates that the Parkstone Sand Member, possibly underlain by the Broadstone Clay Member, is present.

A thorough ground investigation is therefore required to determine the final nature of the ground conditions.

5.2 Contaminated Land

There is a medium risk that the soil on the site may contain hazardous materials, particularly due to the local made ground, any buried waste or fuel storage tanks. Additionally, the nearby sewage works, car park, farm and historic brickworks may, combined with the local drainage systems, have brought further contaminants to the site.

Table 6 below contains a summary of the key contamination risks to the ground of the site, including an overview of the pathway by which the contaminant could affect current or future nearby persons.

Table 6 – Preliminary Risk Assessment

Potential Source	Potential Receptor	Possible Pathway	Likelihood	Severity	Risk	Comment
On site Possible Made Ground, buried waste and fuel storage tanks	Site current and end users and construction workers	Direct dermal	Likely	Medium	Moderate	The contact pathways are possibilities given the unknown ground conditions and the existence of nearby structures possibly made from asbestos. Other contaminants such as hydrocarbons may have leached into the soil from storage tanks or nearby sources, such as the sewage works, historic brickworks and nearby large Studland Bay car park.
		Ingestion	Likely	Medium	Moderate	Based on the review of the site setting it is considered that the potential for significant contamination being present on site is low, due to the low likelihood. The severity has been deemed as medium on the basis of a review of potential contaminants on site, as such the resulting risk classified as low to moderate.
		Inhalation of fibres, dust, vapours and ground gas	Likely	Severe	High	Contact with the groundwater by existing site users or future site users is considered low due to the various drains present nearby.
		Contact with contaminated groundwater	Unlikely	Medium	Low	
Contaminants in ground, such as sulphur or ground gas	Building materials	Direct contact with building materials	Unlikely	Severe	Moderate	Sulphur or pyrite is unlikely to be present according to the BRE Special Digest 1 (CIRIA, 2005), however the nearby wetlands could be a potential source. Ground gas monitoring will therefore be required, and foundation protection for any potential sulphur will need to be considered.
Off Site	Construction and	Direct dermal	Likely	Medium	Moderate	Construction and maintenance workers could be exposed to contamination during site construction works, although exposure duration will be short term only. Use of personal protective equipment (PPE) and good hygiene practice throughout the

Potential Source	Potential Receptor	Possible Pathway	Likelihood	Severity	Risk	Comment
Industrial activities around the site	maintenance workers	Ingestion	Likely	Medium	Moderate	<p>construction phase is considered sufficient to mitigate the majority of risks presented.</p> <p>Dust suppression and consideration of asbestos in soils should however be made during ground investigation and groundworks on site. It will be necessary to procure specialists to oversee ground works, ensuring correct protective measures are in place and identifying any possible contaminants.</p>
		Inhalation of fibres, dust, vapours and ground gas	Likely	Severe	High	
		Contact with contaminated groundwater	Likely	Medium	Moderate	
	Building materials	Direct contact with building materials- corrosion and ground gas migrations	Unlikely	Severe	Moderate	Possible chemical attack of concrete and Gas migration requires assessment. Corrosion and decay of building materials will result in a severe consequence, as will gas migration.
	Off-site residents and workers	Ingestion and inhalation of airborne fibres and dust	Likely	Medium	Moderate	<p>It is likely that dust from the site may migrate to neighbouring land or surface water.</p> <p>Dust suppression and consideration of asbestos in soils should be made during ground investigation and groundworks on site.</p>
	Off-site surface waters	Deposition of airborne dust	Likely	Medium	Moderate	
Off-site groundwater	Migration of contaminated site groundwater	Low	Medium	Moderate	<p>It is considered that the potential for contamination to be present on site and impacting the underlying groundwater is low.</p> <p>However, there is a risk of contaminated off-site groundwater migrating onto site. The overall risk has therefore been identified as moderate which will need confirmation through a ground investigation.</p>	

5.3 Preliminary Risk Assessment Overview

5.3.1 Site end users

The risk evaluation of what are considered viable CPR linkages indicates that for current site users the risks are low to high. This is based on the site history, current site use, and current surroundings indicating a potential for contamination to be present on the site.

Once the proposed works are complete, depending on whether soft landscaping is included, it is anticipated that the likelihood of end users coming into dermal and ingestion contact with contamination is low likelihood, since the potential for contamination to be present is low. The inhalation exposure route would also be low likelihood.

5.3.2 Construction and maintenance workers

It is considered that construction and maintenance workers have a higher chance of contact with the site soils, therefore the potential risk affecting these receptors has been classed as moderate to high. It should be noted that much of the risks presented to construction works can be mitigated through the appropriate use of PPE, dust suppression and further consideration of asbestos in soils. It may be necessary to procure a specialist in asbestos to oversee the site while ground works are in process, ensuring construction workers have the correct protections and identifying if any hazards occur on site.

5.3.3 Building materials

The potential for the attack of corrosive contaminants on building materials has been deemed a moderate risk on the site, due to the severity of consequences of corrosion and deterioration of building materials. However, this has been assessed in the absence of chemical test results and aggressive ground assessments which would serve to identify and confirm the actual risks presented, and furthermore allow mitigation measures to be recommended and implemented as part of the construction phase. This also applies to the risks posed from ground gas generation and migration into confined spaces.

5.3.4 Groundwater

Groundwater beneath the site has been noted by the EA to be very susceptible to leaching, although the likelihood of contamination is relatively low. There is a chance that lateral migration of groundwater from that underneath the potentially contaminated farm and historic brickworks, or nearby sewage works to the site and its Secondary A aquifer may take place. The overall risk has therefore been identified as moderate.

5.3.5 Off-site residents and workers

The risk to off-site residents and workers from inhalation of airborne dust has currently been classified as moderate. It is anticipated that dust suppression measures will be employed during the site works and further consideration of asbestos in soils will be made. The risk to surface waters from deposition of airborne dust is also considered to be moderate.

5.3.6 Potential re-use or disposal of soils

An assessment of the site soils for the potential re-use on site or disposal off site to a licenced waste facility or permitted site will be required as part of future investigations on site.

6 Preliminary Geo-Environmental Conclusions and Recommendations

This section provides a summary of the main constraints to any proposed development identified by this desk study, as well as geo-environmental considerations and recommendations.

6.1 UXO Risk

The area of the site has been identified by Zetica as one of negligible risk. However the site is in between two towns which are classified as having a low risk of UXO. It is therefore recommended that a detailed UXO risk assessment is commissioned for the site prior to ground investigation works.

6.2 Contamination

This desk study has confirmed that the site may have been impacted by contamination from on site sources or migrating onto site from the nearby sewage works, farm and large car park. The extent of contamination should be confirmed by an intrusive ground investigation.

6.3 Buried Services

A survey of the line, level and extent of the buried services in the area will be obtained prior to any intrusive works taking place on the site.

7 Preliminary Geotechnical Conclusions and Recommendations

The preliminary advice outlined here is based on desk-researched information only and will require confirmation and further detailing following further intrusive ground investigation, an outline of which is provided in Section 8.

7.1 Groundwater

In the 1960 historic borehole, the final standing groundwater level was found to be 6m AOD, or 19m bgl. However, springs and drains are present nearby at about 20m AOD, so it is probable that the groundwater is at about 20mAOD or 10m bgl.

7.2 Building Foundations

At this stage only preliminary loadings for the building are known and the historic ground investigation has not satisfactorily confirmed the ground conditions. Assuming the ground investigation confirms the presence of weak to medium-strong Parkstone Sand Member near the surface, shallow foundations to support the likely column loads for a two or three-storey concrete buildings should be feasible.

No radon protection measures below the floor slabs are expected.

Additional ground investigations and outline structural calculations will be required to confirm the above suggestions and confirm if ground gas protection measures are required.

7.3 Earthworks

Currently, no extensive earthworks are expected for the site.

7.4 External works

At this stage, a California Bearing Ratio (CBR) value of 5% at formation level has been assumed for external pavements in the Parkstone Sand Member, if the works are completed during a period of dry weather. Increased moisture contents resulting from heavy rainfall will reduce the CBR value.

Soakaways may be possible within the Parkstone Sand Member, however the capacity of the overall existing drainage system should be assessed. The site is surrounded by the Broadstone Clay Formation, which is likely to have a low permeability and will therefore require drainage consideration.

7.5 Potential Reuse of Soils

Any excavated soils should be tested to clarify whether they are suitable for re-use as fill. There may not be any suitable soil that could be used as a fill depending on

the depth at which the Parkstone Sand Member is encountered, and the thickness of any Made Ground.

8 Recommendations for Ground Investigation

A ground investigation is recommended in order to establish local ground and water conditions at the site, to inform the design and identify any constraints that may affect the scheme, and in particular to:

- Confirm the stratigraphy, groundwater and ground gas conditions at the site, including the thickness and nature of Made Ground;
- Establish geotechnical parameters for foundation design;
- Chemical characterisation of excavated materials including dry weight and leachability testing;
- Waste Acceptance Criteria (WAC) testing to aid with off-site disposal will also be required;
- Assess the potential for re-use of excavated material, i.e. in soft landscaping;
- Ensure that there are no contaminants that may affect health in the soil.

In order to meet the objectives above, it is anticipated that a ground investigation may comprise the following:

- 2No. rotary or cable percussion boreholes underneath the building footprints with sampling of the bedrock and standard penetration tests and to allow installation of groundwater and gas monitoring standpipes;
- 6No. trial pits to investigate the extent of any superficial deposits or made ground, and retrieve samples for chemical testing of any possible hazardous materials;
- 3No. infiltration tests in trial pits, depending on the results of a drainage investigation this could be increased or decreased;
- 4No. return site visits to monitor groundwater and ground gas levels and to obtain groundwater samples for chemical analysis.

If chalk is encountered as part of the ground investigation, further investigation may be required to determine if any cavities are present.

References

References

- Barton Hyett Associates. (2018). *Tree Survey Report*. Studland: Barton Hyett Associates.
- British Geological Survey. (2017). Retrieved from British Geological Survey: <http://www.bgs.ac.uk/home.html>
- CIRIA. (2005). *BRE Special Digest 1 - Concrete in Aggressive Ground*. Watford: BRE Bookshop.
- Domestic and Commercial Energy Assessors Ltd. (2015). *Asbestos Survey Report DC4611*. Shaftesbury: Domestic and Commercial Energy Assessors Ltd.
- Environment Agency. (2017). Retrieved from Environment Agency: <https://www.gov.uk/government/organisations/environment-agency>
- Focus Ecology Ltd. (2017). *Preliminary Ecological Appraisal (with Preliminary Roost Assessment inc. Third-Party Data Search) & Habitats Regulations Assessment Screening Opinion*. Studland: Focus Ecology Ltd.
- Miles, J. C., Appleton, J. D., Green, B. M., Adlam, K. A., & Myers, A. H. (2007). *Indicative Atlas of Radon in England and Wales*. Didcot: Health Protection Agency.
- Natural England. (2018, January 02). *MAGIC Map Application*. Retrieved from MAGIC: <http://www.natureonthemap.naturalengland.org.uk/>
- Ordnance Survey. (2018). Retrieved 2018, from Ordnance Survey: <https://www.ordnancesurvey.co.uk/>
- Rightway Environmental Ltd. (2017). *Non-Licensed Asbestos Removal Plan of Works*. Studland: Rightway Environmental Ltd.
- Zetica. (2018). Retrieved 2018, from Zetica: <http://www.zetica.com/>

[1]

Appendix A

Groundsure Report

!" #

\$!" % &! (
) % *+,!'-' +
 ./ 0

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 03-May-2014
 Grid Reference: 403110,083272
 Site Size: 1.92ha

Report Reference: GS-4610504
 Client Reference: Knoll_House_Hotel

1\$

Contents Page	3
Overview of Findings	6
Using this report	10
1. Historical Land Use	11
1. Historical Industrial Sites	12
1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping	12
1.2 Additional Information – Historical Tank Database	13
1.3 Additional Information – Historical Energy Features Database	13
1.4 Additional Information – Historical Petrol and Fuel Site Database	13
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	13
1.6 Potentially Infilled Land	14
2. Environmental Permits, Incidents and Registers Map	16
2. Environmental Permits, Incidents and Registers	17
2.1 Industrial Sites Holding Licences and/or Authorisations	17
2.1.1 Records of historic IPC Authorisations within 500m of the study site	17
2.1.2 Records of Part A(1) and IPPC Authorised Activities within 500m of the study site	17
2.1.3 Records of Red List Discharge Consents (potentially harmful discharges to controlled waters) within 500m of the study site	17
2.1.4 Records of List 1 Dangerous Substances Inventory Sites within 500m of the study site	17
2.1.5 Records of List 2 Dangerous Substance Inventory Sites within 500m of the study site	17
2.1.6 Records of Part A(2) and Part B Activities and Enforcements within 500m of the study site	18
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	18
2.1.8 Records of Licensed Discharge Consents within 500m of the study site	18
2.1.9 Records of Water Industry Referrals (potentially harmful discharges to the public sewer) within 500m of the study site	18
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	18
2.2 Dangerous or Hazardous Sites	19
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	19
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site	19
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site	19
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	19
3. Landfill and Other Waste Sites Map	20
3. Landfill and Other Waste Sites	21
3.1 Landfill Sites	21
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site	21
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site	21
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site	21
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site	21
3.2 Other Waste Sites	21
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site	21
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site	22
4. Current Land Use Map	23
4. Current Land Uses	24
4.1 Current Industrial Data	24
4.2 Petrol and Fuel Sites	24
4.3 National Grid High Voltage Underground Electricity Transmission Cables	24
4.4 National Grid High Pressure Gas Transmission Pipelines	25

5. Geology	26
5.1 Artificial Ground and Made Ground.....	26
5.2 Superficial Ground and Drift Geology	26
5.3 Bedrock and Solid Geology	26
6 Hydrogeology and Hydrology	27
6a. Aquifer Within Superficial Geology	27
6b. Aquifer Within Bedrock Geology and Abstraction Licences	28
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences	29
6d. Hydrogeology – Source Protection Zones within confined aquifer	30
6e. Hydrology – Detailed River Network and River Quality	31
6.Hydrogeology and Hydrology	32
6.1 Aquifer within Superficial Deposits.....	32
6.2 Aquifer within Bedrock Deposits.....	32
6.3 Groundwater Abstraction Licences.....	33
6.4 Surface Water Abstraction Licences.....	33
6.5 Potable Water Abstraction Licences.....	34
6.6 Source Protection Zones.....	34
6.7 Source Protection Zones within Confined Aquifer.....	34
6.8 Groundwater Vulnerability and Soil Leaching Potential.....	35
6.9 River Quality.....	35
6.9.1 Biological Quality:.....	35
6.9.2 Chemical Quality:.....	35
6.10 Detailed River Network.....	35
6.11 Surface Water Features.....	37
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)	38
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map	39
7 Flooding	40
7.1 River and Coastal Zone 2 Flooding.....	40
7.2 River and Coastal Zone 3 Flooding.....	40
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating.....	40
7.4 Flood Defences.....	40
7.5 Areas benefiting from Flood Defences.....	40
7.6 Areas benefiting from Flood Storage.....	41
7.7 Groundwater Flooding Susceptibility Areas.....	41
7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes.....	41
7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?.....	41
7.8 Groundwater Flooding Confidence Areas.....	41
8. Designated Environmentally Sensitive Sites Map	42
8. Designated Environmentally Sensitive Sites	43
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	43
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	44
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	44
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	44
8.5 Records of Ramsar sites within 2000m of the study site:.....	45
8.6 Records of Ancient Woodland within 2000m of the study site:	46
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	46
8.8 Records of World Heritage Sites within 2000m of the study site:.....	46
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:	46

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:	46
8.11 Records of National Parks (NP) within 2000m of the study site:	47
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	47
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	47
8.14 Records of Green Belt land within 2000m of the study site:.....	47
9. Natural Hazards Findings	48
9.1 Detailed BGS GeoSure Data.....	48
9.1.1 Shrink Swell.....	48
9.1.2 Landslides.....	48
9.1.3 Soluble Rocks.....	48
9.1.4 Compressible Ground.....	49
9.1.5 Collapsible Rocks.....	49
9.1.6 Running Sand.....	49
9.2 Radon.....	50
9.2.1 Radon Affected Areas.....	50
9.2.2 Radon Protection.....	50
10. Mining	51
10.1 Coal Mining.....	51
10.2 Non-Coal Mining.....	51
10.3 Brine Affected Areas	51
Contact Details	52
Standard Terms and Conditions	54

2)

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.

Historical Industrial Sites	On-site	0-50	51-250	251-500
Potentially Contaminative Uses identified from 1:10,000 scale mapping	0	0	9	21
Additional Information – Historical Tank Database	1	2	2	3
Additional Information – Historical Energy Features Database	0	0	0	0
Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
Additional Information – Historical Garage and Motor Vehicle Repair Database	0	0	0	0
Potentially Infilled Land	0	0	7	29

Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
Industrial Sites Holding Environmental Permits and/or Authorisations				
Records of historic IPC Authorisations	0	0	0	0
Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
Records of Red List Discharge Consents	0	0	0	0
Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
Records of Licensed Discharge Consents	0	2	0	0
Records of Water Industry Referrals	0	0	0	0
Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
Records of COMAH and NIHHS sites	0	0	0	0
Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
National Incidents Recording System, List 2	0	0	0	0
National Incidents Recording System, List 1	0	0	0	0
Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
Landfill Sites						
Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
BGS/DoE Landfill Site Survey	0	0	0	0	0	0
Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
Landfill and Other Waste Sites Findings						
Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Current Land Use	On-site	0-50m	51-250	251-500
Current Industrial Sites Data	0	2	1	Not searched
Records of Petrol and Fuel Sites	0	0	0	0
National Grid Underground Electricity Cables	0	0	0	0
National Grid Gas Transmission Pipelines	0	0	0	0

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

Hydrogeology and Hydrology		0-500m				
Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?		Yes				
Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?		Yes				
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	1
Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	2
Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	1	1	Not searched	Not searched

Hydrogeology and Hydrology	0-500m					
	On-site	0-50m	51-250	251-500	501-1000	1000-1500
Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
Detailed River Network entries within 500m of the site	0	0	10	11	Not searched	Not searched
Surface water features within 250m of the study site	No	No	Yes	Not searched	Not searched	Not searched

Flooding						
Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	No					
Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site?	No					
What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Very Low					
Are there any Flood Defences within 250m of the study site?	No					
Are there any areas benefiting from Flood Defences within 250m of the study site?	No					
Are there any areas used for Flood Storage within 250m of the study site?	No					
What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential below Surface					
What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	High					

Sites	Designated Environmentally Sensitive					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
Records of Sites of Special Scientific Interest (SSSI)	0	0	5	1	4	14
Records of National Nature Reserves (NNR)	0	0	2	0	0	0
Records of Special Areas of Conservation (SAC)	0	0	2	0	1	2
Records of Special Protection Areas (SPA)	0	0	2	0	1	9
Records of Ramsar sites	0	0	2	0	1	8
Records of Ancient Woodlands	0	0	0	0	0	0
Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
Records of World Heritage Sites	0	0	0	0	0	1
Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Sites	Designated Environmentally Sensitive	On-site	0-50m	51-250	251-500	501-1000	1000-2000
Records of Areas of Outstanding Natural Beauty (AONB)		1	0	0	0	0	0
Records of National Parks		0	0	0	0	0	0
Records of Nitrate Sensitive Areas		0	0	0	0	0	0
Records of Nitrate Vulnerable Zones		0	0	1	0	0	0
Records of Green Belt land		0	0	0	0	0	0

Natural Hazards

What is the maximum risk of natural ground subsidence?	Moderate
What is the maximum Shrink-Swell hazard rating identified on the study site?	Moderate
What is the maximum Landslides hazard rating identified on the study site?	Very Low
What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
What is the maximum Compressible Ground hazard rating identified on the study site?	Negligible
What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
What is the maximum Running Sand hazard rating identified on the study site?	Low
Radon	
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.
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.

Mining

Are there any coal mining areas within 75m of the study site?	No
Are there any Non-Coal Mining areas within 50m of the study site boundary?	No
Are there any brine affected areas within 75m of the study site?	No

0

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:

13 %\$/ \$/

Provides information on past land uses that may pose a risk to the study site in terms of potential contamination from activities or processes. Potentially Infilled Land features are also included. This search is conducted using radii of up to 500m.

&3 4 \$/ 1 4 % \$

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.

#3 \$)// \$ 5\$

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 . \$

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 gas pipelines and underground electricity transmission lines.

-3 / 6

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

,3 6 / 6 \$ 6 / 6

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.

(3 /

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

73 \$ 4 \$//6

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.

"3 \$ \$/ \$8\$

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

!3 9

Provides information on areas of coal and non-coal mining and brine affected areas.

!!3 . \$%

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.

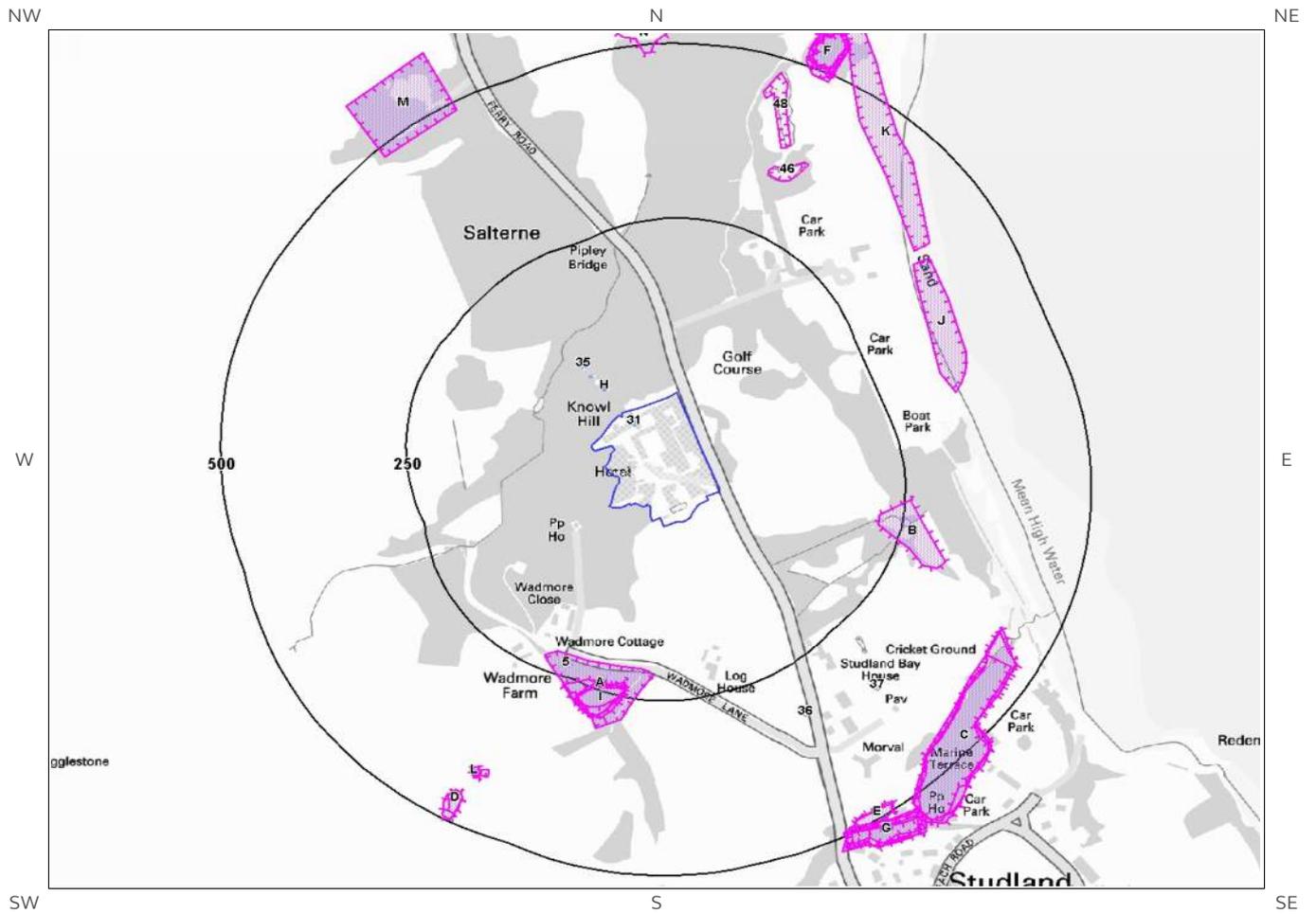
9\$0

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.

!3 %\$/ \$



!3 %\$/ \$/

!3! 1 \$//6 . \$4 \$)) 4!!' "" %\$/ 9\$00

The systematic analysis of data extracted from standard 1:10,560 and 1:10,000 scale historical maps provides the following information:

Records of sites with a potentially contaminative past land use within 500m of the search boundary: 30

	\$ % :4;	%		\$
1A	206	S	Brick Works	1900
2A	217	S	Unspecified Old Kilns	1938
3B	218	E	Unspecified Ground Workings	1985
4B	218	E	Unspecified Ground Workings	1963
5	222	S	Unspecified Old Kilns	1926
6A	229	S	Unspecified Pit	1900
7A	235	S	Unspecified Pit	1938
8A	237	S	Unspecified Pit	1963
9I	237	S	Unspecified Pit	1926
10J	338	NE	Refuse Heap	1963
11K	378	NE	Refuse Heap	1963
12C	427	SE	Unspecified Ground Workings	1886
13C	427	SE	Unspecified Ground Workings	1886
14C	429	SE	Unspecified Pit	1938
15C	429	SE	Unspecified Ground Workings	1963
16D	456	SW	Sand Pit	1900
17D	458	SW	Unspecified Pit	1963
18M	484	NW	Sewage Works	1985
19E	485	SE	Unspecified Pit	1938
20E	487	SE	Unspecified Pit	1926
21F	488	NE	Sand Pit	1963
22E	491	SE	Cuttings	1900
23F	494	NE	Sand Pit	1890
24F	494	NE	Sand Pit	1890
25G	495	SE	Cuttings	1886
26G	495	SE	Cuttings	1938
27F	496	NE	Sand Pit	1900
28F	496	NE	Sand Pit	1925
29G	499	SE	Cuttings	1926
30F	499	NE	Sand Pit	1886

!3& \$/) 4\$ < %\$/ \$ = \$ \$>\$

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical tanks within 500m of the search boundary: 8

	\$ % ?4@	%	Use	\$
31	0	On Site	Unspecified Tank	1954
32H	40	NW	Unspecified Tank	1954
33H	41	NW	Unspecified Tank	1995
34H	64	NW	Unspecified Tank	1954
35	82	NW	Unspecified Tank	1954
36	319	SE	Unspecified Tank	1928
37	347	SE	Unspecified Tank	1928
38L	418	SW	Unspecified Tank	1954

!3# \$/) 4\$ < %\$/ 6 \$ \$ \$>\$

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical energy features within 500m of the search boundary: 0

Database searched and no data found.

!3+ \$/) 4\$ < %\$/ 1 / \$ / \$ \$>\$

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical petrol stations and fuel sites within 500m of the search boundary: 0

Database searched and no data found.

!3- \$/) 4\$ < %\$/ \$ \$ \$ 9 A %/ 0\$ \$ \$>\$

The systematic analysis of data extracted from High Detailed 1:1,250 and 1:2,500 scale historical maps provides the following information.

Records of historical garage and motor vehicle repair sites within 500m of the search boundary: 0

Database searched and no data found.

13,1 \$/6)// \$

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 36

The following Historical Potentially Infilled Features derived from the Historical Mapping information is provided by Groundsure:

	\$ % ?4@	%		\$
39A	206	S	Brick Works	1900
40B	218	E	Unspecified Ground Workings	1963
41B	218	E	Unspecified Ground Workings	1985
42A	229	S	Unspecified Pit	1900
43A	235	S	Unspecified Pit	1938
44A	237	S	Unspecified Pit	1963
45I	237	S	Unspecified Pit	1926
46	333	NE	Pond	1985
47J	338	NE	Refuse Heap	1963
48	377	N	Pond	1985
49K	378	NE	Refuse Heap	1963
50L	411	SW	Covered Reservoir	1985
51L	413	SW	Reservoir	1900
52L	417	SW	Reservoir	1938
53L	422	SW	Reservoir	1926
54C	427	SE	Unspecified Ground Workings	1886
55C	427	SE	Unspecified Ground Workings	1886
56C	429	SE	Unspecified Pit	1938
57C	429	SE	Unspecified Ground Workings	1963
58D	456	SW	Sand Pit	1900
59D	458	SW	Unspecified Pit	1963
60M	484	NW	Sewage Works	1985
61E	485	SE	Unspecified Pit	1938
62N	487	N	Water Body	1890
63N	487	N	Water Body	1890
64E	487	SE	Unspecified Pit	1926
65F	488	NE	Sand Pit	1963
66E	491	SE	Cuttings	1900
67F	494	NE	Sand Pit	1890
68F	494	NE	Sand Pit	1890
69G	495	SE	Cuttings	1886
70G	495	SE	Cuttings	1938
71F	496	NE	Sand Pit	1925
72F	496	NE	Sand Pit	1900

73G	499	SE	Cuttings	1926
74F	499	NE	Sand Pit	1886

&3
% 4
\$ \$/ 1 4
 9\$0



- | | | | | | |
|---|--------------------|---|-------------------------------|---|--|
|  | 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 |
|  | 250 |  | Dangerous Substances (List 2) |  | Part A(2) and Part B Authorised Processes |
|  | 500 |  | Water Industry Referrals |  | COMAH / NIHHS Sites |
| | |  | Licenced Discharge Consents |  | Sites Determined as Contaminated Land |
| | |  | Red List Discharge Consents |  | Hazardous Substance Consents and Enforcements |

3
% 4 \$/ 1 4
\$

3! \$/ / % % \$ B \$

Searches of information provided by the Environment Agency/Natural Resources Wales and Local Authorities reveal the following information:

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.3 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.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations:

0

Database searched and no data found.

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

2

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

	\$ % ?4@	%		\$ /	
1	25	SW	403000 83200	Address: STUDLAND WADMORE LANE, STUDLAND Effluent Type: SEWAGE DISCHARGES - PUMPING STATION - WATER COMPANY Permit Number: 041161 Permit Version: 1	Receiving Water: DITCH Status: CONSENT REVOKED OR REVISED - NEW CONSENT ISSUED (37(1)) Issue date: - Effective Date: 31-Oct-1989 Revocation Date: 16/10/2007
2	47	SW	402980 83190	Address: WADMORE LANE PUMPING STATION, WADMORE LANE, STUDLAND, DORSET, BH19 3AY Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: 401418 Permit Version: 1	Receiving Water: AN UN-NAMED WATERCOURSE Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 17/10/2007 Effective Date: 17-Oct-2007 Revocation Date: -

2.1.9 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.

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

0

Database searched and no data found.

38 \$ 88

Records of COMAH & NIHHS sites within 500m of the study site: 0

Database searched and no data found.

3# 4 %6B \$ \$/ % 5\$/ % 1 // %

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

0

Database searched and no data found.

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

0

Database searched and no data found.

3+ 4 \$. \$4 \$ \$ 1\$ & 1 !""

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.

#3 \$) // \$ 5\$
9\$0



- | | | | | | |
|---|------------------------|---|---------------------------|---|---|
|  | Site Outline |  | EA/NRW Active Landfill |  | Historic and Planned Waste Sites |
|  | 250 Search Buffers (m) |  | EA/NRW Historic Landfill |  | EA/NRW Licensed Waste Site |
|  | 500 Search Buffers (m) |  | BGS / DoE Survey Landfill |  | Local Authority/Historical Mapping Landfill Records |

#3 \$) // \$ 5\$

#3! \$) //

3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site:

0

Database searched and no data found.

3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site:

0

Database searched and no data found.

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

0

Database searched and no data found.

3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site:

0

Database searched and no data found.

#3& 5\$

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

0

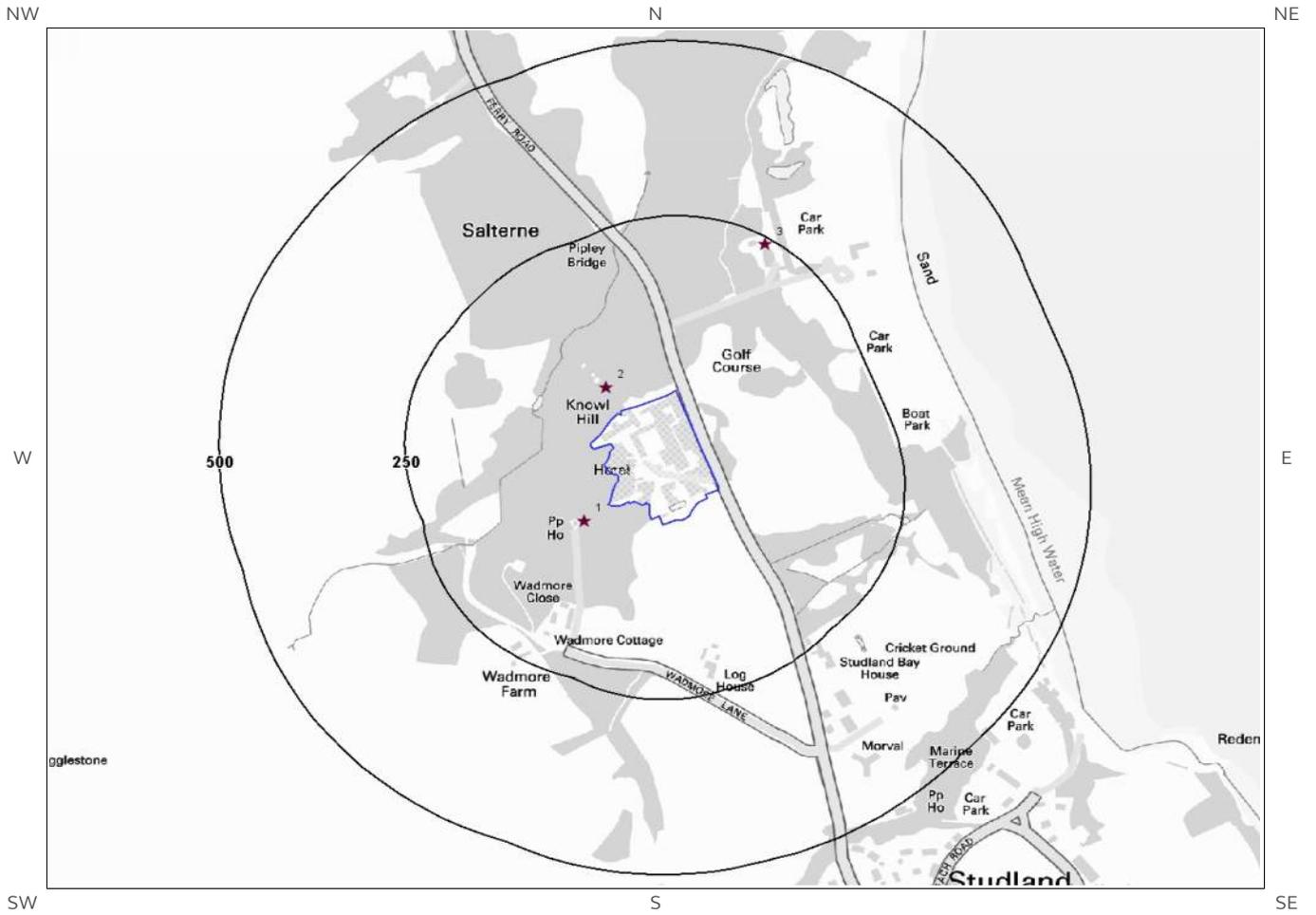
Database searched and no data found.

3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site:

0

Database searched and no data found.

+3 . \$ 9\$0



Site Outline

★ Current Industrial Sites

— Electricity Transmission Cables

— 250 — Search Buffers (m)
— 500 —

● Petrol & Fuel Sites

— Gas Transmission Pipelines

+3 . \$

+3! . \$/ \$\$

Records of potentially contaminative industrial sites within 250m of the study site: 3

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

	\$ % ?4@	%	. 40\$ 6		% 6	.\$ 6	
1	40	SW	Pumping House	402989 83190	BH19	Water Pumping Stations	Industrial Features
2	41	NW	Tank	403018 83381	BH19	Tanks (Generic)	Industrial Features
3	241	NE	Wind Generator	403232 83585	BH19	Energy Production	Industrial Features

+3& 1 /\$ /

Records of petrol or fuel sites within 500m of the study site: 0

Database searched and no data found.

+3# \$ \$/ A/\$ /% % 6 \$ 4 .\$/

This dataset identifies the high voltage electricity transmission lines running between generating power plants and electricity substations. The dataset does not include the electricity distribution network (smaller, lower voltage cables distributing power from substations to the local user network). This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high voltage underground electricity transmission cables within 500m of the study site: 0

Database searched and no data found.

+3+ \$ \$/ 1 \$ \$ 4 1 0 /

This dataset identifies high-pressure, large diameter pipelines which carry gas between gas terminals, power stations, compressors and storage facilities. The dataset does not include the Local Transmission System (LTS) which supplies gas directly into homes and businesses. This information has been extracted from databases held by National Grid and is provided for information only with no guarantee as to its completeness or accuracy. National Grid do not offer any warranty as to the accuracy of the available data and are excluded from any liability for any such inaccuracies or errors.

Records of National Grid high pressure gas transmission pipelines within 500m of the study site: 0

Database searched and no data found.

-3 / 6

-3!)% \$/ \$ 9\$

Database searched and no data found.

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

-3& 0)% \$/ \$) / 6

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

C .	% 0	%= 60
HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL

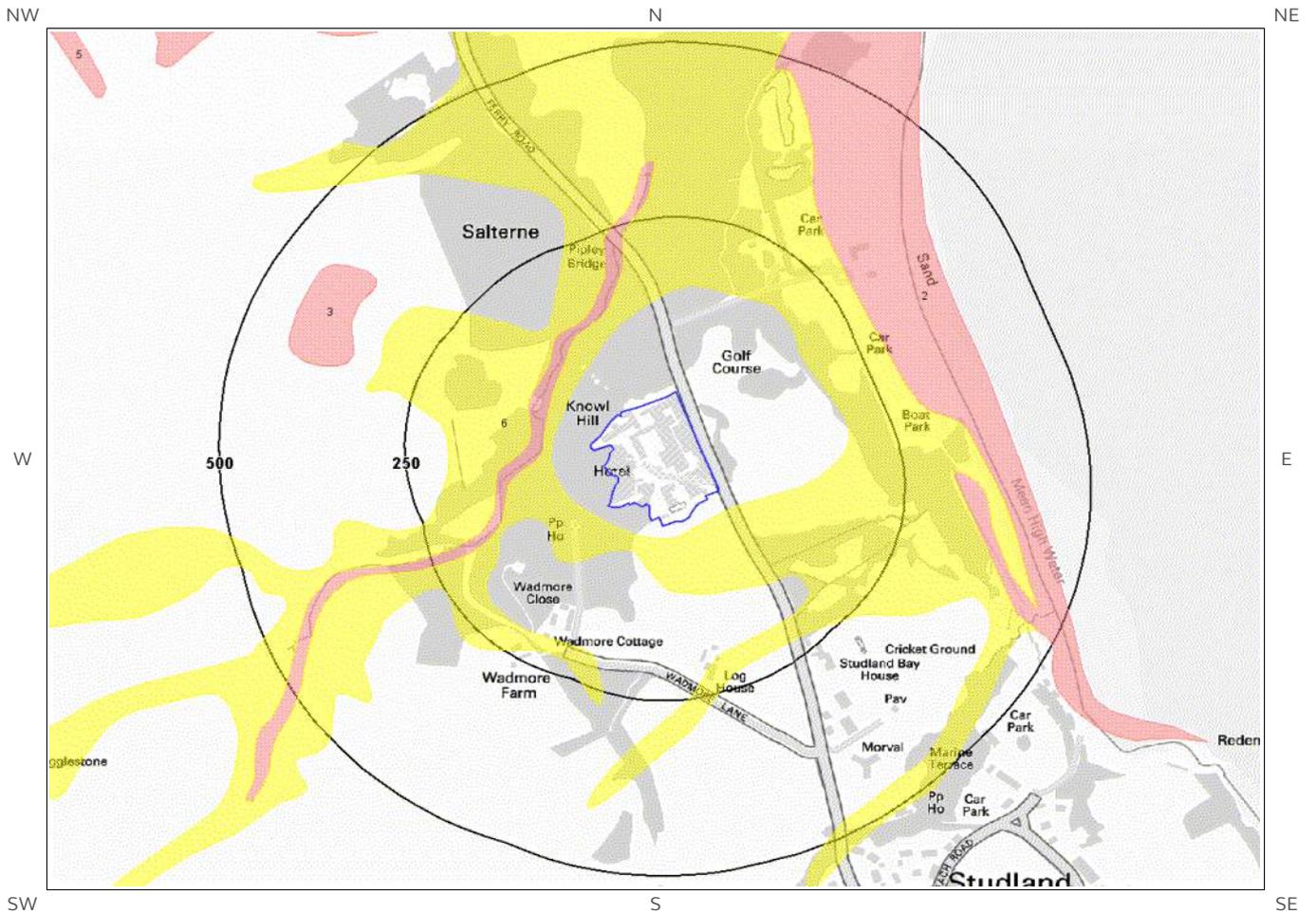
-3# %= \$ / / 6

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

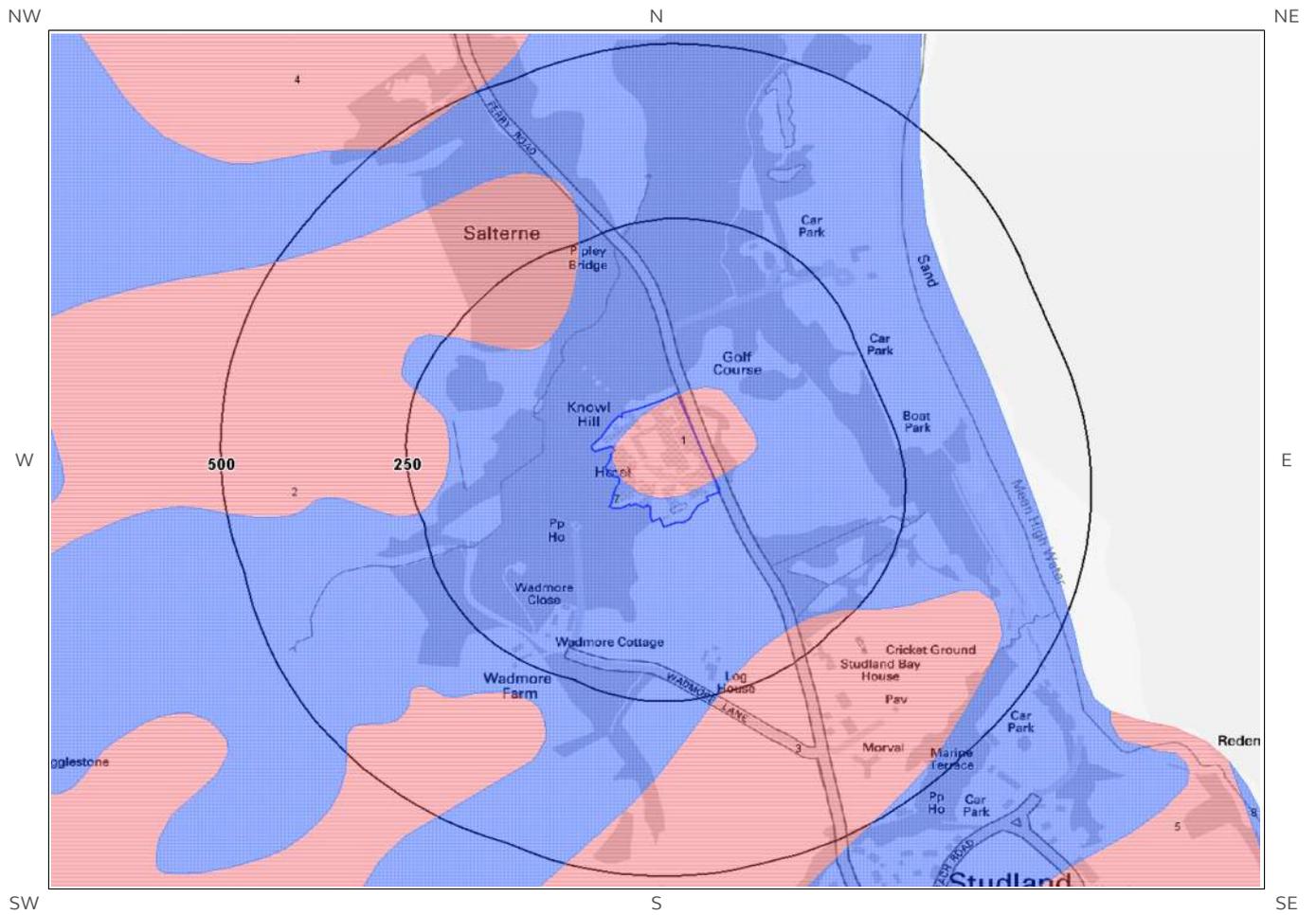
C .	% 0	%= 60
BRTC-CZ	BROADSTONE CLAY MEMBER	CLAY, SILTY
PKS-S	PARKSTONE SAND MEMBER	SAND

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

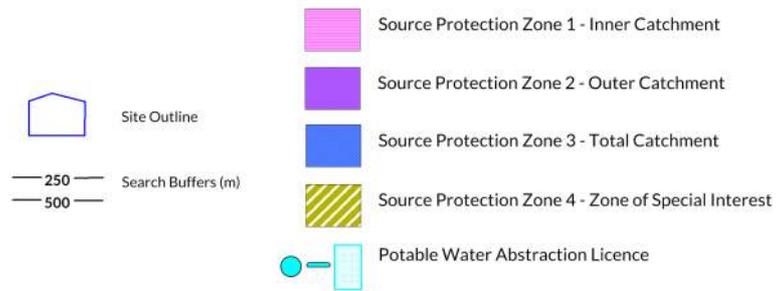
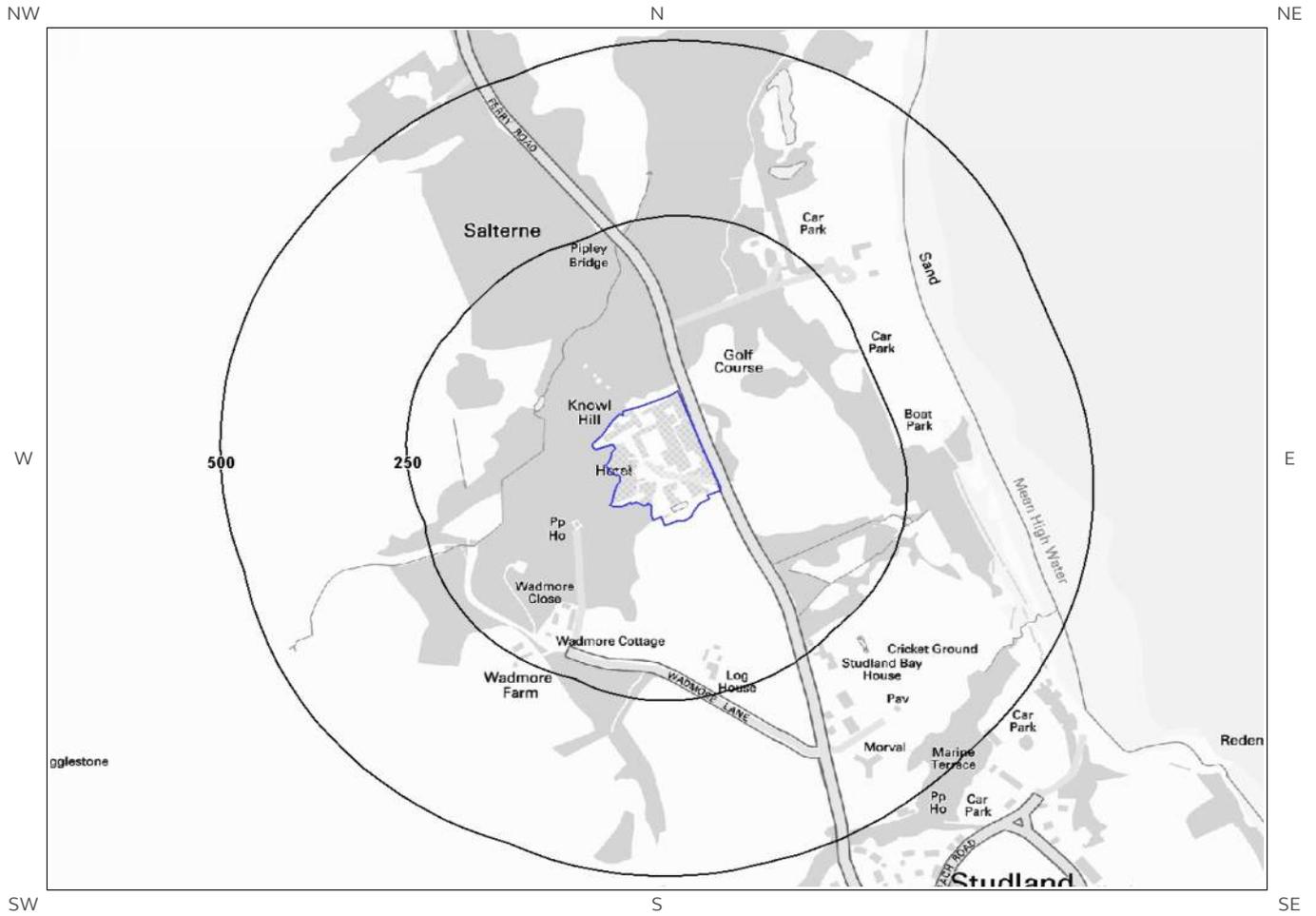
, 6 / 6 \$ 6 / 6
 , \$ 3 D) 5 0) % \$ /
 / 6



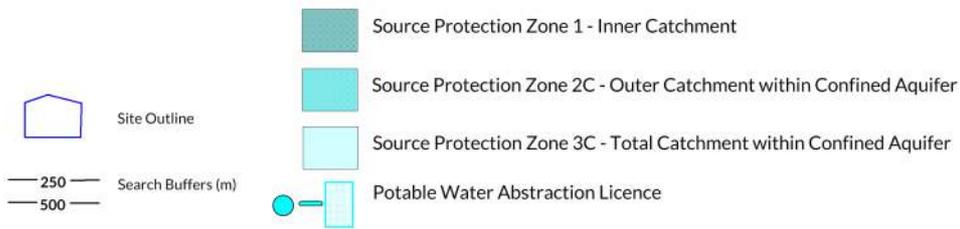
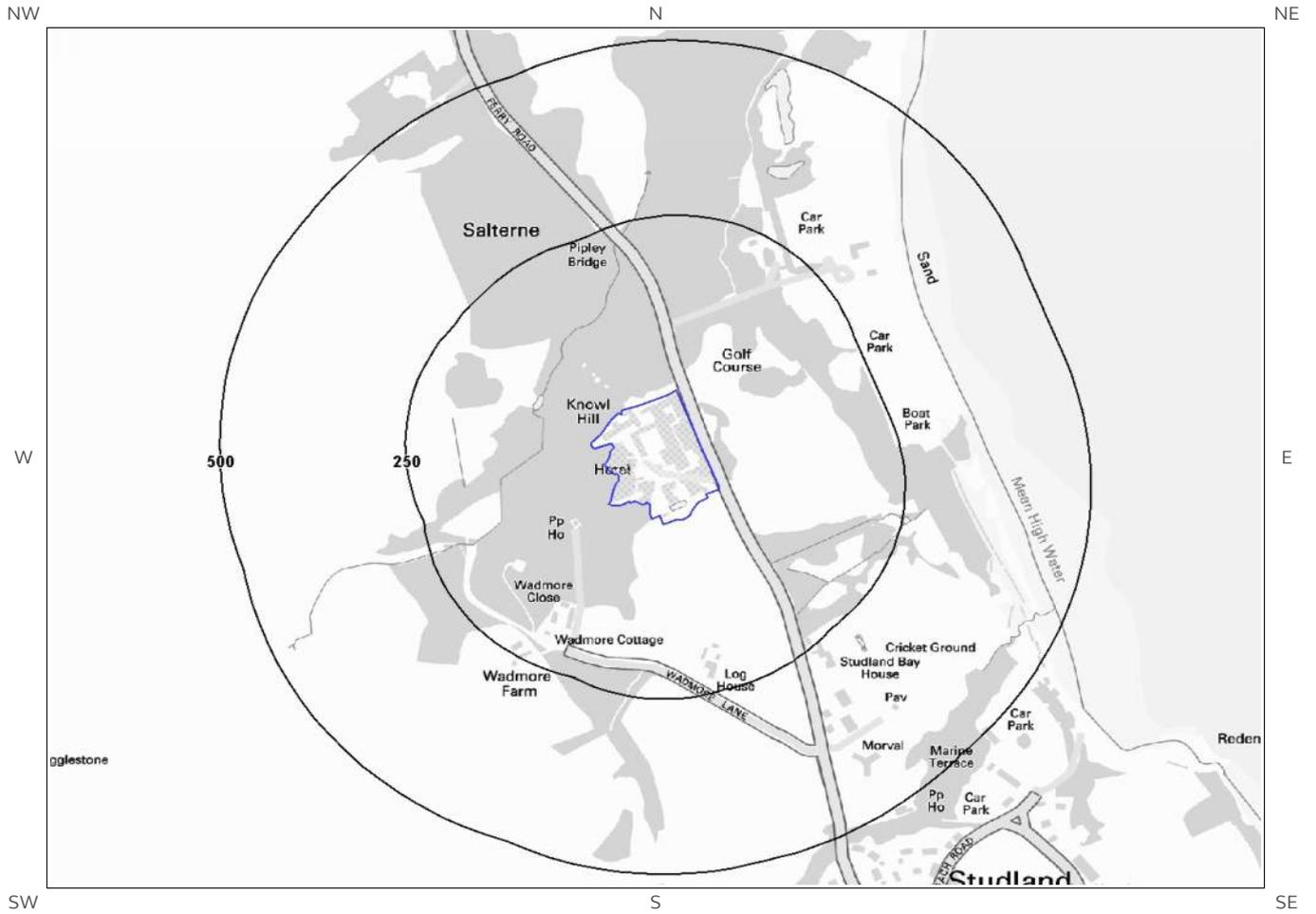
,>3 D) 5 %=
/ 6 \$ > \$%
%



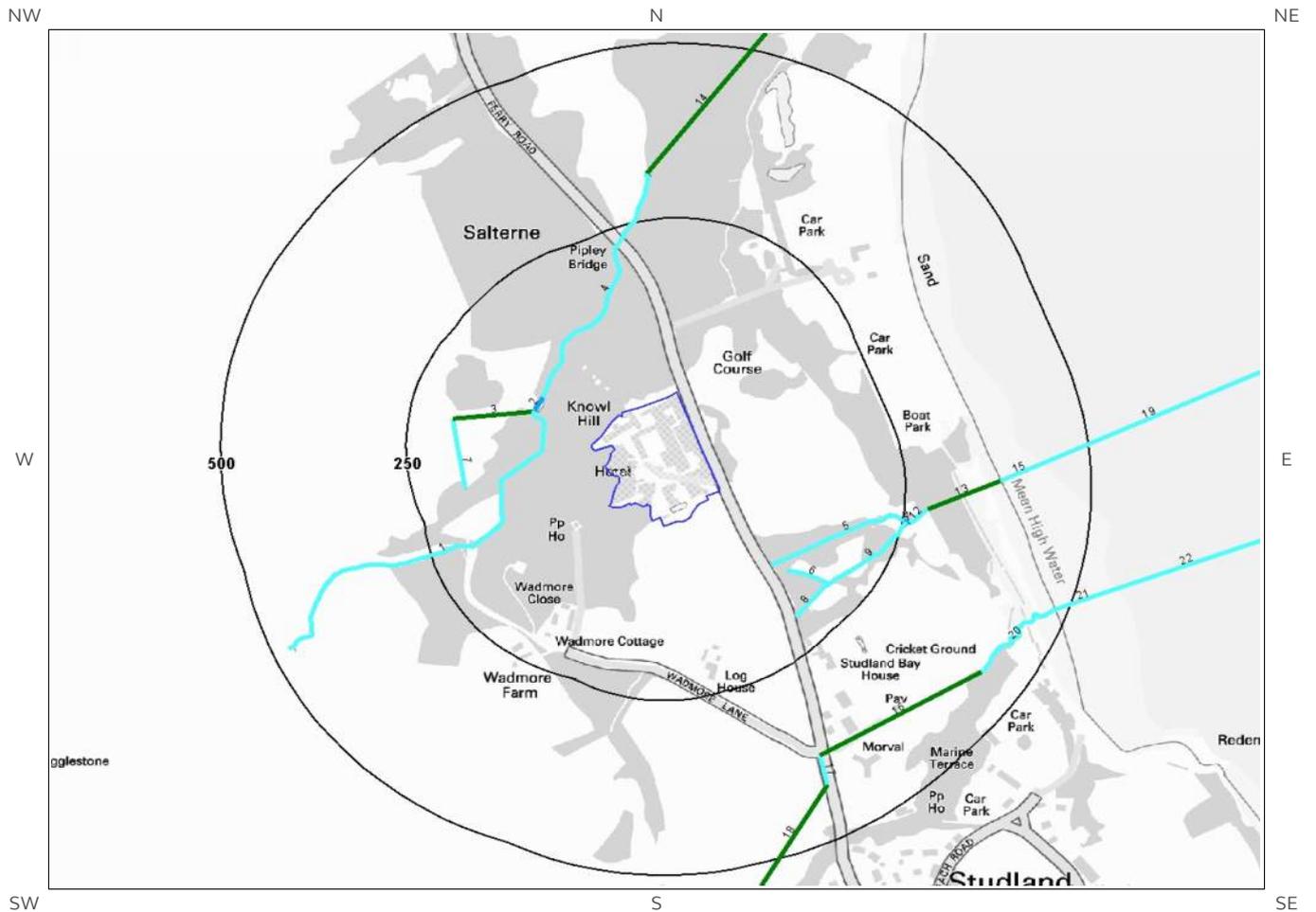
,%36 / 6 < %
1 % E \$ 1 \$>/
5\$ > \$% %



, 3 6 / 6 < %
1 % E 2 %)
\$D)



, 3 6 / 6 < \$ /
2 = \$ F \$ / 6



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

,36 / 6\$ 6 / 6

,3! D) 2 0)%\$/ 0

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

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Superficial Geology Map (6a):

	\$ % ?4@	%	\$	% 0
6	16	SE	Secondary (undifferentiated)	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
1	64	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
2	278	NE	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	344	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& D) 2 %= 0

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

From 1 April 2010, the Environment Agency/Natural Resources Wales'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 Enviro Insight User Guide.

The following aquifer records are shown on the Aquifer within Bedrock Geology Map (6b):

	\$ % ?4@	%	\$	% 0
1	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
7	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
2	144	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
3	206	SE	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@	%	\$	% 0
4	488	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

,3# 2\$ > \$% % %

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 (6b):

	\$ % ?4@	%	\$ /
Not shown	1284	SE	403800 82100
			Status: Active Licence No: 13/44/003/G/003 Details: General Farming & Domestic Direct Source: Ground Water - Fresh Point: Studland Borehole #1 Data Type: Point Name: National Trust
			Annual Volume (m ³): 11365 Max Daily Volume (m ³): 54.6 Original Application No: 13/44/003/G/003 Original Start Date: 1/11/1967 Expiry Date: - Issue No: 100 Version Start Date: 1/4/2008 Version End Date:

,3+)\$% 5\$ > \$% % %

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 (6b):

				* 3 \$ 4\$56 (7 8 ! 0 3 \$ 4\$56 (*11 9 % ! 281 0 ! (: 3 ! 3 2 + !
			! " # \$ % & ! \$! ' (#) \$ * + , \$ * " + - + +) . ! /01) \$, \$1 2 /	
				* 3 \$ 4\$56 (7 8 ! 0 3 \$ 4\$56 (*11 9 % ! 281 0 ! (: 3 ! 3 2 + !
			! " # \$ % & ! \$! ' (#) ; \$ * + , \$ * " + - + +) . ; ! /01) \$, \$1 2 /	

,3- 1 \$>/ 5\$ > \$% % %

Are there any Potable Water Abstraction Licences within 2000m of the study site? No

Database searched and no data found.

,3, % 1 % E

Are there any Source Protection Zones within 500m of the study site? No

Database searched and no data found.

,3(% 1 % E 2 .) D)

Are there any Source Protection Zones within the Confined Aquifer within 500m of the study site? No

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

Database searched and no data found.

37 2\$ A / \$> / 6\$ / \$% 1 \$/

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

\$ % ?4@	%	.\$) %\$	/ A / \$> / 6.\$ 6	% 0
0	On Site	Minor Aquifer/High Leaching Potential	H3	Coarse textured or moderately shallow soils which readily transmit non-adsorbed pollutants and liquid discharges but have some ability to attenuate adsorbed pollutants because of their clay or organic matter content.
97	E	Minor Aquifer/High Leaching Potential	H2	Deep, permeable, coarse textured soils which readily transmit a wide range of pollutants because of their rapid drainage and low attenuation potential.
427	N	Minor Aquifer/Intermediate Leaching Potential	I2	Soils which can possibly transmit non – or weakly adsorbed pollutants and liquid discharges but are unlikely to transmit adsorbed pollutants.

3" F \$/ 6

Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site? No

6.9.1 Biological Quality:

Database searched and no data found.

6.9.2 Chemical Quality:

Database searched and no data found.

3! \$/ 2 =

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 (6e):

\$ % ?4@	%	\$ /
1	66	W
		River Name: - Welsh River Name: - Alternative Name: -
		River Type: Tertiary River Main River Status: Currently Undefined

	\$ % ?4@	%		\$ /
2	91	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
3	91	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
4	95	NW	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
5	125	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
6	146	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
7	178	W	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
8	197	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
9	199	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
10A	250	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
11A	255	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Secondary River Main River Status: Currently Undefined
12	261	E	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
13	281	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
14	316	N	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
15	378	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
16	382	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
17	382	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
18	424	SE	River Name: - Welsh River Name: - Alternative Name: -	River Type: Culvert Main River Status: Currently Undefined
19	434	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined
20	438	SE	River Name: Drain Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

	\$ % ?4@	%		\$ /
21	482	E	River Name: - Welsh River Name: - Alternative Name: -	River Type: Tertiary River Main River Status: Currently Undefined

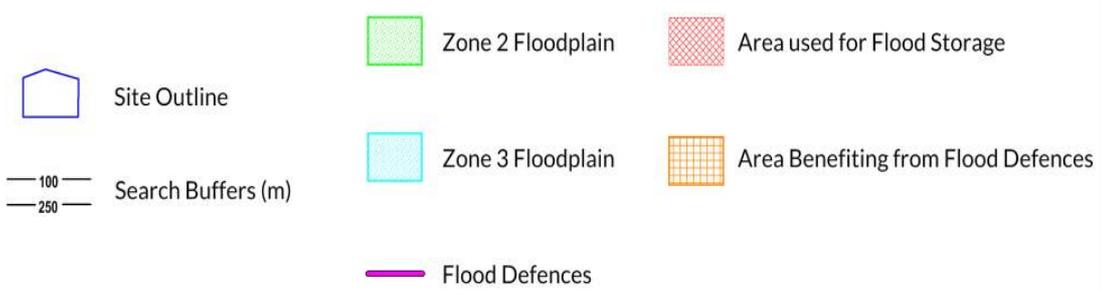
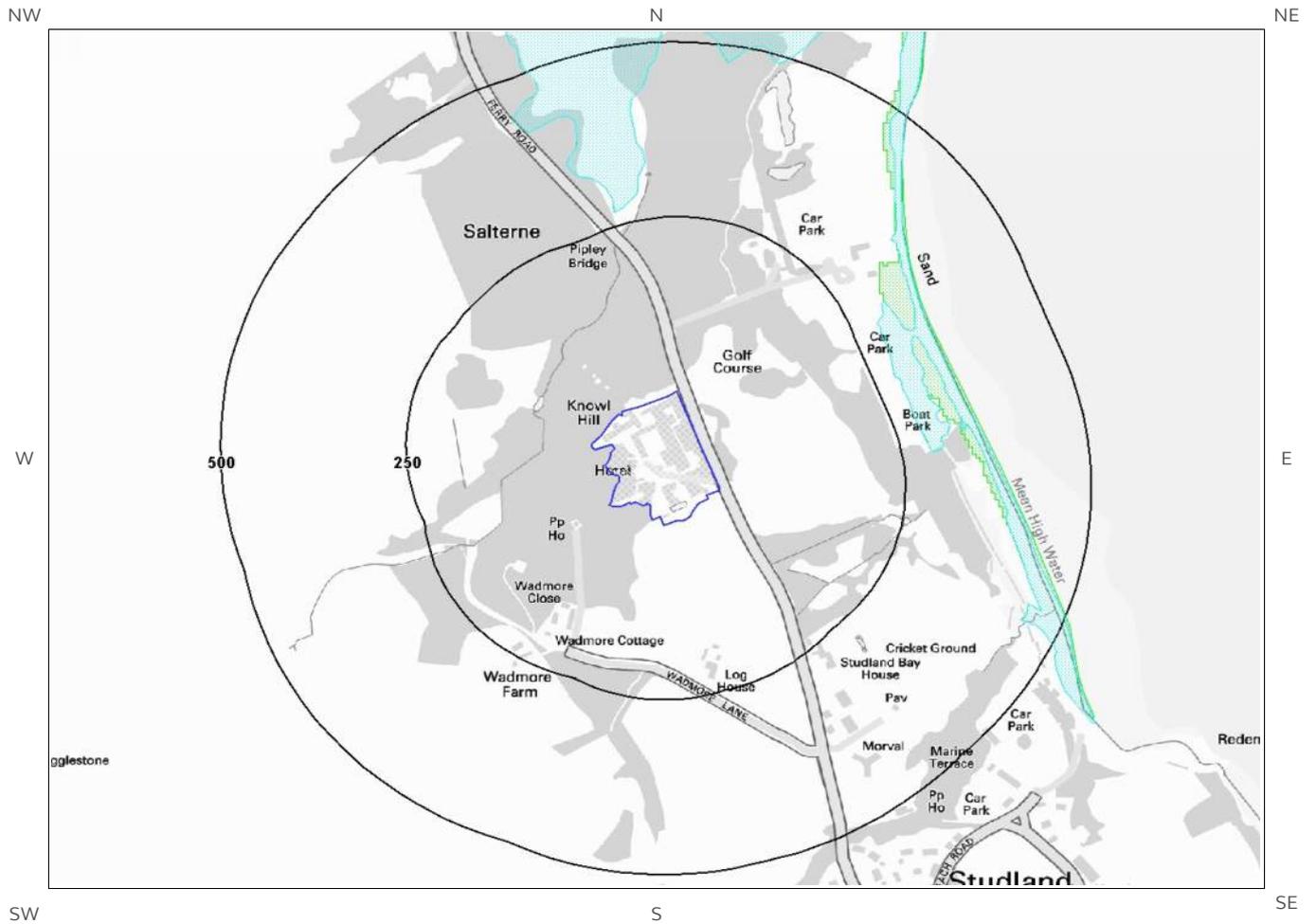
,3!!)\$% 5\$ \$

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

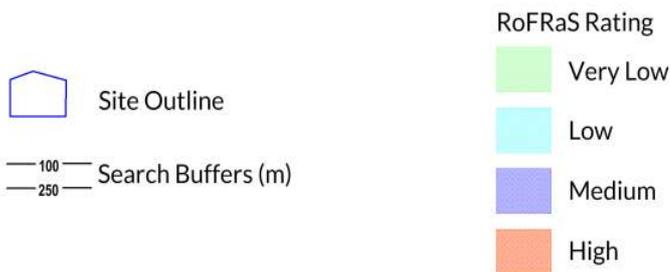
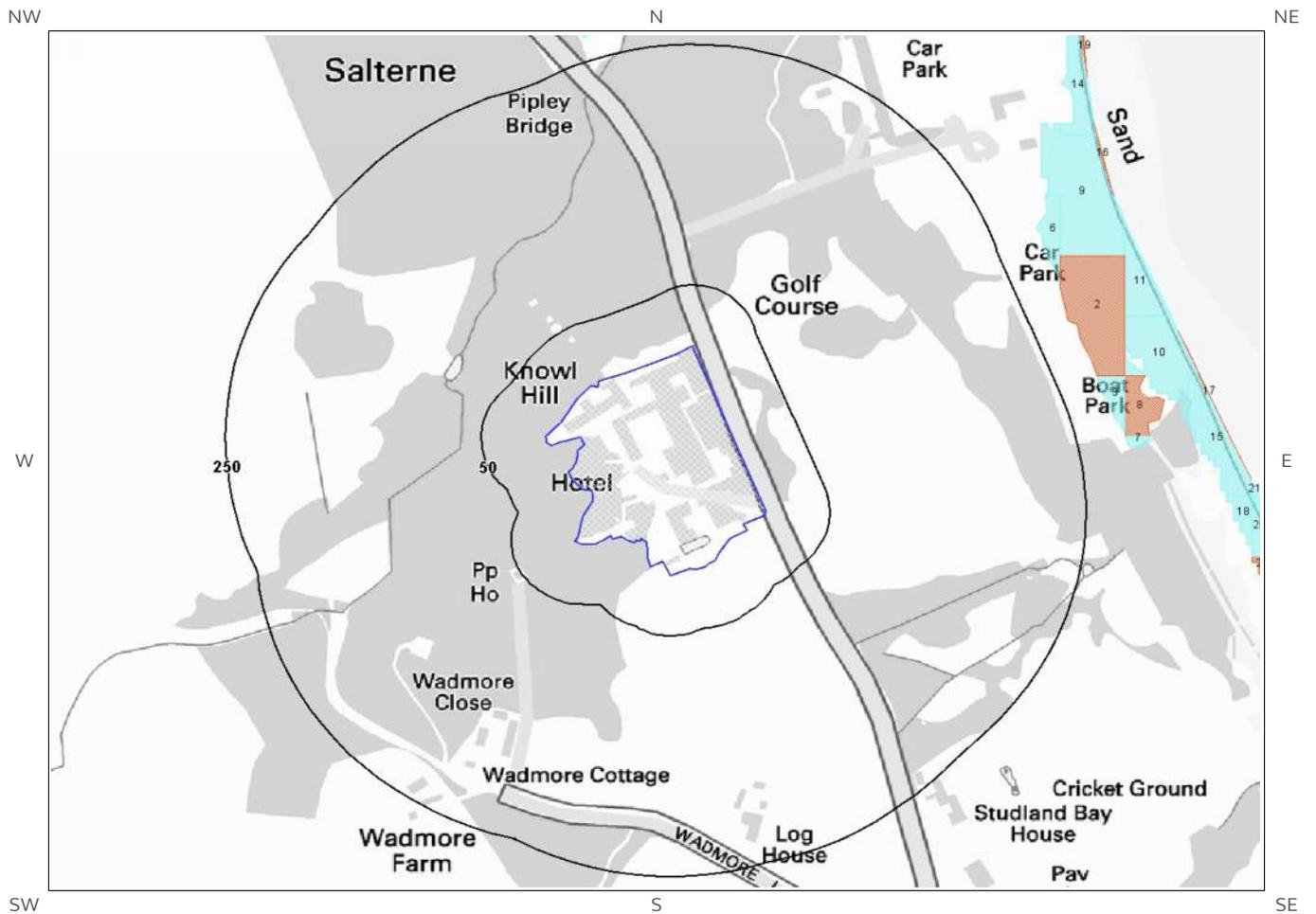
The following surface water records are not represented on mapping:

\$ % ?4@	%
66	W
95	NW
125	SE
146	SE
178	W
199	SE
199	SE
232	N

(\$3 4 %6B \$ \$/
% 5\$/ / 9\$0)
1/\$?) 4 \$ @\$



(>3 4 %6B \$ \$/
 % 5\$/ =) /
) 4 \$ \$? \$ @
 9\$0



(/

(3! \$. \$ \$/E & /

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? No

Environment Agency/Natural Resources Wales Zone 2 floodplains estimate the annual probability of flooding as between 1 in 1000 (0.1%) and 1 in 100 (1%) from rivers and between 1 in 1000 (0.1%) and 1 in 200 (0.5%) from the sea. Any relevant data is represented on Map 7a – Flood Map for Planning:

Database searched and no data found.

(3& \$. \$ \$/E # /

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? No

Zone 3 shows the extent of a river flood with a 1 in 100 (1%) or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year. Any relevant data is represented on Map 7a – Flood Map for Planning.

Database searched and no data found.

(3# =) /) 4 \$ \$? \$@ / \$

What is the highest risk of flooding onsite? Very Low

The Environment Agency/Natural Resources Wales RoFRaS database provides an indication of river and coastal flood risk at a national level on a 50m grid with the flood rating at the centre of the grid calculated and given above. The data considers the probability that the flood defences will overtop or breach by considering their location, type, condition and standard of protection.

RoFRaS data for the study site indicates the property is in an area with a Very Low (less than 1 in 1000) chance of flooding in any given year.

(3+ /) %

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

Database searched and no data found.

(3- \$ >)) 4 /) %

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

(3, \$ >)) 4 / \$

Are there any areas used for Flood Storage within 250m of the study site?

No

(3(2\$ / % 0 > / 6 \$

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

Does this relate to Clearwater Flooding or Superficial Deposits Flooding?

Clearwater Flooding

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

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

Potential below Surface

Where potential for groundwater flooding of property situated below ground level is indicated, this means that given the geological conditions there may be a groundwater flooding hazard to basements and other below surface infrastructure. Unless other relevant information, e.g. records of previous flooding, suggests groundwater flooding has occurred before in this area you need take no further action in relation to groundwater flooding hazard. If there are records of previous incidences of groundwater flooding, then is recommended that other information e.g. rainfall history, property type, and land drainage information in addition to previous records of flooding be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

(37 2\$ / .) % \$

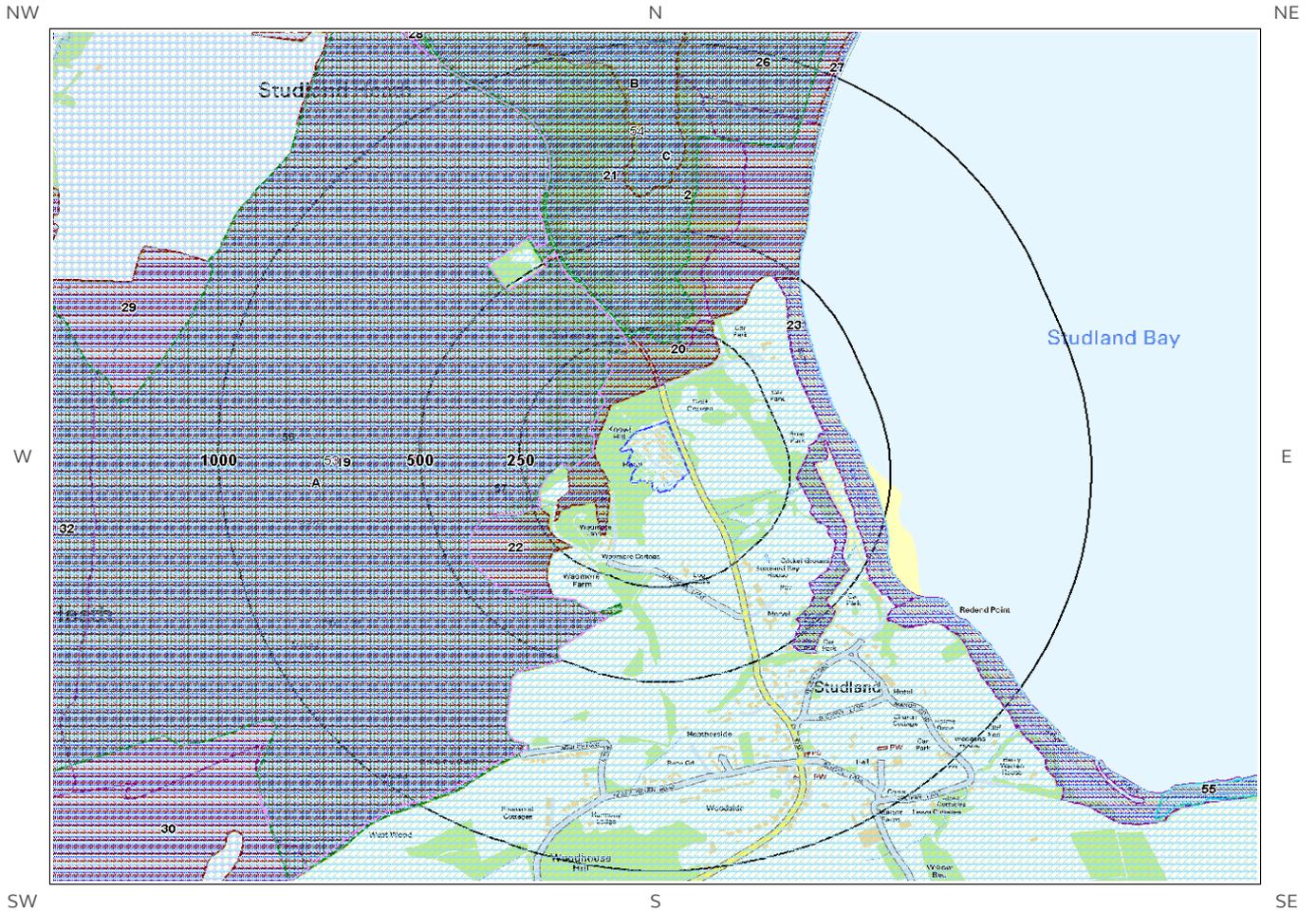
What is the British Geological Survey confidence rating in this result?

High

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

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

73 \$ 4 \$/16
9\$0



73 \$ 4 \$/6

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

73! %)) 0 % \$/ %) % ? @ 2 &"4) 6

24

The following Site of Special Scientific Interest (SSSI) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	\$4	\$ \$ %
18	51	W	Studland & Godlingston Heaths	Natural England
19	70	W	Studland & Godlingston Heaths	Natural England
20	94	N	Studland & Godlingston Heaths	Natural England
21	197	N	Studland & Godlingston Heaths	Natural England
22	219	SW	Studland & Godlingston Heaths	Natural England
23	267	E	Studland & Godlingston Heaths	Natural England
24B	596	N	Studland & Godlingston Heaths	Natural England
25	618	SE	Studland Cliffs	Natural England
26	852	N	Studland & Godlingston Heaths	Natural England
27	868	NE	Studland & Godlingston Heaths	Natural England
28	1110	NW	Studland & Godlingston Heaths	Natural England
29	1114	NW	Studland & Godlingston Heaths	Natural England
30	1144	SW	Studland & Godlingston Heaths	Natural England
31	1288	NW	Studland & Godlingston Heaths	Natural England
32	1310	W	Studland & Godlingston Heaths	Natural England
Not shown	1358	NW	Poole Harbour	Natural England
Not shown	1425	NW	Poole Harbour	Natural England
Not shown	1707	W	Studland & Godlingston Heaths	Natural England
Not shown	1740	NW	Poole Harbour	Natural England
Not shown	1762	NW	Poole Harbour	Natural England
Not shown	1773	NW	Poole Harbour	Natural England
Not shown	1895	NW	Rempstone Heaths	Natural England
Not shown	1900	S	Purbeck Ridge (East)	Natural England

	\$ % ?4@	%	\$4	\$ \$ %
Not shown	1979	NW	Rempstone Heaths	Natural England

73& %) \$ \$/ \$? @ 2 &"4) 6

2

The following National Nature Reserve (NNR) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	\$4	\$ \$ %
53	70	W	Studland and Godlingston Heath	Natural England
54	204	N	Studland and Godlingston Heath	Natural England

73# %) 0 % \$/ \$) . \$? .@ 2 &"4) 6

5

The following Special Area of Conservation (SAC) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	. \$4	\$ \$ %
1A	51	W	Dorset Heaths (Purbeck & Wareham) & Studland Dunes	Natural England
2	100	N	Dorset Heaths (Purbeck & Wareham) & Studland Dunes	Natural England
3	618	SE	Isle of Portland to Studland Cliffs	Natural England
Not shown	1895	NW	Dorset Heaths (Purbeck & Wareham) & Studland Dunes	Natural England
Not shown	1979	NW	Dorset Heaths (Purbeck & Wareham) & Studland Dunes	Natural England

73+ %) 0 % \$/ 1 % \$? 1 @ 2 &"4) 6

12

The following Special Protection Area (SPA) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	1 \$4	\$ \$ %
6A	51	W	Dorset Heathlands	Natural England
7C	98	N	Dorset Heathlands	Natural England
8B	598	N	Poole Harbour	Natural England
Not shown	1357	NW	Poole Harbour	Natural England

	\$ % ?4@	%	1 \$4	\$ \$ %
Not shown	1424	NW	Poole Harbour	Natural England
Not shown	1586	N	Poole Harbour	Natural England
Not shown	1740	NW	Poole Harbour	Natural England
Not shown	1762	NW	Poole Harbour	Natural England
Not shown	1766	NW	Poole Harbour	Natural England
Not shown	1773	NW	Poole Harbour	Natural England
Not shown	1894	NW	Dorset Heathlands	Natural England
Not shown	1978	NW	Dorset Heathlands	Natural England

73- %) \$4 \$ 2 &"4) 6

11

The following Ramsar records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	\$4 \$ \$4	\$4 \$ \$	\$ \$ %
42A	51	W	Dorset Heathlands	Listed	Natural England
43C	100	N	Dorset Heathlands	Listed	Natural England
44B	596	N	Poole Harbour	Listed	Natural England
Not shown	1358	NW	Poole Harbour	Listed	Natural England
Not shown	1425	NW	Poole Harbour	Listed	Natural England
Not shown	1587	N	Poole Harbour	Listed	Natural England
Not shown	1740	NW	Poole Harbour	Listed	Natural England
Not shown	1762	NW	Poole Harbour	Listed	Natural England
Not shown	1773	NW	Poole Harbour	Listed	Natural England
Not shown	1895	NW	Dorset Heathlands	Listed	Natural England
Not shown	1979	NW	Dorset Heathlands	Listed	Natural England

73, %) % 5 /\$ 2 &"4) 6

0

Database searched and no data found.

73(%) %\$/ \$? @ 2 &"4) 6

0

Database searched and no data found.

737 %) 5 / \$ 2 &"4) 6

1

The following World Heritage Site records provided by English Heritage and Cadw are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	5 / \$ \$4	\$ \$ %
55	1450	SE	Dorset and East Devon Coast	English Heritage

73" %) 4 \$//6 \$ 2 &"4) 6

0

Database searched and no data found.

73! %) \$) \$ \$ \$/ \$ 6 ? @ 2 &"4)
6

1

The following Area of Outstanding Natural Beauty (AONB) records provided by Natural England/Natural Resources Wales are represented as polygons on the Designated Environmentally Sensitive Sites Map:

	\$ % ?4@	%	B \$4	\$ \$ %
57	0	On Site	Dorset	Natural England

73!! %) \$ \$/ 1\$ = ? 1@ 2 &"4) 6

0

Database searched and no data found.

73!& %) \$ \$ 2 &"4) 6

0

Database searched and no data found.

73!# %) \$ A / \$>/ E 2 &"4) 6

1

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

	\$ % ?4@	%	AE \$4	\$\$ %
56	66	W	Existing	DEFRA

73!+ %) / /\$ 2 &"4) 6

0

Database searched and no data found.

"3 \$ \$/ \$8\$

"3! \$ / \$ \$

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 Geo Insight**, available from our **website**. The following information has been found:

9.1.1 Shrink Swell

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

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

\$8\$

Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. 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 probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

9.1.2 Landslides

What is the maximum Landslide* 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:

\$8\$

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.

9.1.3 Soluble Rocks

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

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

\$8\$

Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

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

9.1.4 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:

\$\$

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.

9.1.5 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:

\$\$

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.

9.1.6 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:

\$\$

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.

"3& \$

9.2.1 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.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

9.2.2 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.

! '3 9

!'3! . \$/ 9

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

No

Database searched and no data found.

!'3& *. \$/ 9

Are there any Non-Coal Mining areas within 50m of the study site boundary?

No

Database searched and no data found.

!'3#)) % \$

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

No

Guidance: No Guidance Required.

· \$% \$ /

/0/
Telephone: 08444 159 000
info@groundsure.com

/ %\$/ 6 D
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:
Web: 2223> 3\$%3 =

BGS Geological Hazards Reports and general geological enquiries:
D G> 3\$%3 =

4 %6
National Customer Contact Centre, PO Box 544
Rotherham, S60 1BY
Tel: 03708 506 506

Web: _____
Email: enquiries@environment-agency.gov.uk

1 >/ % \$/ /\$
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
% < = 1
Email: D G0 3 3 =
Main switchboard '&' (,-+ 7'''

· \$/ 6
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
2223% \$/3 3 =

\$ % 6
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505

%\$/ 6
Authority: Purbeck District Council
Phone: 01929 556 561
Web: <http://www.dorsetforyou.com/>
Address: Westport House, Worgret Road, Wareham, Dorset, BH20

4\$00 1 .
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, Natural England 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.

\$ \$ 4 \$.

Groundsure's Terms and Conditions can be viewed online at this link:
<https://www.groundsure.com/terms-and-conditions-sept-2016>

!"

#

! \$%& '

(\$

)*+ &,& ,

-.

/

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 03-May-2014

Grid Reference: 403110,083272

Site Size: 1.92ha

- 0#

Contents Page.....	3
Overview of Findings.....	5
1:10,000 Scale Availability.....	8
Availability of 1:10,000 Scale Geology Mapping.....	9
1 Geology (1:10,000 scale).....	10
1.1 Artificial Ground map (1:10,000 scale).....	10
1. Geology 1:10,000 scale.....	11
1.1 Artificial Ground.....	11
1.2 Superficial Deposits and Landslips map (1:10,000 scale).....	12
1.2 Superficial Deposits and Landslips.....	13
1.2.1 Superficial Deposits/ Drift Geology.....	13
1.2.2 Landslip.....	13
1.3 Bedrock and linear features map (1:10,000 scale).....	14
1.3 Bedrock and linear features.....	15
1.3.1 Bedrock/ Solid Geology.....	15
1.3.2 Linear features.....	15
2 Geology 1:50,000 Scale.....	16
2.1 Artificial Ground map.....	16
2. Geology 1:50,000 scale.....	17
2.1 Artificial Ground.....	17
2.1.1 Artificial/ Made Ground.....	17
2.1.2 Permeability of Artificial Ground.....	17
2.2 Superficial Deposits and Landslips map (1:50,000 scale).....	18
2.2 Superficial Deposits and Landslips.....	19
2.2.1 Superficial Deposits/ Drift Geology.....	19
2.2.2 Permeability of Superficial Ground.....	19
2.2.3 Landslip.....	19
2.2.4 Landslip Permeability.....	19
2.3 Bedrock and linear features map (1:50,000 scale).....	20
2.3 Bedrock, Solid Geology & linear features.....	21
2.3.1 Bedrock/Solid Geology.....	21
2.3.2 Permeability of Bedrock Ground.....	21
2.3.3 Linear features.....	21
3 Radon Data.....	22
3.1 Radon Affected Areas.....	22
3.2 Radon Protection.....	22
4 Ground Workings map.....	23
4 Ground Workings.....	24
4.1 Historical Surface Ground Working Features derived from Historical Mapping.....	24
4.2 Historical Underground Working Features derived from Historical Mapping.....	24
4.3 Current Ground Workings.....	25
5 Mining, Extraction & Natural Cavities.....	27
5.1 Historical Mining.....	27
5.2 Coal Mining.....	27
5.3 Johnson Poole and Bloomer.....	27
5.4 Non-Coal Mining.....	27
5.5 Non-Coal Mining Cavities.....	28
5.6 Natural Cavities.....	28
5.7 Brine Extraction.....	28
5.8 Gypsum Extraction.....	28
5.9 Tin Mining.....	29
5.10 Clay Mining.....	29
6 Natural Ground Subsidence.....	30
6.1 Shrink-Swell Clay map.....	30
6.2 Landslides map.....	31
6.3 Ground Dissolution of Soluble Rocks map.....	32
6.4 Compressible Deposits map.....	33
6.5 Collapsible Deposits map.....	34
6.6 Running Sand map.....	35

6 Natural Ground Subsidence.....	36
6.1 Shrink-Swell Clays.....	36
6.2 Landslides.....	36
6.3 Ground Dissolution of Soluble Rocks.....	37
6.4 Compressible Deposits.....	37
6.5 Collapsible Deposits.....	37
6.6 Running Sands.....	37
7 Borehole Records.....	40
8 Estimated Background Soil Chemistry.....	41
9 Railways and Tunnels map.....	42
9 Railways and Tunnels.....	43
9.1 Tunnels	43
9.2 Historical Railway and Tunnel Features	43
9.3 Historical Railways.....	44
9.4 Active Railways.....	44
9.5 Railway Projects.....	44

1 1 2 (

The Groundsure Geo Insight 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 and 1:10,000 Digital Geological Map of Great Britain, BGS Geosure data; BRITPITS database; Non-coal 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 1:10,000 Scale		
1.1 Artificial Ground	1.1 Is there any Artificial Ground/ Made Ground present beneath the study site at 1:10,000 scale?	No
1.2 Superficial Geology and Landslips	1.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site at 1:10,000 scale?*	No
	1.2.2 Are there any records of landslip within 500m of the study site boundary at 1:10,000 scale?	No
1.3 Bedrock, Solid Geology and linear features	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 of linear features within 500m of the study site boundary at 1:10,000 scale?	Yes
Section 2: Geology 1:50,000 Scale		
2.1 Artificial Ground	2.1.1 Is there any Artificial Ground/ Made Ground present beneath the study site?	No
	2.1.2 Are there any records relating to permeability of artificial ground within the study site*boundary?	No
2.2 Superficial Geology and Landslips	2.2.1 Is there any Superficial Ground/Drift Geology present beneath the study site?*	Yes
	2.2.2 Are there any records of permeability of superficial ground within 500m of the study site?	Yes
	2.2.3 Are there any records of landslip within 500m of the study site boundary?	No
	2.2.4 Are there any records relating to permeability of landslips within the study site* boundary?	No

Section 2: Geology 1:50,000 Scale

2.3 Bedrock, Solid Geology and linear features

2.3.1 For records of Bedrock and Solid Geology beneath the study site* see the detailed findings section.

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

Yes

2.3.3 Are there any records of linear features within 500m of the study site boundary?

Yes

Section 3: Radon

3. Radon

3.1 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.

3.2 Radon Protection

No radon protective measures are necessary.

Section 4: Ground Workings

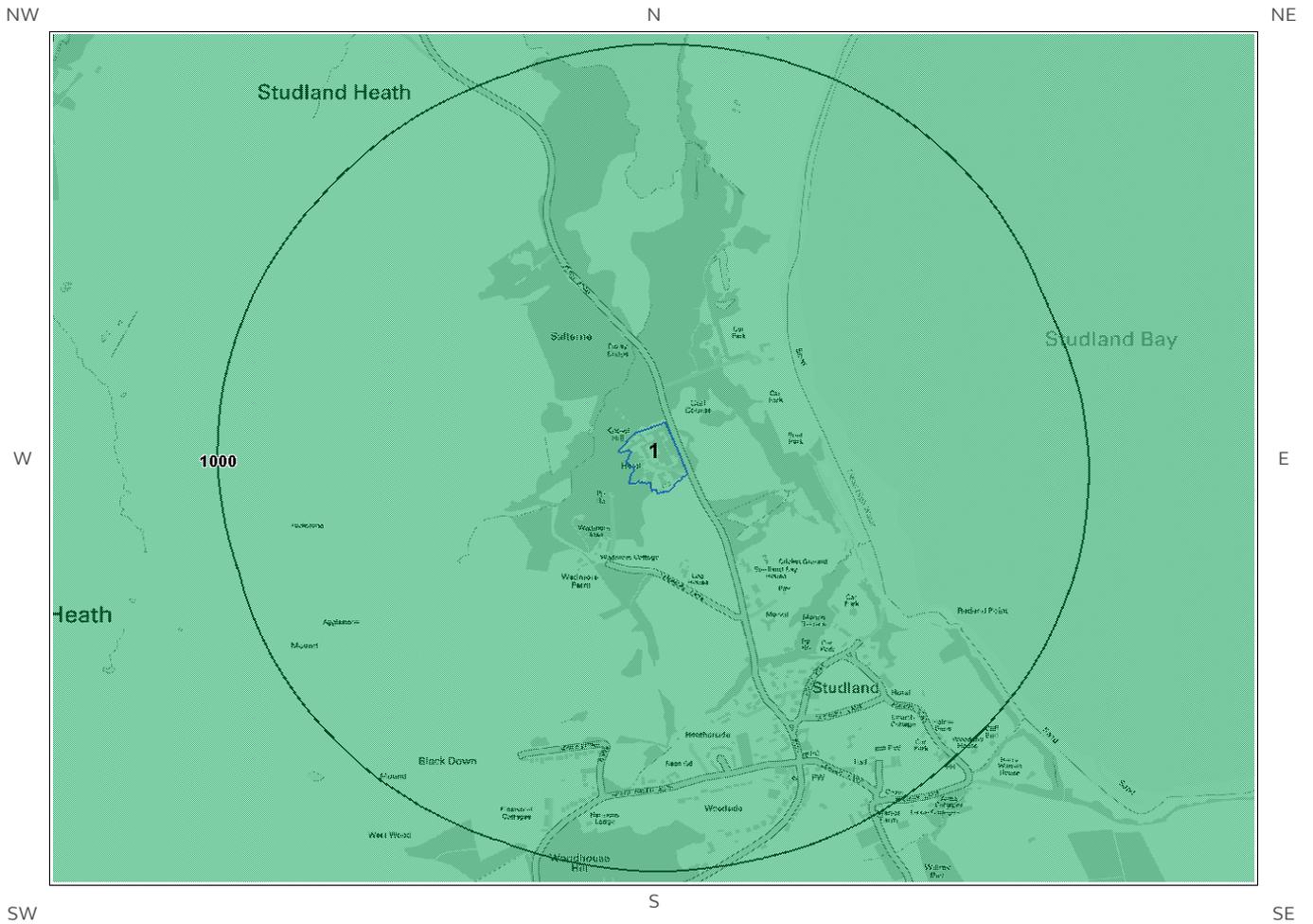
	On-site	0-50m	51-250	251-500	501-1000
4.1 Historical Surface Ground Working Features from Small Scale Mapping	0	0	7	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	0	0	0
4.3 Current Ground Workings	0	0	0	1	2

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	0	0	0
5.2 Coal Mining	0	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	0	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	1

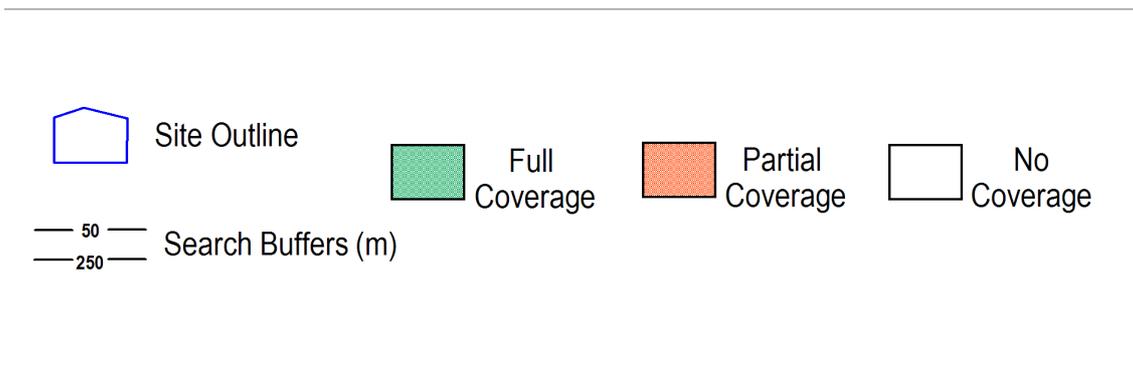
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence	On-site				
6.1 Shrink-Swell Clay	Moderate				
6.2 Landslides	Very Low				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Negligible				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Low				
Section 7: Borehole Records	On-site	0-50m	51-250		
7 BGS Recorded Boreholes	0	0	1		
Section 8: Estimated Background Soil Chemistry	On-site	0-50m	51-250		
8 Records of Background Soil Chemistry	3	3	0		
Section 9: Railways and Tunnels	On-site	0-50m	51-250	250-500	
9.1 Tunnels	0	0	0	Not Searched	
9.2 Historical Railway and Tunnel Features	0	0	0	Not Searched	
9.3 Historical Railways	0	0	0	Not Searched	
9.4 Active Railways	0	0	0	Not Searched	
9.5 Railway Projects	0	0	0	0	

& &&& \$#. 1# .#3 . 4



5 & &&& 1# .#3 . 4

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



1# .#3 . 4 (& &&& \$#. . 4 6#//

The following information represents the availability of the key components of the 1:10,000 scale geological data.

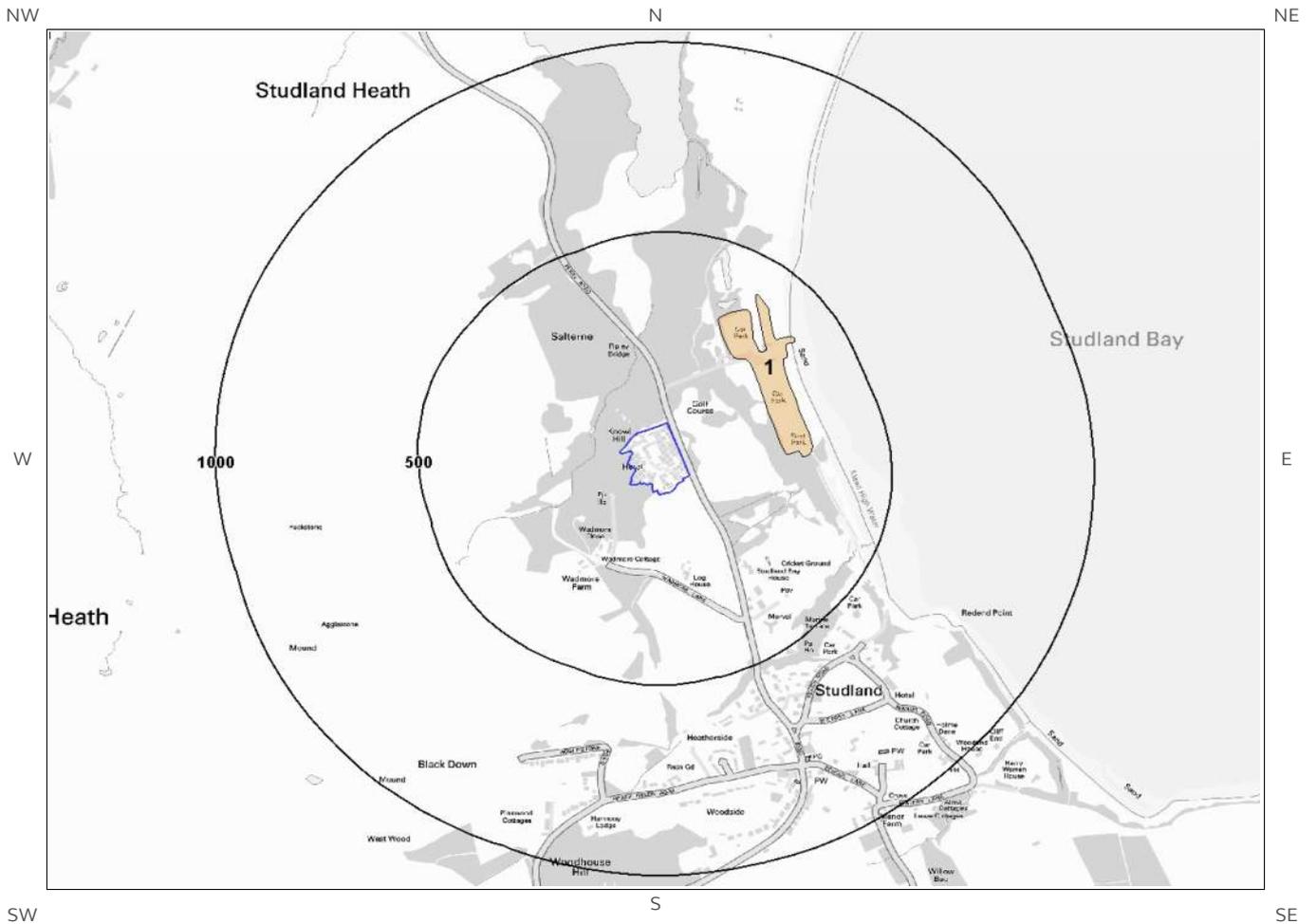
	# \$	(\$ #. - 1 #	/ (\$ #. - 1 #	\$7 - 1 #	6# 6 1 8 - 1 #
1	0.0	Some deposits are mapped	Full	Full	Some deposits are mapped
N2	1625.0	No deposits are mapped	No coverage	No coverage	No coverage
N3	1830.0	No deposits are mapped	No coverage	Partial	No coverage

Guidance: The 1:10,000 scale geological interpretation is the most detailed generally available from BGS and is the scale at which most geological surveying is carried out in the field. The database is presented as four types of geology (artificial, mass movement, superficial and bedrock), although not all themes are mapped or available on every map sheet. Therefore a coverage layer showing the availability of the four themes is presented above.

The definitions of coverage are as follows:

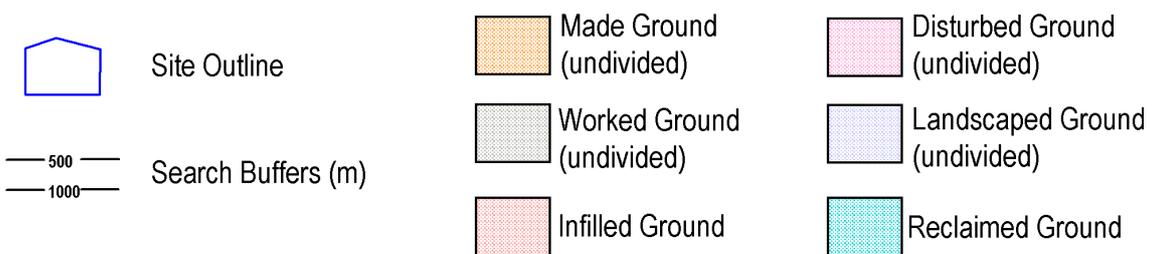
. 4	.. - 1 #	0# #. - 1 #	- 1 #
Bedrock	The whole tile has been mapped	Some but not all the tile has been mapped	No coverage
Superficial	The whole tile has been mapped	Some but not all of the tile has been mapped	No coverage
Artificial	Some deposits are mapped on this tile	-	No deposits are mapped
Mass Movement	Some deposits are mapped on this tile	-	No coverage

. 4 9 & &&& \$#. : ;
; (\$ #. 8#/ 9 & &&&
\$#. :



(\$ #.

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



; . 4 & &&& \$#.

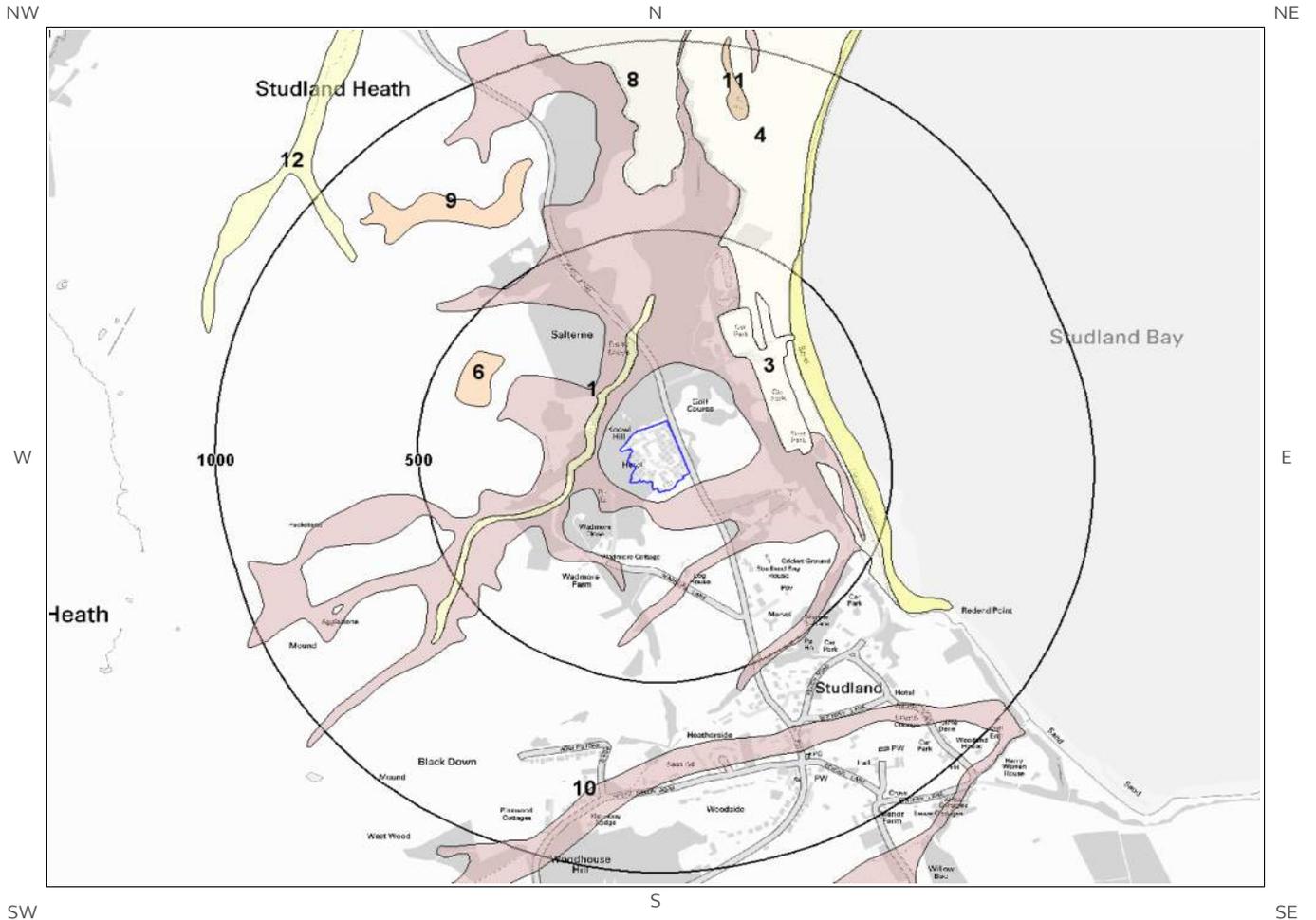
; (\$#.

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

Are there any records of Artificial/ Made Ground within 500m of the study site boundary at 1:10,000 scale? Yes

	# \$	\$	< -	\$ /	\$7 \$ /
1	238.0	NE	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

;% / (\$ #. / #
. / 8#/ 9 & &&& \$#. :

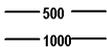


(\$ #.

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

;% / (\$ #. / #
. /

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping

1.2.1 Superficial Deposits/ Drift Geology

Are there any records of Superficial Deposits/ Drift Geology within 500m of the study site boundary at 1:10,000 scale? Yes

	# \$ 98:	\$	< -	\$ /	\$7 \$ /
1	17.0	SE	HEAD-XCZSV	Head - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
2	64.0	W	ALV-XCZSV	Alluvium - Clay, Silt, Sand And Gravel	Clay, Silt, Sand And Gravel
3	238.0	NE	SUPD-SED	Superficial Deposits - Sediment	Sediment
4	296.0	NE	BSA-S	Blown Sand - Sand	Sand
5	314.0	E	BSA-S	Blown Sand - Sand	Sand
6	344.0	W	RTD8-XSV	River Terrace Deposits, 8 - Sand And Gravel	Sand And Gravel
7	353.0	NE	TFD-XCZS	Tidal Flat Deposits - Clay, Silt And Sand	Clay, Silt And Sand

1.2.2 Landslip

Are there any records of Landslip within 500m of the study site boundary at 1:10,000 scale?

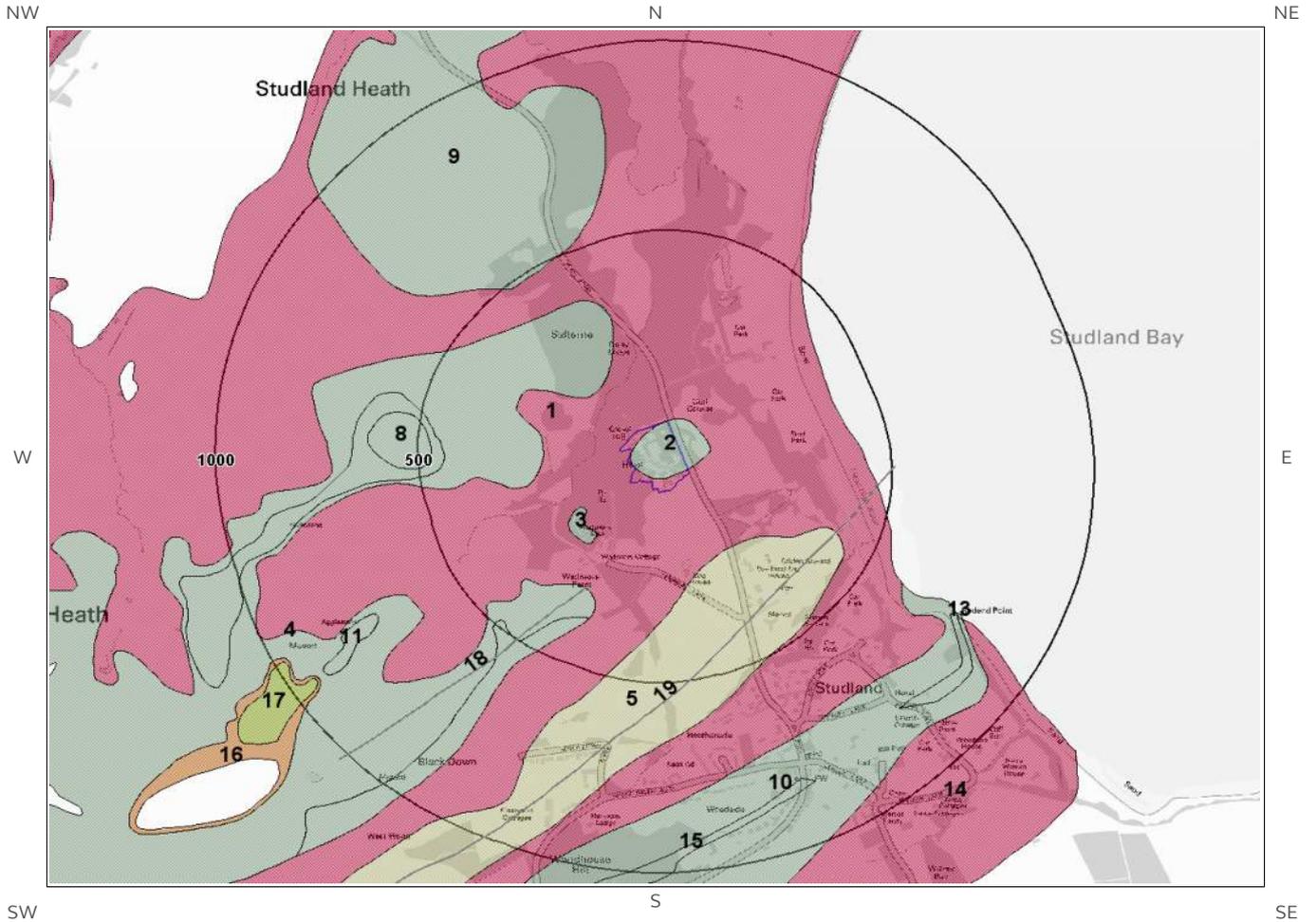
No

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 1:10,000 scale

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.

;" \$7 # . # (# 8#/
9 & &&& \$#. :

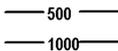


\$7 # . # (#

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

;" \$7 # . # (#

The following geological information represented on the mapping is derived from 1:10,000 scale BGS Geological mapping.

1.3.1 Bedrock/ Solid Geology

Records of Bedrock/Solid Geology within 500m of the study site boundary at 1:10,000 scale.

	# \$ 98:	\$	< -	\$ /	\$7
1	0.0	On Site	BRTC-CLAY	Broadstone Clay Member - Clay	Lutetian Age
2	0.0	On Site	PKS-SANDU	Parkstone Sand Member - Sand	Palaeogene Period
3	131.0	SW	PKS-SANDU	Parkstone Sand Member - Sand	Palaeogene Period
4	144.0	NW	PKS-SANDU	Parkstone Sand Member - Sand	Palaeogene Period
5	205.0	SE	BRTC-SANDU	Broadstone Clay Member - Sand	Lutetian Age
6	370.0	S	PKS-SDST	Parkstone Sand Member - Sandstone	Palaeogene Period
7	436.0	W	PKS-SDST	Parkstone Sand Member - Sandstone	Palaeogene Period
8	467.0	W	PKS-SANDU	Parkstone Sand Member - Sand	Palaeogene Period
9	485.0	NW	PKS-SANDU	Parkstone Sand Member - Sand	Palaeogene Period

1.3.2 Linear features

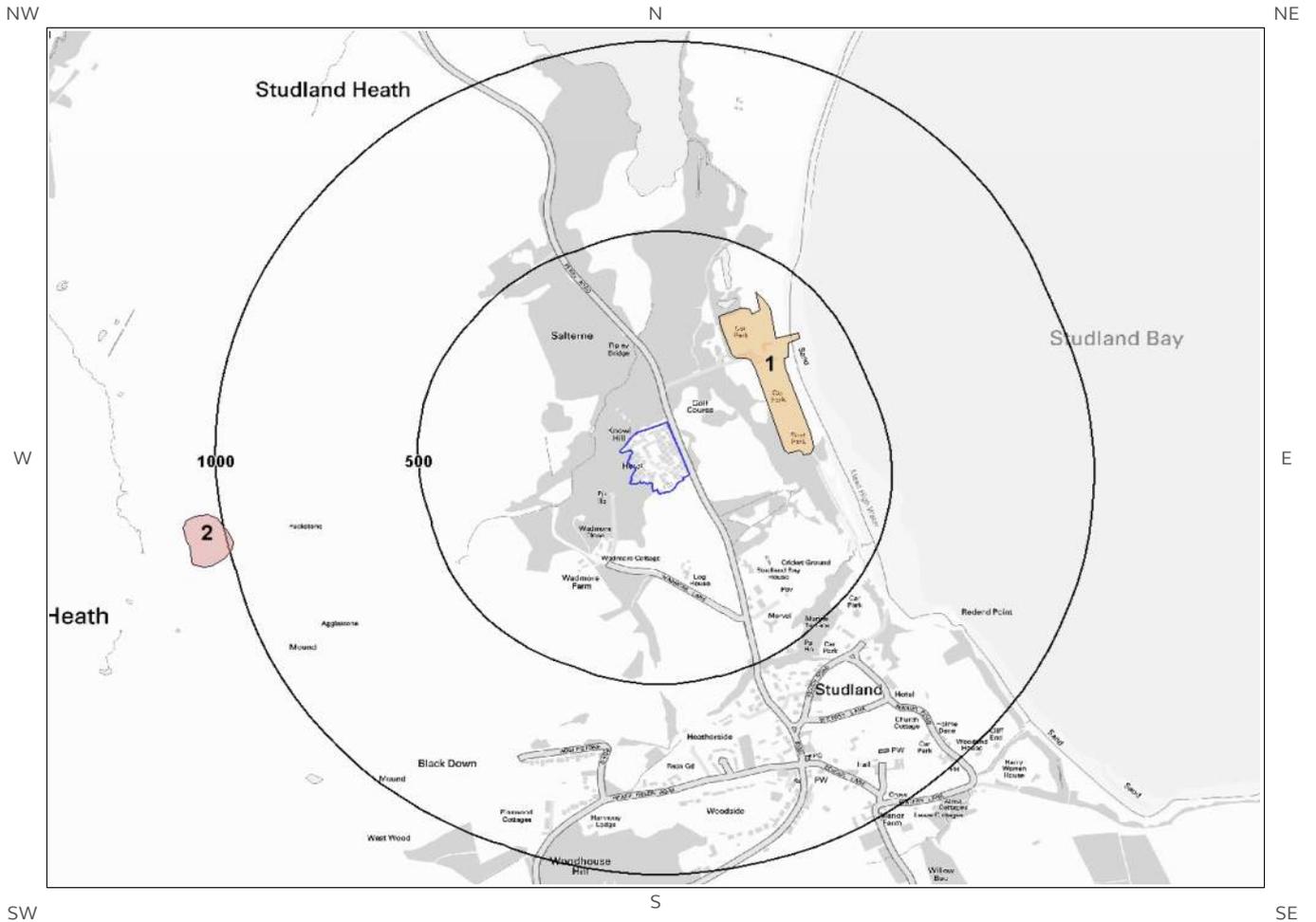
Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? Yes

	# \$ 98:	\$	-# 4 \$ /	# \$ /
18	285.0	S	FOLD_AXIS	Axial plane trace of major syncline
19	369.0	SE	FOLD_AXIS	Axial plane trace of major anticline

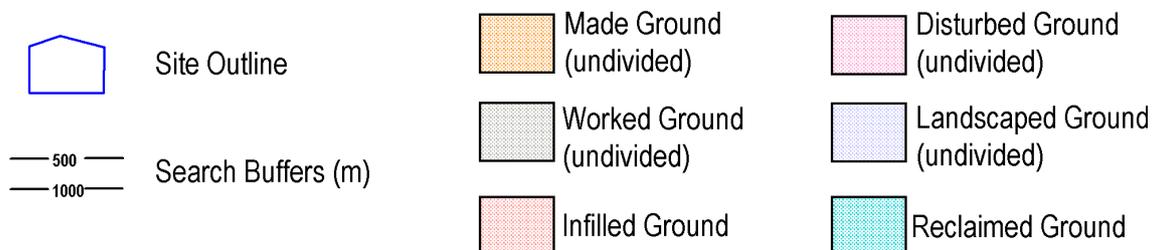
The geology map for the site and surrounding area are extracted from the BGS Digital Geological Map of great Britain at 1:10,000 scale.

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.

% . 4 , & &&& \$#.
 %; (\$ #. 8#/



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



%; . 4 ,& &&& \$#.

%; (\$#.

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 343

2.1.1 Artificial/ Made Ground

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

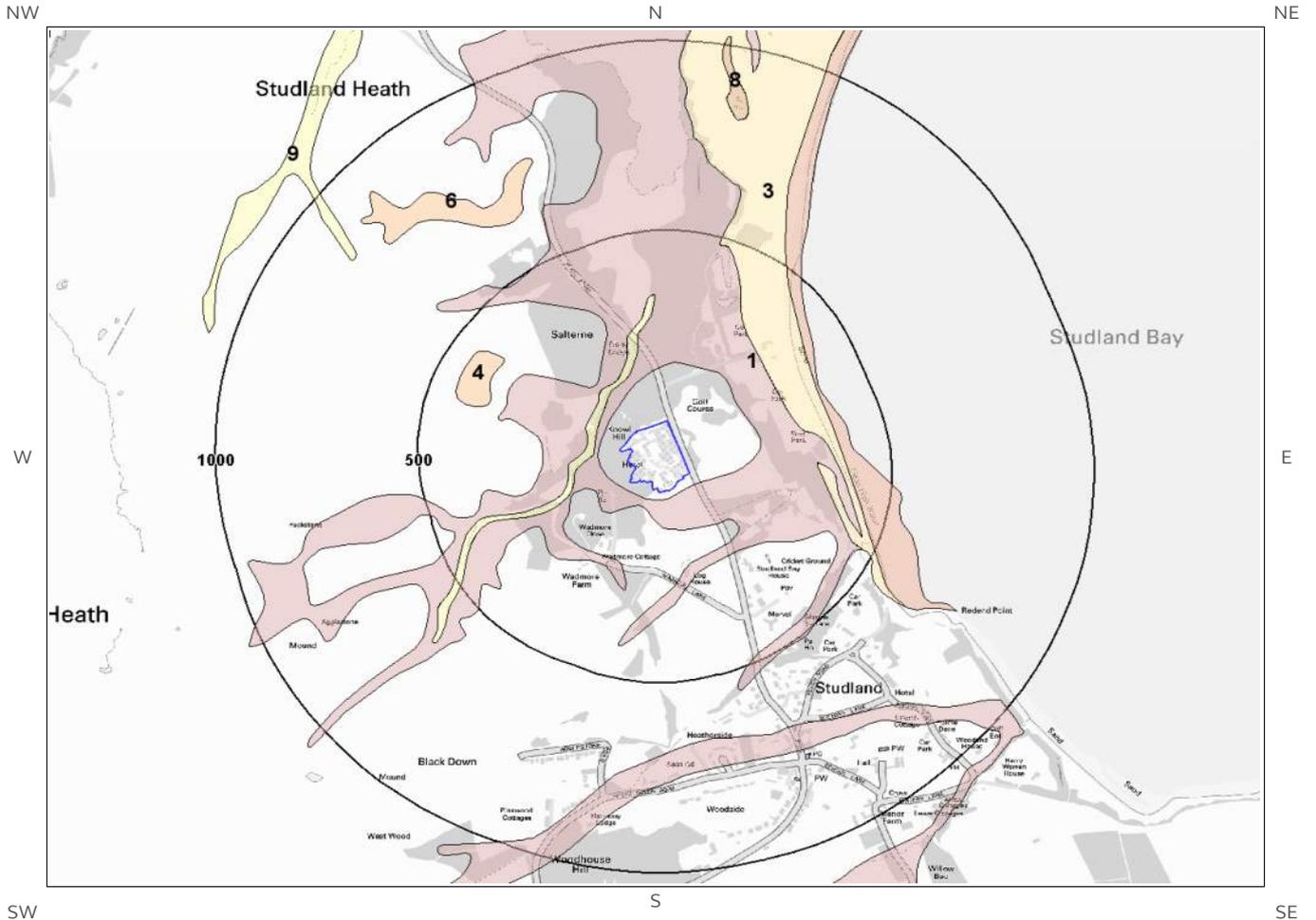
ID	# \$ 98:	\$	< -	\$ /	\$7 \$ /
1	239.0	NE	MGR-ARTDP	MADE GROUND (UNDIVIDED)	ARTIFICIAL DEPOSIT

2.1.2 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.

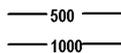
%;% / (\$ #. / #
. / 8#/ 9 ,& &&& \$#. :



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

%;% / (\$ #. / #
. /

2.2.1 Superficial Deposits/ Drift Geology

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

	# \$	\$	< -	\$ /	\$7 \$ /
1	16.0	SE	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
2	64.0	W	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
3	278.0	NE	BSA-S	BLOWN SAND	SAND
4	344.0	W	RTD8-XSV	RIVER TERRACE DEPOSITS, 8	SAND AND GRAVEL
5	373.0	NE	MBD-S	MARINE BEACH DEPOSITS	SAND

2.2.2 Permeability of Superficial Ground

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

# \$ 98:	\$. 2 4/	6# = 8 8 0 8 #3 . 4	6 8 8 0 8 #3 . 4
16.0	SE	Mixed	High	Very Low

2.2.3 Landslip

Are there any records of Landslip 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, there 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.

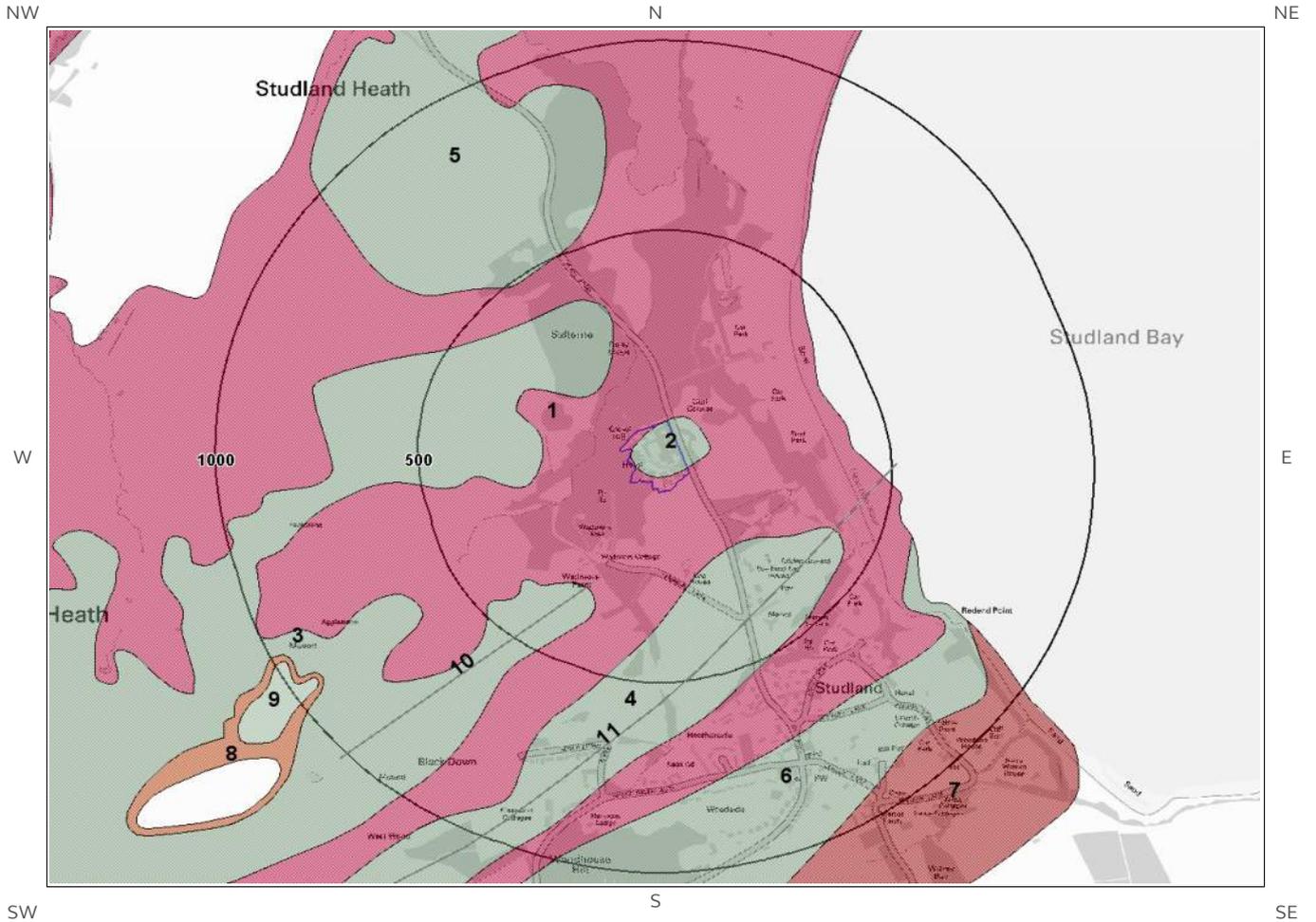
2.2.4 Landslip Permeability

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

Database searched and no data found.

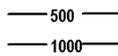
%;" \$7 # . # (# 8#/

9 ,& &&& \$#. :



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.

 Site Outline

 Search Buffers (m)

%;" \$7 . . 4 > . #
(#

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 343

2.3.1 Bedrock/Solid Geology

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

#	\$	\$	< -	\$7 \$ /	\$7
1	0.0	On Site	BRTC-CZ	BROADSTONE CLAY MEMBER - CLAY, SILTY	LUTETIAN
2	0.0	On Site	PKS-S	PARKSTONE SAND MEMBER - SAND	-
3	144.0	NW	PKS-S	PARKSTONE SAND MEMBER - SAND	-
4	206.0	SE	BROS-S	BROADSTONE SAND MEMBER AND OAKDALE SAND MEMBER (UNDIFFERENTIATED) - SAND	-
5	488.0	NW	PKS-S	PARKSTONE SAND MEMBER - SAND	-

2.3.2 Permeability of Bedrock Ground

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

#	\$. 2 4/	6#= 8 8 0 8 #3 . 4	6 8 8 0 8 #3 . 4
0.0	On Site	Intergranular	High	High
0.0	On Site	Fracture	Low	Very Low

2.3.3 Linear features

Are there any records of linear features within 500m of the study site boundary? Yes

#	\$	\$	-# 4 \$ /	# \$ /
10	278.0	S	FOLD_AXIS	Axial plane trace of major syncline
11	367.0	SE	FOLD_AXIS	Axial plane trace of major anticline

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 nation wide coverage.

" # # #

3.1 Radon Affected Areas

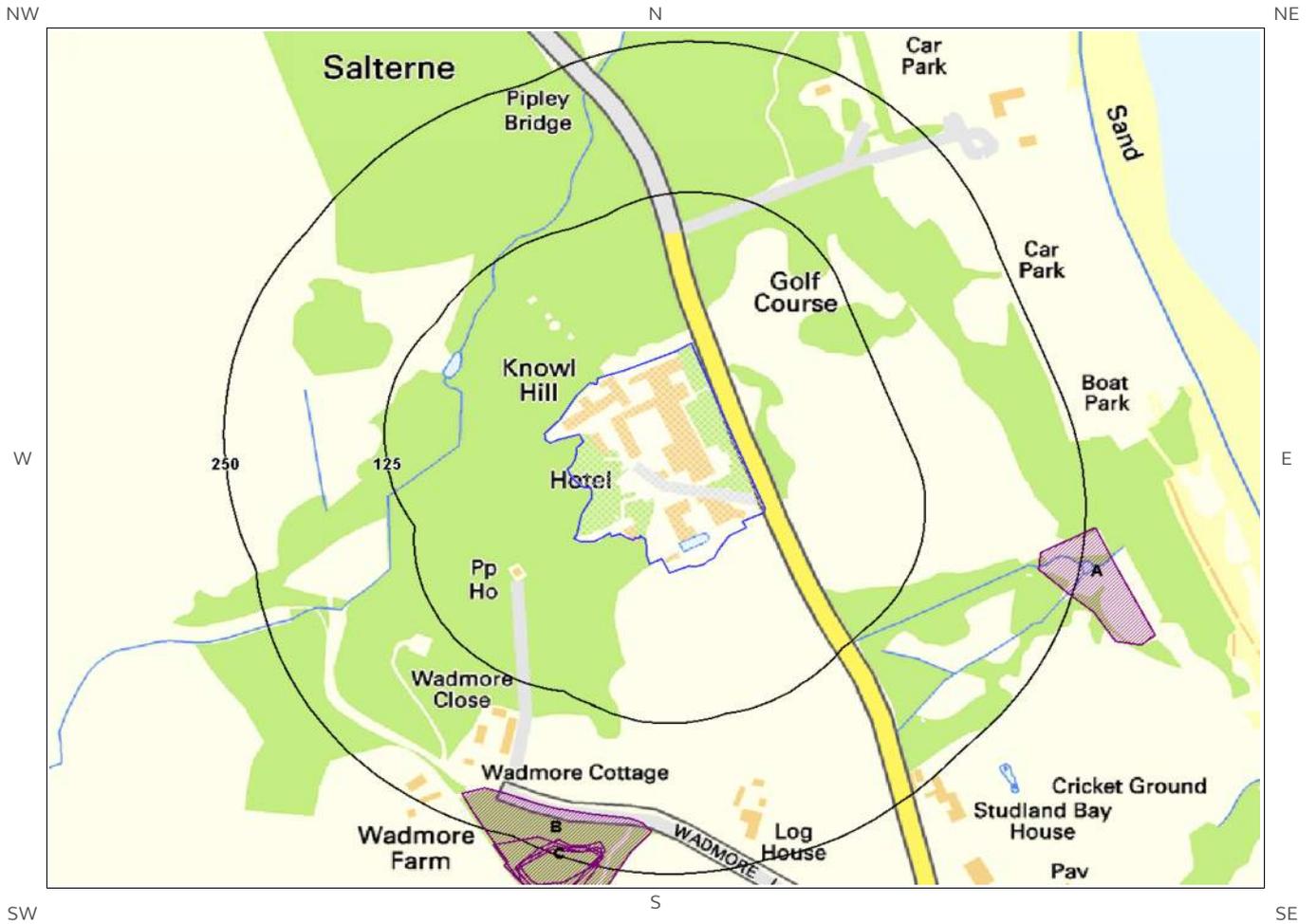
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is not in a Radon Affected Area, as less than 1% of properties are above the Action Level.

The radon data in this report is supplied by the BGS/Public Health England and is the definitive map of Radon Affected Areas in Great Britain and Northern Ireland. The dataset was created using long-term radon measurements in over 479,000 homes across Great Britain and 23,000 homes across Northern Ireland, combined with geological data. The dataset is considered accurate to 50m to allow for the margin of error in geological lines, and the findings of this report supercede any answer given in the less accurate Indicative Atlas of Radon in Great Britain, which simplifies the data to give the highest risk within any given 1km grid square. As such, the radon atlas is considered indicative, whereas the data given in this report is considered definitive.

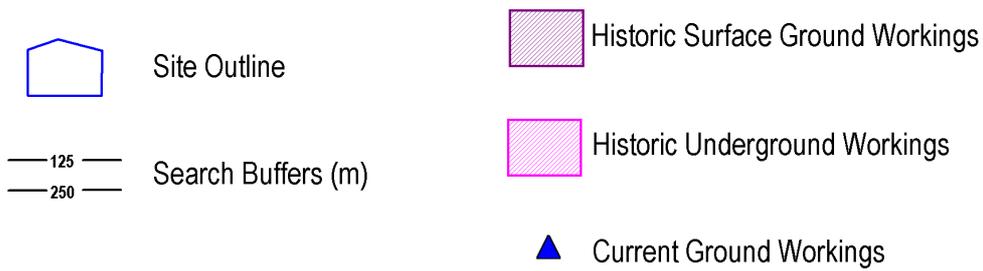
3.2 Radon Protection

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.

* ? 7 8#/



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



* ? 7

*; \$. (#\$? 7 # 1 (8 \$. 6#//

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

	# \$ 98:	\$			#
1B	206.0	S	403008 82950	Brick Works	1900
2A	218.0	E	403429 83173	Unspecified Ground Workings	1963
3A	218.0	E	403429 83173	Unspecified Ground Workings	1985
4B	229.0	S	403012 82944	Unspecified Pit	1900
5C	235.0	S	403009 82935	Unspecified Pit	1938
6C	237.0	S	403000 82939	Unspecified Pit	1963
7C	237.0	S	403010 82932	Unspecified Pit	1926

*;% \$. (#\$? 7 # 1 (8 \$. 6#//

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.

*;" - ? 7

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:

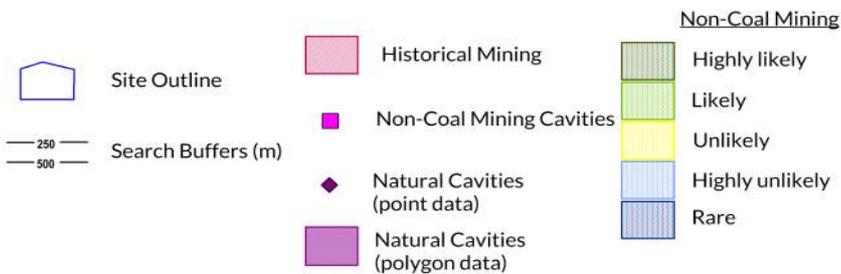
ID	# \$ 98:	\$		- 88 4 0 \$	0 #8	4/ (2 7	#
Not shown	470.0	SW	402810 82793	Sand	Studland	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	525.0	N	403311 83862	Sand	Salterne	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	750.0	SW	402736 82518	Sand	Black Down	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

, 6 = # \$ > # #.
-#1 8#/#



6 = # \$ #
#. -#1

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



, 6 = # \$ > # #.
-#1

;; \$#. 6

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.

;;% - #. 6

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.

;;" @ 0 . # . 8

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.

;;*)- #. 6

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? No

Database searched and no data found.

;;)- #. 6 -#1

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.

;;+ # #. -#1

This dataset provides information based on the Peter Brett Associates natural cavities database. The dataset is made up of points and polygons. Where polygons are used these represent an area in which it is expected the cavities could be found. It does not indicate that cavities are present everywhere within the polygon, and caution should be used in the interpretation of this data.

Are there any Natural Cavities within 1000m of the study site boundary? Yes

The following Natural Cavities information provided by Peter Brett Associates:

ID	# \$ 98:	\$	(\$ #. /	\$7 /	-#1 4 4/ # 83
1	766.0	SE	403800 82800	-	Chalk Group Sea Cave x 3

;;' = # \$

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

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

Database searched and no data found.

;;A 4/ 8 = # \$

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.

6

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.

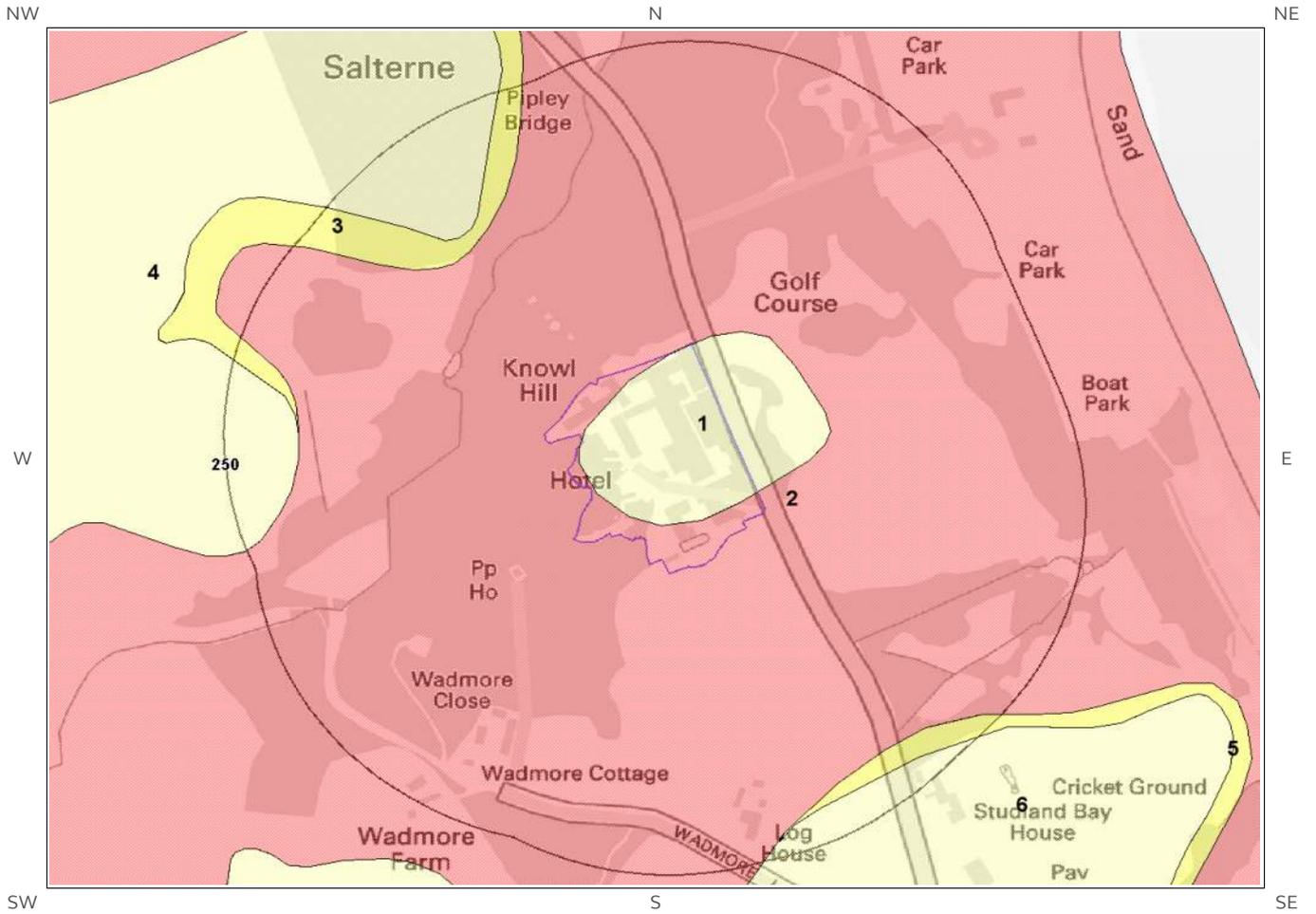
6

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

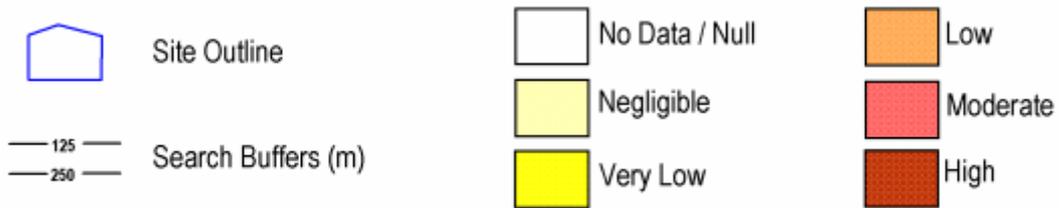
Are there any Clay Mining areas within 1000m of the study site boundary? No

Database searched and no data found.

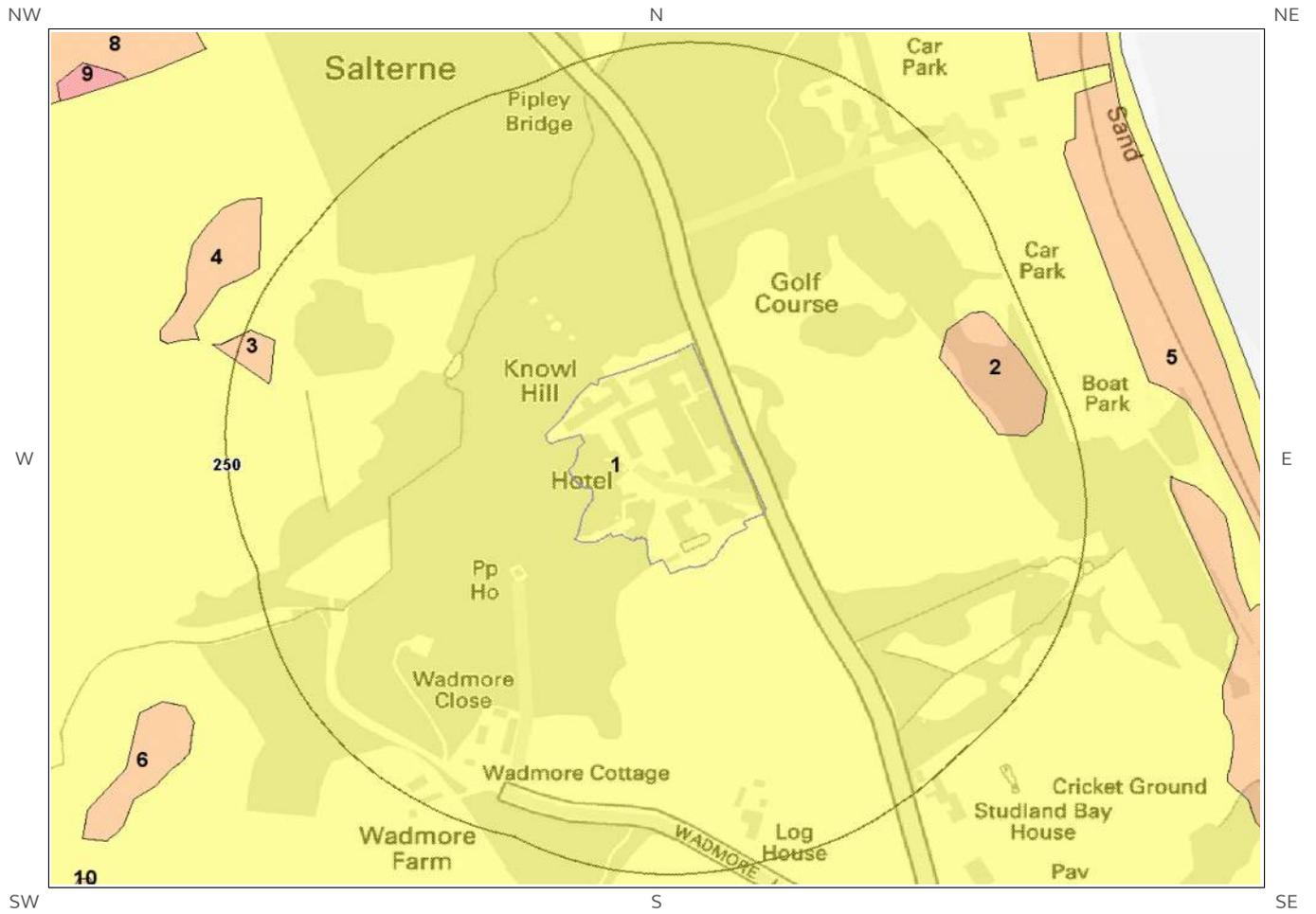
+ # #. 3 \$
+; 7) 2 .. -.#4 8#/



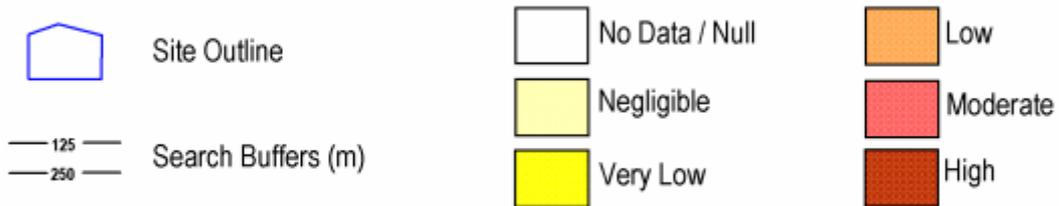
© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



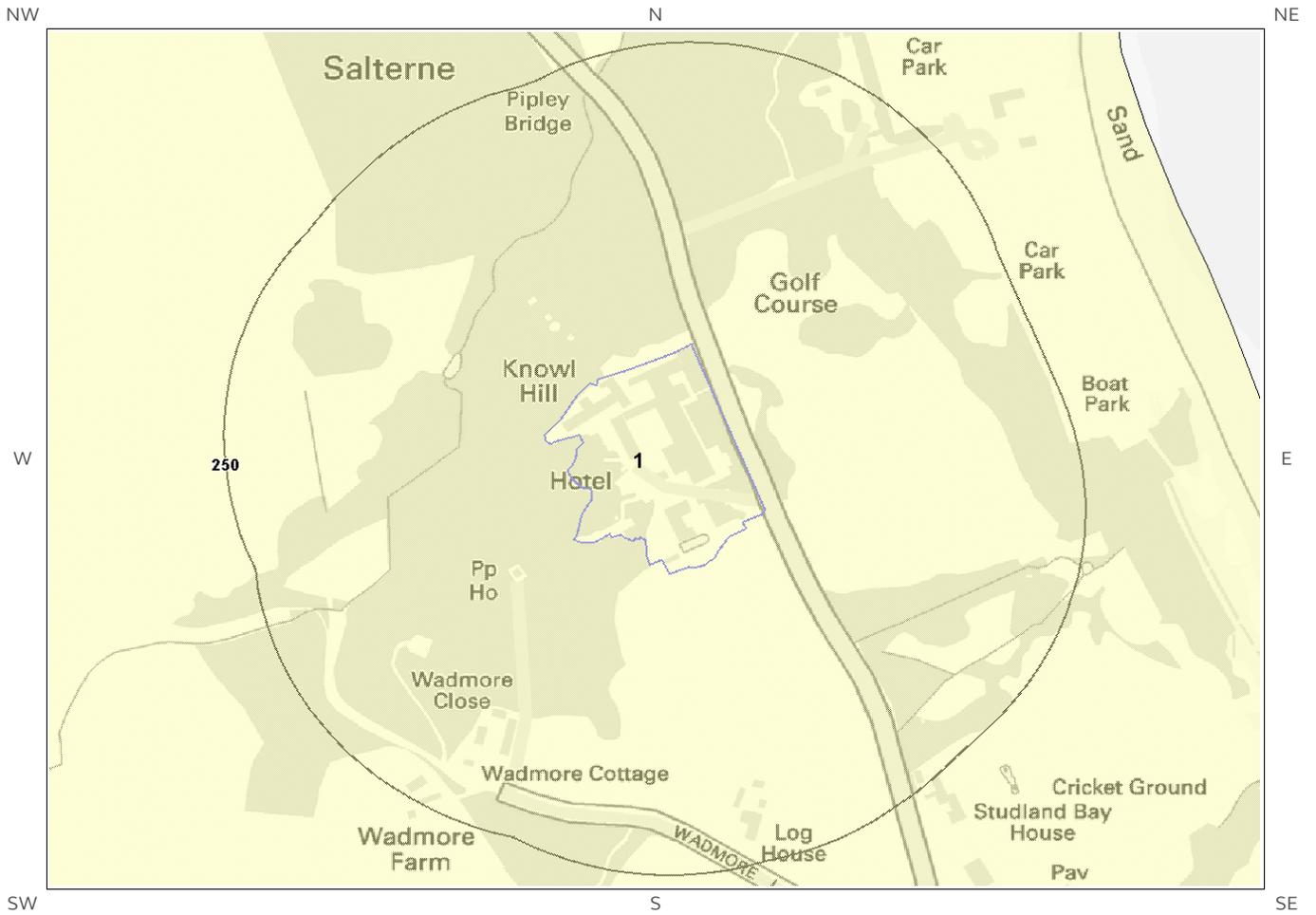
+;% # . 8#/



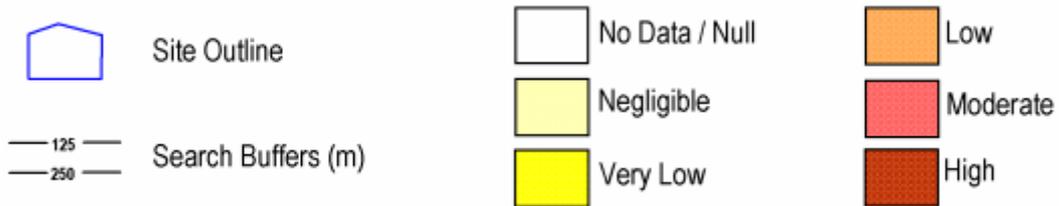
© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



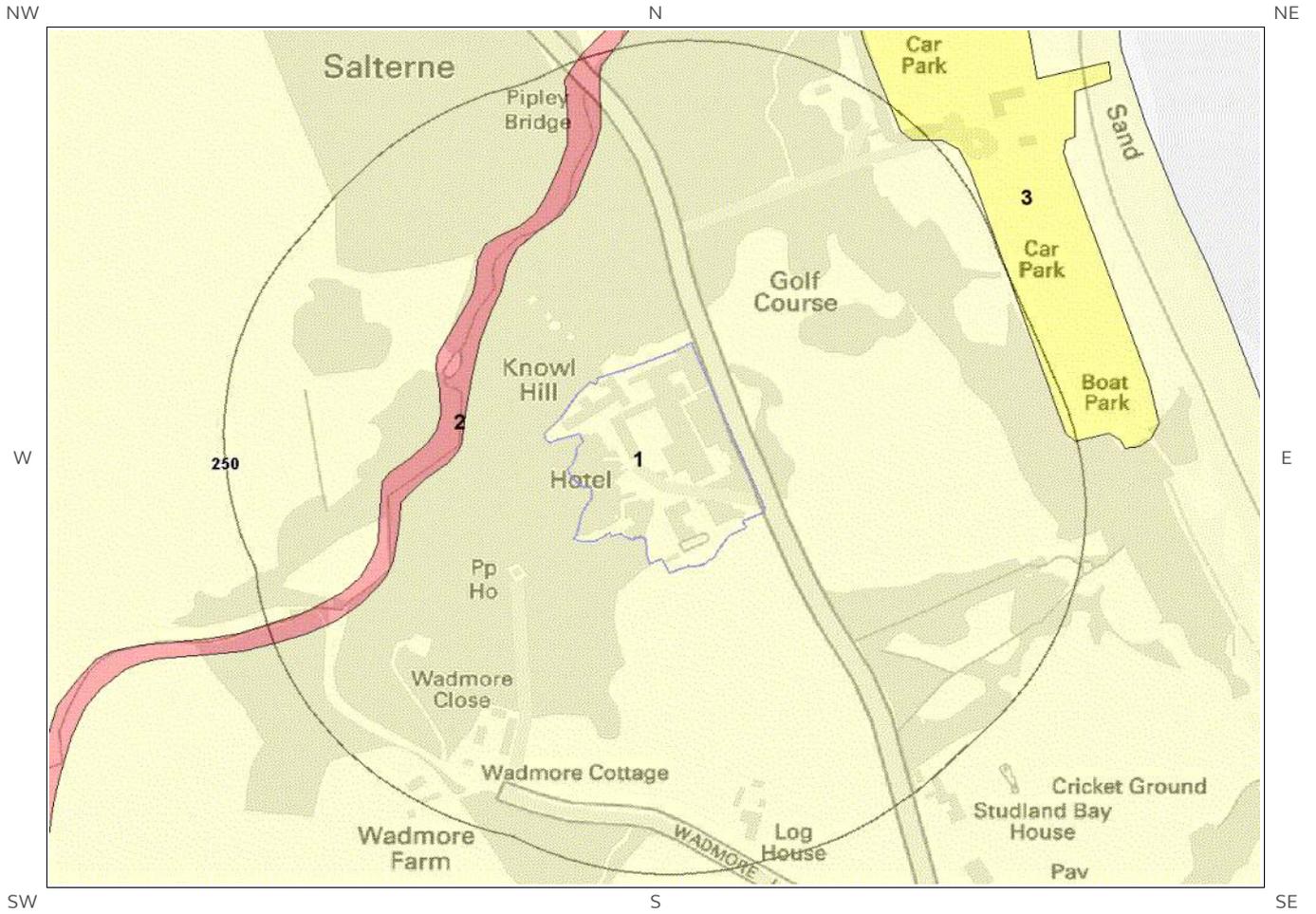
+, " . (. 3.
\$7 8#/



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.

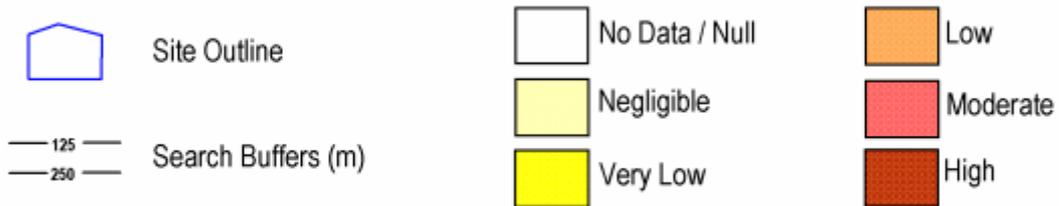


+;* - 8/ 3. / 8#/

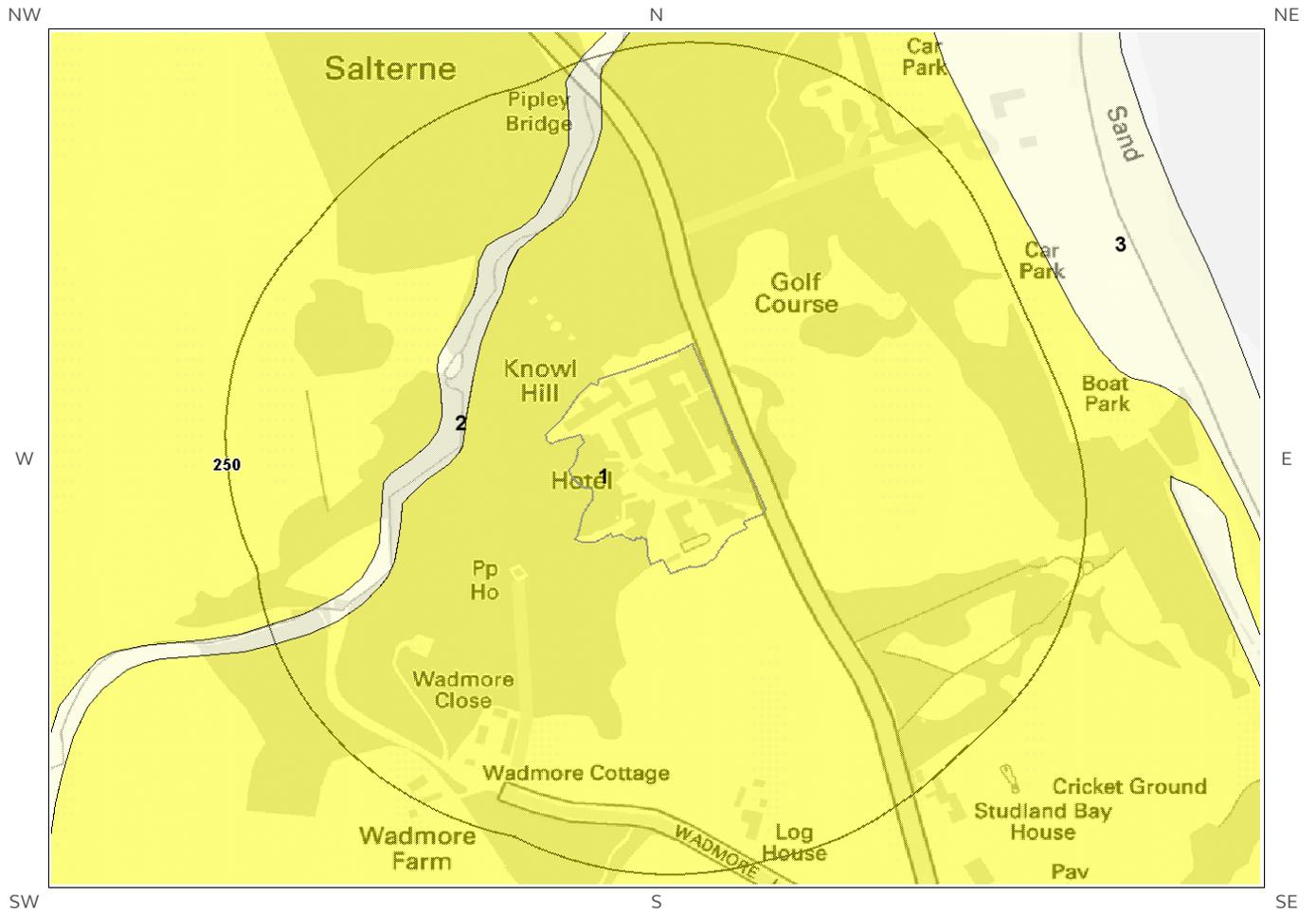


- 8/ 3. /

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



+;, - ..#/ 3. / 8#/

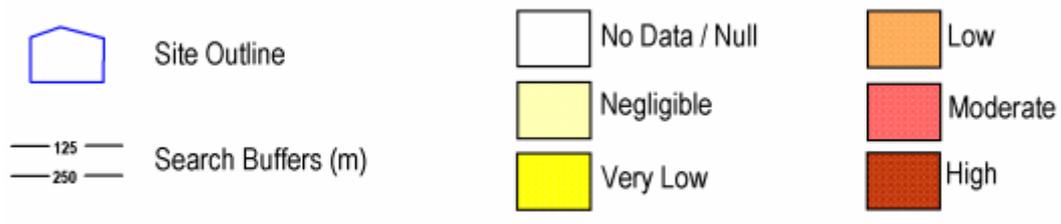
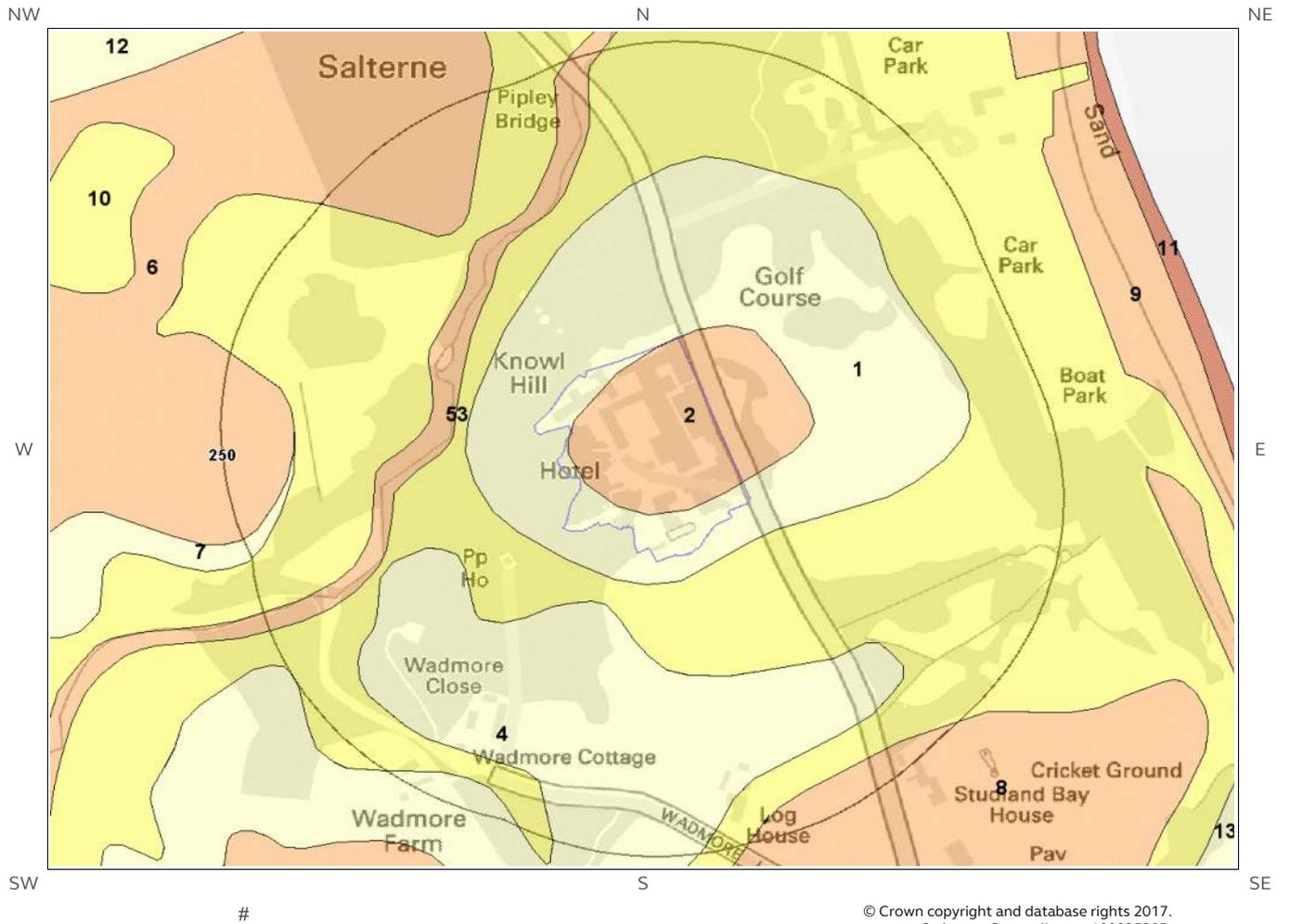


- ..#/ 3. /

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



+;+ # 8#/



+ # #. 3 \$

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? Moderate

7) 2 .. -.#4

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

#	\$	\$	#B#	#	#
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		Moderate	Ground conditions predominantly high plasticity. Do not plant or remove trees or shrubs near to buildings without expert advice about their effect and management. 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 probable increase in construction cost to reduce potential shrink-swell problems. For existing property, there is a probable increase in insurance risk during droughts or where vegetation with high moisture demands is present.

+,% # .

The following Landslides information provided by the British Geological Survey:

#	\$	\$	#B#	#	#
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

+, " (.3. \$7

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

#	\$	\$	#B#	#	#
98:					
1	0.0	On Site		Negligible	Soluble rocks are present, but unlikely to cause problems except under exceptional conditions. No special actions required to avoid problems due to soluble rocks. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with soluble rocks.

+,* - 8/ 3. /

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

#	\$	\$	#B#	#	#
98:					
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.

+, - .#/ 3. /

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

#	\$	\$	#B#	#	#
98:					
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.

+,+ #

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

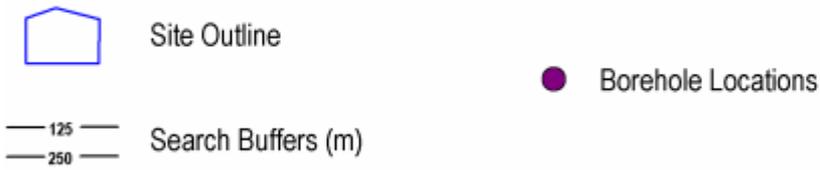
#	\$	\$	#B#	#	#
98:					
1	0.0	On Site		Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	0.0	On Site		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.

#	\$	\$	#B#	#	#
3	16.0	SE		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.
4	50.0	SW		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.

\$ 8#/



© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.



' . \$

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	# \$ 98:	\$	(\$..	. #8	
1	206.0	S	403200 83000	SZ08SW29	24.99	KNOWLE HOUSE HOTEL

The borehole records are available using the hyperlinks below: Please note that if the donor of the borehole record has requested the information be held as commercial-in-confidence, the additional data will be held separately by the BGS and a formal request must be made for its release.

#1: scans.bgs.ac.uk/sobi_scans/boreholes/451238

A 8# #7 .
- 8 4

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

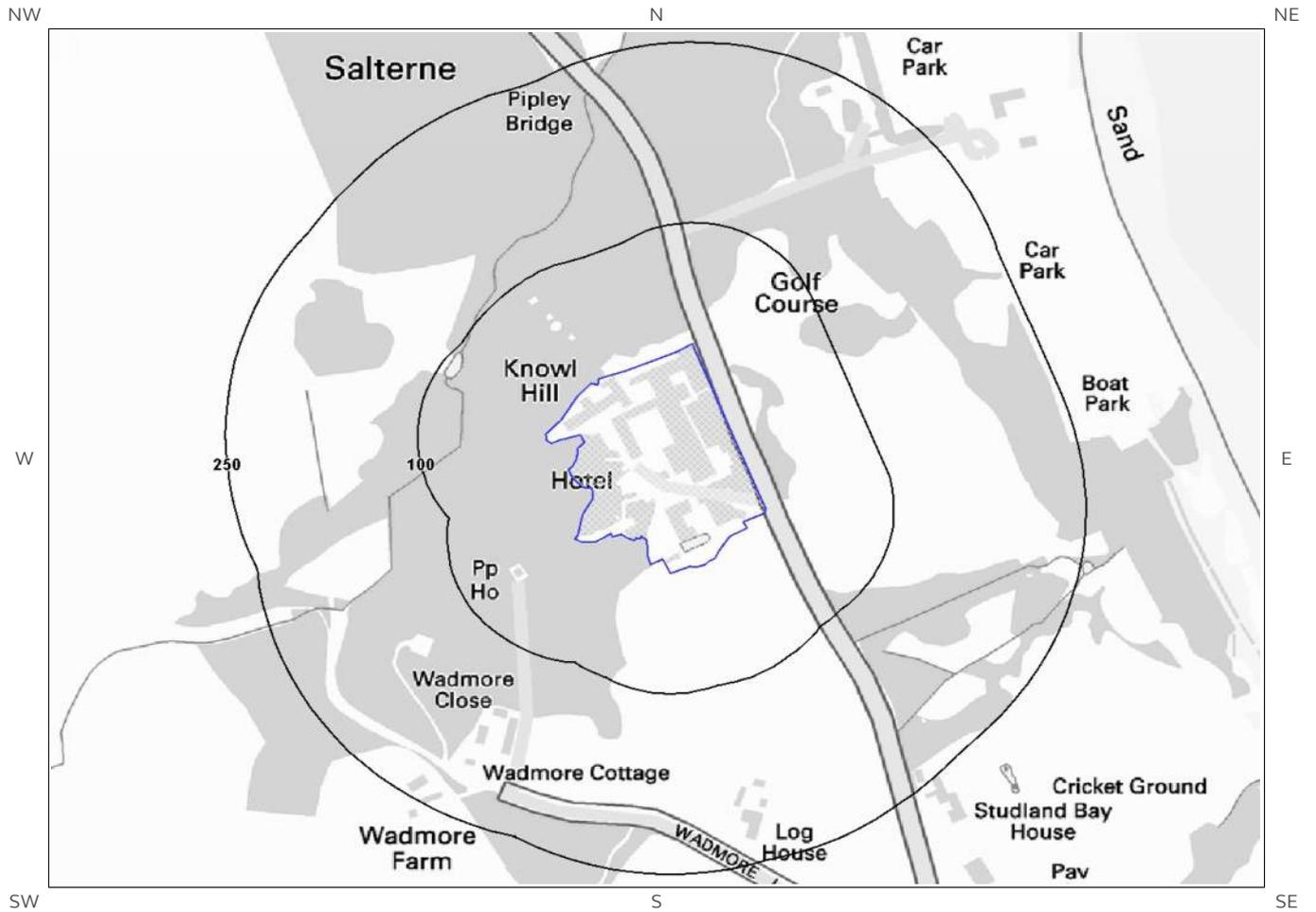
6

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

# \$ 98:	\$	#8/. 4/	\$ 9 :	-# 8 89- :	- 8 89- :	\$7 . 9 :	# 903:
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
0.0	On Site	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
16.0	SE	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
25.0	SW	Sediment	<15 mg/kg	<1.8 mg/kg	90 - 120 mg/kg	15 - 30 mg/kg	<100 mg/kg
50.0	SW	Sediment	15 - 25 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg

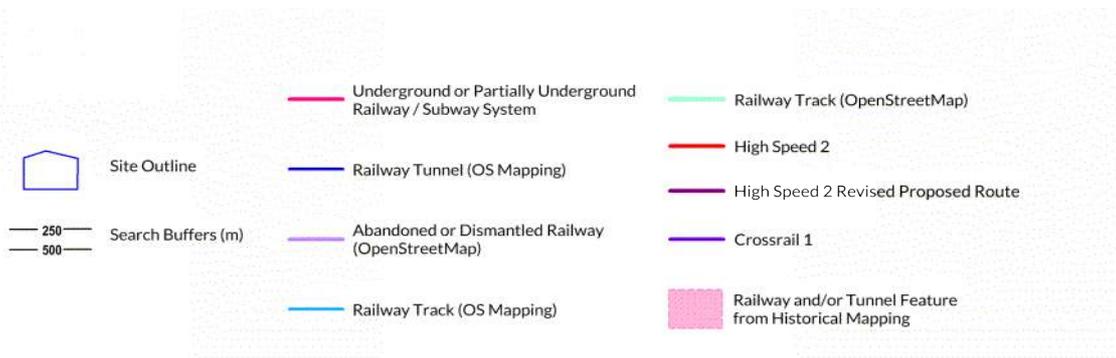
*As this data is based upon underlying 1:50,000 scale geological information, a 50m buffer has been added to the search radius.

! # .2#4 # . 8#/



.2#4 # .

© Crown copyright and database rights 2017.
Ordnance Survey license 100035207.
© OpenStreetMapContributors



! # .2#4 # .

!; .

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

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

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

Database searched and no data found.

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

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

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

Database searched and no data found.

!;% \$#. # .2#4 # . #

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

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

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

Database searched and no data found.

!;" \$#. # .2#4

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

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

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

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above

!;* \$ 1 # .2#4

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

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

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

Database searched and no data found.

Multiple sections of the same track may be listed in the detail above

!;, # .2#4 0 C \$

These datasets provide information on the location of large scale railway projects High Speed 2 and Crossrail 1 .

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

Is the study site within 500m of the route of the Crossrail 1 rail project? No

!"# \$ %

The route data has been digitised from publicly available maps by Groundsure. The route as provided relates to the Crossrail 1 project only, and does not include any details of the Crossrail 2 project, as final details of the route for Crossrail 2 are still under consultation.

Please note that this assessment takes account of both the original Phase 2b proposed route and the amended route proposed in 2016. As the Phase 2b route is still under consultation, Groundsure are providing information on both options until the final route is formally confirmed. Practitioners should take account of this uncertainty when advising clients.

- # \$ # .

./ &A***;!&&&
(D ;\$ 8



. \$#. 1 4 E
Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email: E D3 ;#\$; 7
Web:222;3 ;#\$; 7

BGS Geological Hazards Reports and general geological enquiries



4/ 8
British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX



- #. 4
200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
222;\$ #: 1; 7



0 3. \$ #. .#
Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
/ FF222; 1; 7F 1 8 F # # F/3. \$) #.)
.#
Email: E D/ ; 1; 7
Main switchboard: 020 7654 8000



@ 0 . > . 8 8
Harris and Pearson Building, Brettel Lane
Brierley Hill, West Midlands
DY5 3LH
Tel: +44 (0) 1384 262 000
Email: E ; DC/3;\$; 7
Website: 222;C/3;\$; 7



\$ 1 4
Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505
/ FF222; # \$ 1 4;\$; 7F



8#/ 0 -
Virginia Villas, High Street, Hartley Witney,
Hampshire RG27 8NW
Tel: 01252 845444
Website: / FF222; 8#/ ;\$ 8F



0 \$ #
Caversham Bridge House
Waterman Place
Reading
Berkshire RG1 8DN
Tel: +44 (0)118 950 0761 E-mail: # D/3#;\$; 7
Website: / FF222;/ 3 ;\$ 8F 8



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.

8 # -

Groundsure's Terms and Conditions can be viewed online at this link:

/ FF222; ;\$ 8F 8)#)\$) /)%& +F

Appendix B

Historic Map Extracts

Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

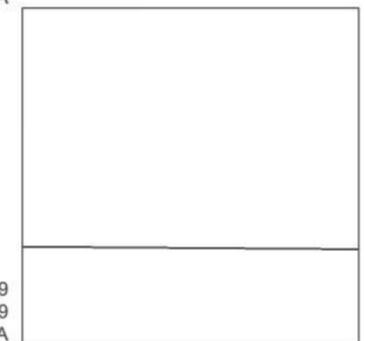
Map date: 1889

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1889
 Revised 1889
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1889
 Revised 1889
 Edition N/A
 Copyright N/A
 Levelled N/A

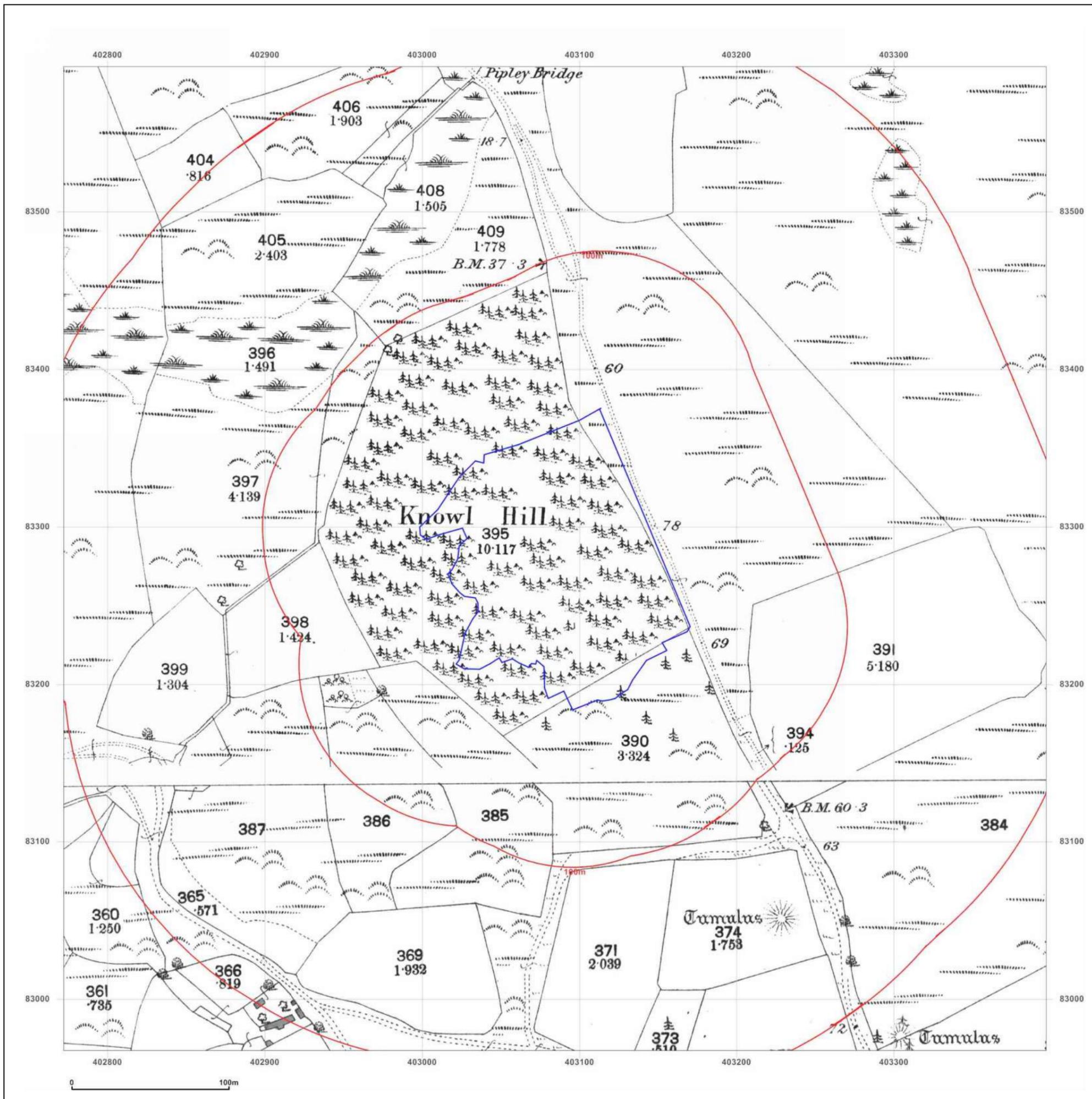


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

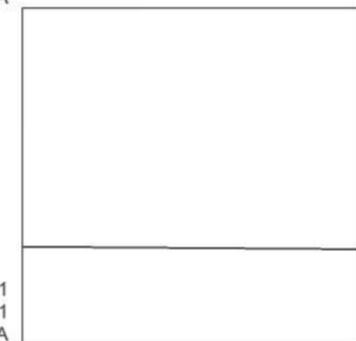
Map date: 1901

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1901
 Revised 1901
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1901
 Revised 1901
 Edition N/A
 Copyright N/A
 Levelled N/A

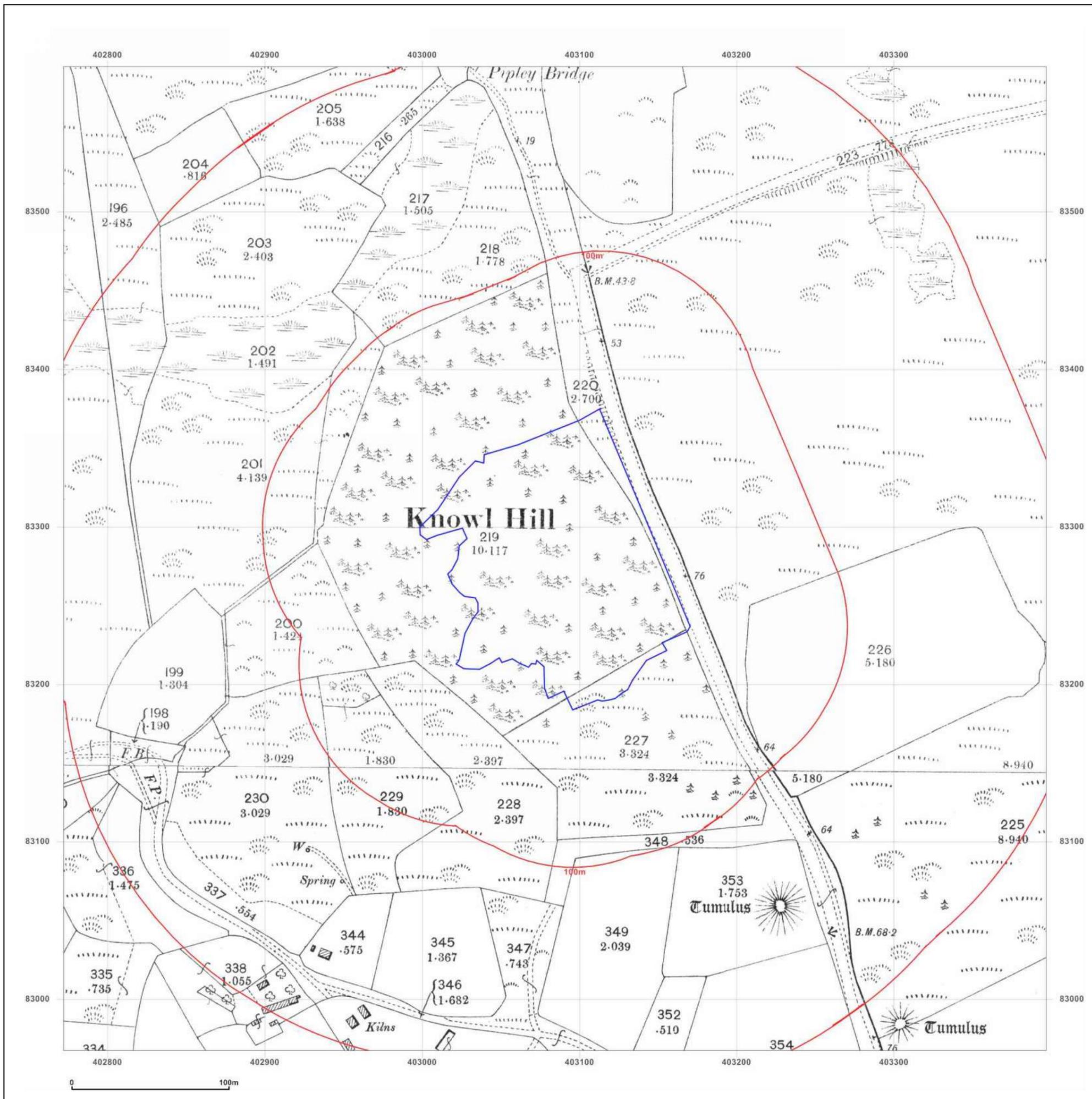


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

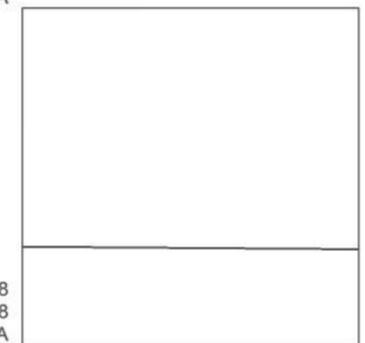
Map date: 1925-1928

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1925
 Revised 1925
 Edition N/A
 Copyright N/A
 Levelled N/A



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

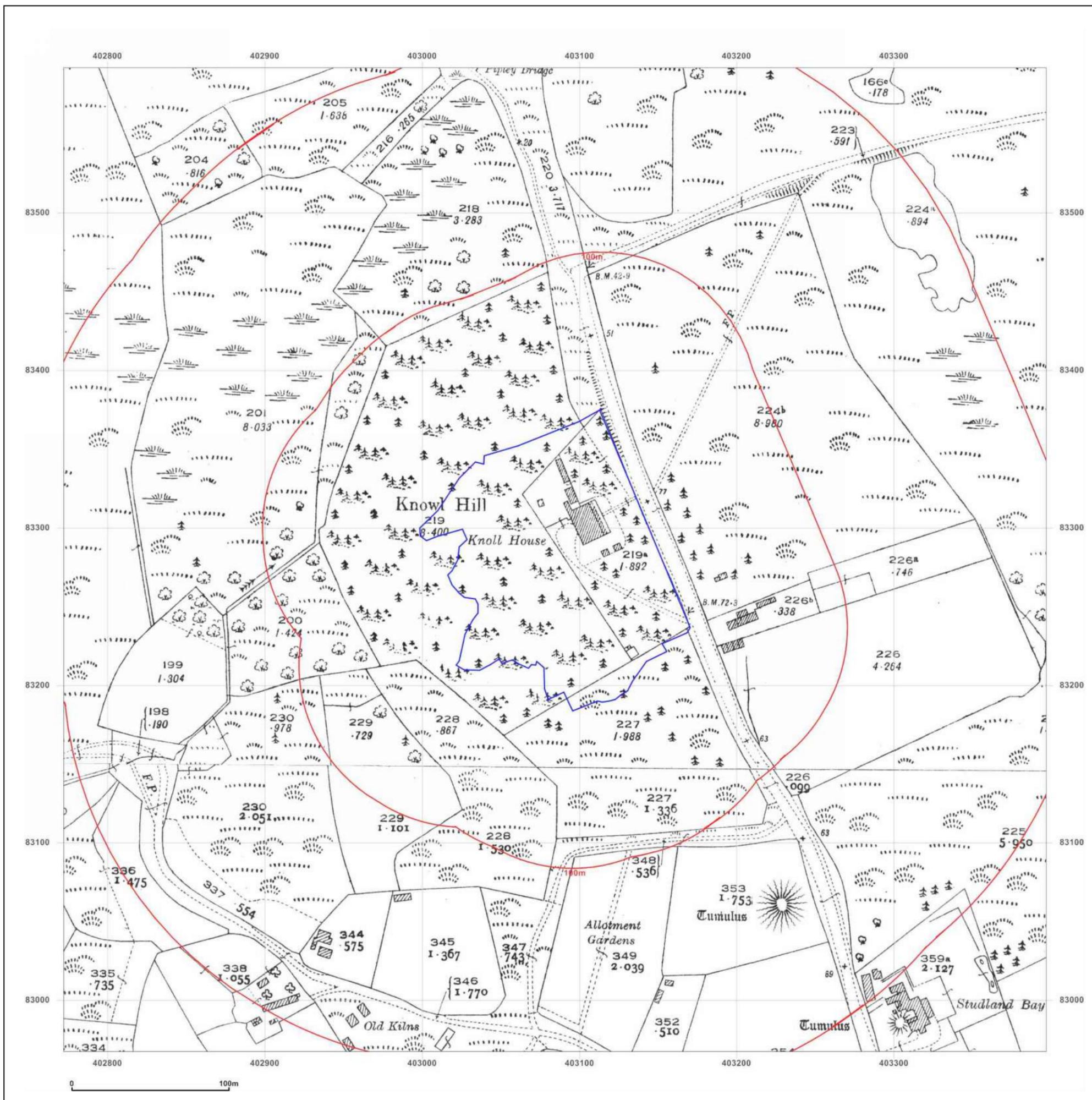


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1954

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1954
 Revised 1954
 Edition N/A
 Copyright N/A
 Levelled 1951

Surveyed 1954
 Revised 1954
 Edition N/A
 Copyright N/A
 Levelled 1951

Surveyed 1954
 Revised 1954
 Edition N/A
 Copyright N/A
 Levelled 1951

Surveyed 1954
 Revised 1954
 Edition N/A
 Copyright N/A
 Levelled 1951

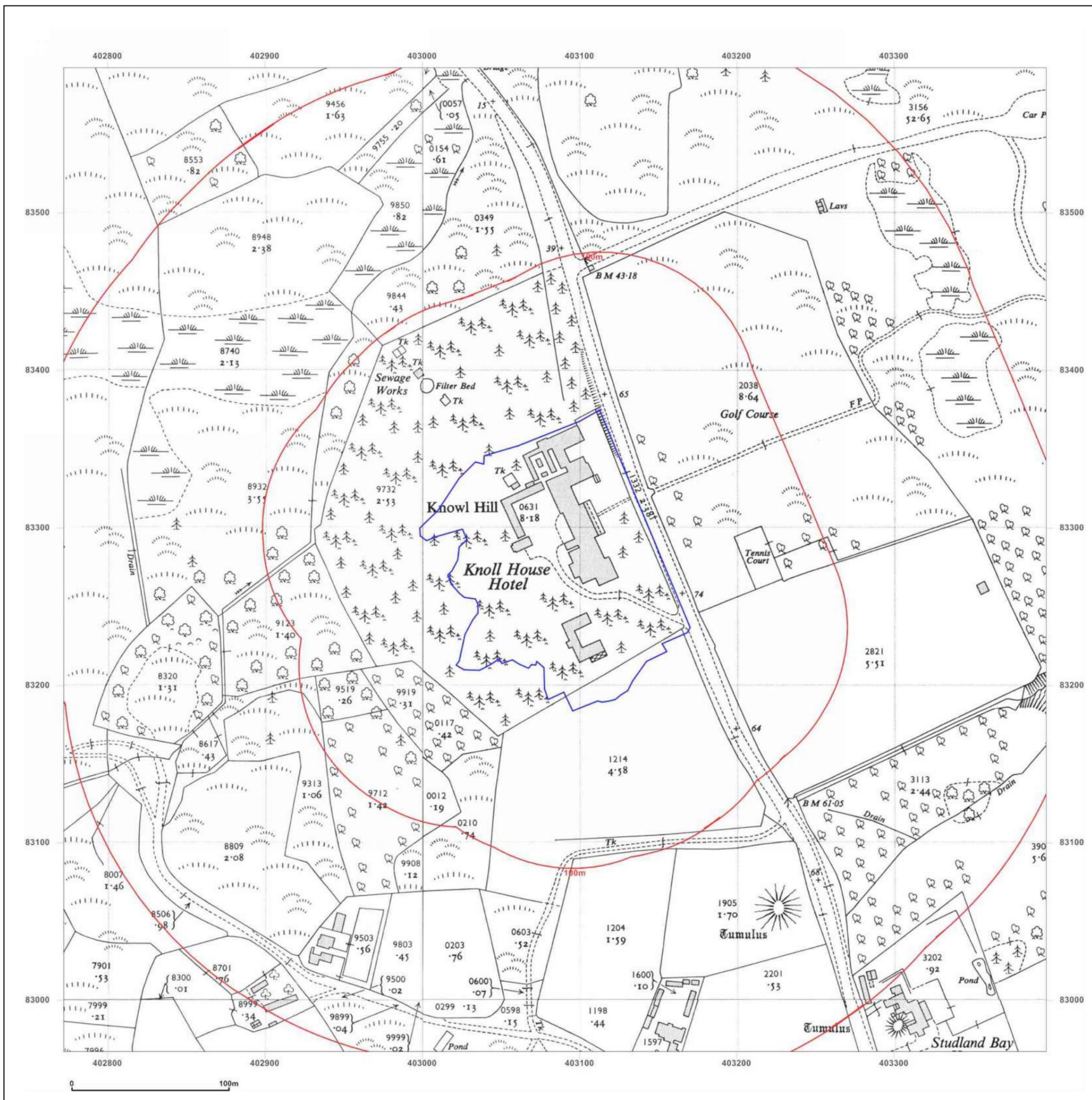


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1955

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

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

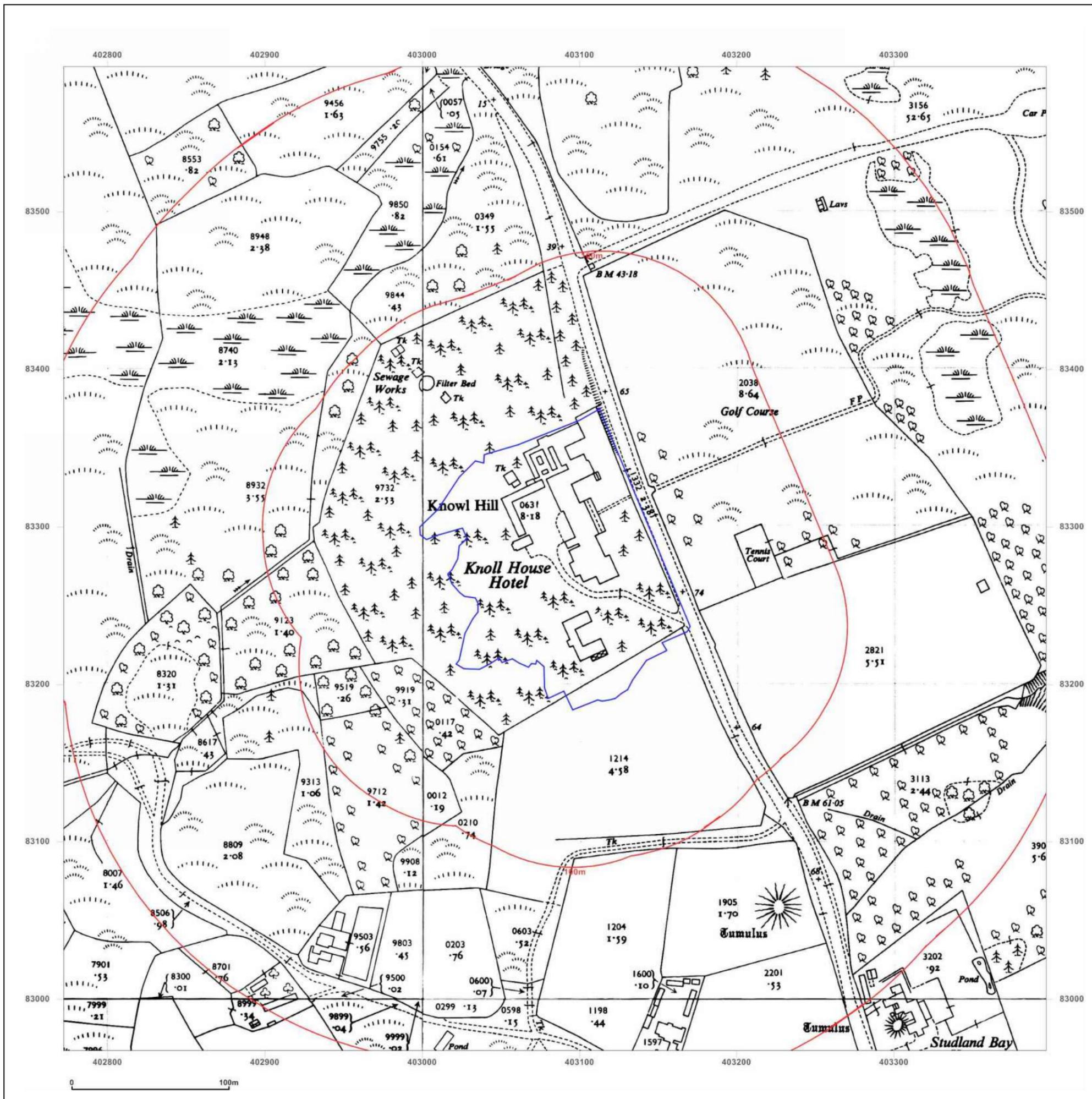


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1985-1986

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

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

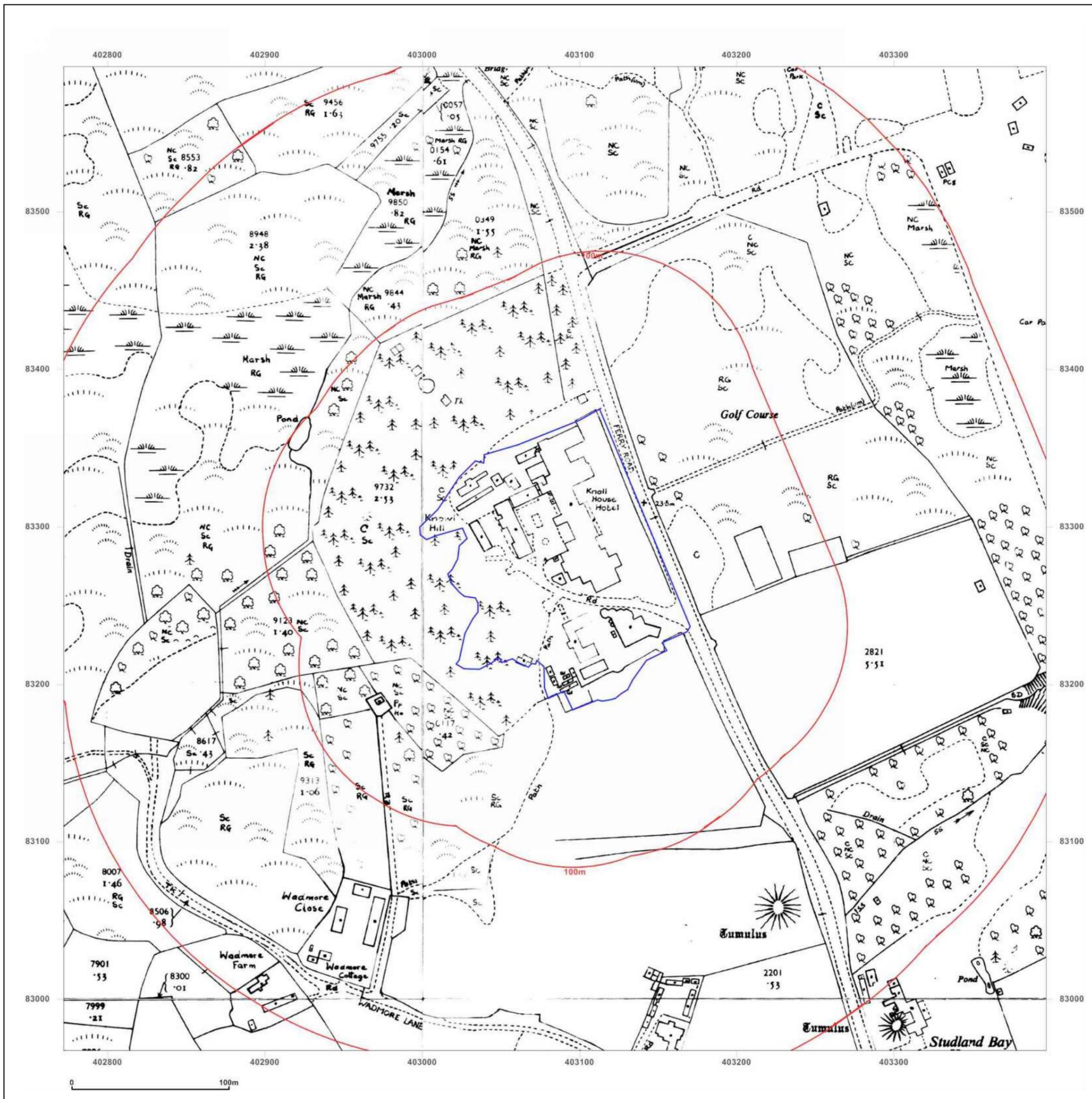


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1985-1986

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1958
 Revised 1985
 Edition N/A
 Copyright 1985
 Levelled 1958

Surveyed 1958
 Revised 1986
 Edition N/A
 Copyright 1986
 Levelled 1958

Surveyed 1958
 Revised 1985
 Edition N/A
 Copyright 1985
 Levelled 1958

Surveyed 1958
 Revised 1986
 Edition N/A
 Copyright 1986
 Levelled 1958

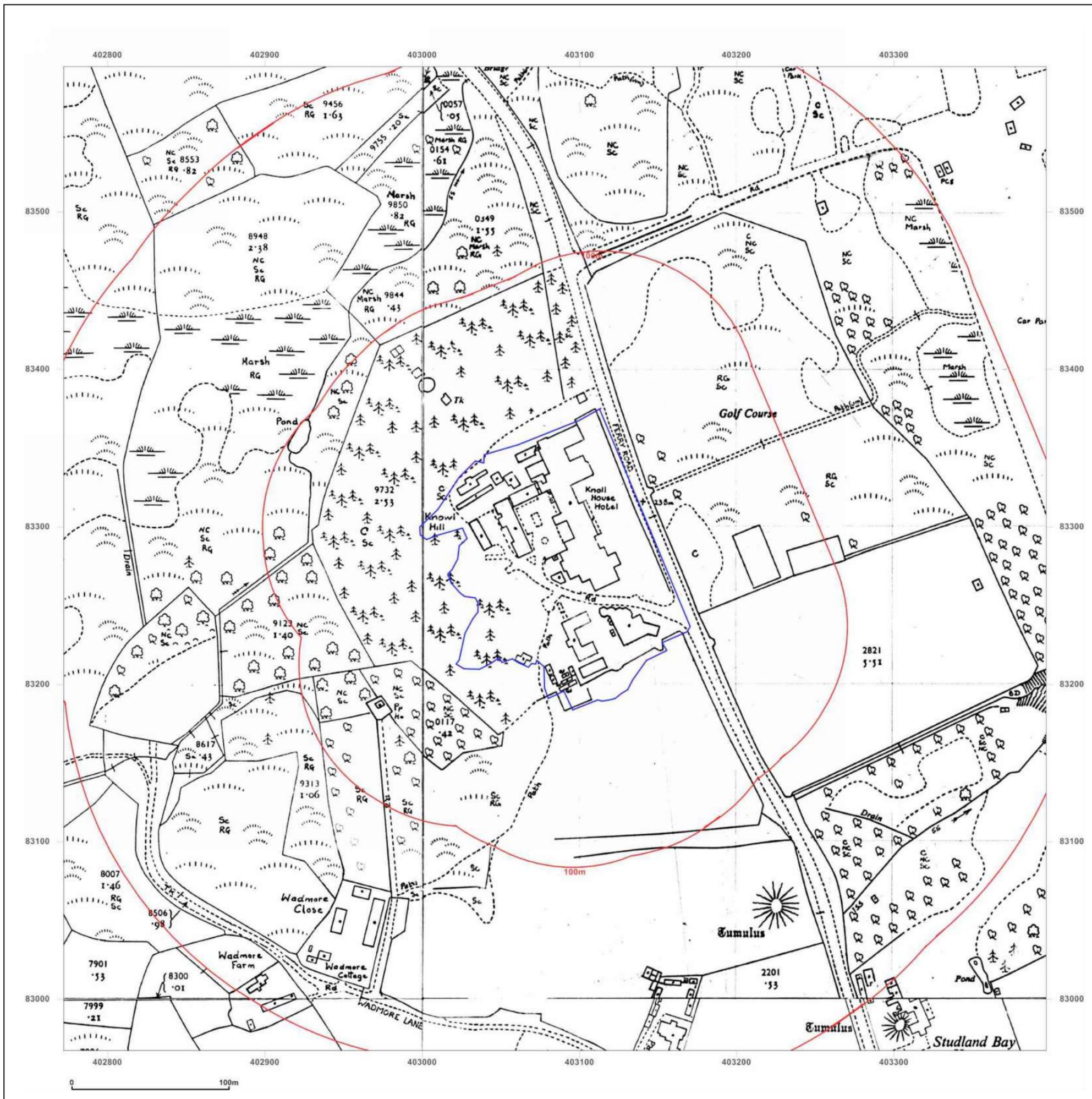


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1995

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1995
 Revised 1995
 Edition N/A
 Copyright N/A
 Levelled N/A

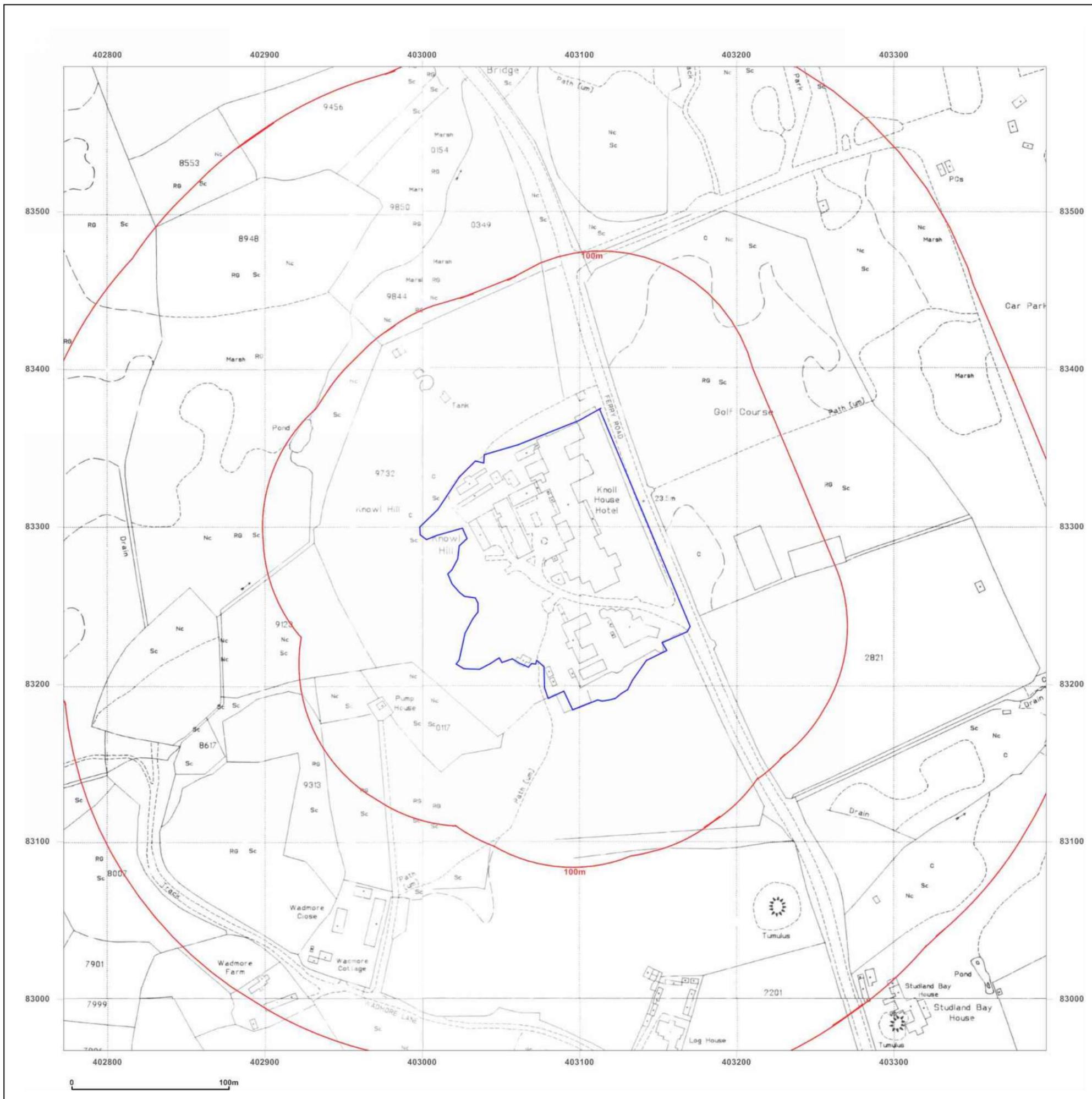


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

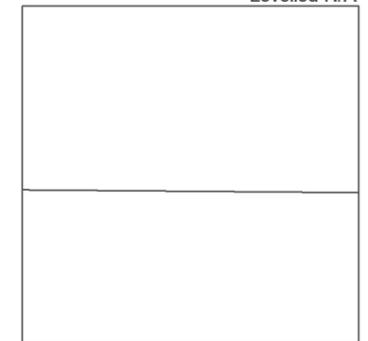
Map date: 1890

Scale: 1:10,560

Printed at: 1:10,560



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

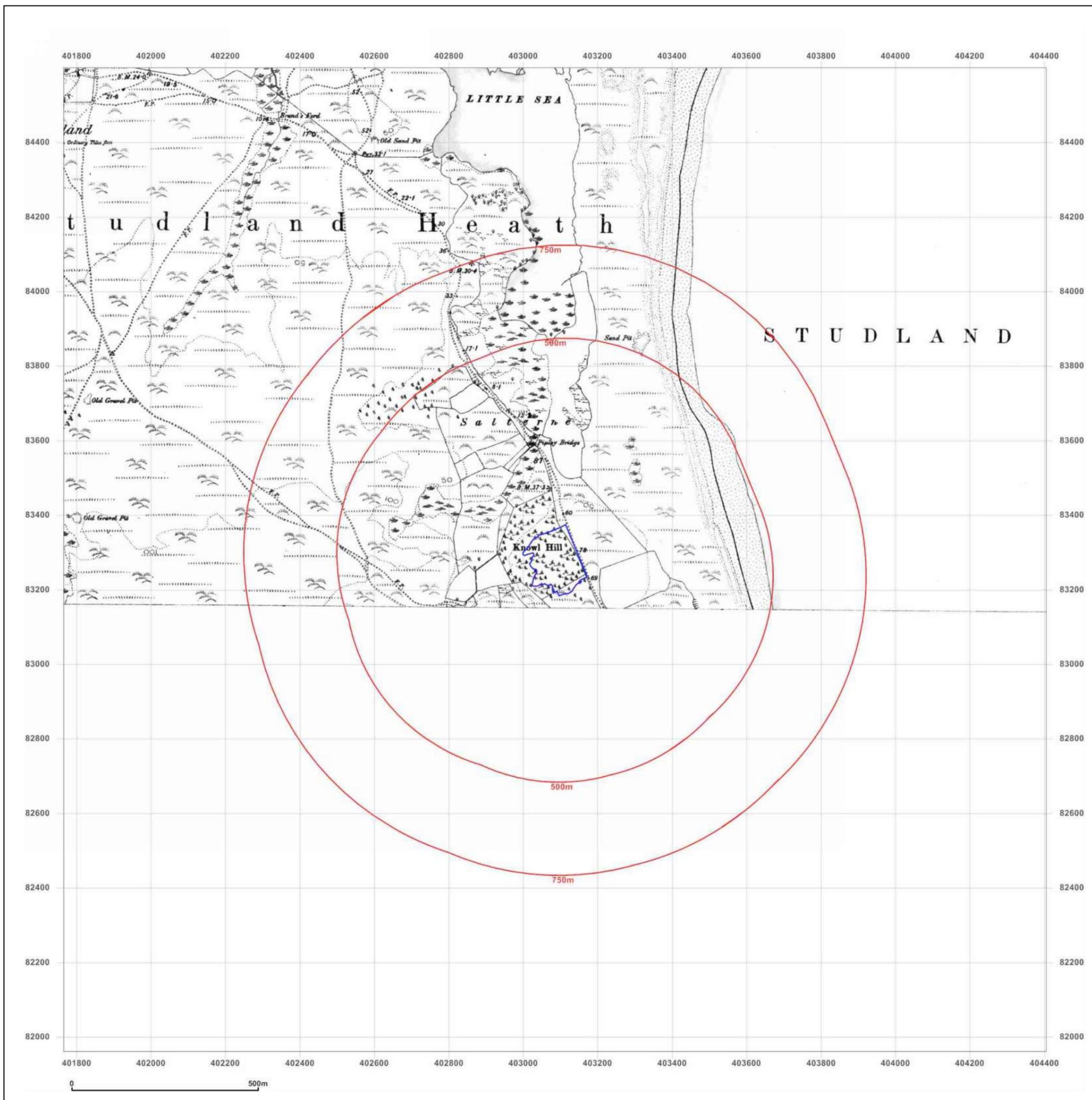


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

Map date: 1900

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
 Revised 1900
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1886
 Revised 1900
 Edition N/A
 Copyright N/A
 Levelled N/A

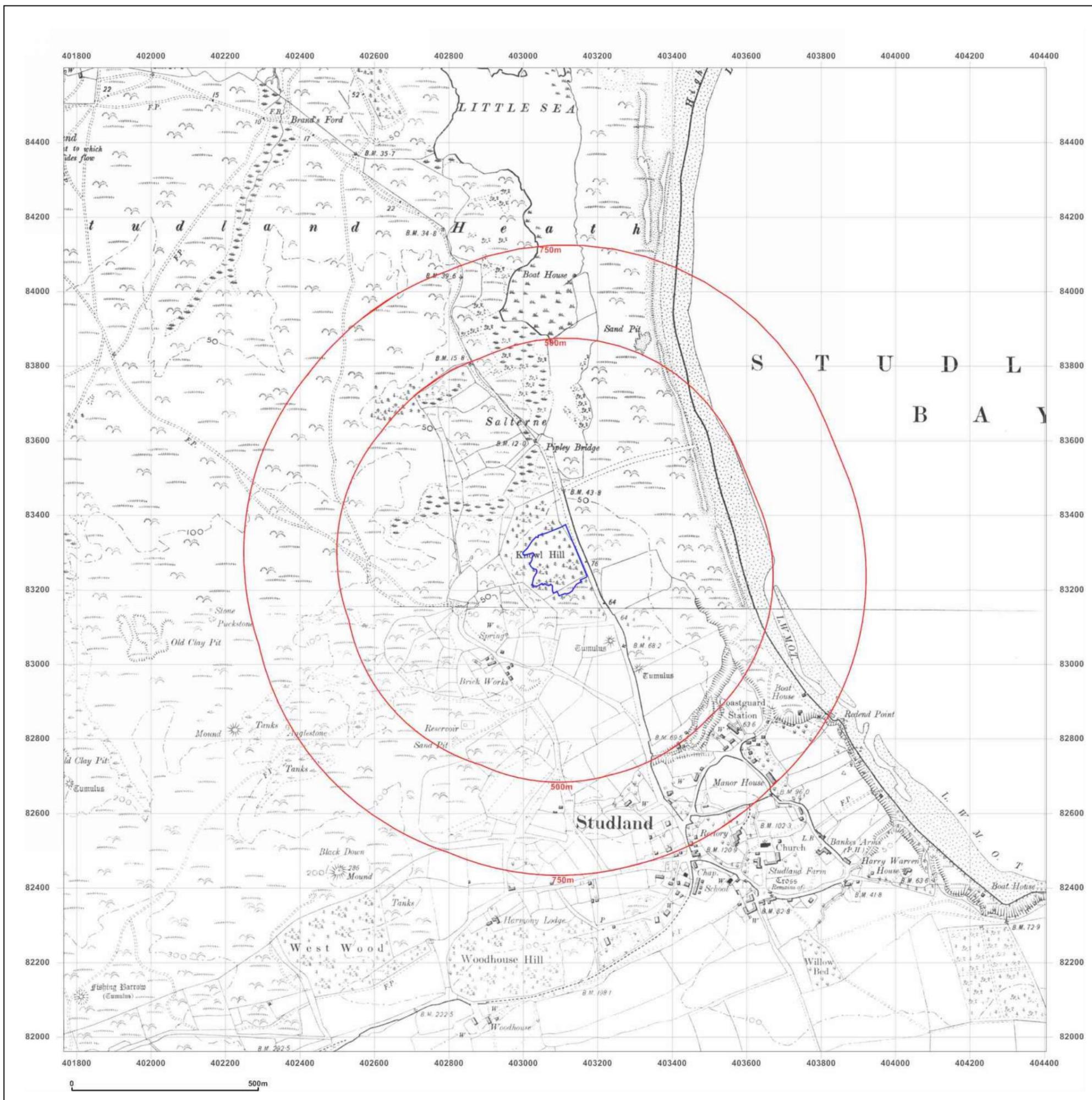


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

Map date: 1925-1926

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
 Revised 1925
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1886
 Revised 1926
 Edition N/A
 Copyright N/A
 Levelled N/A

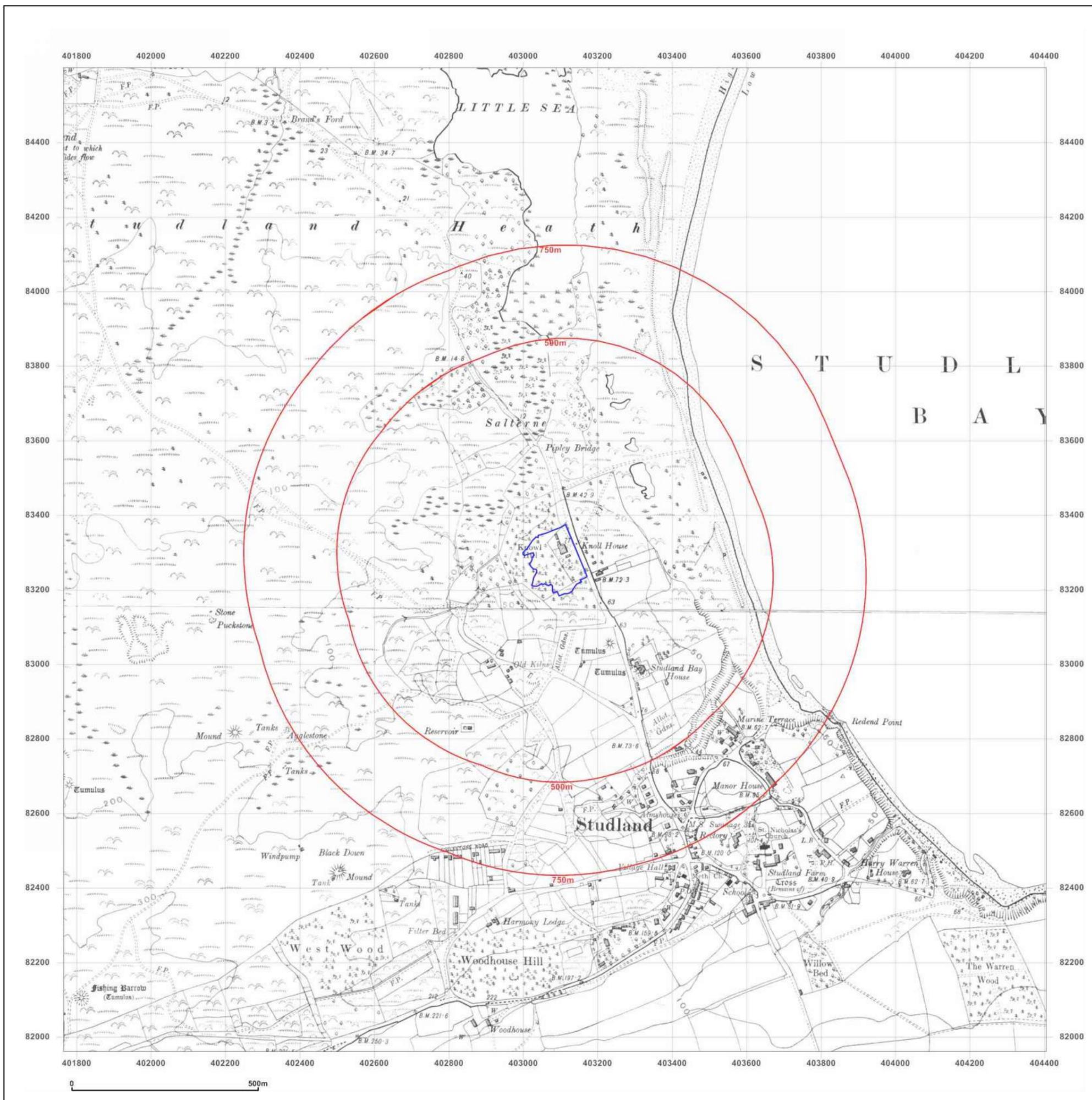


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

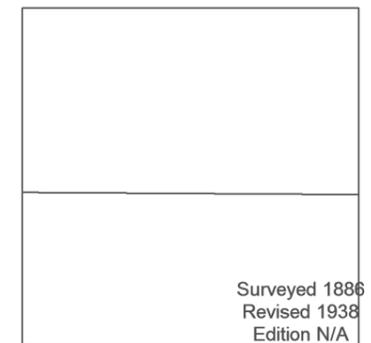
Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: County Series

Map date: 1938

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1886
 Revised 1938
 Edition N/A
 Copyright N/A
 Levelled N/A

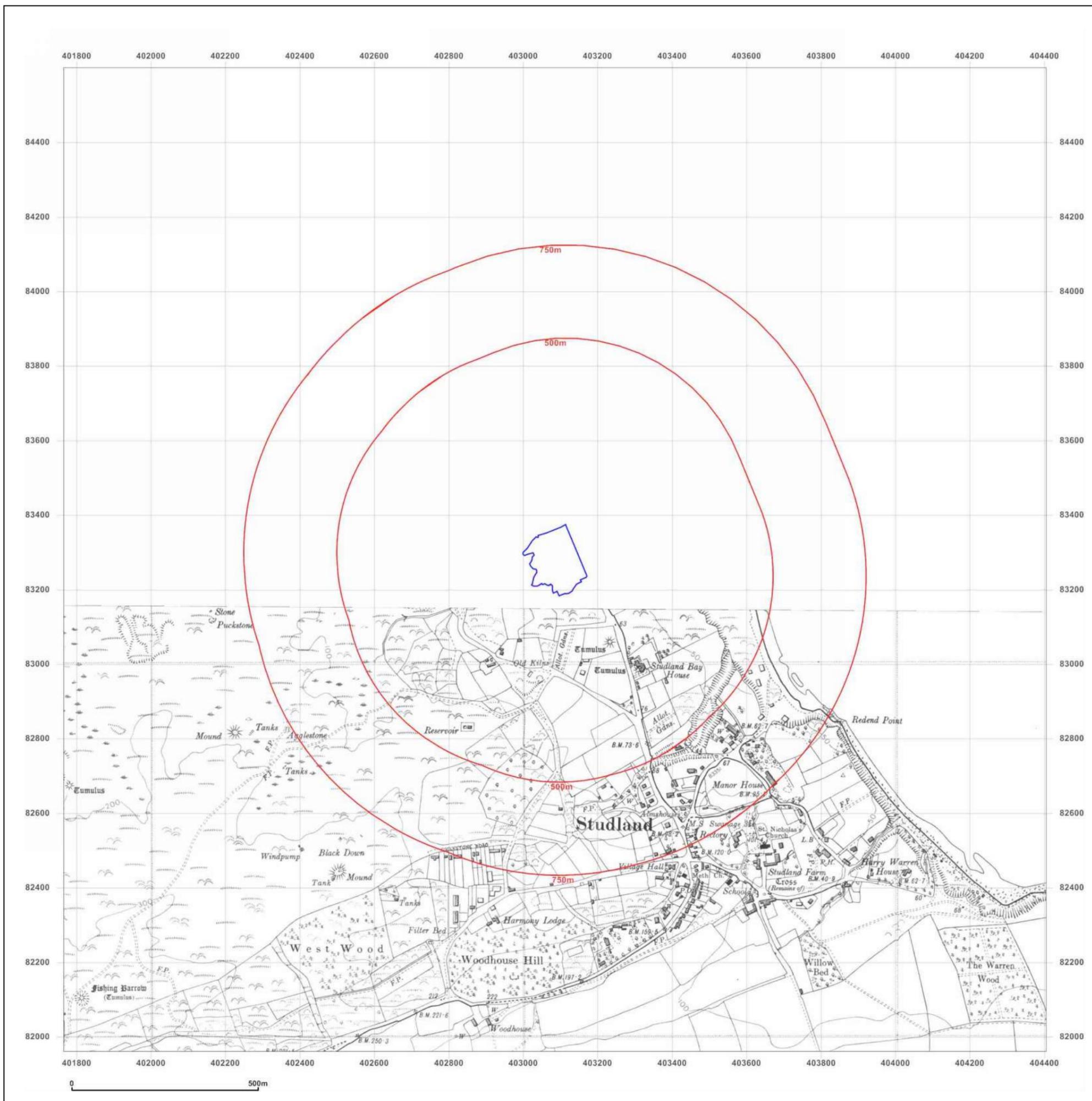


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: Provisional

Map date: 1963

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1963
 Revised 1963
 Edition N/A
 Copyright N/A
 Levelled N/A

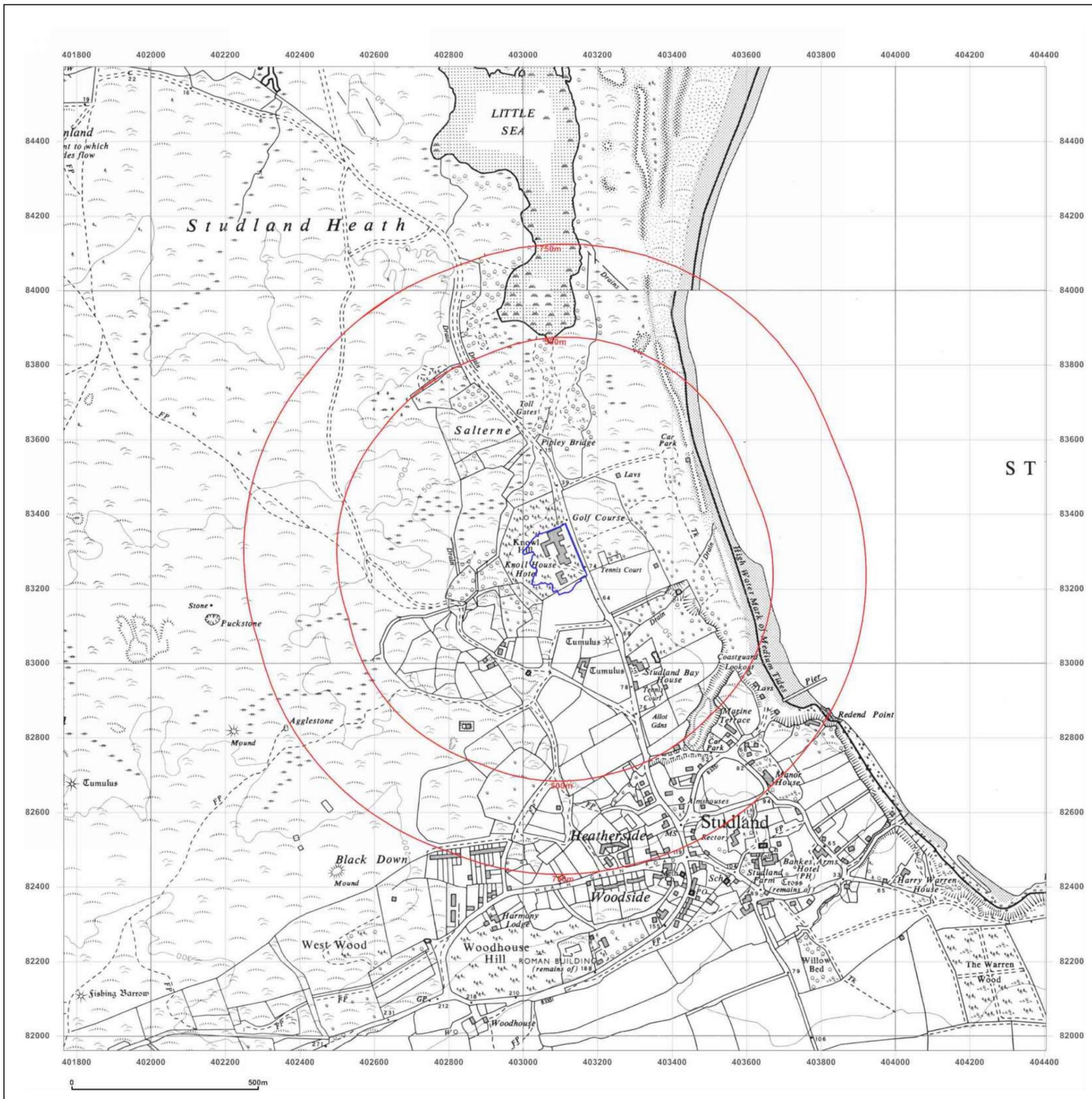


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 1985

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1960
 Revised 1985
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

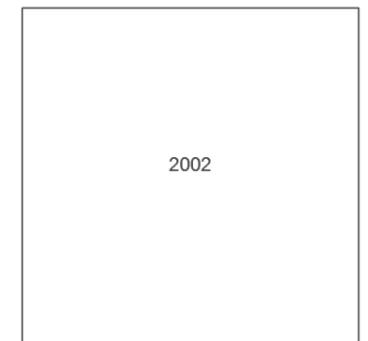
Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

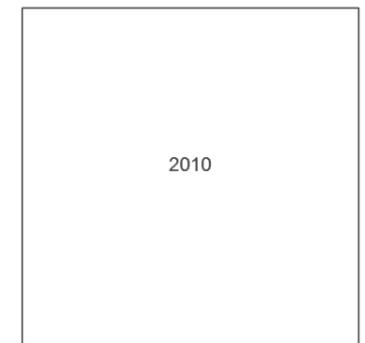
Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000

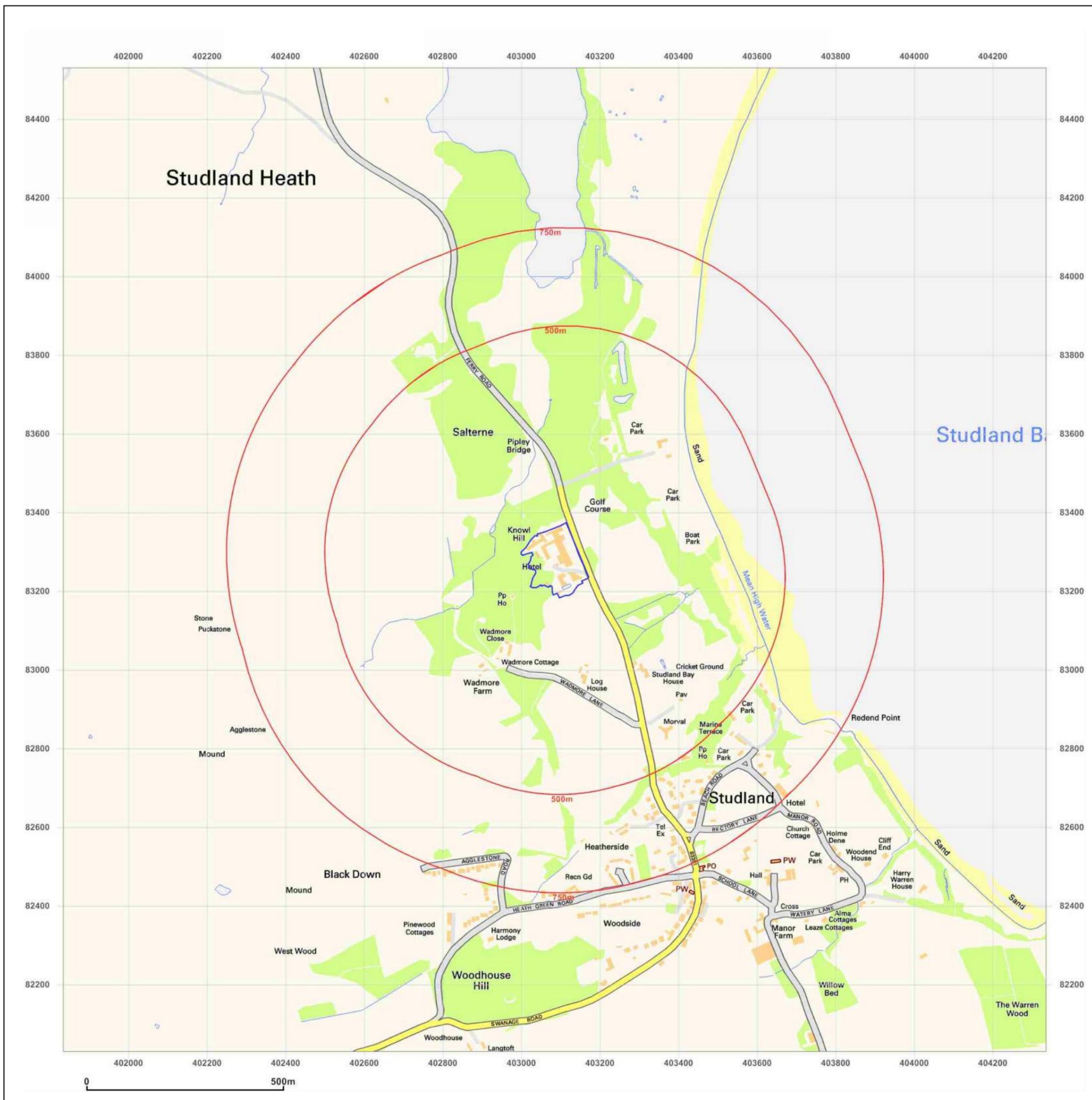


Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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



Site Details:

KNOLL HOUSE HOTEL, KNOLL HOUSE HOTEL, FERRY ROAD, STUDLAND, BH19 3AH

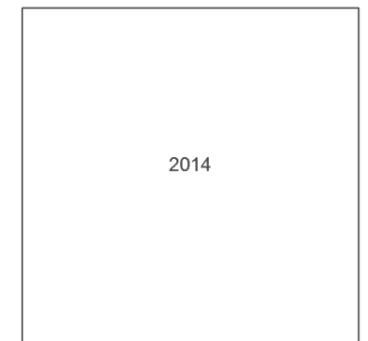
Client Ref: Knoll_House_Hotel
Report Ref: GS-4610506
Grid Ref: 403084, 83280

Map Name: National Grid

Map date: 2014

Scale: 1:10,000

Printed at: 1:10,000



Produced by
 Groundsure Insights
 T: 08444 159000
 E: info@groundsure.com
 W: www.groundsure.com

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 19 December 2017

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

