

OCEAN SQUARE, SAUNDERSFOOT HARBOUR

Phase I – Preliminary Risk Assessment of Land Quality/Desk Study

Report No. G40102/DS

February 2018

DOCUMENT CONTROL

Contract Name: Ocean Square, Saundersfoot
Contract Reference: G40102
Report Type: Phase I – Preliminary Risk Assessment of Land Quality/Desk Study
Report Reference: G40102/DS
Date of Report Production: February 2018
Client: Saundersfoot Harbour

Version:	Date:	Prepared by:	Checked by:	Approved by:
Draft Issue	13/02/18	J Phillips	P Darby	R McDermott
				
		Engineering Geologist B.Sc (Hons), FGS.	Senior Engineering Geologist B.Sc (Hons), MSc, FGS, CGeol.	Director B.Sc (Hons), MSc, FGS, CGeol.

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

Quantum Geotechnical Ltd, Ty Berwig, Bynea, Llanelli, SA14 9ST T: 01554 744880 E: enquiries@quantum-geotech.co.uk

CONTENTS

0.	FOREWORD	1
1.	INTRODUCTION	2
1.1	General	2
1.2	Objectives and Scope of Work.....	2
2.	SITE DETAIL.....	4
2.1	Site Description.....	4
2.2	Topography.....	4
2.3	Statutory Service Information.....	4
3.	GEOLOGY AND SITE HISTORY.....	5
3.1	Published Geology.....	5
3.2	Site History.....	5
4.	GEO-ENVIRONMENTAL APPRAISAL	7
4.1	General	7
4.2	Geolnsight® Report– Geology and Ground Stability	7
4.3	EnviroInsight® Report – Site Environmental Appraisal.....	11
5.	COAL MINING RISK ASSESSMENT	15
6.	CONCEPTUAL SITE MODEL.....	16
6.1	Legal Framework for Contaminated Land.....	16
6.2	Conceptual Site Model.....	16
7.	RECOMMEDATIONS AND CONCLUSIONS	19
7.1	Report Summary.....	19
7.2	Evaluation and Recommendations	20
8.	REFERENCES	21

APPENDICES

<i>APPENDIX I – SITE PLANS</i>	<i>I</i>
<i>APPENDIX II – HISTORICAL MAP COLLECTION</i>	<i>II</i>
<i>APPENDIX III – GROUNDSURE® GEOINSIGHT® REPORT</i>	<i>III</i>
<i>APPENDIX IV – GROUNDSURE® ENVIROINSIGHT® REPORT</i>	<i>IV</i>
<i>APPENDIX V – COAL AUTHORITY MINING REPORT</i>	<i>V</i>

0. FOREWORD

The following Conditions and Notes on Site Investigation Procedures should be read in conjunction with this report.

The recommendations made and opinions expressed in the report are based upon the study of historical Ordnance Survey maps of the area, GroundSure® GeoInsight and EnviroInsight reports, and geological maps where available.

Where other plan sources, borehole records from adjacent sites and published data are considered, these are specifically referred to in the text.

We regret that no responsibility can be held for conditions, which have not been revealed by the plan sources referred to. Whilst the report may suggest the likely configuration of strata below the site, this is only indicative and no liability can be accepted for its accuracy.

1. INTRODUCTION

1.1 General

Upon the instructions of Saundersfoot Harbour (Client), Quantum Geotechnical Ltd (QG) has been commissioned to undertake a Phase I Preliminary Risk Assessment of Land Quality/Desk Study in preparation for a proposed extension to an existing building and construction of associated commercial shops at Ocean Square, Saundersfoot Harbour.

This report presents an assessment of both geotechnical and environmental ground conditions to provide information on any potential risks or hazards that may be posed the development of the site.

The following sources of information have been used;

- Site specific GroundSure® GeoInsight® Report,
- Site specific GroundSure® EnviroInsight® Report,
- Ordnance Survey Historical Map Collection,
- Published Geological Map for the area including British Geological Survey (BGS) Sheet 228 'Haverfordwest' drift and solid editions at 1:63,360 scale.
- Coal Authority Mining Report
- Environment Agency Maps Website,
- British Geological Survey Website.

1.2 Objectives and Scope of Work

1.2.1 Objectives

The objectives of this report are to provide a preliminary assessment of the land quality and to assess the likely geotechnical and geo-environmental characteristics, which could have an impact on the residential development and long-term viability of the site.

The main objectives are:

- To provide an early indication of possible land quality issues that could impact on the development proposals,
- To provide a guide to decision making,
- Enable an adequate ground investigation design to be undertaken.

1.2.2 Scope of Work

The general Scope of Work undertaken in the preparation of this assessment was as follows:

- The collation of archival and recent information relating to the geological, geotechnical and geo-environmental conditions at the site,
- Undertake a review of the information obtained which included historical and recent survey maps, geological maps and environmental information,
- Provision of a preliminary appraisal of the data and identification of ground conditions that could potentially impact on the proposed development,
- Produce a conceptual model of the site detailing potential contamination source pathways and receptors.

General notes on the techniques employed by Quantum Geotechnical are described in the Foreword together with the limitations inherent in this type of work.

2. SITE DETAIL

2.1. Site Description

The proposed development site is located on land adjacent and including the BBQ building in Ocean Square, Saundersfoot Harbour. The nearest postcode is SA69 9ER.

Figure 1 below shows the location of the site with a plan provided by the Client presented in Appendix I.

Figure 1: Site Location Plan (Not to scale). Extract from Bing online maps ©.



The approximate National Grid Reference of the site is E: 213642 N: 204820. Appendices II – IV also provide added mapping detail for the site.

2.2. Topography

The site lies to the north of Saundersfoot Harbour along Cambrian Place with a car park and beach found directly and 100m to the east respectively. The site itself contains a flat grassed picnic area next to the BBQ building.

Aerial photographs of the site are included in the Groundsure reports presented in Appendices III & IV.

2.3. Statutory Service Information

Service plans have not been made available to Quantum by the Client and do not form part of this assessment. During excavation works on site, safe digging practices in accordance with HS(G)47 must be employed.

3. GEOLOGY AND SITE HISTORY

3.1. Published Geology

A number of available geological sources are available from published geological maps, stratigraphy data and maps available online. The following sections summarize the information gathered from these sources.

3.1.1. Superficial Deposits

The published geological map covering the site, British Geological Survey (BGS) Sheet 228 'Haverfordwest' (drift edition) shows no superficial deposits to lie beneath the site. The closest superficial deposits are located 1m to the south and comprise Alluvium deposits of Clay, Silt, Sand and Gravel.

3.1.2. Solid Geology

Bedrock beneath the site is shown to be mudstone, siltstone and sandstone of the South Wales Middle Coal Measures Formation of the Carboniferous Period.

3.1.3. Structural Geology

The closest fault to the site is mapped 25m to the south and trends west to east.

3.1.4. Mining and Quarrying Activity

The underlying strata (South Wales Middle Coal Measures) is known to have been extensively worked in the area.

3.2. Site History

A review of the site history has been undertaken based on archive and recent maps provided by GroundSure and presented in Appendix II. A summary of the details contained within the Ordnance Survey maps is provided as follows.

1889 - 1964 County Series 1:2,500 & 1:10,560.

The site is mainly an open unused plot of land with a small building where the current BBQ building is located called the Cambrian Hotel. To the east of the site are a set of tramway lines running north to south and down to the harbour. To the south are the Docks and the surrounding area is predominantly occupied by housing.

1967 - 2014 County Series 1:2,500 & 1:10,560.

The southern end to the site remains mainly undeveloped, however from 1967 the Cambrian hotel has been extended and is now the BBQ building. The surrounding areas have been further developed with housing. The tramway to the east no longer exists and has been replaced with a car park.

Summary

The history of the site is mainly split into two periods, prior to 1967, where the building onsite was smaller and known as the Cambrian Hotel, with less development in the surrounding areas and tramways located to the east around the dock and harbour area. Post 1967 the onsite building has expanded and is known as the Barbecue, surrounding areas have been developed with predominantly housing and the tramway no longer exists.

4. GEO-ENVIRONMENTAL APPRAISAL

4.1. General

As part of the Desk Study searches, an environmental report and a combined geological / ground stability report have been obtained from GroundSure®.

The GeoInsight® Report provides details on the geology of the site as well as information relating to ground workings in the area of the site, mining, extraction, natural cavities and natural ground subsidence. The EnviroInsight® report details site specific environmental issues including pollution incidents, discharge consents, flooding issues and any areas of significant contamination potential as well the risk to any existing or planned properties from the underlying ground conditions.

Copies of the GroundSure® reports are included in Appendix III & IV.

4.2. GeolInsight® Report– Geology and Ground Stability

4.2.1. Artificial Ground

The geology section of the combined geological/ground stability GroundSure® GeoInsight® report (Report Ref: HMD-213-4682854) indicates no Artificial / Made Ground within 500m of the study site boundary. The report does however identify the southern area of the site as being in an area of Potentially Infilled Land

4.2.2. Superficial Geology & Landslips

The report indicates no superficial deposits to be present on the site, however 1.0m to the south superficial deposits are mapped as Alluvium consisting of clay, silt, sand and gravel. Also, 45m to the east are beach and tidal flat deposits of sand, silt and clay. There is no records of landslips within 500m of the site.

4.2.3. Bedrock, Solid Geology & Faults

Bedrock beneath the site is shown to be mudstone, siltstone and sandstone of the South Wales Middle Coal Measures Formation. The closest coal seam is indicated as cropping 176m north west of the site. The closest faults indicated are 25m south and 467m to the north.

4.2.4. Radon Data

The report states that the Health Protection Agency indicates the site is in a Radon Affected Area, however, only 1 and 3% of properties are above the action level. Therefore no radon protective measures are necessary.

4.2.5. Ground Workings

The closest historical surface working is on site in the form of docks. Features such as unspecified ground workings and other dock features are found 70 – 75m to the south of the site.

The closest historical underground working are unspecified old shafts 158, 184, 186 and 238m to the west of the site. Features including tunnels are also indicated within 1000m of the site.

4.2.6. Mining, Extraction & Natural Cavities

The GeolInsight® report indicates that there are coal mining related mining activities that have taken place on site.

There is one localised small-scale underground iron ore mining area 25m to the south the site. There are also no records of brine, gypsum, tin or clay extraction within 1000m of the site boundary. There are also no records of natural cavities within 1000m of the site.

4.2.7. Natural Ground Subsidence

The GeolInsight Report details a number of ground related hazards and provides a relevant hazard rating for the related occurrence of natural ground subsidence. The report includes results up to 50m away from site in each direction.

Table 1: Natural Hazards on site

Hazard	Hazard Rating	Details
Shrink - Swell Clays	Very Low	Ground conditions predominantly low plasticity. 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 due to potential problems with shrink-swell clays.
Landslides	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.

<p>Ground Dissolution of Soluble Rocks</p>	<p>Negligible</p>	<p>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.</p>
<p>Compressible ground</p>	<p>Negligible - (1.0m to the south) Moderate</p>	<p>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.</p> <p>-</p> <p>Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property – possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.</p>
<p>Collapsible deposits</p>	<p>Very Low</p>	<p>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.</p>
<p>Running Sand</p>	<p>Low</p>	<p>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.</p>

4.2.8. *Estimated Background Soil Chemistry*

Records of the estimated background soil chemistry indicate the following concentrations on site:

Table 2: *Estimated Geometric Mean Soil Concentrations (mg/kg)*

Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
<15	<1.8	60 – 90	15 - 30	<100

There are number of other background chemistry records within 250m of the site boundary (closest is on site).

4.2.9. *Railways and Tunnels*

There are no records of any Tunnels, Historical Railway and Tunnel Features, or Historical/Active Railways within the site boundary. However, records indicate that Tramway sidings and Railway sidings are located 2m to the east of the site boundary.

4.3. EnviroInsight® Report – Site Environmental Appraisal

4.3.1. General

The GroundSure® EnviroInsight® report (Report Ref: HMD-213-4682853) presents environmental data pertinent to the site and its surrounding area.

The datasets covered within the report are:

- Historical Industrial Sites
- Authorisations Incidents and Registers
- Landfill and Other Waste Sites
- Current Land Uses
- Geology
- Hydrogeology and Hydrology
- Flooding
- Designated Environmentally Sensitive Sites

The records contained in these datasets are described in more detail on the following pages.

4.3.2. Historical Industrial Sites

The report identifies 43 No. records of potentially contaminative past land uses within 500m of the site boundary with the nearest located on site. This refers to dock use from 1963 - 1985. Other potentially contaminative past land uses include, tramway and railway sidings from 2 to 58m from site.

There are no records of Historical Tanks within 500m of the site boundary. There are 7 No. records of Historical Energy Features within 500m of the site relating to Electricity Substation, however the nearest of these is 83m west of the site boundary.

There are no Historic Petrol and Fuel Site sites within 500m of the site, however there are 11 records of Garage / Motor Vehicle Repair with the nearest 35m south west of the site.

There are 32 No. records of Potentially Infilled Land within 500m of the site boundary. The nearest feature within the site boundary and its use was a dock. Other records include unspecified old shafts, unspecified heaps, tunnels and unspecified ground workings.

4.3.3. Environmental Permits, Incidents and Registers

Under Industrial Sites Holding Licences and / or Authorisations, the report identifies 20 No. Licenced Discharge Consents within 500m of the site boundary. The nearest is 26m south west of the site, the effluent type is not noted and the receiving water was a stream flowing to Saundersfoot. Effective date was 22/04/1969.

There are no others records of Industrial Sites Holding Licences and/or Authorisations, nor any Dangerous or Hazardous Sites (COMAH & NIHHS) or Sites Determined as Contaminated Land under Part 2A EPA 1990 within 500m of the site boundary. There are 6 No. Environment Agency/Natural Resources Wales Recorded Pollution Incidents. The closest is located 169m south east of the site dated 05/07/2012 with microbiological pollutant. Water Impact was Category 1, with no impact to Land and Air.

4.3.4. Landfills and Other Waste Sites

There are no records of Environment Agency / Natural Resource Wales historic landfill sites within 1500m of the site boundary. No records of BGS / DoE Non-Operational Landfill Sites within 1500m of the site boundary.

There is no records of Landfills from Local Authority and Historical Mapping Records within 1500m of the site boundary, and no records of Environment Agency / Natural Resources Wales licensed waste sites within 1500m of the site boundary.

4.3.5. Current Land Use

There are 8 No. potentially contaminative industrial sites within 250m radius of the site boundary. The nearest is 39m west of the site and is detailed as electrical features.

There are no Petrol / Fuel Sites, National Grid High Voltage Underground Electricity Transmission Cables or National Grid High Pressure Underground Gas Transmission Pipelines within 500m of the site boundary.

4.3.6. Hydrogeology and Hydrology

No superficial deposits are recorded across the site, however offsite 1m south and 46m east the superficial deposits are designated as a Secondary A and Secondary (undifferentiated) aquifer respectively.

The bedrock within the site boundary has been identified as Secondary A aquifer. A Secondary A aquifer contains 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.

There are no records of Groundwater Abstraction Licences within 2000m of the site boundary. There are 3 No.

records of Surface Water Abstraction Licences within 2000m of the site boundary. The nearest being 1039m west, status is historical and involved spray irrigation. There are no records of Potable Water Abstraction Licences within the site boundary.

There are no records of Source Protection Zones within 500m of the site boundary.

With respect to Groundwater Vulnerability and Soil Leaching, the report has classified the aquifer within the site boundary to be a minor aquifer with high leaching potential and a Soil Vulnerability Category of H3. This includes soil information for urban areas and restored mineral workings. These soils are therefore assumed to be 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.

There are 14 No. Detailed River Network entries within 500m of the site boundary comprising, primary rivers, culverts and tertiary rivers. The nearest record is a primary river 37m southwest of the site boundary. There are also 2 No. records of Surface Water Features within 250m of the site boundary. The nearest is 47m east of the site boundary.

4.3.7. Flooding

Information on surface water flooding, flood defences, flood storage and groundwater flood areas are provided in this section within a radius of 250m of the site. The report indicates the site boundary is within an Environment Agency / Natural Resource Wales Zone 2 (Fluvial / Tidal Models) and Zone 3 (Fluvial Models) floodplain.

The Flood Rating on site is designated 'Medium' corresponding to a chance of flooding of greater than 1 in 100 but less than 1 in 30. There are no Flood Defences, Areas Benefiting from Flood Defences or Areas Benefiting from Flood Storage within 250m of the site boundary.

There is a record of a British Geological Survey (BGS) Groundwater Flooding Susceptibility Area within 50m of the site boundary. This is designated Superficial Deposits Flooding which relates to unconfined aquifers. The report designates that there is limited potential for groundwater flooding and that no further action would be required in relation to this.

4.3.8. Designated Environmentally Sensitive Sites

There are 2 records of Sites of Special Scientific Interest (SSSIs) 40m to the east of the site relating to Telpyn/Saundersfoot coast. There are no records of National Nature Reserves (NNRs). There are 3 records of Special Areas of Conservation (SACs) the nearest 40m east of the site, Carmarthen Bay and Estuaries.

There is 1 record of Special Protection Areas (SPAs) or Ramsar Sites within 2000m of the site boundary 393m south east of the site, Carmarthen Bay. The Rhos Hen-Glyn-Isaf SSSI is located 1935m north of the site.

There are 65 No. records of Ancient Woodland within 2000m of the site boundary. The nearest record is 465m south of the site and is listed as an unknown wood which contains restored ancient woodland.

4.3.9. Records of National Parks

There is 1 record of National Park within 2000m of the site boundary, located on site and known as Pembrokeshire Coast.

5. COAL MINING RISK ASSESSMENT

5.1 Coal Authority Mining Report

A Coal Authority Mining Report (Ref: 51001775434001, January 2018) has been obtained. A copy of this report is presented in Appendix V.

The report states that the site is in a surface area that could be affected by past underground mining, with 1 seam of coal at 190m depth, and last worked in 1919. However, any movement in the ground due to coal mining activity should have stopped. The property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some point in the past, and this potential presence of coal workings should be considered prior to any site works or future development.

The report states that the site is not within a surface area that could be affected by present underground mining.

The site is not in an area where the Coal Authority has plans to grant a license to remove coal using underground method. However, reserves of coal exist in the local area which could be worked at some point in the future. There are no known coal mine entries within 20m of the site boundary. The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

The site does not lie within the boundary of a past opencast site or within 200m of a present open cast site. There are no licence requests outstanding to remove coal by opencast methods within 800m of the boundary.

The Coal Authority has not received a damage notice or claim for the subject property or any property within 50m, since records began on 31st October 1994. There are no listed Mine Gas or Coal Mine Related Hazards needing attention.

6. CONCEPTUAL SITE MODEL

6.1 Legal Framework for Contaminated Land

Part 2A of the Environmental Protection Act 1990 created a regime for the identification and remediation of contaminated land. Contaminated land is defined by the potential to cause significant harm to human health and/or the environment. It establishes that responsibility for deciding when land is contaminated lies solely with local authorities.

Part 2A of the Environmental Protection Act 1990, Section 78A (2) defines “Contaminated Land” as:

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

- (a) significant harm is being caused or there is a significant possibility of such harm being caused; or*
- (b) pollution of controlled waters is being, or is likely to be, caused.”*

The definition is subject to statutory guidance issued by the Secretary of State which defines significant harm and a significant possibility of such harm with respect to the definition of contaminated land. The statutory guidance sets the definition of contaminated land within the context of Government policy including the “suitable for use” approach.

Under the planning regime, land contamination is also a material consideration. A local authority has the duty to consider potential implications of contamination when it is considering applications for planning permission. A planning authority may require investigations to be undertaken where there is potential contamination or contamination is known to exist at a site before granting planning permission. Alternatively, planning permission may be conditional requiring appropriate investigation and, if necessary, remediation.

6.2 Conceptual Site Model

The conceptual site model is a representation of the current understanding of the site and its surrounding environment with regards to geology, groundwater, surface waters, and potential contamination on-site and adjacent off-site and any migration pathways.

The potential risks to the proposed development and adjacent land have been assessed by consideration of the potential pollution linkages. For a risk to exist there must be a source of contamination, a receptor that may be harmed, and a pathway by which the receptor could be exposed to the contaminant. Only when all three factors are present (i.e. source, pathway, and receptor) can a pollution linkage, and consequently an unacceptable risk, exist. The conceptual site model considers all three elements and the potential for pollution linkages that may exist. If no linkage is identified then there is considered to be no or negligible risk.

The information gained from the land use assessment has been collated to identify any potential pathways

that may exist between any contamination source and its receptors. The Conceptual Site Model has been developed for the proposed end use. Receptors specific for the proposed end use considered in the assessment are as follows:

- Human Health – end users.
- Controlled Waters – ground water and surface waters.
- Buildings and Services.

Potential Contamination Sources

The historical plans and Groundsure reviews, identify several potential sources of contamination onsite and in the surrounding area. Therefore, there is a risk from contamination from both onsite and offsite sources which may impact on any proposed residential development at the site.

The potential sources relate to Made Ground associated with the historic land-uses such as the docks or the tram and railway sidings, in the immediate vicinity in which waste material may have been deposited on the site. Other potential contamination sources offsite include the unspecified old shafts, tunnels and electricity sub-station.

Due to potential sources being identified on-site, it is considered that the risk posed to the proposed development site from any contaminants sourced on-site is moderate.

Any Made Ground that may be present on site could contain Heavy Metals, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons and Asbestos.

Given the number of potentially contaminative historic land uses on and in the surrounding area which included Docks, rail, tramway sidings and electricity sub-station there is a risk, albeit low, of potentially contaminated Made Ground and/or mobile contaminants which may potentially present a threat to any development on-site, and end site users.

Potential contamination associated with the potentially contaminative off site historic land uses and Made Ground that may be present are Heavy Metals, Total Petroleum Hydrocarbons PCB's, Polycyclic Aromatic Hydrocarbons and Asbestos.

Details of the pathways associated with each of the components for pollution linkages are highlighted in the following tables:

Table 3: Existing Pollutant Linkages *on-site to on-site*

Potential Sources onsite	<ul style="list-style-type: none"> • POSSIBLE MADE GROUND - Heavy Metals, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, and Asbestos. • CONTAMINATED SOILS – Plant spillage/leaks
Potential Pathways on-site to on-site	Receptors onsite
<ul style="list-style-type: none"> • Dermal contact with contaminated soils – dermatitis. • Ingestion of soil, water or dust through ground maintenance etc. • Inhalation of dust or land gas emissions from Made Ground and organic soils. • Leaching of contaminated soils into groundwater. • Migration of groundwater across site. • Flooding of Zones 2/3 	Future Site End Users including Workers, Construction Workers and Visitors. Groundwater: – Bedrock: ‘Secondary A’ aquifer
<ul style="list-style-type: none"> • Chemically aggressive contaminants identified at raised concentrations. 	Buildings and services.

Table 4: Existing Pollutant Linkages *on-site to off-site*

Potential Sources onsite	<ul style="list-style-type: none"> • POSSIBLE MADE GROUND - Heavy Metals, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, and Asbestos. • CONTAMINATED SOILS – Historic spillage/leaks
Potential Pathways on-site to off-site	Receptors offsite
<ul style="list-style-type: none"> • Inhalation of dust or land gas emissions from possible Made Ground and organic soils. • Leaching of contaminated soils into groundwater. • Migration from groundwater to surface waters. • Migration of contaminants through groundwater off-site leading to potential dermal contact, ingestion of soil, water or dust and inhalation of gas emissions. 	Neighbouring site users and occupiers Groundwater: – Bedrock: ‘Secondary A’ aquifer

Table 5: Existing Pollutant Linkages *off-site to on-site*

Potential Sources offsite	<ul style="list-style-type: none"> • POSSIBLE MADE GROUND - Heavy Metals, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, and Asbestos. • Potentially Contaminative Historic Land Uses • Electricity Substation
Potential Pathways off-site to on-site	Receptors onsite
<ul style="list-style-type: none"> • Inhalation of dust or land gas emissions from Made Ground and organic soils. • Migration of contaminants through groundwater on-site leading to potential dermal contact, ingestion of soil, water or dust and inhalation of gas emissions. • Flooding of Zones 2/3 	Future Site End Users including Workers, Construction Workers and Visitors. Groundwater: – Bedrock: ‘Secondary A’ aquifer

7. RECOMMEDATIONS AND CONCLUSIONS

7.1. Report Summary

From the Phase 1 Land Quality Assessment/Desk Study the following points have been identified:

Geotechnical Issues

- The geological map for the area indicates the site is directly underlain by solid / bedrock geology of mudstone, siltstone and sandstone of the South Wales Middle Coal Measures Formation.
- No superficial deposits have been mapped on site. However, to the south of the site Alluvium deposits have been identified.
- No evidence of historic or recent Made Ground or artificial ground have been identified. However, the Groundsure report identifies potentially infilled land in the Southern area of the site. If present any Made Ground/Infilled strata is unlikely to be suitable for founding significant structures.
- The Coal Authority Mining Report states that the site could be affected by underground mining. There are no known mine entries recorded within 20m of the site boundary. The Coal Mining Risk Assessment stated that the coal may have been worked at some point in the past and that the potential presence of coal workings at or close to the surface should be considered. A single coal seam has been identified possibly under the site at 190m depth. Given the anticipated depth of any historic mine workings, the risk to the proposed development is considered negligible.
- The site has very low to moderate risk of shrink swell clays, ground dissolution of soluble rocks, compressible ground, collapsible rocks and running sand.

Environmental Issues

- This desk study has identified several potential sources of contamination on site and off site in the form of docks, railway and tramway sidings and unspecified old shafts and pits, Made Ground, Electricity sub-station. Contamination could comprise heavy metals, hydrocarbons and asbestos.
- The GroundSure® GeolInsight® report states that no radon protective measures are necessary.
- The mudstone, sandstone and siltstone of the South Wales Middle Coal Measures Formation are classified as a 'Secondary A' aquifer. If any mobile contaminants are present on site, in the Made Ground for example, the potential exists for these to migrate to the underlying aquifer and pose a risk to the wider environment.

7.2. Evaluation and Recommendations

A number of potential geotechnical and environmental issues have been identified within this study. The following evaluations and subsequent recommendations are made:

- In relation to any environmental / contaminated land issues, the desk study has identified low to moderate risk associated with on-site and off-site historic land uses. It is therefore recommended a limited chemical screening of selected soil samples across the site is undertaken to further assess the human health and environmental risks posed and permit a revised Conceptual Site Model to be constructed.
- Such sampling could be achieved through a trial pitting exercise. This would establish the extent / depth of potential Made Ground and some sampling of the superficial deposits and possibly allow depth to bedrock to be determined for foundation design.
- If additional areas of hardstanding are constructed, it would be prudent to undertake in-situ testing on the shallow surface deposits to assess its suitability as a sub-grade material.
- The presence and extent of Made Ground deposits and the competency of any superficial deposits should be investigated to determine foundation requirements of the proposed development.

8. REFERENCES

British Geological Survey:

- BGS Lexicon of Named Rock Units (www.bgs.ac.uk/lexicon).
- BGS Geology of Britain Viewer (www.bgs.ac.uk).
- British Geological Survey (BGS) Sheet 228 'Haverfordwest' drift and solid edition at 1:63,360 scale.

Environmental and Ground Stability:

- GroundSure® EnviroInsight® Report (Ref: HMD-213-4682853).
- GroundSure® GeolInsight® Report (Ref: HMD-213-4682854).

Environmental Protection Act 1990

Ordnance Survey Plans:

- Collection of Historical Plans from 1878 to 2014, at 1:2,500, 1:10,560 and 1:10,000 scale.

The Coal Authority

- CON29M Non-residential Mining Report (Ref: 51001775434001)

APPENDIX I – SITE PLANS



Based upon the Ordnance Survey map with the permission of The Controller of Her Majesty's Stationary Office, © Crown Copyright AL 55195A0001



Ty Berwig, Bynea
Llanelli, Carmarthenshire
SA14 9ST
Tel: 01554 744880
Fax: 01554 776150
Email: enquiries@quantum-geotech.co.uk

FIGURE 1

Project: Ocean Square, Saundersfoot

Job No: G40102/DS

Drawing Title: Site Location Plan

APPENDIX II – HISTORICAL MAP COLLECTION

Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: County Series

Map date: 1887

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1887
 Revised 1887
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1887
 Revised 1887
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com

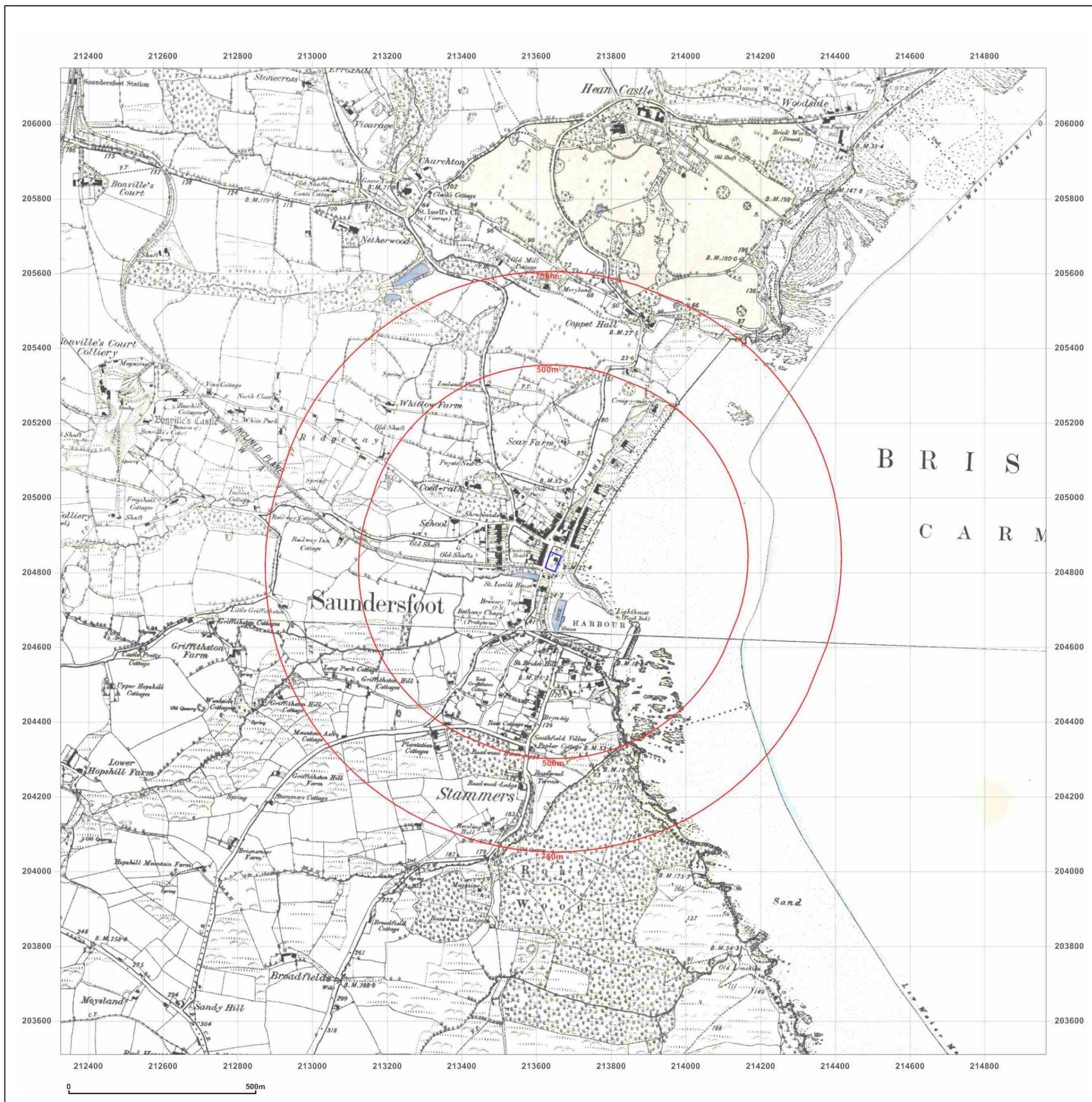


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

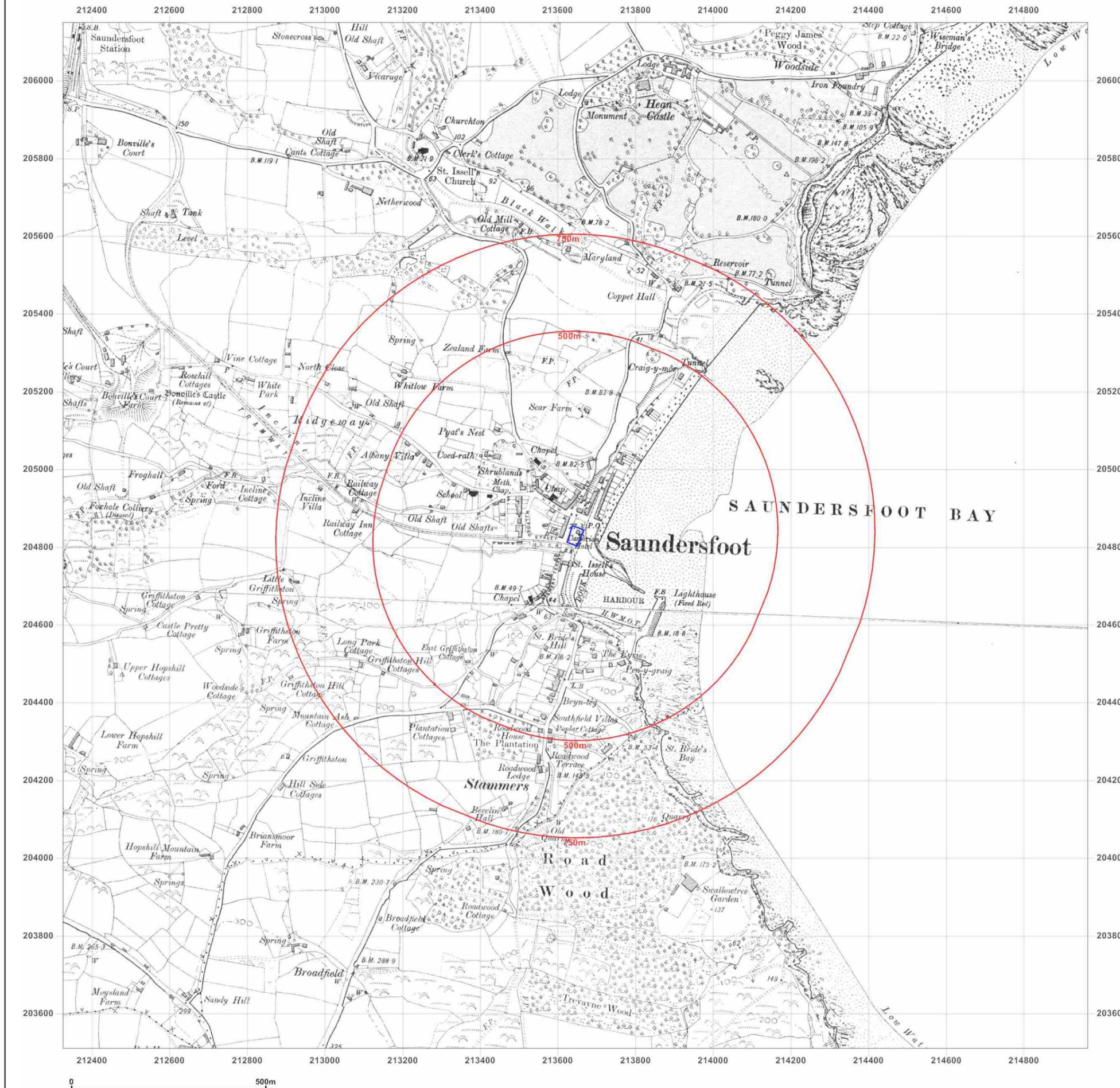
Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: County Series

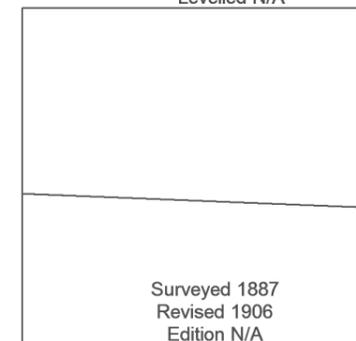
Map date: 1906

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1887
 Revised 1906
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1887
 Revised 1906
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com



Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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

Site Details:

213642, 204820

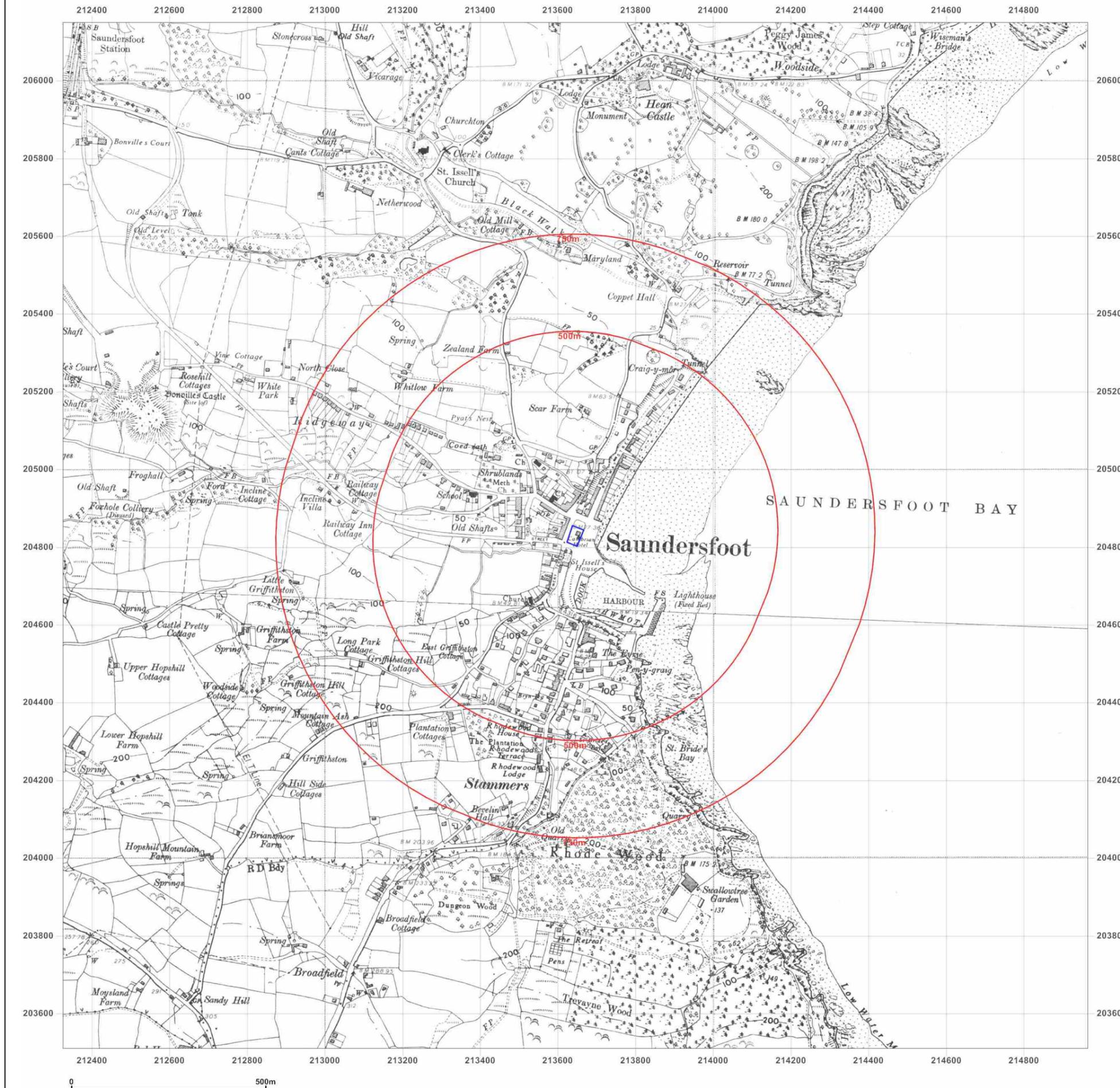
Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: County Series

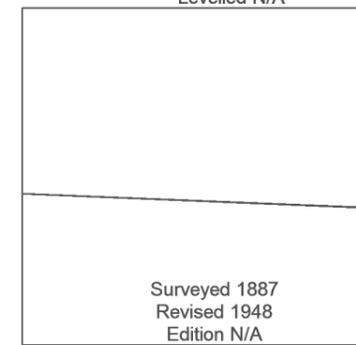
Map date: 1948

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1887
 Revised 1948
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1887
 Revised 1948
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com



Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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

Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: Provisional

Map date: 1963-1964

Scale: 1:10,560

Printed at: 1:10,560



Surveyed N/A
 Revised 1963
 Edition N/A
 Copyright 1964
 Levelled N/A

Surveyed 1948
 Revised 1963
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com

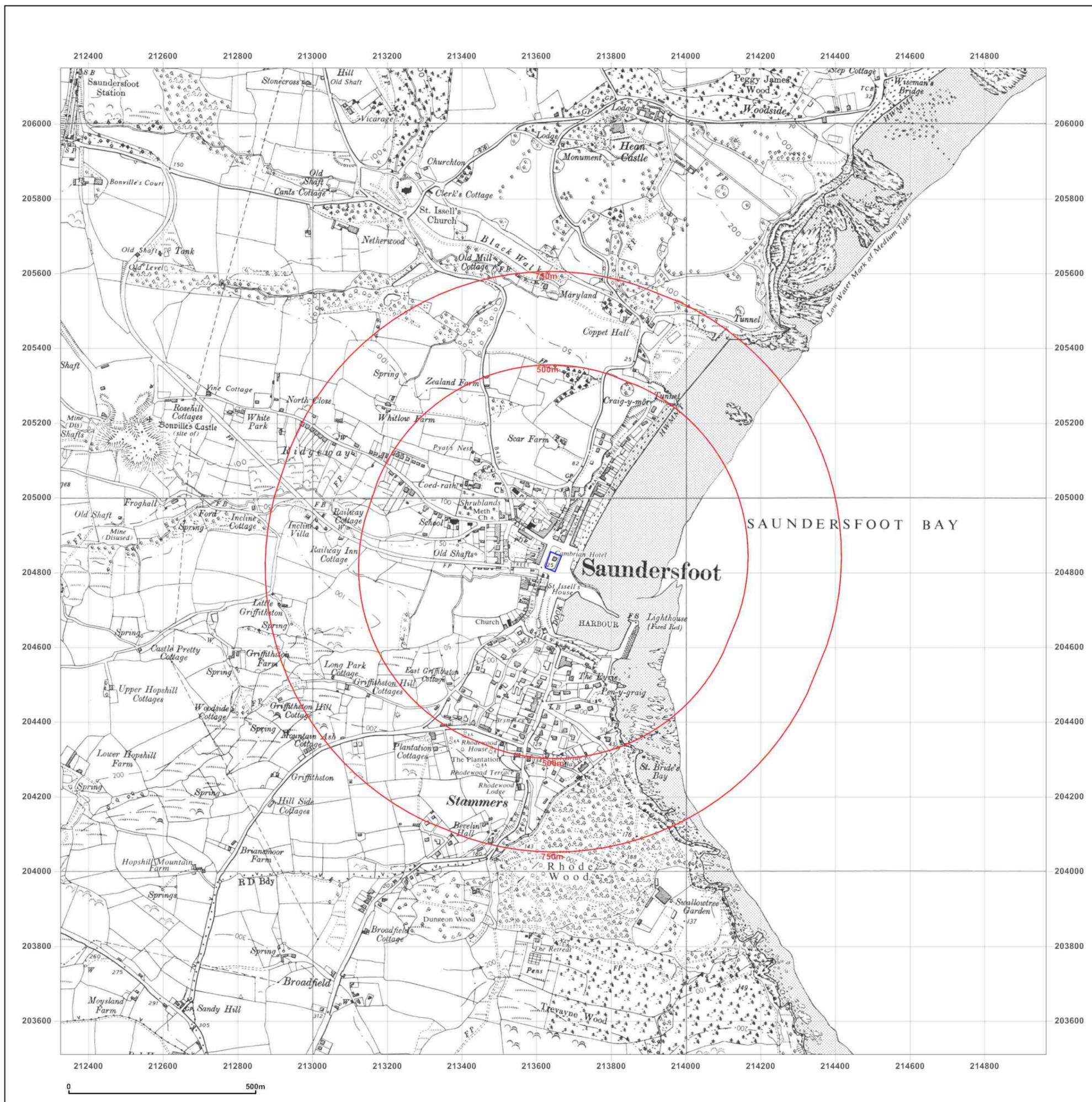


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: Provisional

Map date: 1969

Scale: 1:10,560

Printed at: 1:10,560



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



Produced by
 Groundsure Insights
www.groundsure.com

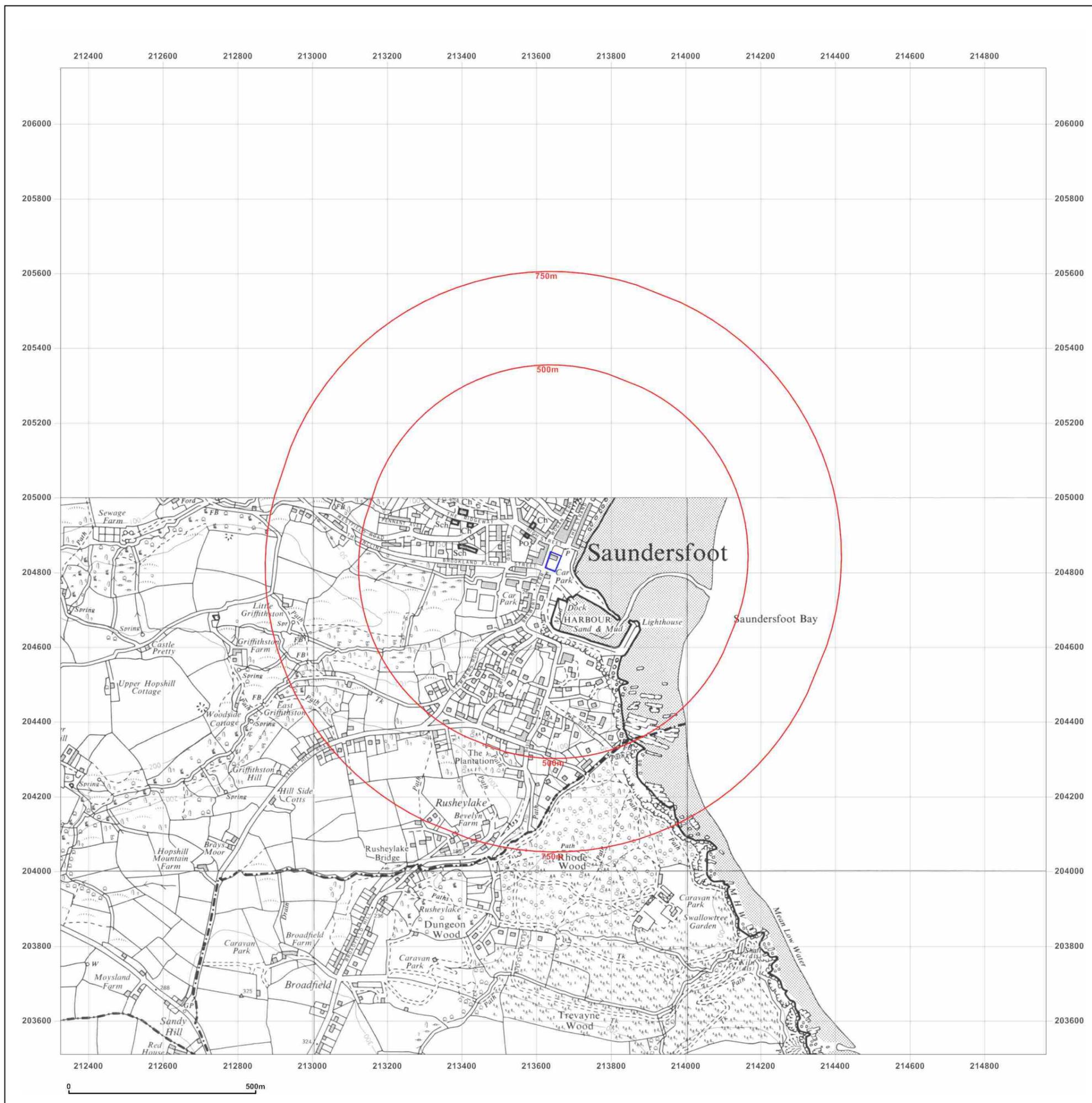


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1985-1988

Scale: 1:10,000

Printed at: 1:10,000



Surveyed 1967
 Revised 1988
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1975
 Revised 1985
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com

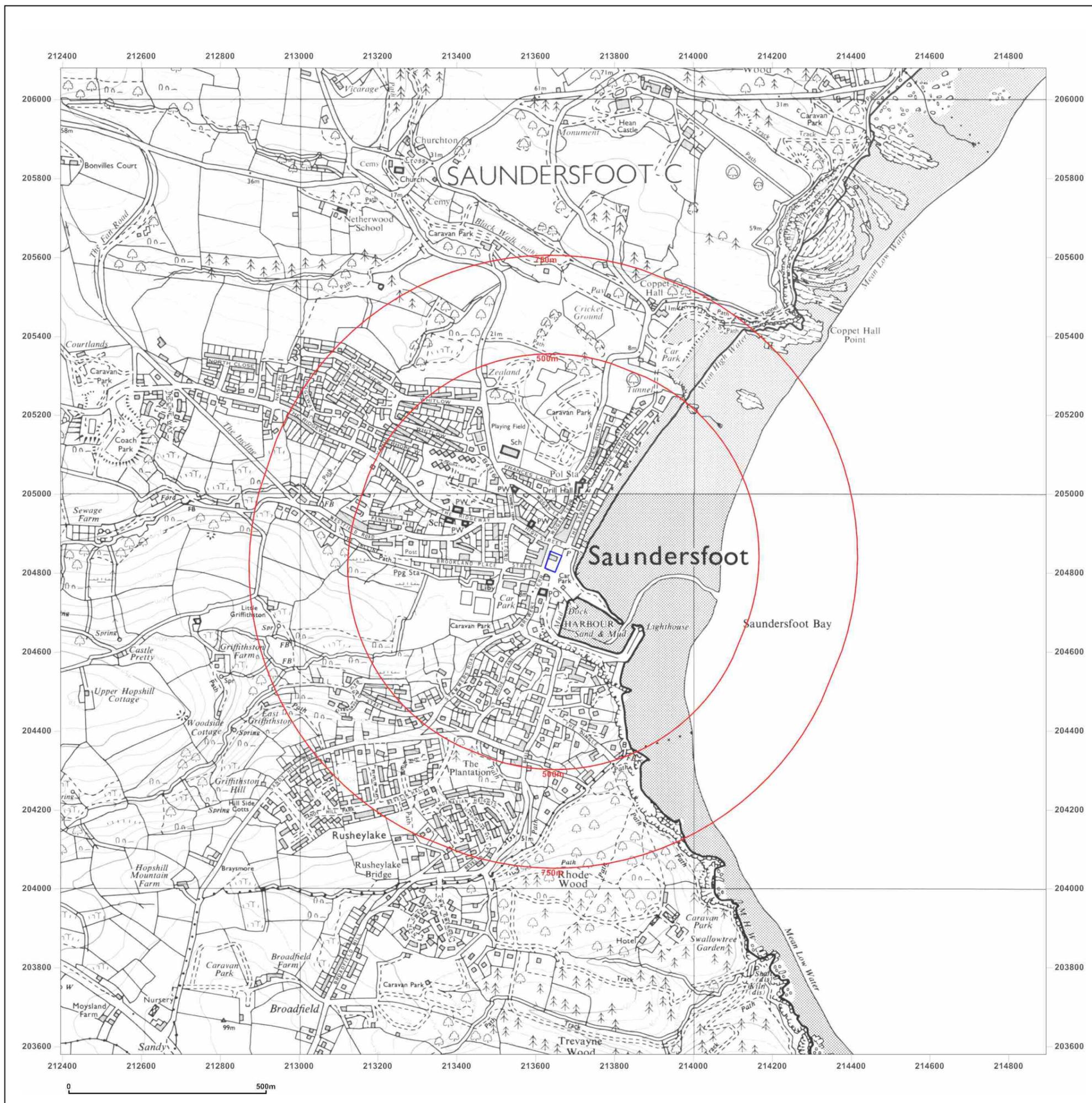


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

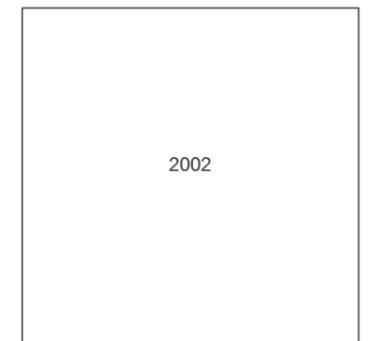
Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: 1:10,000 Raster

Map date: 2002

Scale: 1:10,000

Printed at: 1:10,000



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

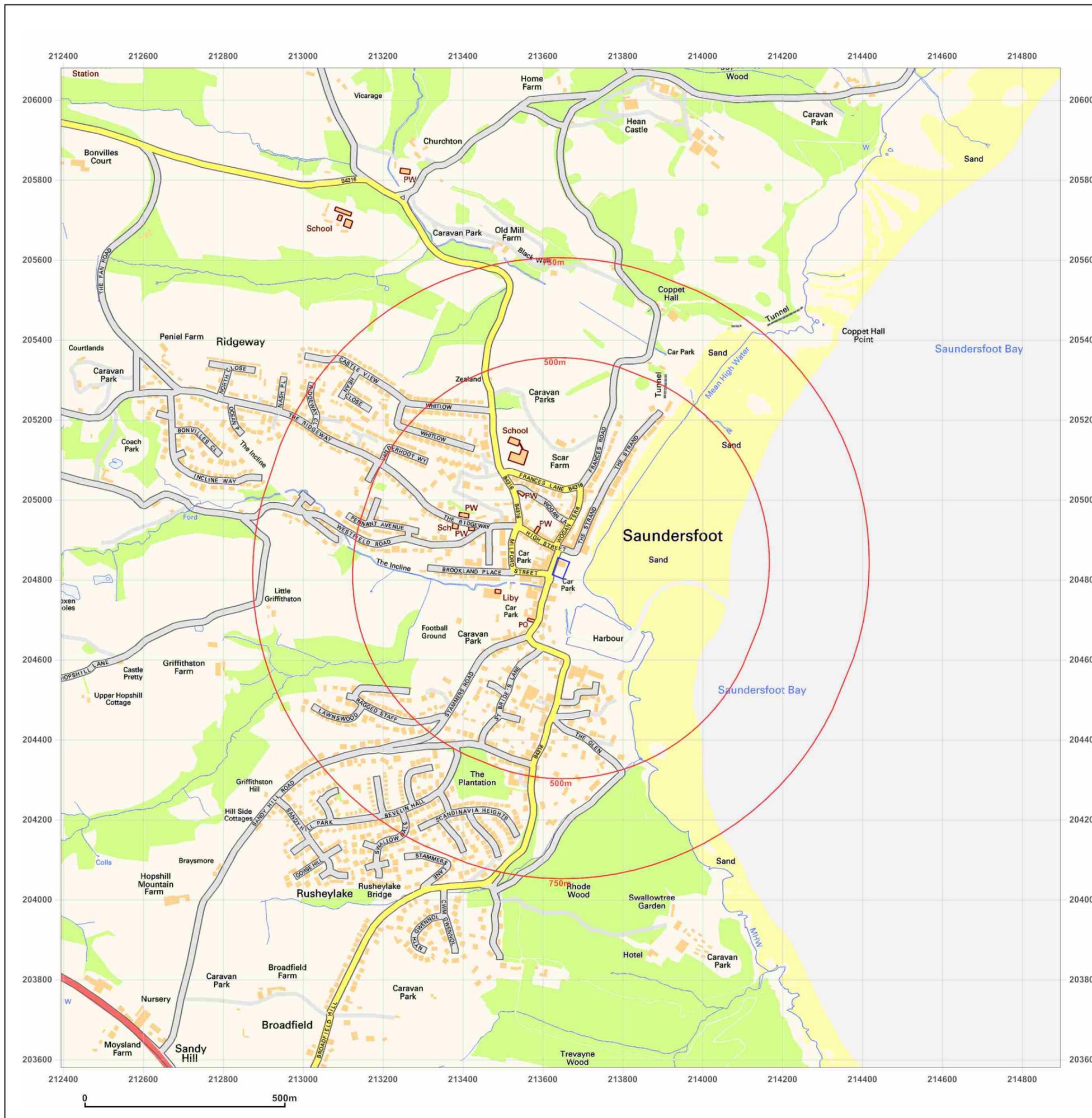
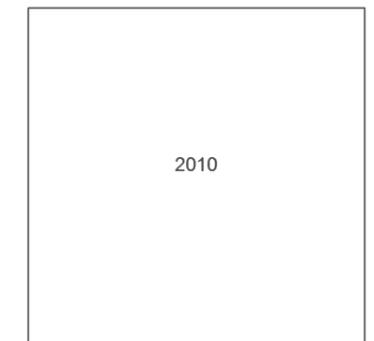
Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



Produced by
Groundsure Insights
www.groundsure.com



Supplied by:
Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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

Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

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

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
www.groundsure.com

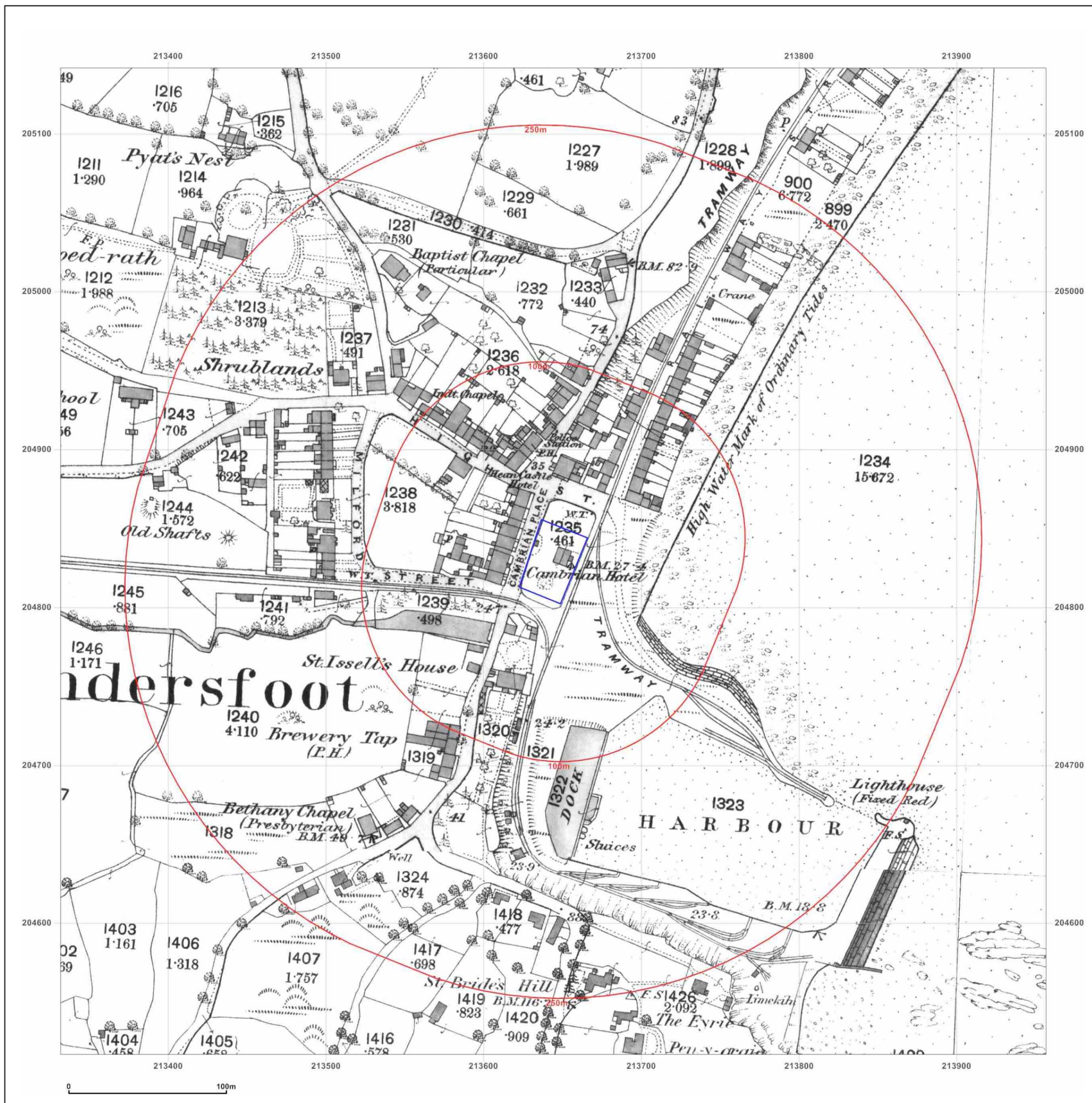


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: County Series

Map date: 1907

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1907
 Revised 1907
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1907
 Revised 1907
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1907
 Revised 1907
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1907
 Revised 1907
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com

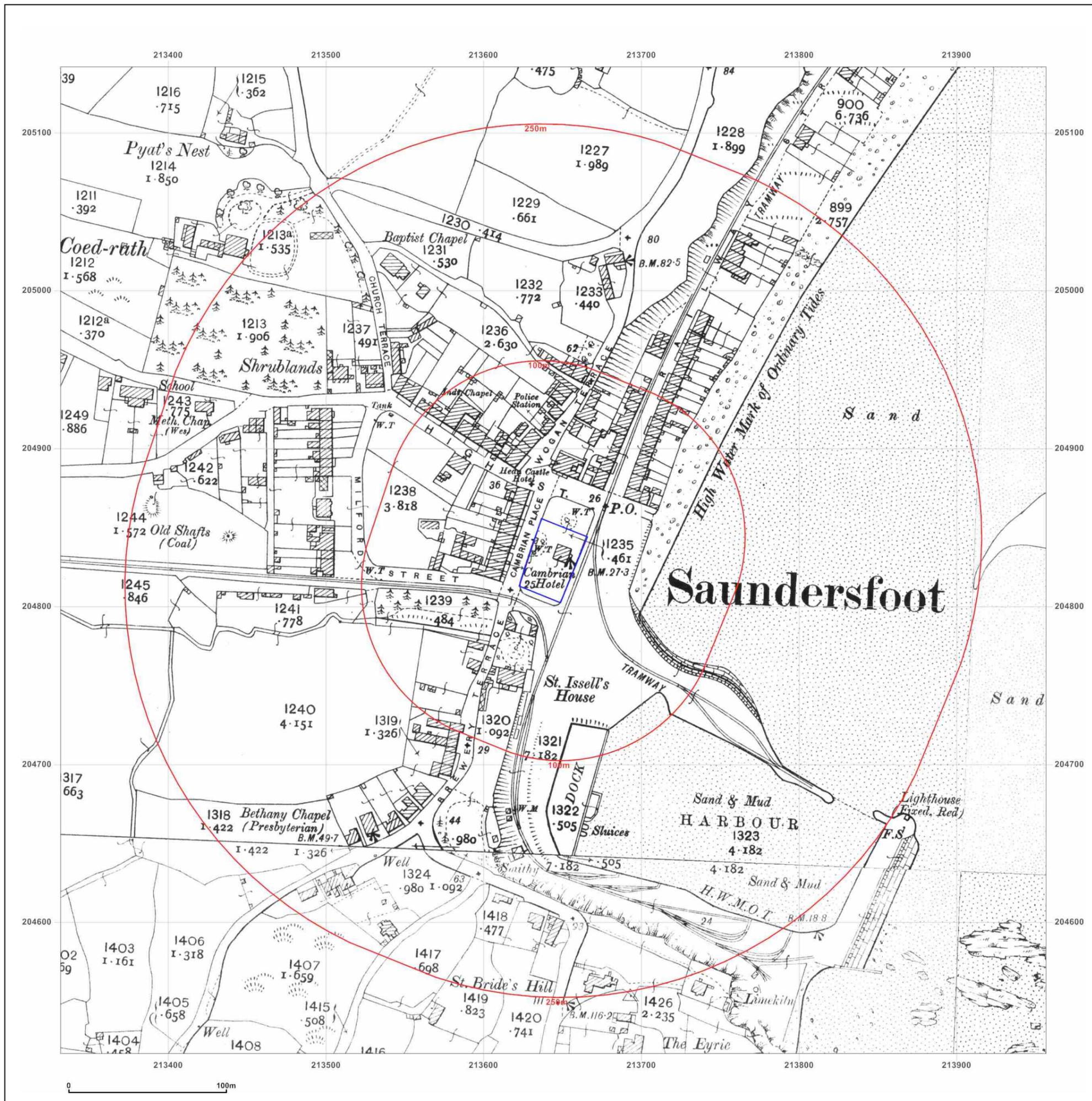


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: County Series

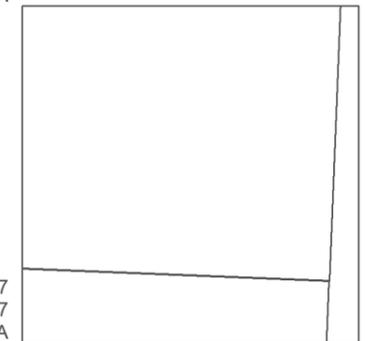
Map date: 1937

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1937
 Revised 1937
 Edition N/A
 Copyright N/A
 Levelled N/A



Surveyed 1937
 Revised 1937
 Edition N/A
 Copyright N/A
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com

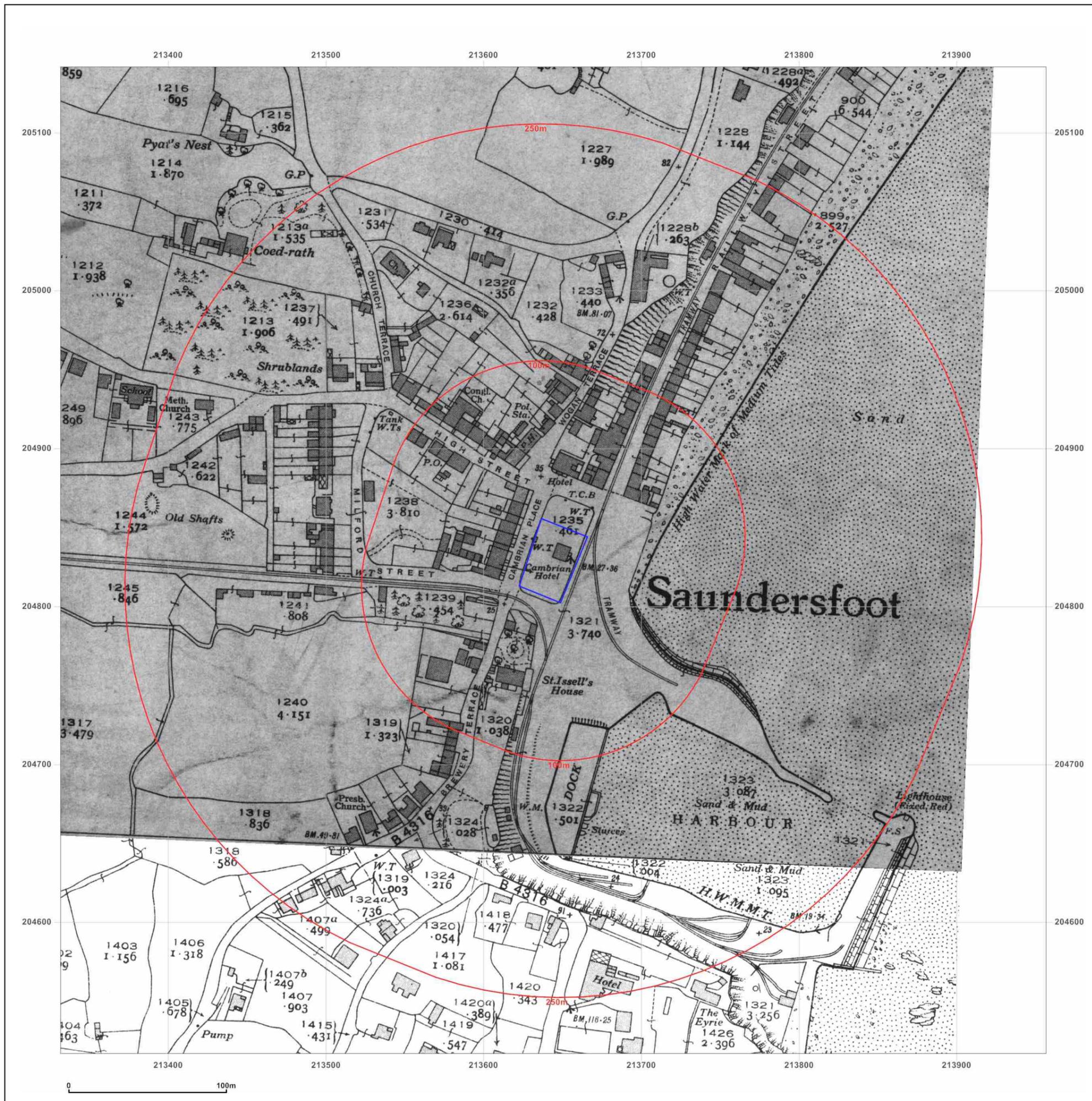


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1966-1967

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 1966
 Revised 1966
 Edition N/A
 Copyright 1967
 Levelled 1962



Produced by
 Groundsure Insights
www.groundsure.com

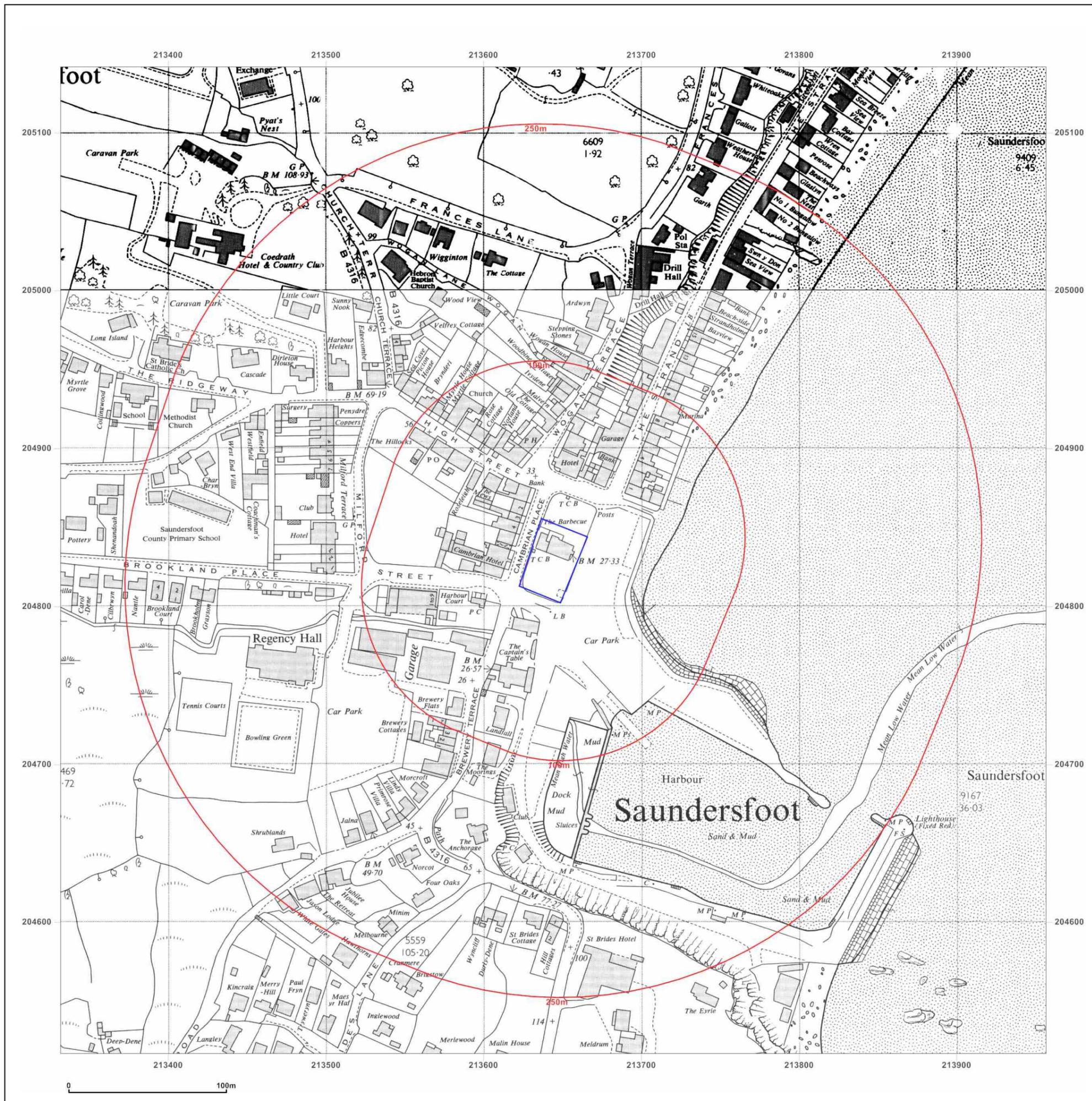


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
 Report Ref: HMD-213-4682855
 Grid Ref: 213644, 204829

Map Name: National Grid

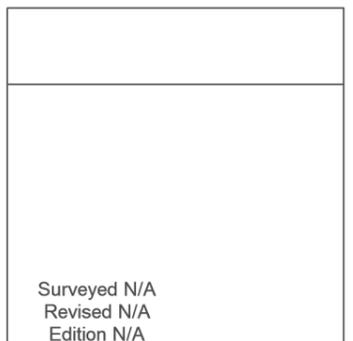
Map date: 1967

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1967
 Revised 1967
 Edition N/A
 Copyright 1968
 Levelled 1962



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



Produced by
 Groundsure Insights
www.groundsure.com



Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1973

Scale: 1:2,500

Printed at: 1:2,500



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

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



Produced by
 Groundsure Insights
www.groundsure.com

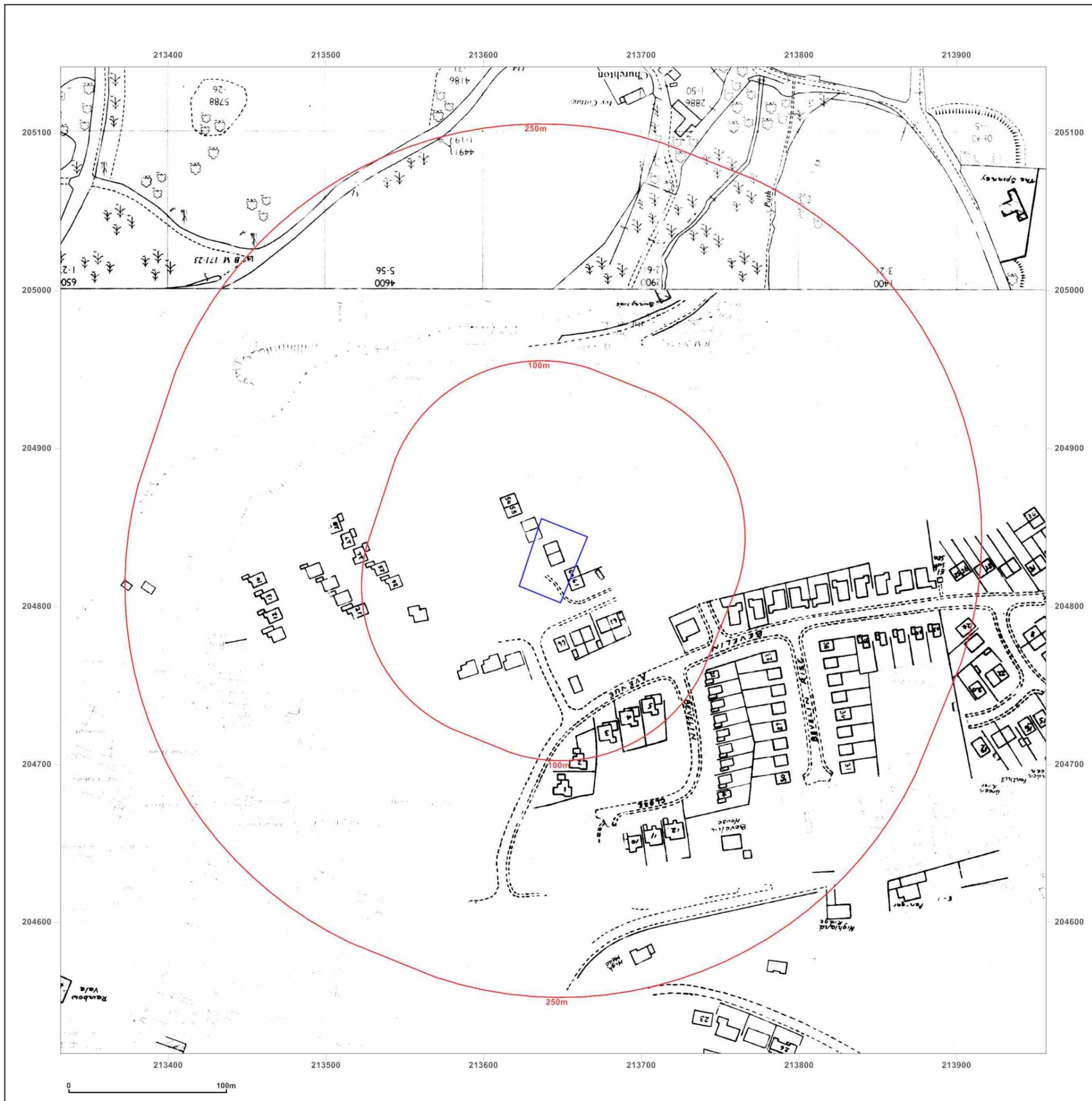


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
 Report Ref: HMD-213-4682855
 Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1971-1974

Scale: 1:2,500

Printed at: 1:2,500



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

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



Produced by
 Groundsure Insights
www.groundsure.com

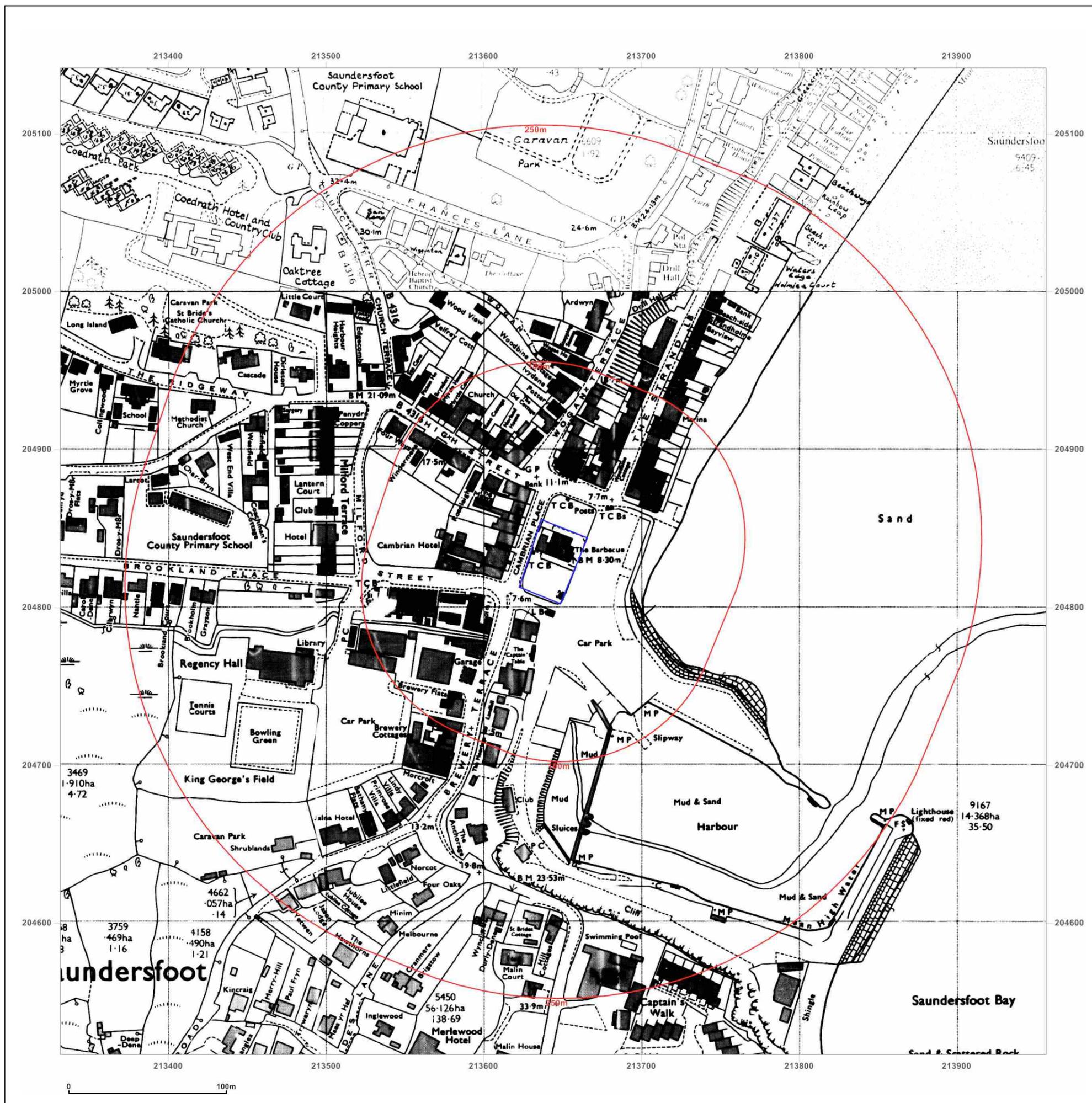


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1973-1977

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 1973
 Revised 1973
 Edition N/A
 Copyright 1974
 Levelled 1971



Produced by
 Groundsure Insights
www.groundsure.com

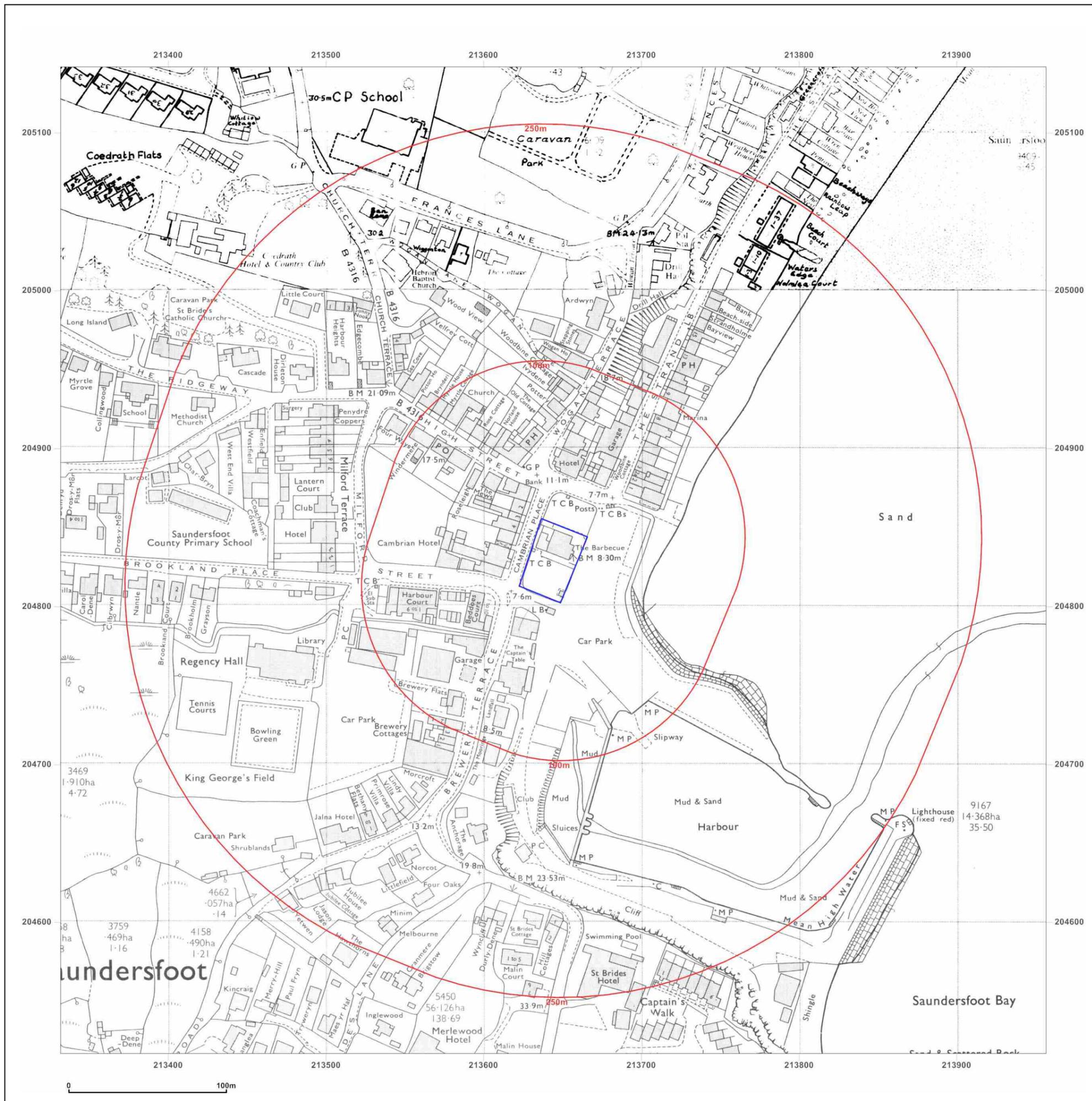


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1977-1981

Scale: 1:2,500

Printed at: 1:2,500



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

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



Produced by
 Groundsure Insights
www.groundsure.com

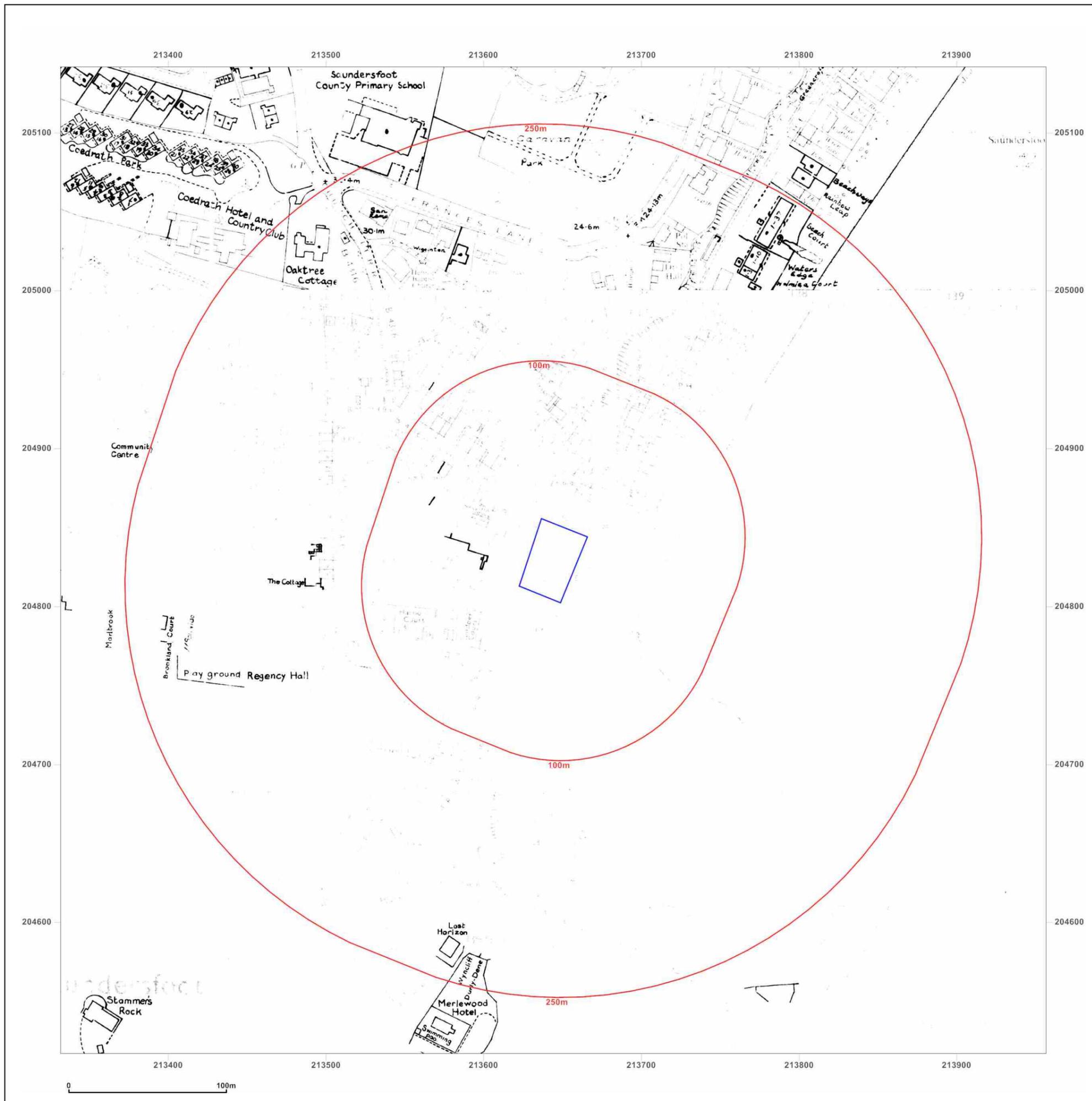


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1988

Scale: 1:2,500

Printed at: 1:2,500



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



Produced by
 Groundsure Insights
www.groundsure.com

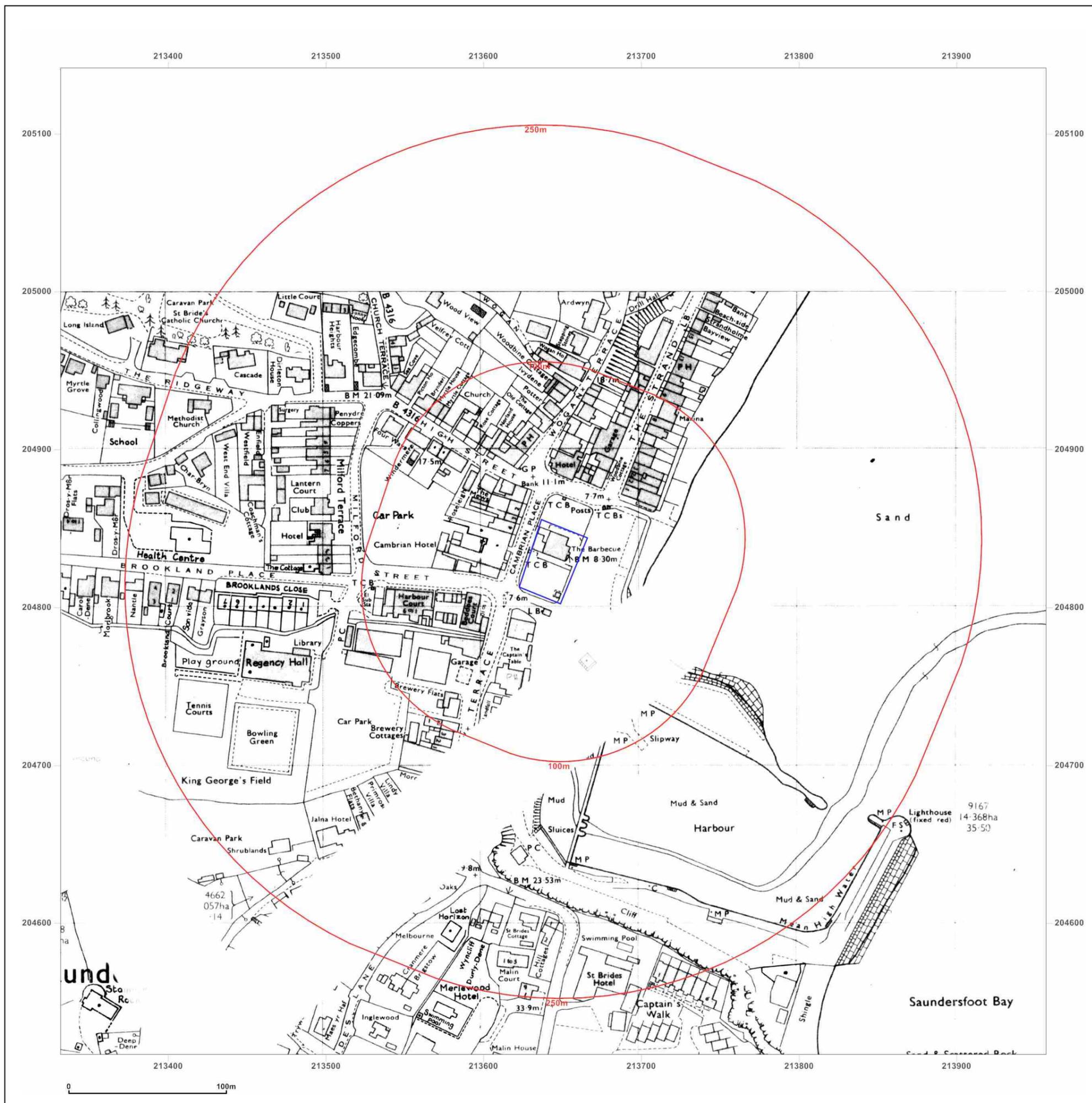


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1988

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1970
 Revised 1988
 Edition N/A
 Copyright 1988
 Levelled 1970



Produced by
 Groundsure Insights
www.groundsure.com

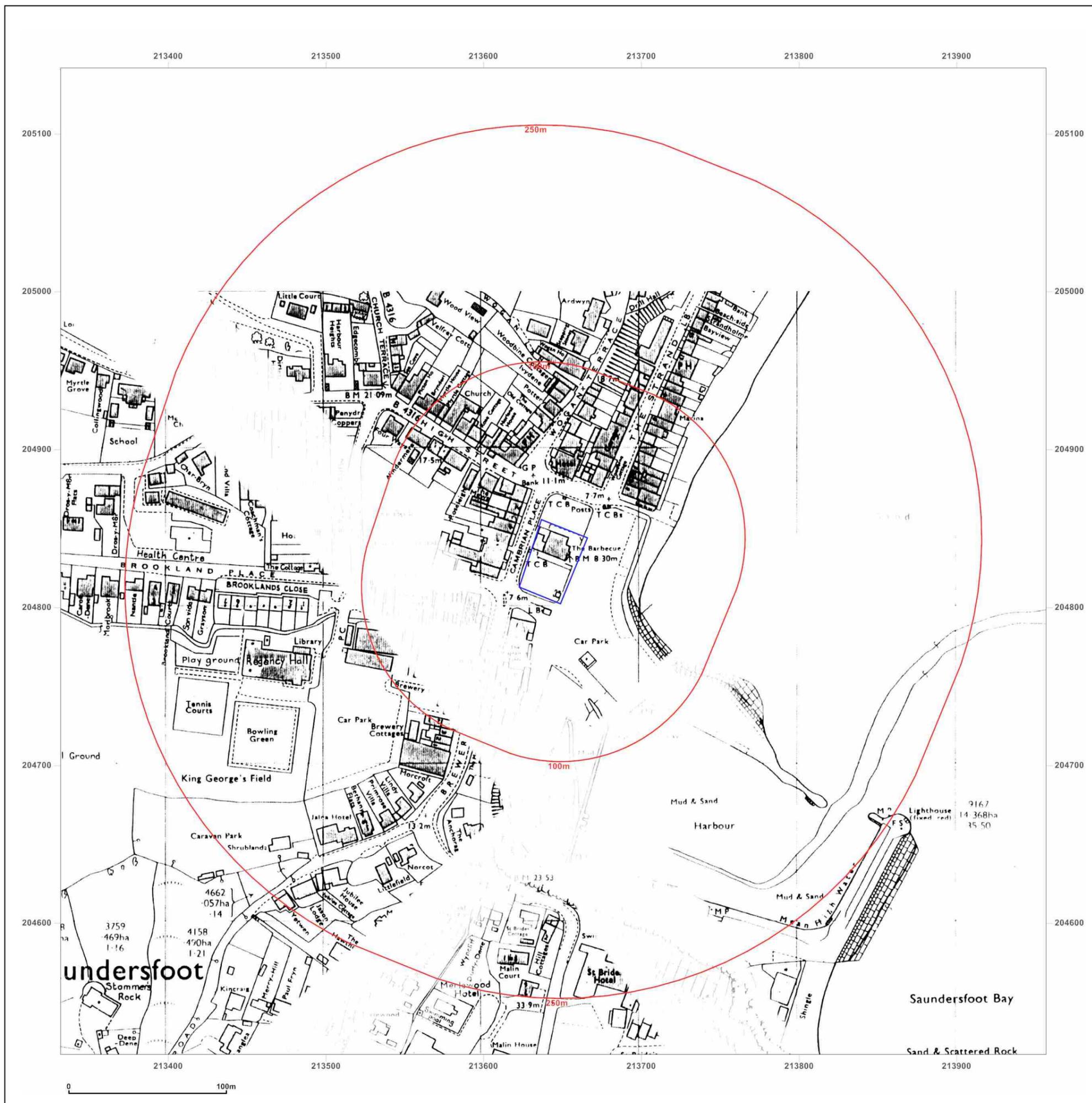


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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



Produced by
 Groundsure Insights
www.groundsure.com

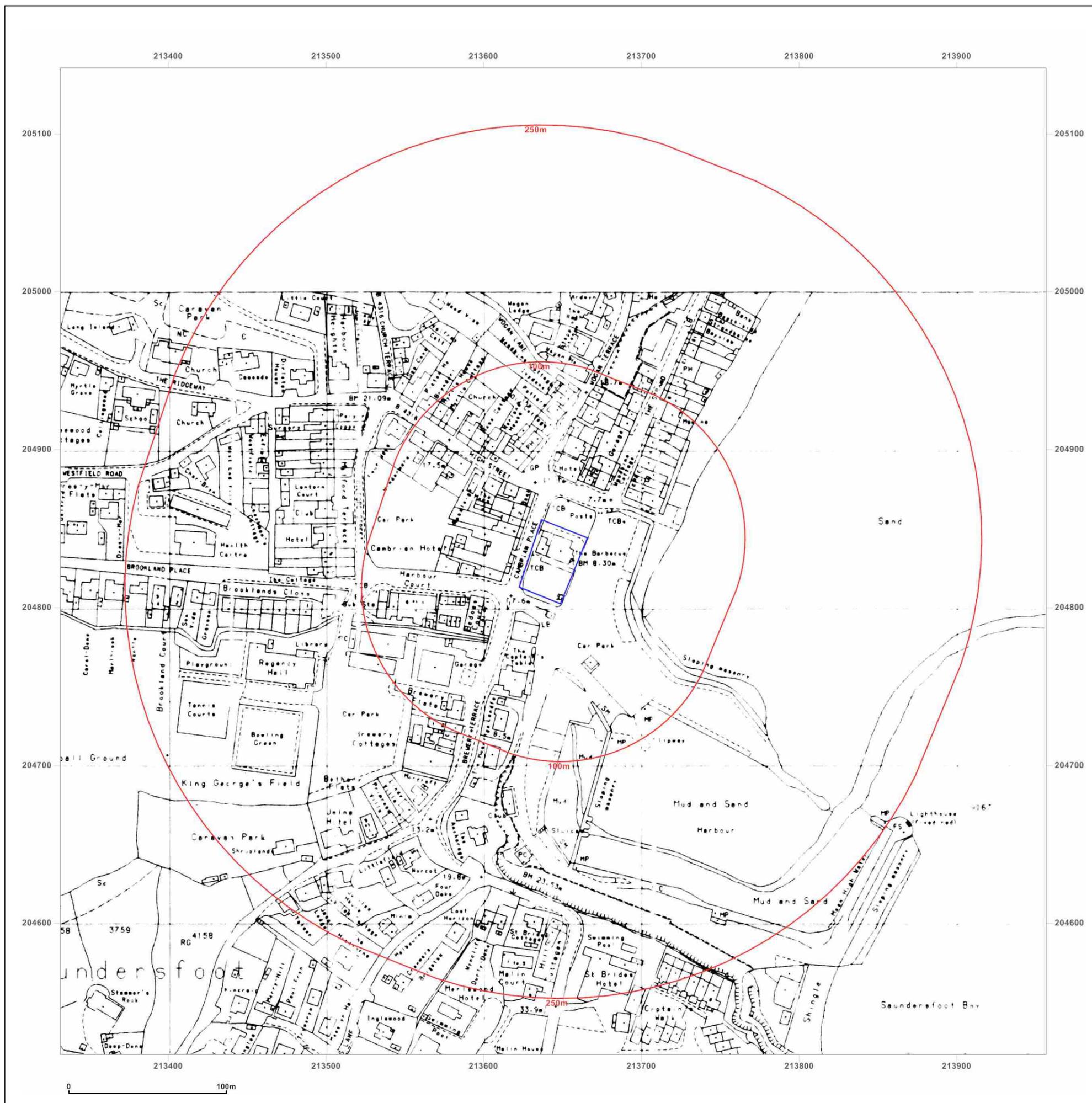


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
 Report Ref: HMD-213-4682855
 Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1993
 Revised 1993
 Edition N/A
 Copyright 1993
 Levelled N/A



Produced by
 Groundsure Insights
www.groundsure.com



Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
 Report Ref: HMD-213-4682855
 Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1991-1994

Scale: 1:2,500

Printed at: 1:2,500



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

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



Produced by
 Groundsure Insights
www.groundsure.com



Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



Site Details:

213642, 204820

Client Ref: G40102_-_Ocean_Square
Report Ref: HMD-213-4682855
Grid Ref: 213644, 204829

Map Name: National Grid

Map date: 1994

Scale: 1:2,500

Printed at: 1:2,500



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



Produced by
 Groundsure Insights
www.groundsure.com

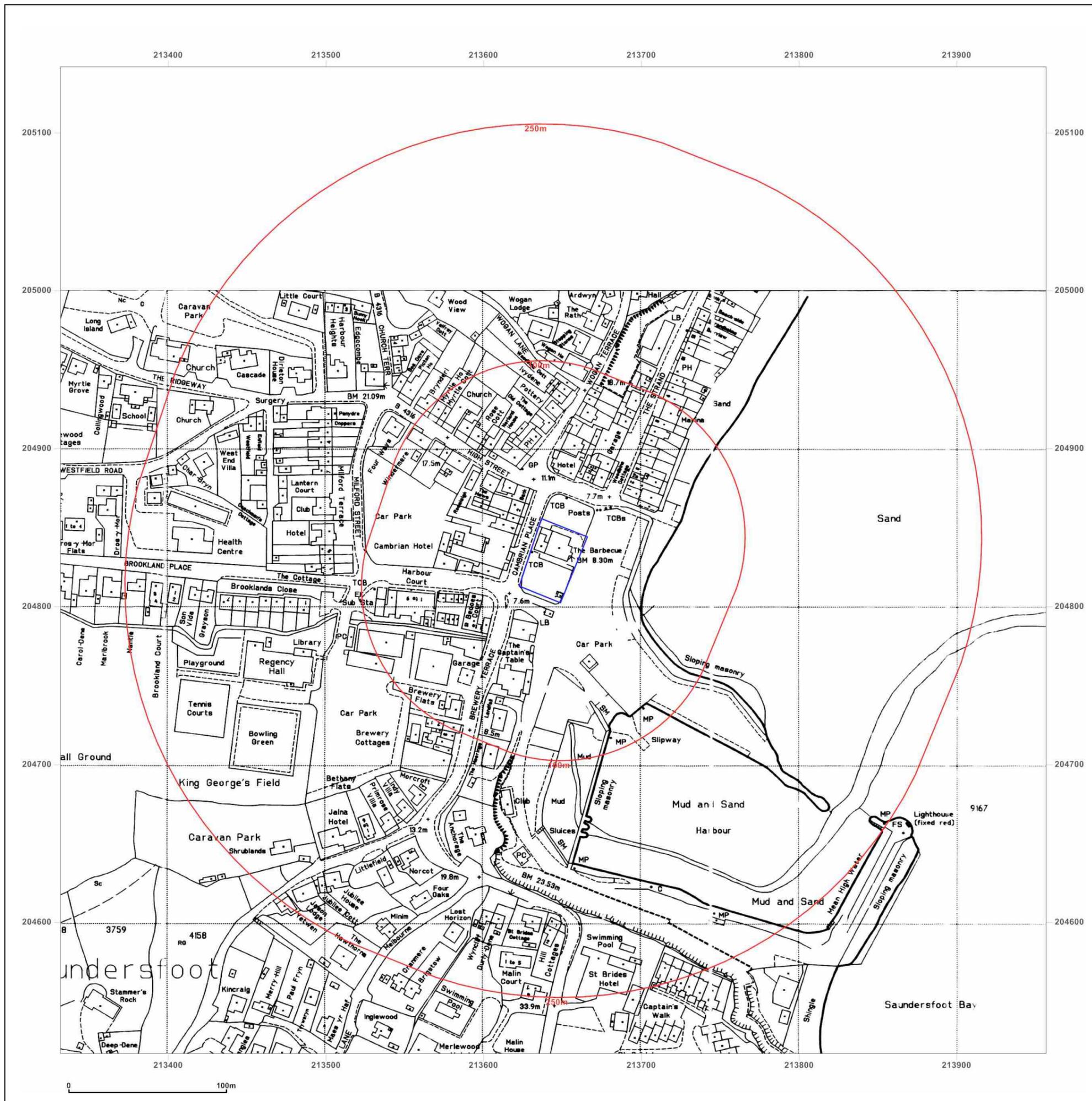


Supplied by:
 Quantum Geotechnical
www.quantum-geotech.co.uk

© Crown copyright and database rights 2015 Ordnance Survey 100035207

Production date: 24 January 2018

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



APPENDIX III – GROUNDSURE® GEOINSIGHT® REPORT

Address: 213642, 204820,
Date: 24 Jan 2018
Reference: HMD-213-4682854
Client: Quantum Geotechnical Ltd

NW N NE

W E



SW S SE

Aerial Photograph Capture date: 23-Jul-2014
Grid Reference: 213642,204820
Site Size: 0.13ha

Contents Page

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.....	28
5.4 Non-Coal Mining.....	28
5.5 Non-Coal Mining Cavities.....	28
5.6 Natural Cavities.....	28
5.7 Brine Extraction.....	29
5.8 Gypsum Extraction.....	29
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.....	38
6.6 Running Sands.....	38
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

Overview of Findings

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?	No

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 in a Radon Affected Area, as between 1 and 3% 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	2	0	3	Not Searched	Not Searched
4.2 Historical Underground Workings from Small Scale Mapping	0	0	7	5	2
4.3 Current Ground Workings	0	0	1	2	3

Section 5: Mining, Extraction & Natural Cavities

	On-site	0-50m	51-250	251-500	501-1000
5.1 Historical Mining	0	0	7	1	1
5.2 Coal Mining	1	0	0	0	0
5.3 Johnson Poole and Bloomer Mining Area	0	0	0	0	0
5.4 Non-Coal Mining*	0	1	0	0	0
5.5 Non-Coal Mining Cavities	0	0	0	0	0
5.5 Natural Cavities	0	0	0	0	0

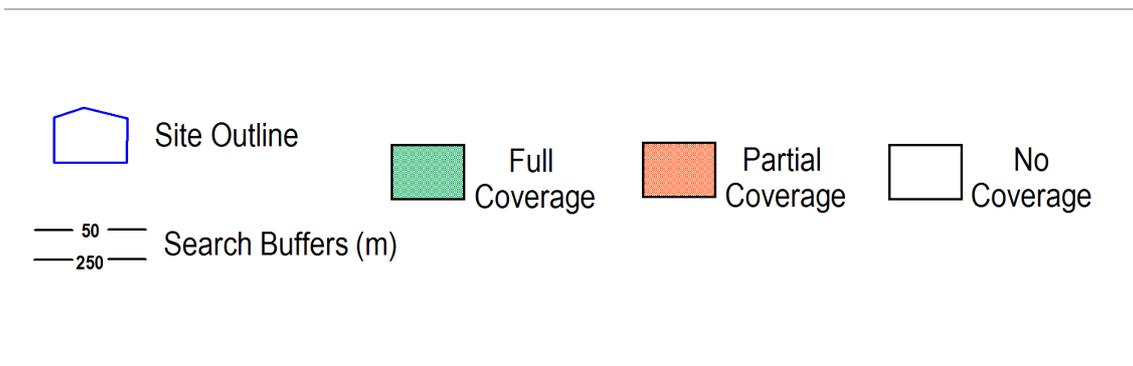
Section 5: Mining, Extraction & Natural Cavities	On-site	0-50m	51-250	251-500	501-1000
5.6 Brine Extraction	0	0	0	0	0
5.7 Gypsum Extraction	0	0	0	0	0
5.8 Tin Mining	0	0	0	0	0
5.9 Clay Mining	0	0	0	0	0
Section 6: Natural Ground Subsidence					
	On-site				
6.1 Shrink-Swell Clay	Very Low				
6.2 Landslides	Moderate				
6.3 Ground Dissolution of Soluble Rocks	Negligible				
6.4 Compressible Deposits	Moderate				
6.5 Collapsible Deposits	Very Low				
6.5 Running Sand	Moderate				
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	1	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	2	5	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	

1:10,000 Scale Availability



1_10,000 Availability Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



Availability of 1:10,000 Scale Geology Mapping

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

ID	Distance	Artificial Coverage	Superficial Coverage	Bedrock Coverage	Mass Movement Coverage
1	0.0	No deposits are mapped	No coverage	No coverage	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:

Geology	Full Coverage	Partial Coverage	No Coverage
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

1 Geology (1:10,000 scale).

1.1 Artificial Ground map (1:10,000 scale)



Artificial Ground Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

	Site Outline		Made Ground (undivided)		Disturbed Ground (undivided)
	Search Buffers (m)		Worked Ground (undivided)		Landscaped Ground (undivided)
			Infilled Ground		Reclaimed Ground

1. Geology 1:10,000 scale

1.1 Artificial Ground

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? No

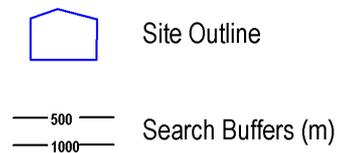
Database searched and no data found.

1.2 Superficial Deposits and Landslips map (1:10,000 scale)



Artificial Ground Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



1.2 Superficial Deposits and Landslips

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? No

Database searched and no data found.

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

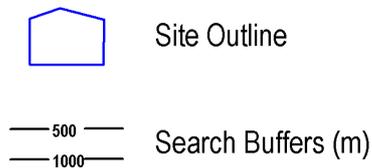
This Geology shows the main components as discrete layers, these are: Artificial / Made Ground, Superficial / Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

1.3 Bedrock and linear features map (1:10,000 scale)



Bedrock and linear features Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



1.3 Bedrock and linear features

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.

Database searched and no data found at this scale.

1.3.2 Linear features

Are there any records of linear features within 500m of the study site boundary at 1:10,000 scale? No

Database searched and no data found at this scale.

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.

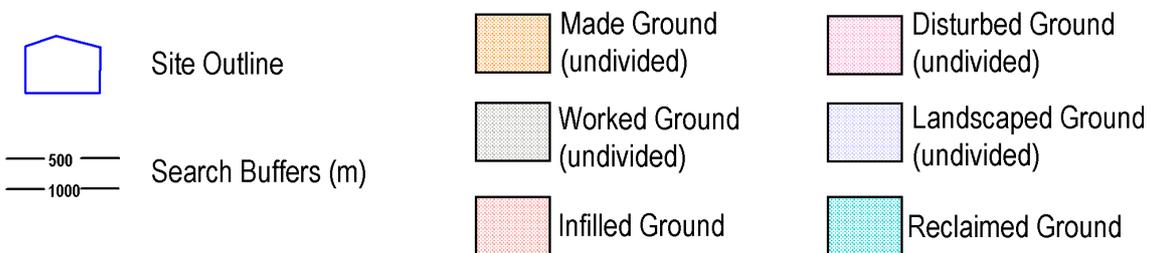
This Geology shows the main components as discrete layers, these are: Bedrock/ Solid Geology and linear features such as faults. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

2 Geology 1:50,000 Scale

2.1 Artificial Ground map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



2. Geology 1:50,000 scale

2.1 Artificial Ground

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 228

2.1.1 Artificial/ Made Ground

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

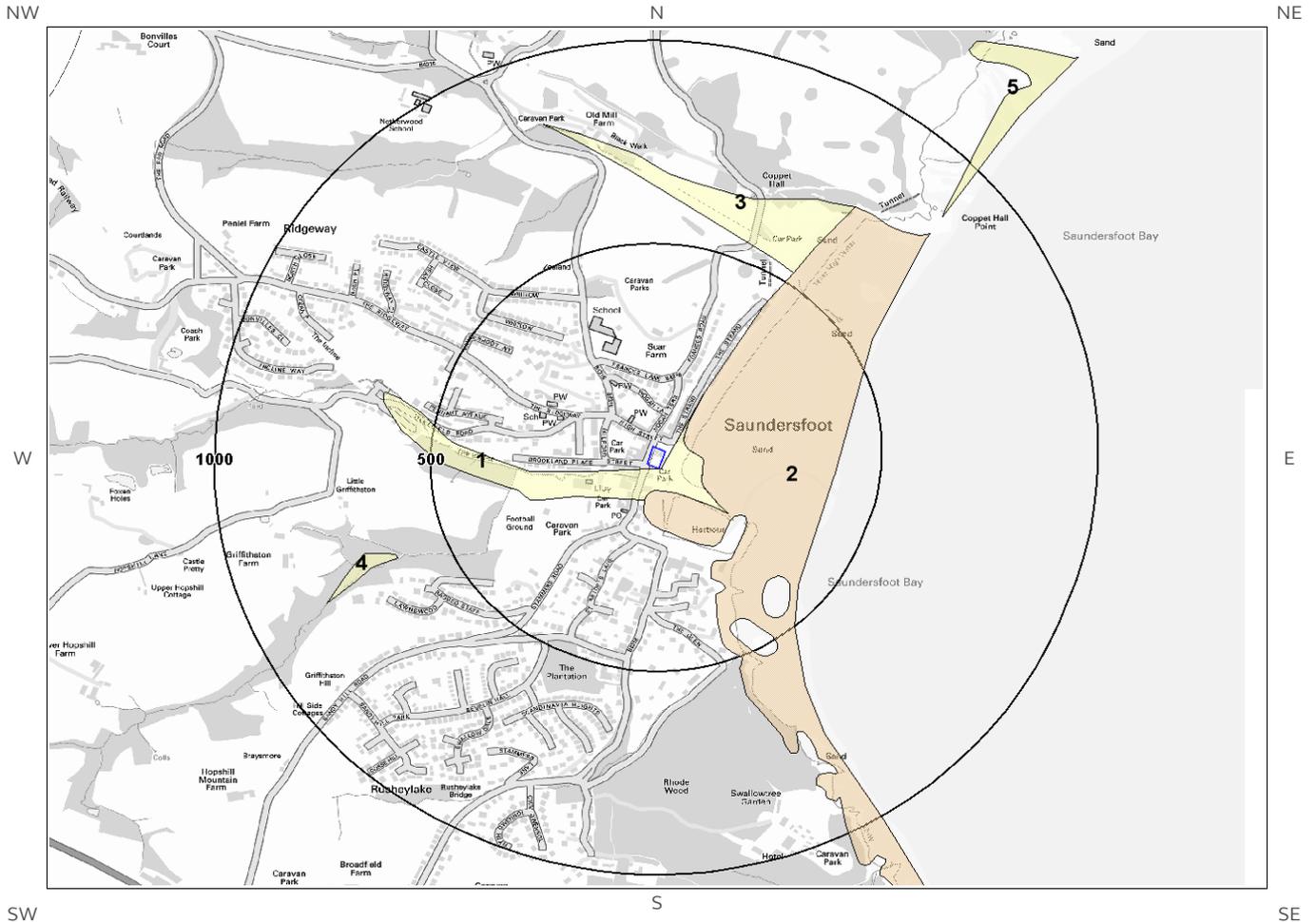
Database searched and no data found.

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.

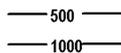
2.2 Superficial Deposits and Landslips map (1:50,000 scale)



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

2.2 Superficial Deposits and Landslips

2.2.1 Superficial Deposits/ Drift Geology

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

ID	Distance	Direction	LEX Code	Description	Rock Description
1	1.0	S	ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
2	46.0	E	BTFU-XSZC	BEACH AND TIDAL FLAT DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY

2.2.2 Permeability of Superficial Ground

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

Distance (m)	Direction	Flow Type	Maximum Permeability	Minimum Permeability
1.0	S	Intergranular	High	Very Low
46.0	E	Intergranular	High	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.

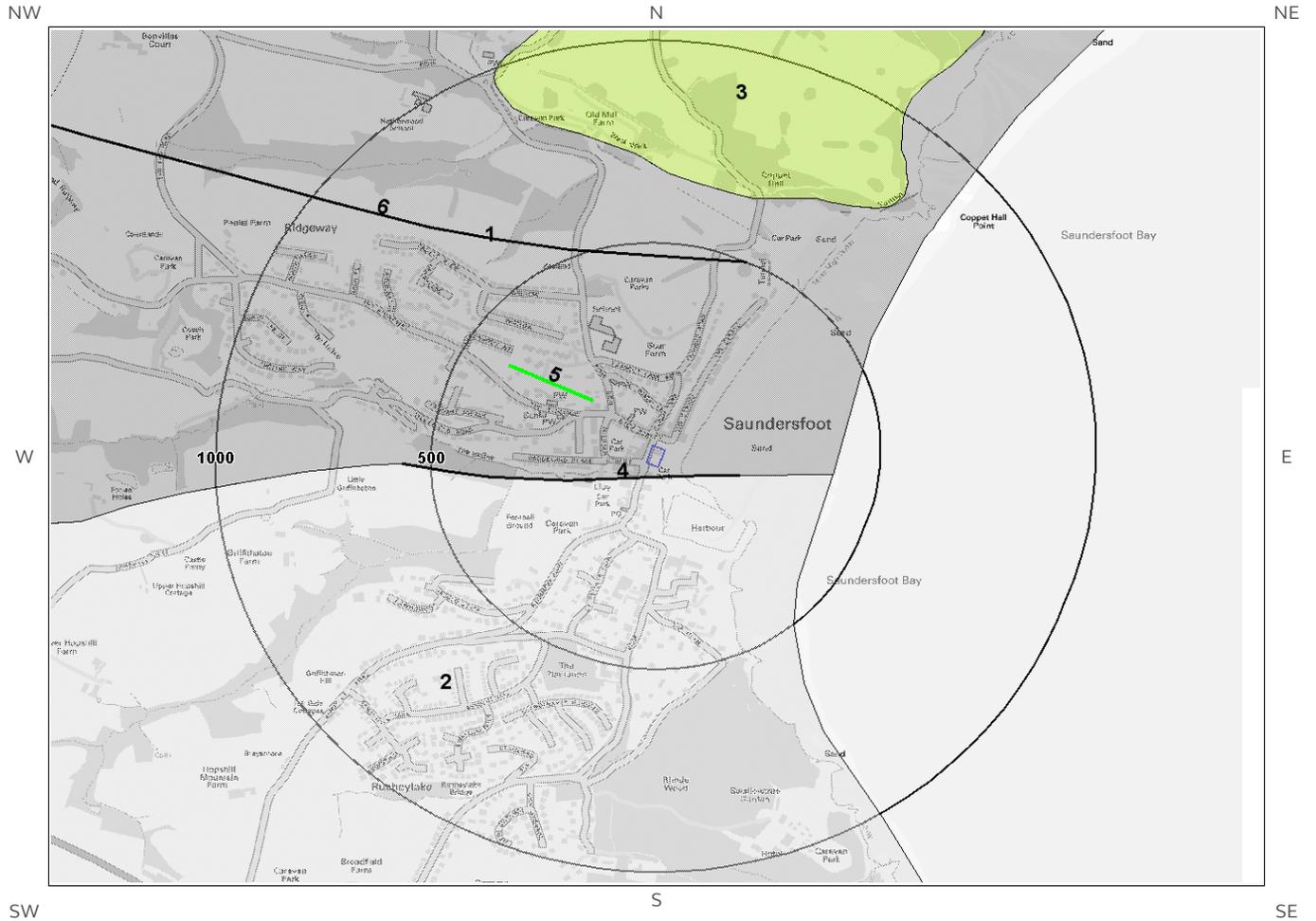
This Geology shows the main components as discrete layers, there are: Artificial/ Made Ground, Superficial/ Drift Geology and Landslips. These are all displayed with the BGS Lexicon code for the rock unit and BGS sheet number. Not all of the main geological components have nationwide coverage.

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.

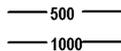
2.3 Bedrock and linear features map (1:50,000 scale)



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



Site Outline



Search Buffers (m)

2.3 Bedrock, Solid Geology & linear features

The following geological information represented on the mapping is derived from 1:50,000 scale BGS Geological mapping, Sheet No: 228

2.3.1 Bedrock/Solid Geology

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

ID	Distance	Direction	LEX Code	Rock Description	Rock Age
1	0.0	On Site	SWMCM-MDSS	SOUTH WALES MIDDLE COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN
2	25.0	S	SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION - MUDSTONE, SILTSTONE AND SANDSTONE	WESTPHALIAN

2.3.2 Permeability of Bedrock Ground

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

Distance	Direction	Flow Type	Maximum Permeability	Minimum Permeability
0.0	On Site	Fracture	Moderate	Low
25.0	S	Fracture	Moderate	Low

2.3.3 Linear features

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

ID	Distance	Direction	Category Description	Feature Description
4	25.0	S	FAULT	Fault, inferred, displacement unknown
5	176.0	NW	ROCK	Coal seam, observed
6	467.0	N	FAULT	Fault, inferred, displacement unknown

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 Radon Data

3.1 Radon Affected Areas

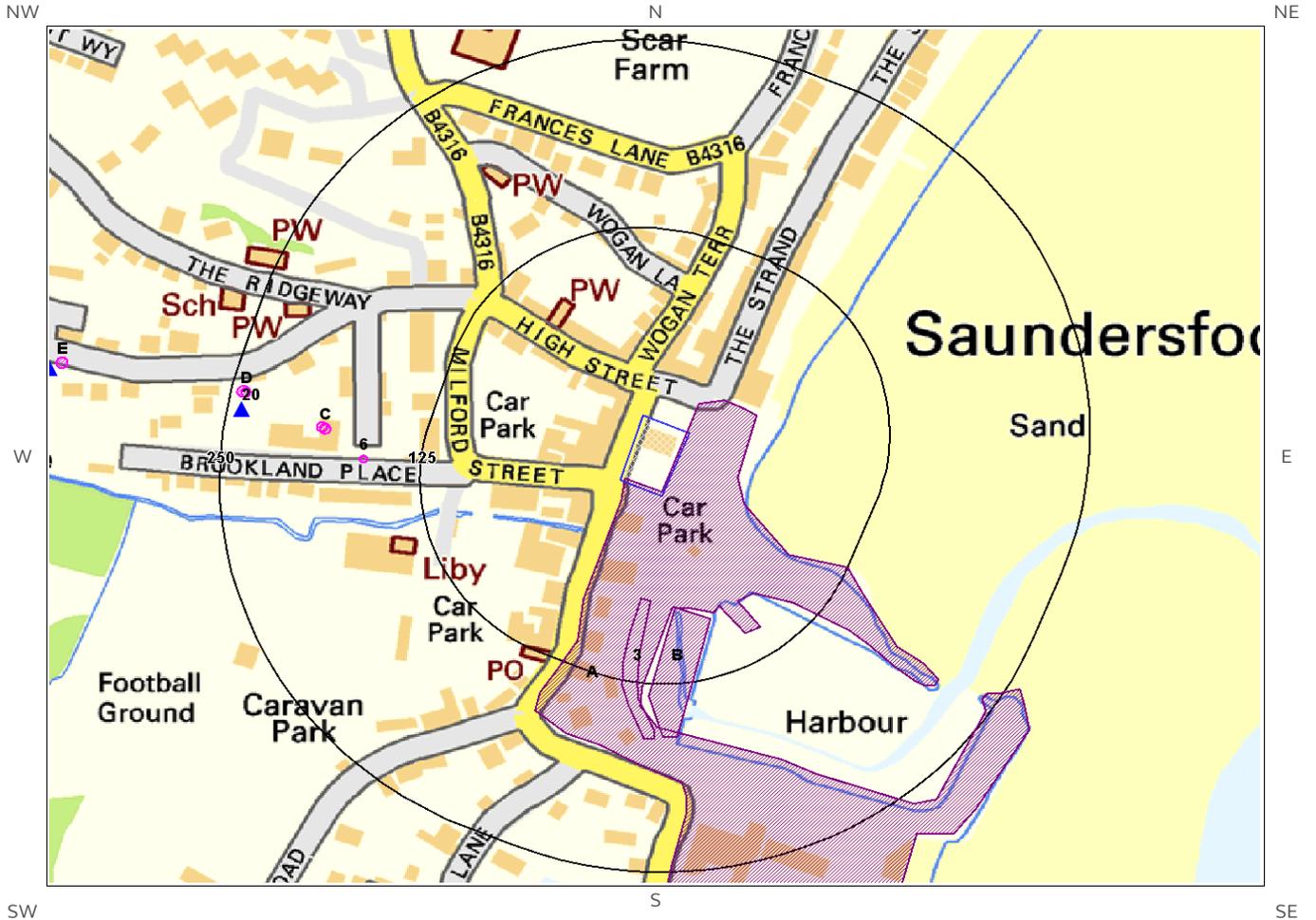
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level? The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.

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

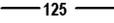
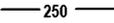
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment? No radon protective measures are necessary.

4 Ground Workings map



Ground Workings Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

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

4 Ground Workings

4.1 Historical Surface Ground Working Features derived from Historical Mapping

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

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

ID	Distance (m)	Direction	NGR	Use	Date
1A	0.0	On Site	213603 204665	Dock	1969
2A	0.0	On Site	213603 204665	Dock	1985
3	70.0	S	213629 204687	Unspecified Ground Workings	1948
4B	75.0	S	213660 204687	Dock	1948
5B	75.0	S	213660 204687	Dock	1906

4.2 Historical Underground Working Features derived from Historical Mapping

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

Are there any Historical Underground Working Features within 1000m of the study site boundary? Yes

The following Historical Underground Working Features are provided by Groundsure:

ID	Distance (m)	Direction	NGR	Use	Date
6	158.0	W	213462 204827	Unspecified Old Shafts	1948
7C	184.0	W	213438 204847	Unspecified Old Shafts	1948
8C	184.0	W	213438 204847	Unspecified Old Shafts	1906
9C	186.0	W	213436 204848	Unspecified Old Shaft	1948
10D	238.0	W	213389 204871	Unspecified Old Shafts	1906
11D	238.0	W	213389 204871	Unspecified Old Shafts	1948
12D	238.0	W	213387 204872	Unspecified Old Shafts	1948

ID	Distance (m)	Direction	NGR	Use	Date
13E	353.0	W	213274 204891	Unspecified Old Shaft	1906
Not shown	473.0	NE	214248 205587	Tunnel	1948
Not shown	473.0	NE	214248 205587	Tunnel	1988
Not shown	475.0	NE	214278 205668	Tunnel	1948
Not shown	476.0	NE	213905 205283	Tunnel	1906
Not shown	584.0	NW	213153 205187	Unspecified Old Shaft	1906
Not shown	778.0	NE	214202 205458	Tunnel	1906

4.3 Current Ground Workings

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

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

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

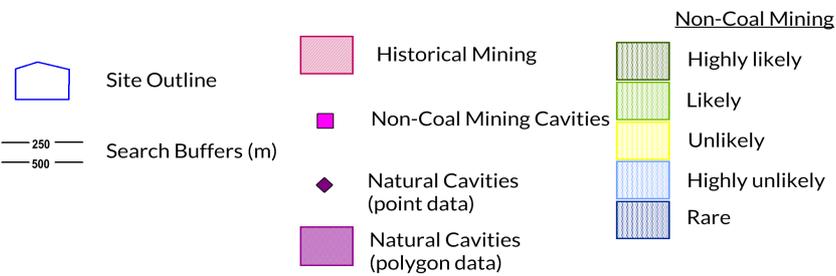
ID	Distance (m)	Direction	NGR	Commodity Produced	Pit Name	Type of working	Status
20	241.0	W	213386 204860	Coal, Deep	Saundersfoot	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
21E	364.0	W	213266 204887	Coal, Deep	Saundersfoot	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	499.0	NW	213261 205184	Coal, Deep	Whillow Farm	Working is wholly underground, access by shaft, adit or drift. Working may be termed Colliery, Mine, Drift Mine, Slant, Level, Adit or Ingoing Eye (Ingaun Ee - Scots)	Ceased
Not shown	746.0	SE	213951 204121	Sandstone	Stammers	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	756.0	S	213554 204052	Sandstone	Stammers	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased
Not shown	991.0	W	212706 204437	Sandstone	Woodside Cottage	A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site	Ceased

5 Mining, Extraction & Natural Cavities map



Mining, Extraction and Natural Cavities Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



5 Mining, Extraction & Natural Cavities

5.1 Historical Mining

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

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

The following Historical Mining information is provided by Groundsure:

ID	Distance (m)	Direction	NGR	Details	Date
2	158.0	W	213462 204827	Unspecified Old Shafts	1948
3A	184.0	W	213438 204847	Unspecified Old Shafts	1906
4A	184.0	W	213438 204847	Unspecified Old Shafts	1948
5A	186.0	W	213436 204848	Unspecified Old Shaft	1948
6B	238.0	W	213389 204871	Unspecified Old Shafts	1906
7B	238.0	W	213389 204871	Unspecified Old Shafts	1948
8B	238.0	W	213387 204872	Unspecified Old Shafts	1948
9	353.0	W	213274 204891	Unspecified Old Shaft	1906
10	584.0	NW	213153 205187	Unspecified Old Shaft	1906

5.2 Coal Mining

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

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

The following Coal Mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0.0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

5.3 Johnson Poole and Bloomer

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

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

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

5.4 Non-Coal Mining

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

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

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

ID	Distance (m)	Direction	Name	Commodity	Assessment of likelihood
1	25.0	S	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

5.5 Non-Coal Mining Cavities

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

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

Database searched and no data found.

5.6 Natural Cavities

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? No

Database searched and no data found.

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.

5.8 Gypsum Extraction

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

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

Database searched and no data found.

5.9 Tin Mining

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

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

Database searched and no data found.

5.10 Clay Mining

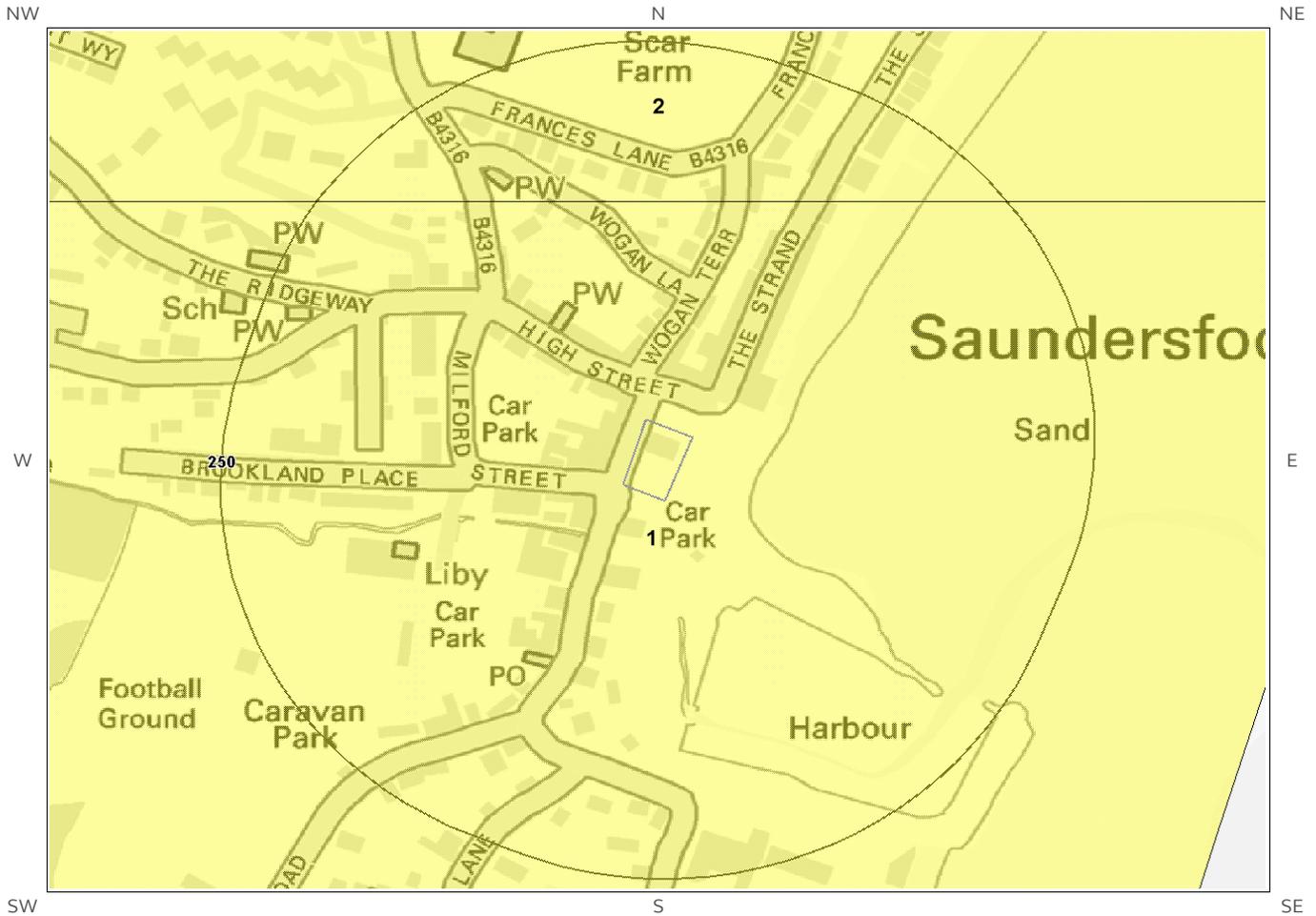
This dataset provides information on Kaolin and Ball Clay mining from relevant mining records.

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

Database searched and no data found.

6 Natural Ground Subsidence

6.1 Shrink-Swell Clay map

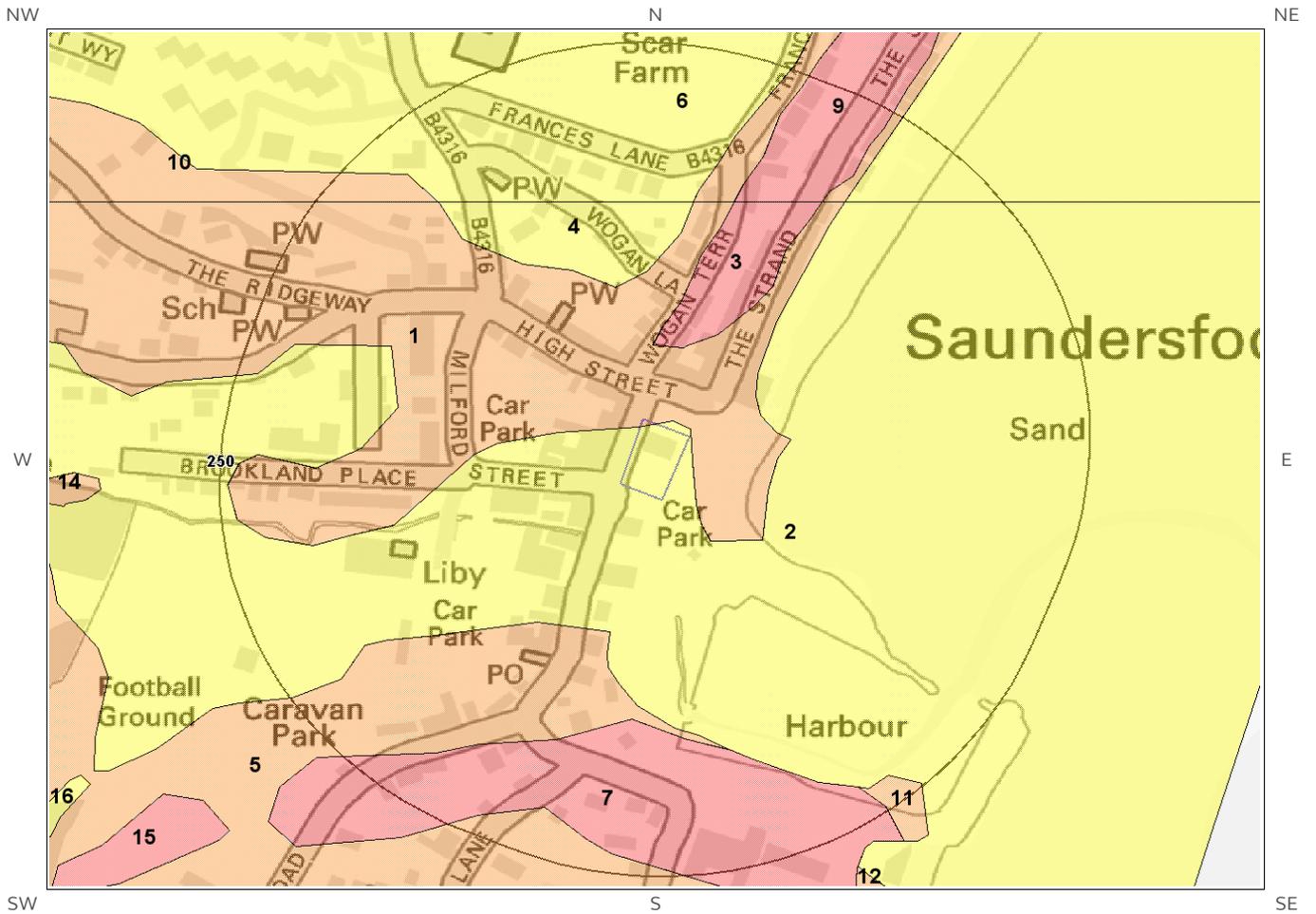


Shrink Swell Clay Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

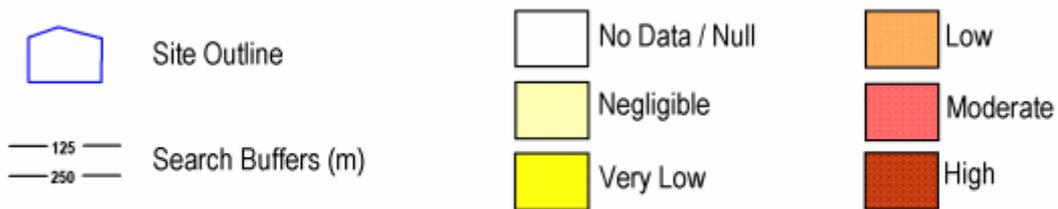


6.2 Landslides map

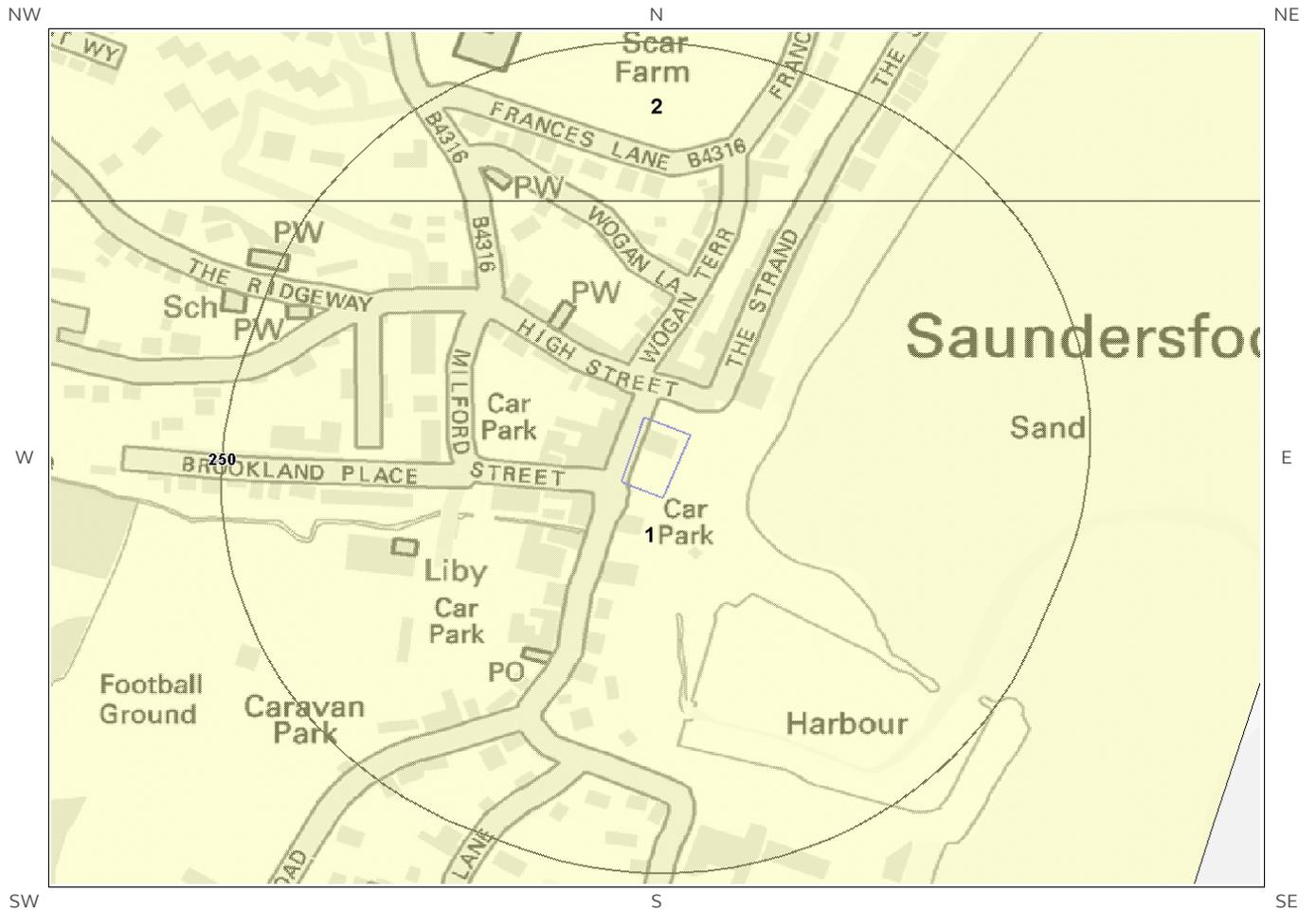


Landslides Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

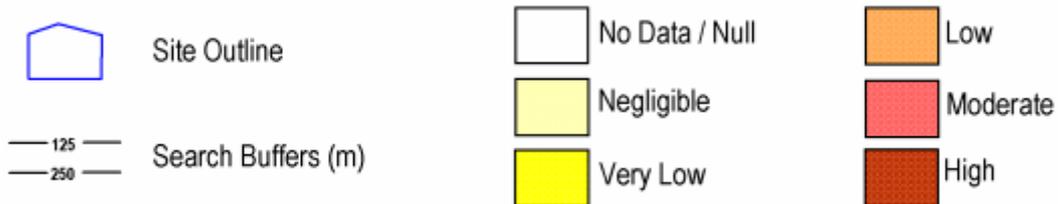


6.3 Ground Dissolution of Soluble Rocks map

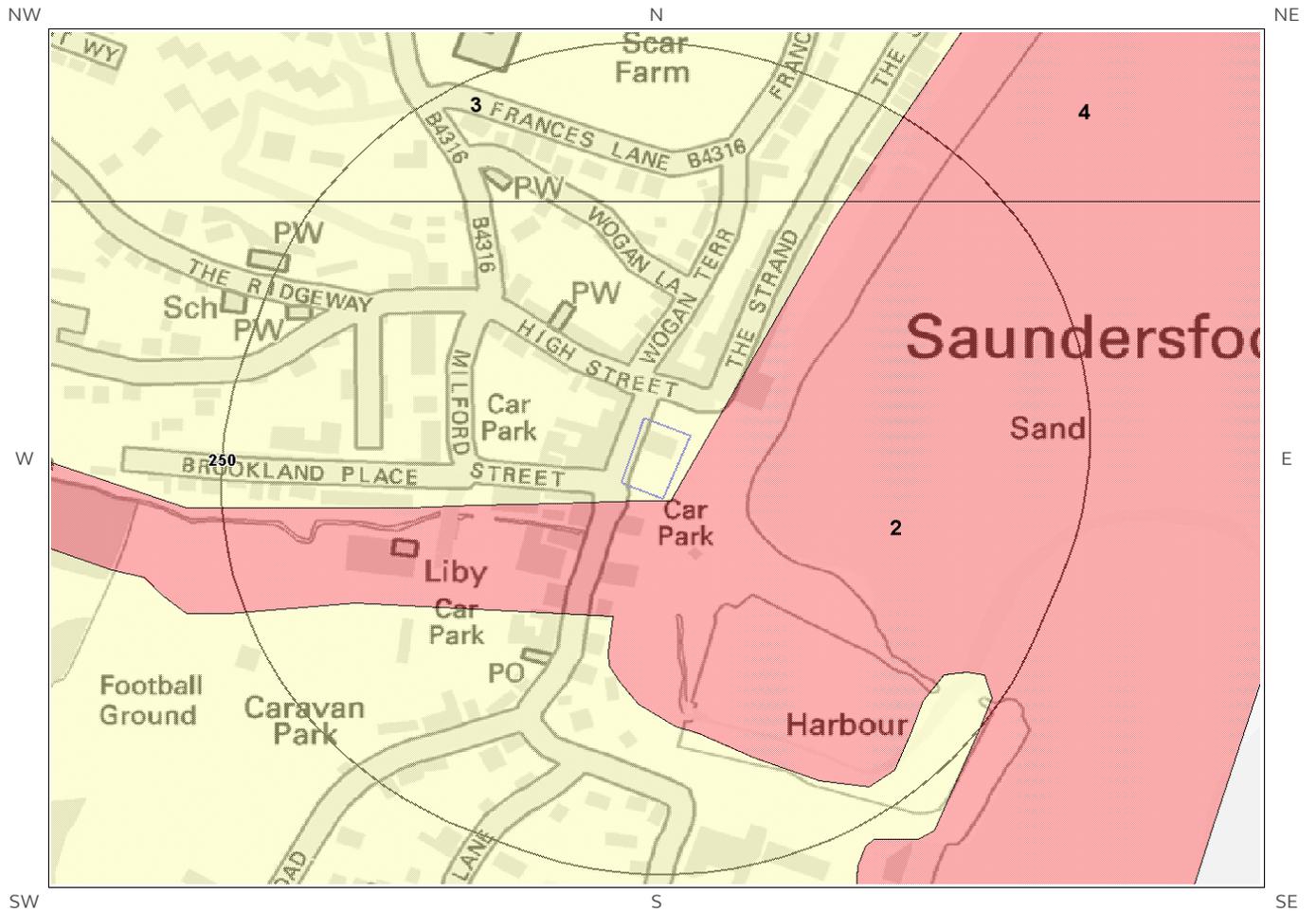


Ground Dissolution Soluble Rocks Legend

© Crown copyright and database rights 2018. Ordnance Survey license 100035207.



6.4 Compressible Deposits map

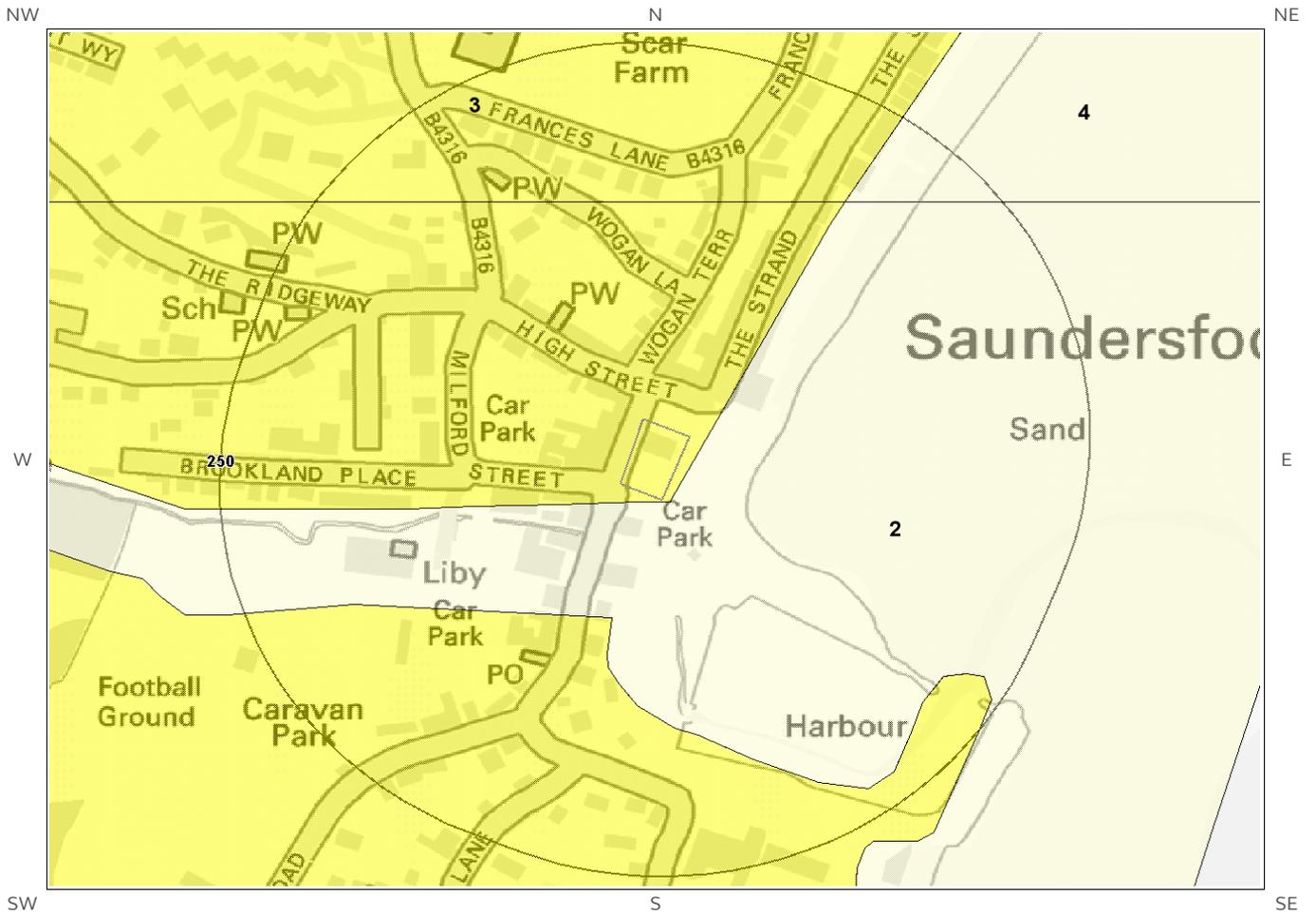


Compressible Deposits Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

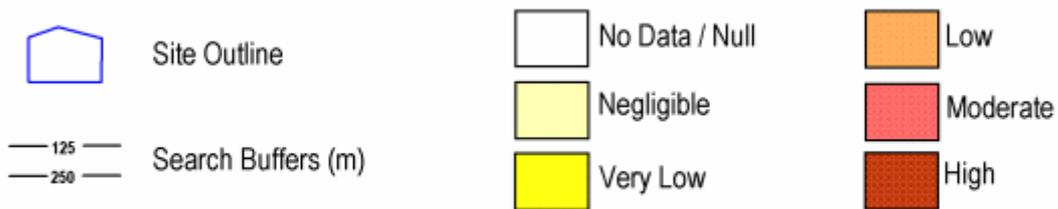


6.5 Collapsible Deposits map

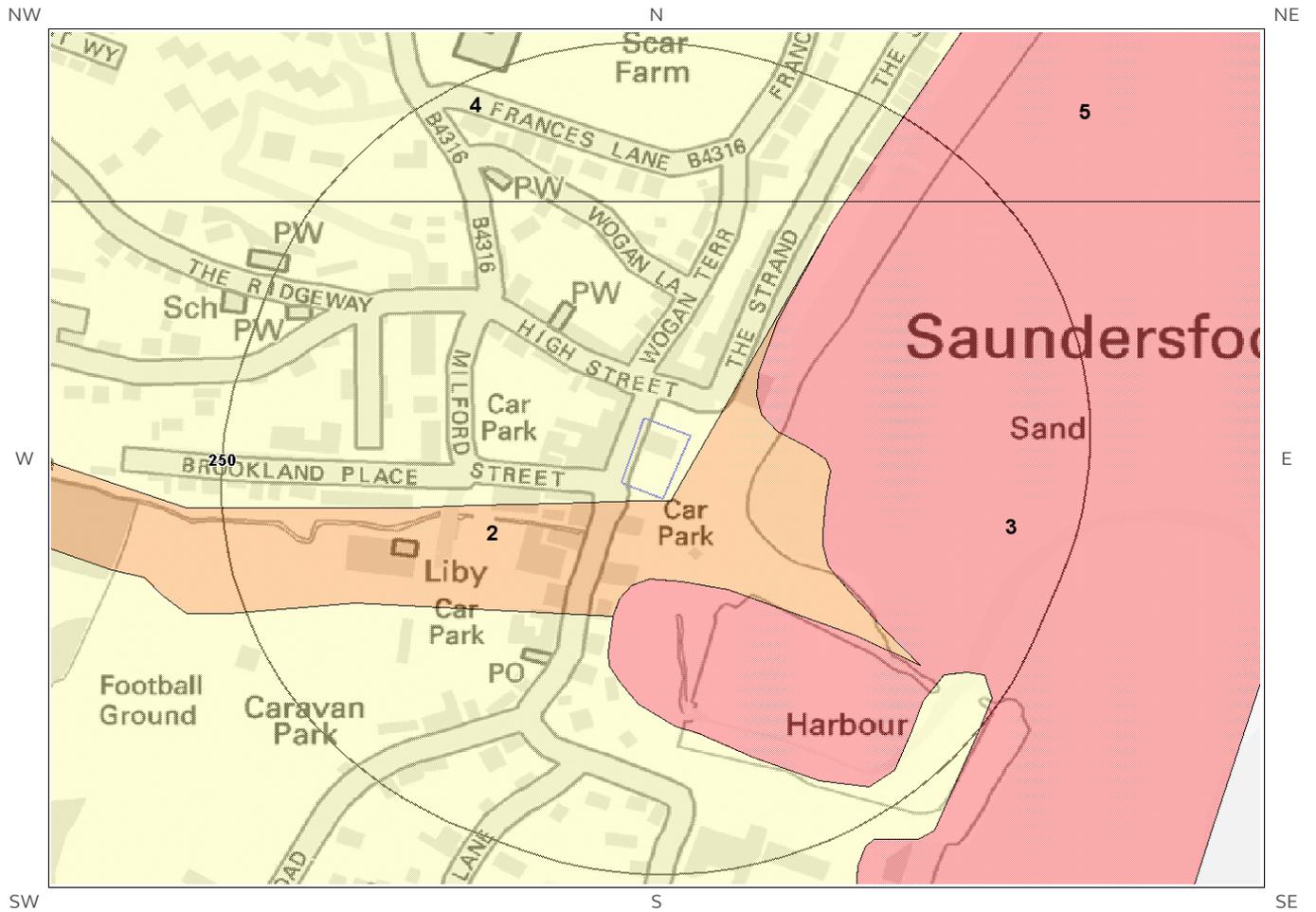


Collapsible Deposits Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

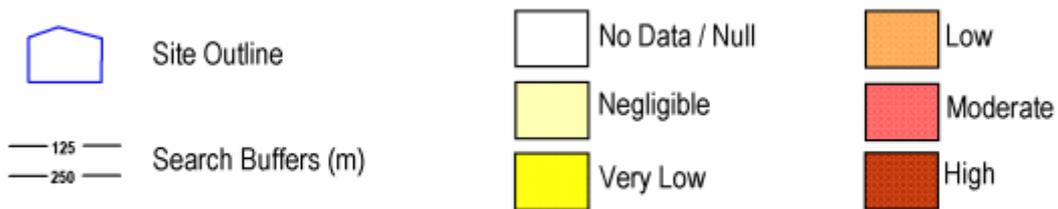


6.6 Running Sand map



Running Sand Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



6 Natural Ground Subsidence

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

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

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

6.1 Shrink-Swell Clays

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Ground conditions predominantly low plasticity. 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 due to potential problems with shrink-swell clays.

6.2 Landslides

The following Landslides information provided by the British Geological Survey:

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Low	Possibility of slope instability problems after major changes in ground conditions. Consideration should be given to stability if changes to drainage or excavations take place. Possible increase in construction cost to reduce potential slope stability problems. Existing property - no significant increase in insurance risk due to natural slope instability problems.
2	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

ID	Distance (m)	Direction	Hazard Rating	Details
3	50.0	N	Moderate	<p>Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build - consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property - probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.</p>

6.3 Ground Dissolution of Soluble Rocks

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	<p>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.</p>

6.4 Compressible Deposits

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

ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	<p>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.</p>
2	1.0	S	Moderate	<p>Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build - consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property - possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.</p>

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

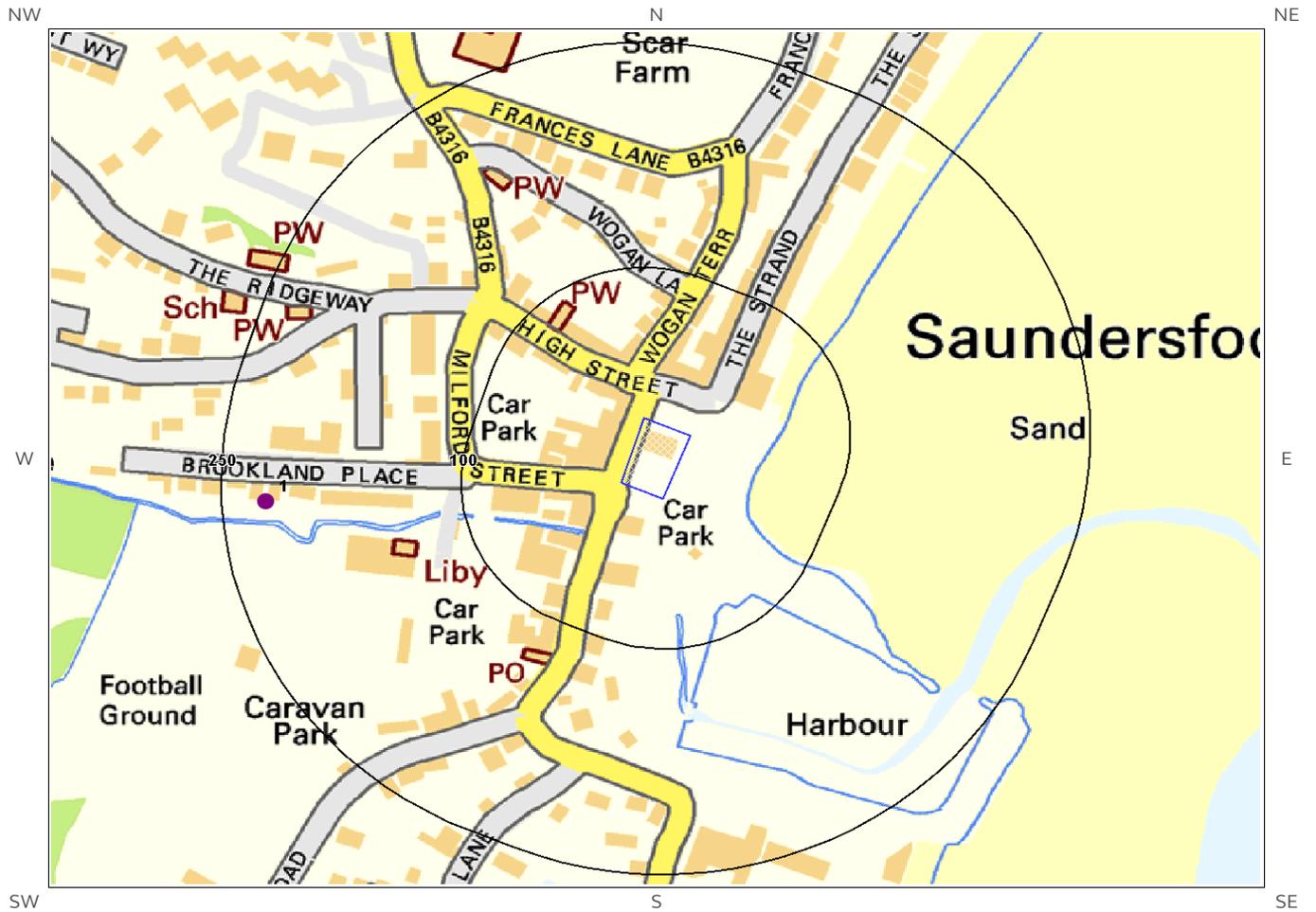
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Very Low	Deposits with potential to collapse when loaded and saturated are unlikely to be present. No special ground investigation required or increased construction costs or increased financial risk due to potential problems with collapsible deposits.
2	1.0	S	Negligible	No indicators for collapsible deposits identified. No actions required to avoid problems due to collapsible deposits. No special ground investigation required, or increased construction costs or increased financial risk due to potential problems with collapsible deposits.

6.6 Running Sands

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

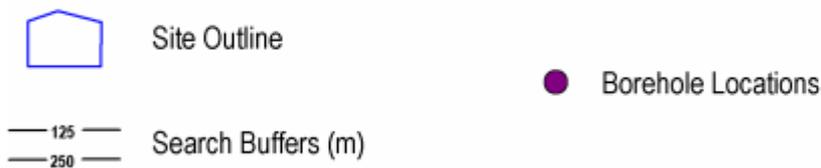
ID	Distance (m)	Direction	Hazard Rating	Details
1	0.0	On Site	Negligible	No indicators for running sand identified. No special actions required to avoid problems due to running sand. No special ground investigation required, and increased construction costs or increased financial risks are unlikely due to potential problems with running sand.
2	1.0	S	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.
3	46.0	E	Moderate	Significant potential for running sand problems with relatively small changes in ground conditions. Avoid large amounts of water entering the ground (for example through pipe leakage or soak-aways). Do not dig (deep) holes into saturated ground near the property without technical advice. For new build - consider the consequences of soil and groundwater conditions during and after construction. For existing property - possible increase in insurance risk from running sand, for example, due to water leakage, high rainfall events or flooding.

7 Borehole Records map



Borehole Records Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



7 Borehole Records

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

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

1

ID	Distance (m)	Direction	NGR	BGS Reference	Drilled Length	Borehole Name
1	223.0	W	213400 204800	SN10SW2	946.0	SECTION OF COAL MEASURES AT SOUNDERSFOOT

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/252964

8 Estimated Background Soil Chemistry

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

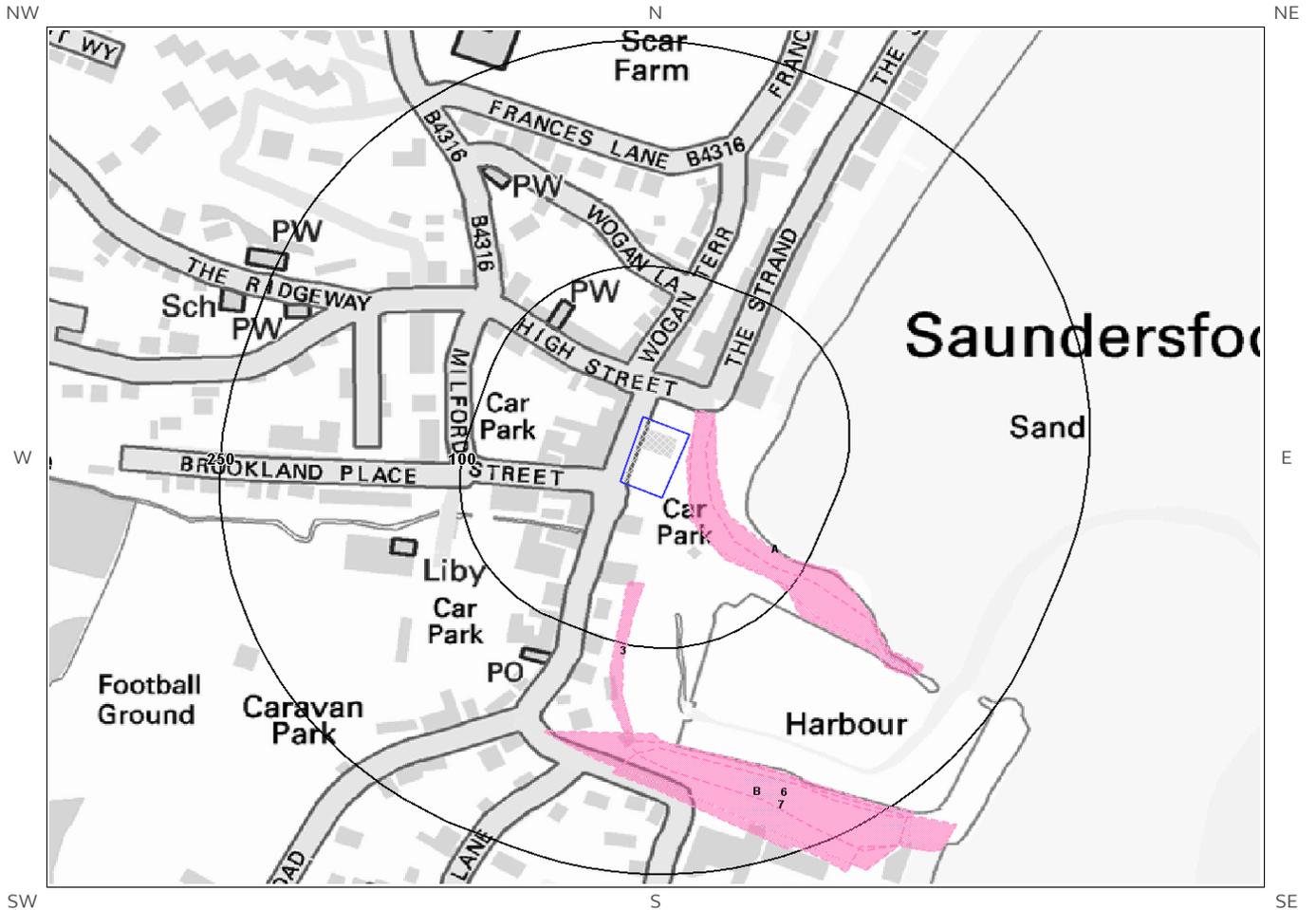
4

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.

Distance (m)	Direction	Sample Type	Arsenic (As)	Cadmium (Cd)	Chromium (Cr)	Nickel (Ni)	Lead (Pb)
0.0	On Site	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
1.0	S	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
25.0	S	Sediment	<15 mg/kg	<1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg	<100 mg/kg
46.0	E	Sediment	<15 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.

9 Railways and Tunnels map



Railways and Tunnels Legend

© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.
© OpenStreetMapContributors

- | | | | | | |
|---|---|---|--|---|---|
|  | Site Outline |  | Underground or Partially Underground Railway / Subway System |  | Railway Track (OpenStreetMap) |
|  | Railway Tunnel (OS Mapping) |  | High Speed 2 |  | High Speed 2 Revised Proposed Route |
|  | Abandoned or Dismantled Railway (OpenStreetMap) |  | Crossrail 1 |  | Railway and/or Tunnel Feature from Historical Mapping |
|  | Railway Track (OS Mapping) | | | | |
|  | 250 Search Buffers (m) | | | | |
|  | 500 Search Buffers (m) | | | | |

9 Railways and Tunnels

9.1 Tunnels

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

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

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

Database searched and no data found.

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

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

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

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

Database searched and no data found.

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

9.2 Historical Railway and Tunnel Features

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

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

Have any historical railway or tunnel features been identified within 250m of the study site boundary? Yes

ID	Distance (m)	Direction	NGR	Details	Date
1A	2	E	213696 204771	Tramway Sidings	1906
2A	2	E	213687 204772	Railway Sidings	1887
3	58	S	213621 204695	Railway Sidings	1887
4B	157	S	213689 204606	Railway Sidings	1906
5B	157	S	213689 204606	Railway Sidings	1948
6	162	S	213714 204604	Railway Sidings	1887

ID	Distance (m)	Direction	NGR	Details	Date
7	166	S	213725 204595	Railway Sidings	1963

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

9.3 Historical Railways

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

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

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

Database searched and no data found.

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

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

9.4 Active Railways

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

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

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

Database searched and no data found.

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

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

9.5 Railway Projects

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

Further information on proximity to these routes, the project construction status and associated works can be obtained through the purchase of a Groundsure HS2 and Crossrail 1 Report.

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.

Contact Details

Quantum Geotechnical
Telephone: 01554 744880
rmcdermott@quantum-gb.co.uk



British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email: enquiries@bgs.ac.uk
Web: www.bgs.ac.uk



BGS Geological Hazards Reports and general geological enquiries

British Gypsum

British Gypsum Ltd
East Leake
Loughborough
Leicestershire
LE12 6HX



The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



Public Health England

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



Johnson Poole & Bloomer Limited

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



Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505
Website: <http://www.ordnancesurvey.co.uk/>



Getmapping PLC

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



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



Acknowledgements: Ordnance Survey © Crown Copyright and/or Database Right. All Rights Reserved. Licence Number [03421028]. This report has been prepared in accordance with the Groundsure Ltd standard Terms and Conditions of business for work of this nature.

Standard Terms and Conditions

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

APPENDIX IV – GROUNDSURE® ENVIROINSIGHT® REPORT

Address: 213642, 204820,
Date: 24 Jan 2018
Reference: HMD-213-4682853
Client: Quantum Geotechnical Ltd

NW

N

NE

W

E



SW

S

SE

Aerial Photograph Capture date: 23-Jul-2014
Grid Reference: 213642,204820
Site Size: 0.13ha

Report Reference: HMD-213-4682853
Client Reference: G40102_-_Ocean_Square

Contents Page

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	14
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	21
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	21
2.2 Dangerous or Hazardous Sites	21
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents	21
2.3.1 Records of National Incidents Recording System, List 2 within 500m of the study site	21
2.3.2 Records of National Incidents Recording System, List 1 within 500m of the study site	22
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	22
3. Landfill and Other Waste Sites Map	23
3. Landfill and Other Waste Sites	24
3.1 Landfill Sites	24
3.1.1 Records from Environment Agency/Natural Resources Wales landfill data within 1000m of the study site	24
3.1.2 Records of Environment Agency/Natural Resources Wales historic landfill sites within 1500m of the study site	24
3.1.3 Records of BGS/DoE non-operational landfill sites within 1500m of the study site	24
3.1.4 Records of Landfills from Local Authority and Historical Mapping Records within 1500m of the study site	24
3.2 Other Waste Sites	24
3.2.1 Records of waste treatment, transfer or disposal sites within 500m of the study site	24
3.2.2 Records of Environment Agency/Natural Resources Wales licensed waste sites within 1500m of the study site	25
4. Current Land Use Map	26
4. Current Land Uses	27
4.1 Current Industrial Data	27
4.2 Petrol and Fuel Sites	27
4.3 National Grid High Voltage Underground Electricity Transmission Cables	28
4.4 National Grid High Pressure Gas Transmission Pipelines	28

5. Geology	29
5.1 Artificial Ground and Made Ground.....	29
5.2 Superficial Ground and Drift Geology	29
5.3 Bedrock and Solid Geology	29
6 Hydrogeology and Hydrology	30
6a. Aquifer Within Superficial Geology	30
6b. Aquifer Within Bedrock Geology and Abstraction Licences	31
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licences	32
6d. Hydrogeology – Source Protection Zones within confined aquifer	33
6e. Hydrology – Detailed River Network and River Quality	34
6.Hydrogeology and Hydrology	35
6.1 Aquifer within Superficial Deposits.....	35
6.2 Aquifer within Bedrock Deposits.....	35
6.3 Groundwater Abstraction Licences.....	36
6.4 Surface Water Abstraction Licences.....	36
6.5 Potable Water Abstraction Licences.....	36
6.6 Source Protection Zones.....	37
6.7 Source Protection Zones within Confined Aquifer.....	37
6.8 Groundwater Vulnerability and Soil Leaching Potential.....	37
6.9 River Quality.....	37
6.9.1 Biological Quality:.....	37
6.9.2 Chemical Quality:.....	38
6.10 Detailed River Network.....	38
6.11 Surface Water Features.....	39
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)	40
7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map	41
7 Flooding	42
7.1 River and Coastal Zone 2 Flooding.....	42
7.2 River and Coastal Zone 3 Flooding.....	42
7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating.....	43
7.4 Flood Defences.....	43
7.5 Areas benefiting from Flood Defences.....	43
7.6 Areas benefiting from Flood Storage.....	43
7.7 Groundwater Flooding Susceptibility Areas.....	44
7.7.1 Are there any British Geological Survey groundwater flooding susceptibility areas within 50m of the boundary of the study site? Yes.....	44
7.7.2 What is the highest susceptibility to groundwater flooding in the search area based on the underlying geological conditions?.....	44
7.8 Groundwater Flooding Confidence Areas.....	44
8. Designated Environmentally Sensitive Sites Map	45
8. Designated Environmentally Sensitive Sites	46
8.1 Records of Sites of Special Scientific Interest (SSSI) within 2000m of the study site:.....	46
8.2 Records of National Nature Reserves (NNR) within 2000m of the study site:.....	46
8.3 Records of Special Areas of Conservation (SAC) within 2000m of the study site:.....	46
8.4 Records of Special Protection Areas (SPA) within 2000m of the study site:.....	47
8.5 Records of Ramsar sites within 2000m of the study site:.....	47
8.6 Records of Ancient Woodland within 2000m of the study site:	48
8.7 Records of Local Nature Reserves (LNR) within 2000m of the study site:.....	51
8.8 Records of World Heritage Sites within 2000m of the study site:.....	51
8.9 Records of Environmentally Sensitive Areas within 2000m of the study site:	51

8.10 Records of Areas of Outstanding Natural Beauty (AONB) within 2000m of the study site:	51
8.11 Records of National Parks (NP) within 2000m of the study site:	52
8.12 Records of Nitrate Sensitive Areas within 2000m of the study site:.....	52
8.13 Records of Nitrate Vulnerable Zones within 2000m of the study site:.....	52
8.14 Records of Green Belt land within 2000m of the study site:.....	52
9. Natural Hazards Findings	53
9.1 Detailed BGS GeoSure Data.....	53
9.1.1 Shrink Swell.....	53
9.1.2 Landslides.....	53
9.1.3 Soluble Rocks.....	53
9.1.4 Compressible Ground.....	54
9.1.5 Collapsible Rocks.....	54
9.1.6 Running Sand.....	54
9.2 Radon.....	55
9.2.1 Radon Affected Areas.....	55
9.2.2 Radon Protection.....	55
10. Mining	56
10.1 Coal Mining.....	56
10.2 Non-Coal Mining.....	56
10.3 Brine Affected Areas	56
Contact Details	57
Standard Terms and Conditions	59

Overview of Findings

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

Section 1: Historical Industrial Sites	On-site	0-50	51-250	251-500
1.1 Potentially Contaminative Uses identified from 1:10,000 scale mapping	3	2	29	9
1.2 Additional Information – Historical Tank Database	0	0	0	0
1.3 Additional Information – Historical Energy Features Database	0	0	3	4
1.4 Additional Information – Historical Petrol and Fuel Site Database	0	0	0	0
1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database	0	11	0	0
1.6 Potentially Infilled Land	3	0	21	8
Section 2: Environmental Permits, Incidents and Registers	On-site	0-50m	51-250	251-500
2.1 Industrial Sites Holding Environmental Permits and/or Authorisations				
2.1.1 Records of historic IPC Authorisations	0	0	0	0
2.1.2 Records of Part A(1) and IPPC Authorised Activities	0	0	0	0
2.1.3 Records of Red List Discharge Consents	0	0	0	0
2.1.4 Records of List 1 Dangerous Substances Inventory sites	0	0	0	0
2.1.5 Records of List 2 Dangerous Substances Inventory sites	0	0	0	0
2.1.6 Records of Part A(2) and Part B Activities and Enforcements	0	0	0	0
2.1.7 Records of Category 3 or 4 Radioactive Substances Authorisations	0	0	0	0
2.1.8 Records of Licensed Discharge Consents	0	5	0	15
2.1.9 Records of Water Industry Referrals	0	0	0	0
2.1.10 Records of Planning Hazardous Substance Consents and Enforcements within 500m of the study site	0	0	0	0
2.2 Records of COMAH and NIHHS sites	0	0	0	0
2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents				
2.3.1 National Incidents Recording System, List 2	0	0	4	2
2.3.2 National Incidents Recording System, List 1	0	0	0	0
2.4 Sites Determined as Contaminated Land under Part 2A EPA 1990	0	0	0	0

Section 3: Landfill and Other Waste Sites	On-site	0-50m	51-250	251-500	501-1000	1000-1500
3.1 Landfill Sites						
3.1.1 Environment Agency/Natural Resources Wales Registered Landfill Sites	0	0	0	0	0	Not searched
3.1.2 Environment Agency/Natural Resources Wales Historic Landfill Sites	0	0	0	0	0	0
3.1.3 BGS/DoE Landfill Site Survey	0	0	0	0	0	0
3.1.4 Records of Landfills in Local Authority and Historical Mapping Records	0	0	0	0	0	0
3.2 Landfill and Other Waste Sites Findings						
3.2.1 Operational and Non-Operational Waste Treatment, Transfer and Disposal Sites	0	0	0	0	Not searched	Not searched
3.2.2 Environment Agency/Natural Resources Wales Licensed Waste Sites	0	0	0	0	0	0

Section 4: Current Land Use	On-site	0-50m	51-250	251-500
4.1 Current Industrial Sites Data	0	3	5	Not searched
4.2 Records of Petrol and Fuel Sites	0	0	0	0
4.3 National Grid Underground Electricity Cables	0	0	0	0
4.4 National Grid Gas Transmission Pipelines	0	0	0	0

Section 5: Geology	
5.1 Are there any records of Artificial Ground and Made Ground present beneath the study site?	No
5.2 Are there any records of Superficial Ground and Drift Geology present beneath the study site?	Yes
5.3 For records of Bedrock and Solid Geology beneath the study site see the detailed findings section.	

Section 6: Hydrogeology and Hydrology	0-500m					
6.1 Are there any records of Strata Classification in the Superficial Geology within 500m of the study site?	Yes					
6.2 Are there any records of Strata Classification in the Bedrock Geology within 500m of the study site?	Yes					
	On-site	0-50m	51-250	251-500	501-1000	1000-2000
6.3 Groundwater Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.4 Surface Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	3
6.5 Potable Water Abstraction Licences (within 2000m of the study site)	0	0	0	0	0	0
6.6 Source Protection Zones (within 500m of the study site)	0	0	0	0	Not searched	Not searched
6.7 Source Protection Zones within Confined Aquifer	0	0	0	0	Not searched	Not searched
6.8 Groundwater Vulnerability and Soil Leaching Potential (within 500m of the study site)	1	0	0	0	Not searched	Not searched

Section 6: Hydrogeology and Hydrology

0-500m

	On-site	0-50m	51-250	251-500	501-1000	1000-1500
6.9 Is there any Environment Agency/Natural Resources Wales information on river quality within 1500m of the study site?	No	No	No	No	No	No
6.10 Detailed River Network entries within 500m of the site	0	2	2	10	Not searched	Not searched
6.11 Surface water features within 250m of the study site	No	Yes	Yes	Not searched	Not searched	Not searched

Section 7: Flooding

7.1 Are there any Environment Agency Zone 2 floodplains within 250m of the study site?	Yes					
7.2 Are there any Environment Agency/Natural Resources Wales Zone 3 floodplains within 250m of the study site?	Yes					
7.3 What is the Risk of flooding from Rivers and the Sea (RoFRaS) rating for the study site?	Medium					
7.4 Are there any Flood Defences within 250m of the study site?	No					
7.5 Are there any areas benefiting from Flood Defences within 250m of the study site?	No					
7.6 Are there any areas used for Flood Storage within 250m of the study site?	No					
7.7 What is the maximum BGS Groundwater Flooding susceptibility within 50m of the study site?	Potential at Surface					
7.8 What is the BGS confidence rating for the Groundwater Flooding susceptibility areas?	Moderate					

Section 8: Designated Environmentally Sensitive Sites

	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.1 Records of Sites of Special Scientific Interest (SSSI)	0	1	1	0	0	0
8.2 Records of National Nature Reserves (NNR)	0	0	0	0	0	0
8.3 Records of Special Areas of Conservation (SAC)	0	1	0	2	0	0
8.4 Records of Special Protection Areas (SPA)	0	0	0	1	0	0
8.5 Records of Ramsar sites	0	0	0	0	0	0
8.6 Records of Ancient Woodlands	0	0	0	2	28	35
8.7 Records of Local Nature Reserves (LNR)	0	0	0	0	0	0
8.8 Records of World Heritage Sites	0	0	0	0	0	0
8.9 Records of Environmentally Sensitive Areas	0	0	0	0	0	0

Section 8: Designated Environmentally Sensitive Sites	On-site	0-50m	51-250	251-500	501-1000	1000-2000
8.10 Records of Areas of Outstanding Natural Beauty (AONB)	0	0	0	0	0	0
8.11 Records of National Parks	1	0	0	0	0	0
8.12 Records of Nitrate Sensitive Areas	0	0	0	0	0	0
8.13 Records of Nitrate Vulnerable Zones	0	0	0	0	0	0
8.14 Records of Green Belt land	0	0	0	0	0	0

Section 9: Natural Hazards

9.1 What is the maximum risk of natural ground subsidence?	Moderate
9.1.1 What is the maximum Shrink-Swell hazard rating identified on the study site?	Very Low
9.1.2 What is the maximum Landslides hazard rating identified on the study site?	Moderate
9.1.3 What is the maximum Soluble Rocks hazard rating identified on the study site?	Negligible
9.1.4 What is the maximum Compressible Ground hazard rating identified on the study site?	Moderate
9.1.5 What is the maximum Collapsible Rocks hazard rating identified on the study site?	Very Low
9.1.6 What is the maximum Running Sand hazard rating identified on the study site?	Moderate
9.2 Radon	
9.2.1 Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The property is in a Radon Affected Area, as between 1 and 3% of properties are above the Action Level.
9.2.2 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.

Section 10: Mining

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

Using this report

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

1. Historical Industrial Sites

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.

2. Environmental Permits, Incidents and Registers

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

3. Landfills and Other Waste Sites

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

4. Current Land Uses

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

5. Geology

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

6. Hydrogeology and Hydrology

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

7. Flooding

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.

8. Designated Environmentally Sensitive Sites

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

9. Natural Hazards

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

10. Mining

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

11. Contacts

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

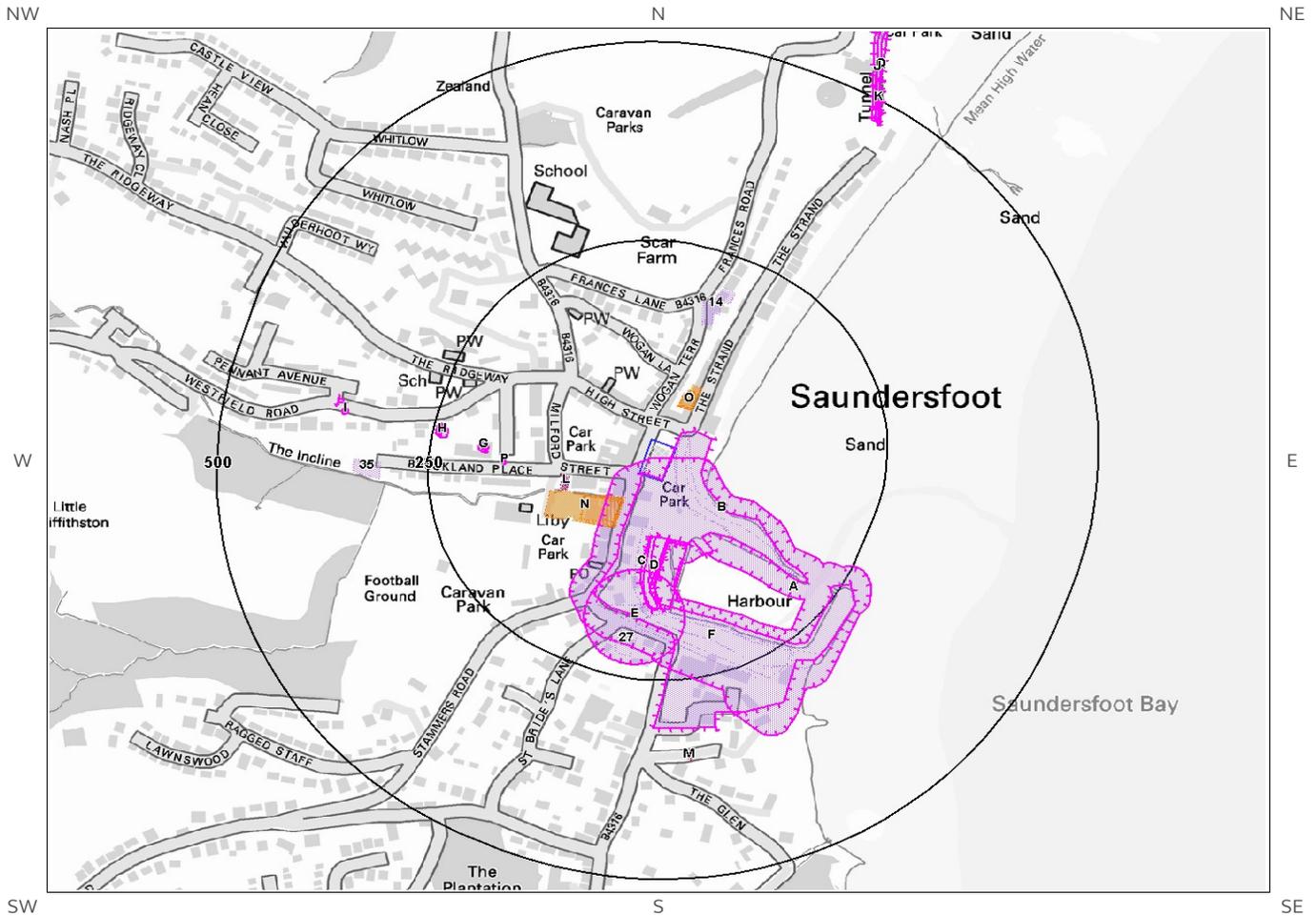
Note: Maps

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

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

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

1. Historical Land Use



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



1. Historical Industrial Sites

1.1 Potentially Contaminative Uses identified from 1:10,000 scale Mapping

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: 43

ID	Distance [m]	Direction	Use	Date
1A	0	On Site	Dock	1963
2A	0	On Site	Dock	1985
3A	0	On Site	Dock	1969
4B	2	E	Tramway Sidings	1906
5B	2	E	Railway Sidings	1887
6C	58	S	Railway Sidings	1887
7C	70	S	Unspecified Ground Workings	1948
8D	70	S	Dock	1887
9D	70	S	Dock	1887
10D	75	S	Dock	1948
11D	75	S	Dock	1906
12E	114	S	Dock	1887
13E	156	S	Smithy	1887
14	156	N	Police Station	1988
15F	157	S	Railway Sidings	1906
16F	157	S	Railway Sidings	1948
17P	158	W	Unspecified Old Shafts	1963
18F	162	S	Railway Sidings	1887
19F	166	S	Railway Sidings	1963
20G	181	W	Unspecified Heap	1887
21G	181	W	Unspecified Heap	1887
22G	184	W	Unspecified Old Shafts	1948
23G	184	W	Unspecified Old Shafts	1906
24G	185	W	Unspecified Old Shafts	1887
25G	185	W	Unspecified Old Shafts	1887
26G	186	W	Unspecified Old Shaft	1963
27	187	S	Smithy	1906
28H	233	W	Unspecified Heap	1887
29H	233	W	Unspecified Heap	1887
30H	238	W	Unspecified Old Shafts	1906
31H	238	W	Unspecified Old Shafts	1948
32H	238	W	Unspecified Old Shafts	1963
33H	241	W	Unspecified Old Shafts	1887

34H	241	W	Unspecified Old Shafts	1887
35	307	W	Pumping Station	1985
36I	353	W	Unspecified Old Shaft	1906
37I	362	W	Unspecified Old Shaft	1887
38I	362	W	Unspecified Old Shaft	1887
39J	473	NE	Tunnel	1948
40J	473	NE	Tunnel	1988
41Q	475	NE	Tunnel	1948
42K	476	NE	Tunnel	1906
43K	477	NE	Tunnel	1887

1.2 Additional Information – Historical Tank Database

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: 0

Database searched and no data found.

1.3 Additional Information – Historical Energy Features Database

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: 7

ID	Distance (m)	Direction	Use	Date
44L	83	W	Electricity Substation	1996
45L	87	W	Electricity Substation	1993
46L	91	W	Electricity Substation	1988
47M	346	S	Electricity Substation	1988
48M	346	S	Electricity Substation	1988
49M	346	S	Electricity Substation	1993
50M	348	S	Electricity Substation	1996

1.4 Additional Information – Historical Petrol and Fuel Site Database

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.

1.5 Additional Information – Historical Garage and Motor Vehicle Repair Database

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: 11

ID	Distance (m)	Direction	Use	Date
51N	35	SW	Garage	1966
52N	39	SW	Garage	1973
53N	41	SW	Garage	1988
54N	41	SW	Garage	1993
55N	42	SW	Garage	1996
56O	48	N	Garage	1996
57O	49	N	Garage	1993
58O	49	N	Garage	1988
59O	49	N	Garage	1988
60O	50	N	Garage	1973
61O	50	N	Garage	1966

1.6 Potentially Infilled Land

Records of Potentially Infilled Features from 1:10,000 scale mapping within 500m of the study site: 32

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

ID	Distance(m)	Direction	Use	Date
62A	0	On Site	Dock	1985
63A	0	On Site	Dock	1969
64A	0	On Site	Dock	1963
65D	70	S	Unspecified Ground Workings	1948
66D	70	S	Dock	1887
67D	70	S	Dock	1887
68D	75	S	Dock	1906
69D	75	S	Dock	1948
70E	114	S	Dock	1887
71P	158	W	Unspecified Old Shafts	1963
72G	181	W	Unspecified Heap	1887
73G	181	W	Unspecified Heap	1887
74G	184	W	Unspecified Old Shafts	1948
75G	184	W	Unspecified Old Shafts	1906
76G	185	W	Unspecified Old Shafts	1887

77G	185	W	Unspecified Old Shafts	1887
78G	186	W	Unspecified Old Shaft	1963
79H	233	W	Unspecified Heap	1887
80H	233	W	Unspecified Heap	1887
81H	238	W	Unspecified Old Shafts	1948
82H	238	W	Unspecified Old Shafts	1906
83H	238	W	Unspecified Old Shafts	1963
84H	241	W	Unspecified Old Shafts	1887
85H	241	W	Unspecified Old Shafts	1887
86I	353	W	Unspecified Old Shaft	1906
87I	362	W	Unspecified Old Shaft	1887
88I	362	W	Unspecified Old Shaft	1887
89J	473	NE	Tunnel	1988
90J	473	NE	Tunnel	1948
91Q	475	NE	Tunnel	1948
92K	476	NE	Tunnel	1906
93K	477	NE	Tunnel	1887

2. Environmental Permits, Incidents and Registers Map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

- | | | | | | |
|---|--------------------|---|-------------------------------|---|--|
|  | Site Outline |  | Recorded Pollution Incident |  | RAS 3 & 4 Authorisations |
|  | Search Buffers (m) |  | Dangerous Substances (List 1) |  | Part A(1) Authorised Processes and Historic IPC Authorisations |
|  | 250 |  | Dangerous Substances (List 2) |  | Part A(2) and Part B Authorised Processes |
|  | 500 |  | Water Industry Referrals |  | COMAH / NIHS Sites |
| | |  | Licensed Discharge Consents |  | Sites Determined as Contaminated Land |
| | |  | Red List Discharge Consents |  | Hazardous Substance Consents and Enforcements |

2. Environmental Permits, Incidents and Registers

2.1 Industrial Sites Holding Licences and/or Authorisations

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:

20

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

ID	Distance (m)	Direction	NGR	Details
7B	26	SW	213600 204800	Address: MILFORD STREET P.S.EM.D SAUND, MILFORD STREET P.S.EM.D SAUND, UNKNOWN, UNKNOWN, UNKNOWN, UNKNOWN Effluent Type: - Permit Number: BN0003602 Permit Version: Receiving Water: STREAM FLOWING TO SAUNDERSFOOT Status: Effective Issue date: 22/04/1969 Effective Date: 22-Apr-1969 Revocation Date: -
8A	48	SW	213580 204790	Address: MILFORD ST P S'S (1 & 1A) SAUNDERSF, MILFORD ST P S'S (1 & 1A) SAUNDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: - Permit Number: BP0112402 Permit Version: Receiving Water: SAUNDERSFOOT STREAM Status: Effective Issue date: 14/02/1996 Effective Date: 15-Feb-1996 Revocation Date: -
9A	48	SW	213580 204790	Address: MILFORD STREET SPS, Milford Street, Saundersfoot, SA69 9EW Effluent Type: - Permit Number: BP0112401 Permit Version: Receiving Water: SAUNDERSFOOT STREAM Status: Effective Issue date: 24/05/2017 Effective Date: 24-May-2017 Revocation Date: -
10B	48	SW	213580 204790	Address: MILFORD ST P S'S (1 & 1A) SAUNDERSF, MILFORD ST P S'S (1 & 1A) SAUNDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: BP0112401 Permit Version: 1 Receiving Water: SAUNDERSFOOT STREAM Status: REVOKED - UNSPECIFIED Issue date: 14/02/1991 Effective Date: 14-Feb-1991 Revocation Date: 14/02/1996
11B	48	SW	213580 204790	Address: MILFORD ST P S'S (1 & 1A) SAUNDERSF, MILFORD ST P S'S (1 & 1A) SAUNDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: BP0112402 Permit Version: 1 Receiving Water: SAUNDERSFOOT STREAM Status: REVOKED - UNSPECIFIED Issue date: 14/02/1991 Effective Date: 14-Feb-1991 Revocation Date: 14/02/1996

ID	Distance (m)	Direction	NGR	Details	
12C	332	W	213290 204820	Address: BROOKLANDS PLACE PS (NO 3) SAUDERSF, BROOKLANDS PLACE PS (NO 3) SAUDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: BP0112302 Permit Version: 1	Receiving Water: SAUNDERSFOOT STREAM Status: REVOKED - UNSPECIFIED Issue date: 14/02/1991 Effective Date: 14-Feb-1991 Revocation Date: 14/02/1996
13C	332	W	213290 204820	Address: BROOKLANDS PLACE PS (NO 3) SAUDERSF, BROOKLANDS PLACE PS (NO 3) SAUDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: UNSPECIFIED Permit Number: BP0112301 Permit Version: 1	Receiving Water: SAUNDERSFOOT STREAM Status: REVOKED - UNSPECIFIED Issue date: 14/02/1991 Effective Date: 14-Feb-1991 Revocation Date: 14/02/1996
14C	332	W	213290 204820	Address: BROOKLANDS PLACE SPS, Brookland Place, Saundersfoot, SA69 9JQ Effluent Type: - Permit Number: BP0112301 Permit Version:	Receiving Water: SAUNDERSFOOT STREAM Status: Effective Issue date: 24/05/2017 Effective Date: 24-May-2017 Revocation Date: -
15C	332	W	213290 204820	Address: BROOKLANDS PLACE PS (NO 3) SAUDERSF, BROOKLANDS PLACE PS (NO 3) SAUDE, SAUNDERSFOOT DYFED, DYFED, UNKNOWN, UNKNOWN Effluent Type: - Permit Number: BP0112302 Permit Version:	Receiving Water: SAUNDERSFOOT STREAM Status: Effective Issue date: 14/02/1996 Effective Date: 15-Feb-1996 Revocation Date: -
16D	458	E	214100 204700	Address: SAUNDERSFOOT STW/PS SAUNDERSFOOT SAUNDERSFOOT STW/PS SAUNDERSFO SAUNDERSFOOT SAUNDERSFOOT SAUNDERSFOOT Effluent Type: UNSPECIFIED Permit Number: BP0251803 Permit Version: 1	Receiving Water: COASTAL WATERS AT SAUNDERSFOOT Status: REVOKED - UNSPECIFIED Issue date: 19/04/1995 Effective Date: 31-Jul-1995 Revocation Date: 29/03/1996
17D	458	E	214100 204700	Address: SAUNDERSFOOT STW/PS SAUNDERSFOOT SAUNDERSFOOT STW/PS SAUNDERSFO SAUNDERSFOOT SAUNDERSFOOT SAUNDERSFOOT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: BP0062901 Permit Version: 2	Receiving Water: SAUNDERSFOOT COASTAL WATERS Status: REVOKED (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 13/10/1992 Effective Date: 13-Jan-1993 Revocation Date: 15/11/1999
18D	458	E	214100 204700	Address: SAUNDERSFOOT STW/PS SAUNDERSFOOT SAUNDERSFOOT STW/PS SAUNDERSFO SAUNDERSFOOT SAUNDERSFOOT SAUNDERSFOOT Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - WATER COMPANY Permit Number: BG0025901 Permit Version: 1	Receiving Water: SAUNDERSFOOT BAY Status: CONSENT EXPIRED - TIME LIMIT Issue date: 16/03/1962 Effective Date: 16-Mar-1962 Revocation Date: 21/01/1987
19D	458	E	214100 204700	Address: SAUNDERSFOOT STW/PS SAUNDERSFOOT SAUNDERSFOOT STW/PS SAUNDERSFO SAUNDERSFOOT SAUNDERSFOOT SAUNDERSFOOT Effluent Type: - Permit Number: BP0251803 Permit Version:	Receiving Water: COASTAL WATERS AT SAUNDERSFOOT Status: Effective Issue date: 29/03/1996 Effective Date: 30-Mar-1996 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.

2.2 Dangerous or Hazardous Sites

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

0

Database searched and no data found.

2.3 Environment Agency/Natural Resources Wales Recorded Pollution Incidents

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

6

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

ID	Distance (m)	Direction	NGR	Details	
1	169	SE	213756 204672	Incident Date: 05-Jul-2012 Incident Identification: 1008976 Pollutant: Other Pollutant Pollutant Description: Microbiological	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
2	192	NW	213459 204930	Incident Date: 31-Dec-2002 Incident Identification: 128447 Pollutant: Oils and Fuel Pollutant Description: Hydraulic Oils	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
3	217	SE	213820 204670	Incident Date: 09-Apr-2002 Incident Identification: 70059 Pollutant: Other Pollutant Pollutant Description: Microbiological	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
4	239	SE	213860 204690	Incident Date: 09-Apr-2002 Incident Identification: 70180 Pollutant: Other Pollutant Pollutant Description: Microbiological	Water Impact: Category 2 (Significant) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

ID	Distance (m)	Direction	NGR	Details	
5	352	W	213270 204816	Incident Date: 14-Aug-2003 Incident Identification: 182010 Pollutant: Sewage Materials Pollutant Description: Other Sewage Material	Water Impact: Category 1 (Major) Land Impact: Category 4 (No Impact) Air Impact: Category 3 (Minor)
6	486	S	213797 204340	Incident Date: 07-Apr-2003 Incident Identification: 149008 Pollutant: Sewage Materials Pollutant Description: Crude Sewage	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)

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

0

Database searched and no data found.

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

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

0

Database searched and no data found.

3. Landfill and Other Waste Sites Map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

- | | | | | | |
|---|------------------------|---|---------------------------|---|---|
|  | 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. Landfill and Other Waste Sites

3.1 Landfill Sites

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.

3.2 Other Waste Sites

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

0

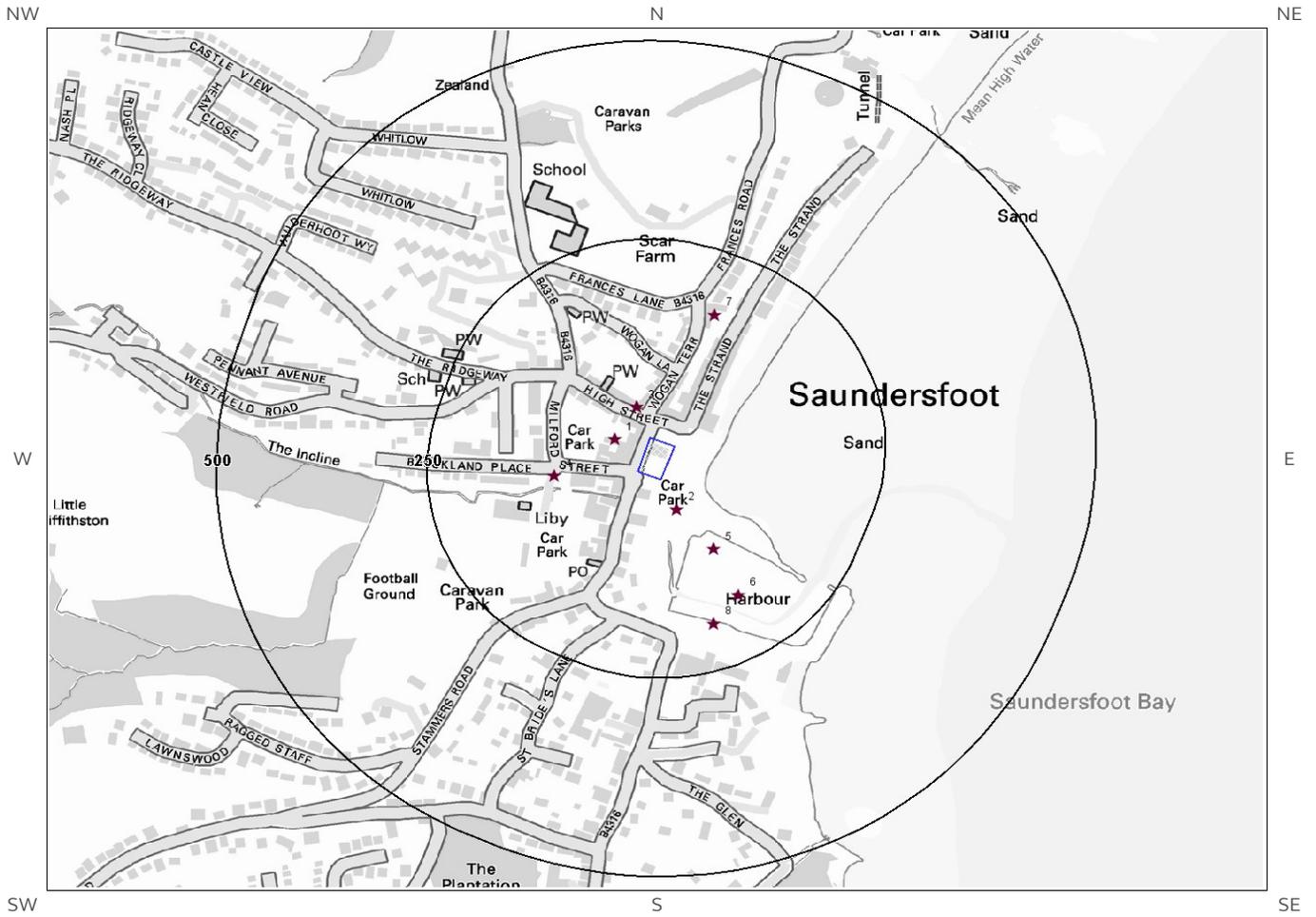
Database searched and no data found.

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.

4. Current Land Use Map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.

-  Site Outline
-  Current Industrial Sites
-  Electricity Transmission Cables
-  Petrol & Fuel Sites
-  Gas Transmission Pipelines
-  Search Buffers (m)

4. Current Land Uses

4.1 Current Industrial Data

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

8

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

ID	Distance (m)	Direction	Company	NGR	Address	Activity	Category
1	39	W	Electricity Sub Station	213595 204854	SA69	Electrical Features	Infrastructure and Facilities
2	41	SE	Saundersfoot Harbour Commissioners	213667 204766	Harbour Office, The Harbour, Saundersfoot, SA69 9HE	Moorings and Unloading Facilities	Water
3	42	NW	Frosts Hardware Shop	213620 204894	High Street, Saundersfoot, SA69 9EJ	General Construction Supplies	Industrial Products
4	100	W	Electricity Sub Station	213523 204808	SA69	Electrical Features	Infrastructure and Facilities
5	107	SE	Slipway	213712 204716	SA69	Moorings and Unloading Facilities	Water
6	171	SE	Harbour	213741 204658	SA69	Moorings and Unloading Facilities	Water
7	173	N	Electricity Sub Station	213713 205011	SA69	Electrical Features	Infrastructure and Facilities
8	191	S	Crane	213712 204622	SA69	Travelling Cranes and Gantries	Industrial Features

4.2 Petrol and Fuel Sites

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

0

Database searched and no data found.

4.3 National Grid High Voltage Underground Electricity Transmission Cables

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.

4.4 National Grid High Pressure Gas Transmission Pipelines

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.

5. Geology

5.1 Artificial Ground and Made Ground

Database searched and no data found.

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

5.2 Superficial Ground and Drift Geology

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

Lex Code	Description	Rock Type
ALV-XCZSV	ALLUVIUM	CLAY, SILT, SAND AND GRAVEL
BTFU-XSZC	BEACH AND TIDAL FLAT DEPOSITS (UNDIFFERENTIATED)	SAND, SILT AND CLAY

5.3 Bedrock and Solid Geology

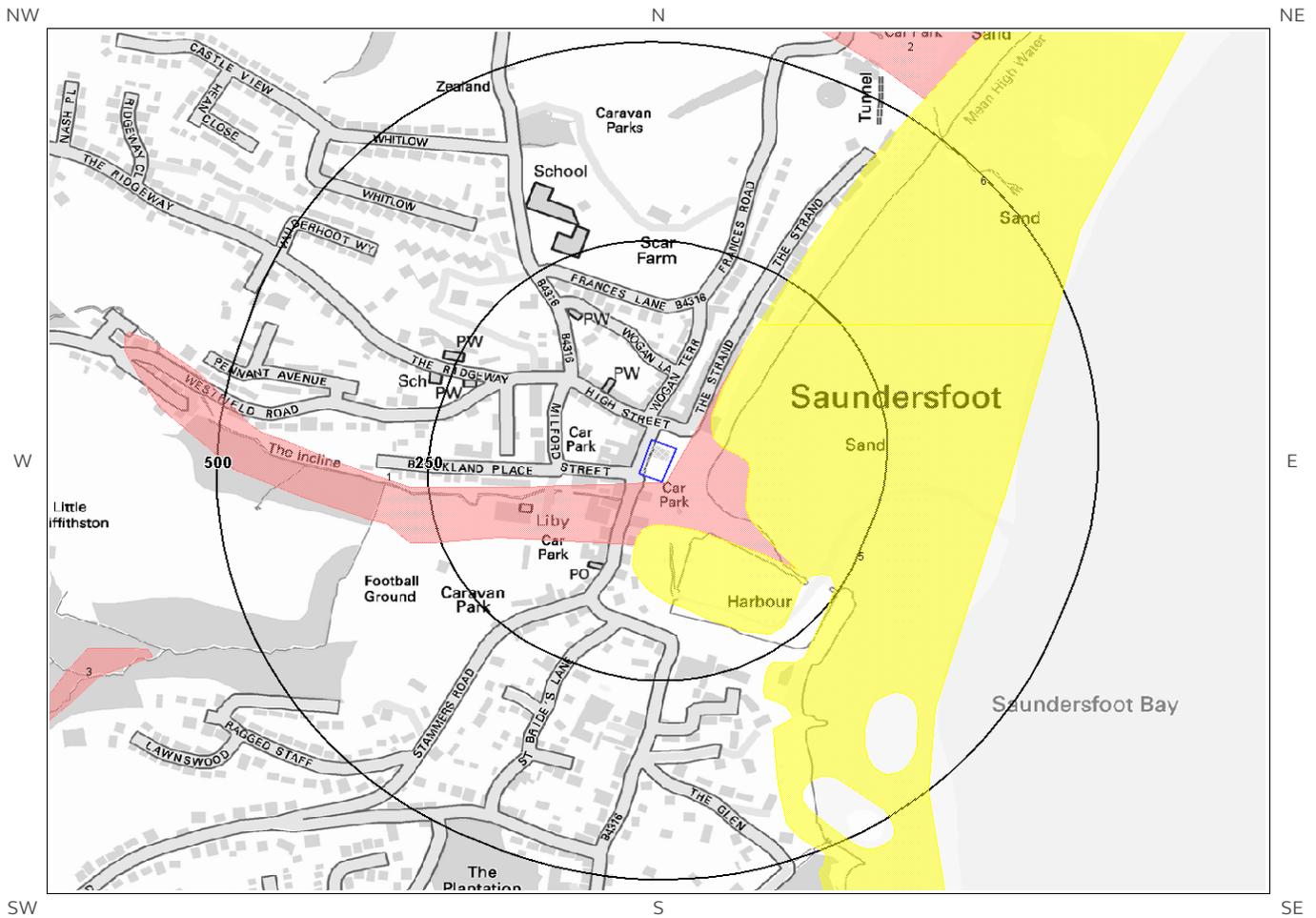
The database has been searched on site, including a 50m buffer.

Lex Code	Description	Rock Type
SWMCM-MDSS	SOUTH WALES MIDDLE COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE
SWLCM-MDSS	SOUTH WALES LOWER COAL MEASURES FORMATION	MUDSTONE, SILTSTONE AND SANDSTONE

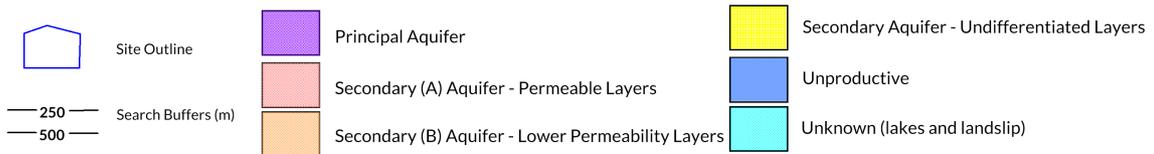
(Derived from the BGS 1:50,000 Digital Geological Map of Great Britain)

6 Hydrogeology and Hydrology

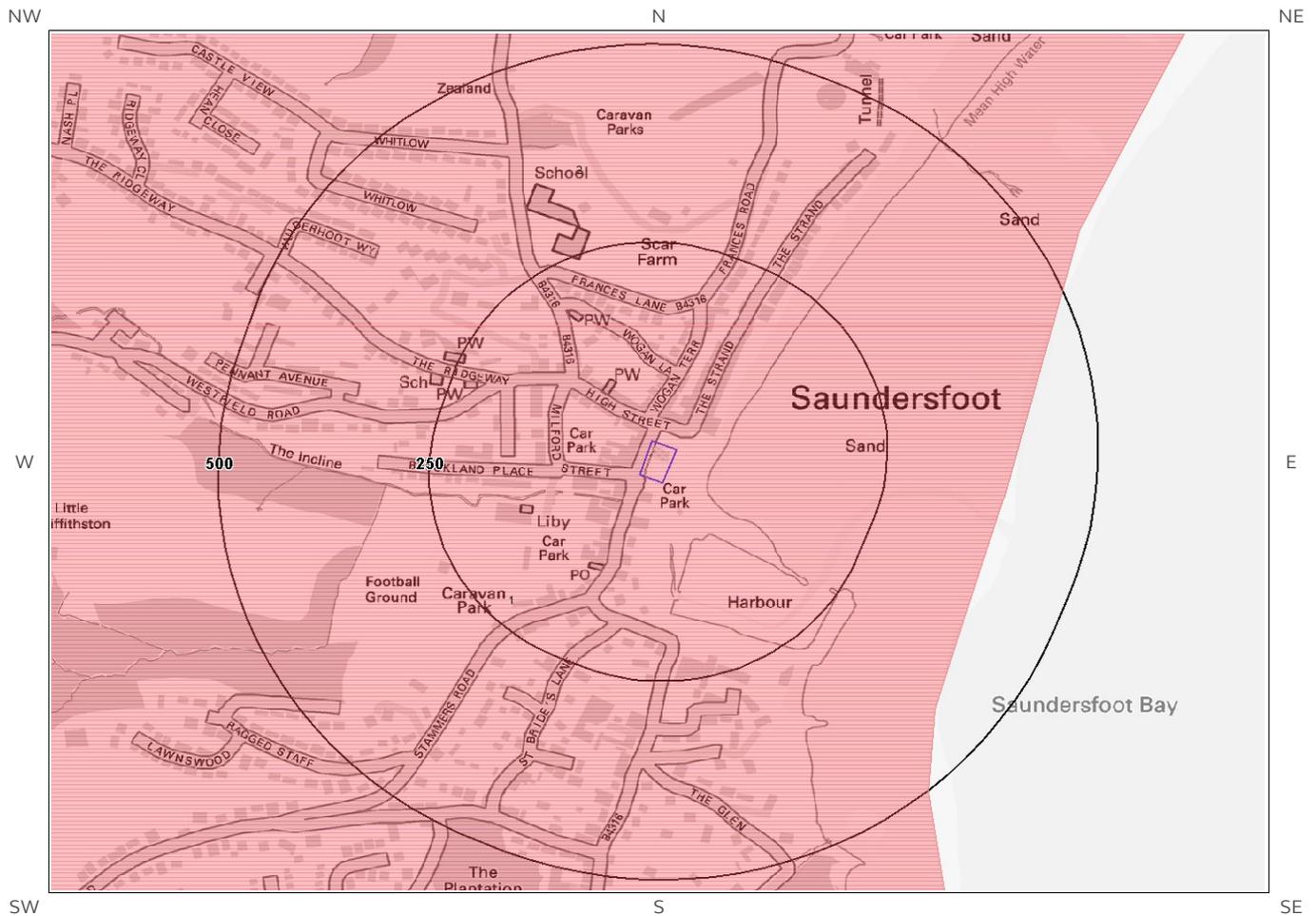
6a. Aquifer Within Superficial Geology



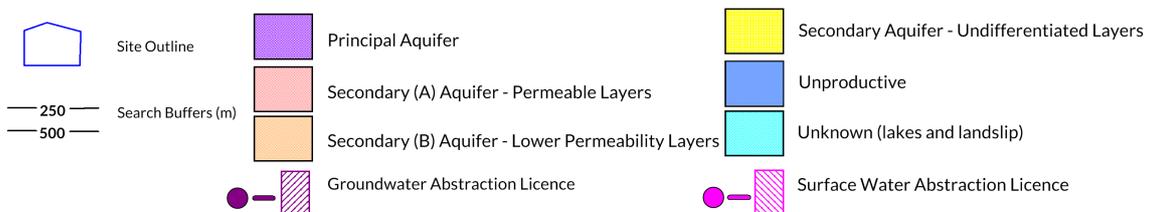
© Crown copyright and database rights 2018
Ordnance Survey license 100035207.



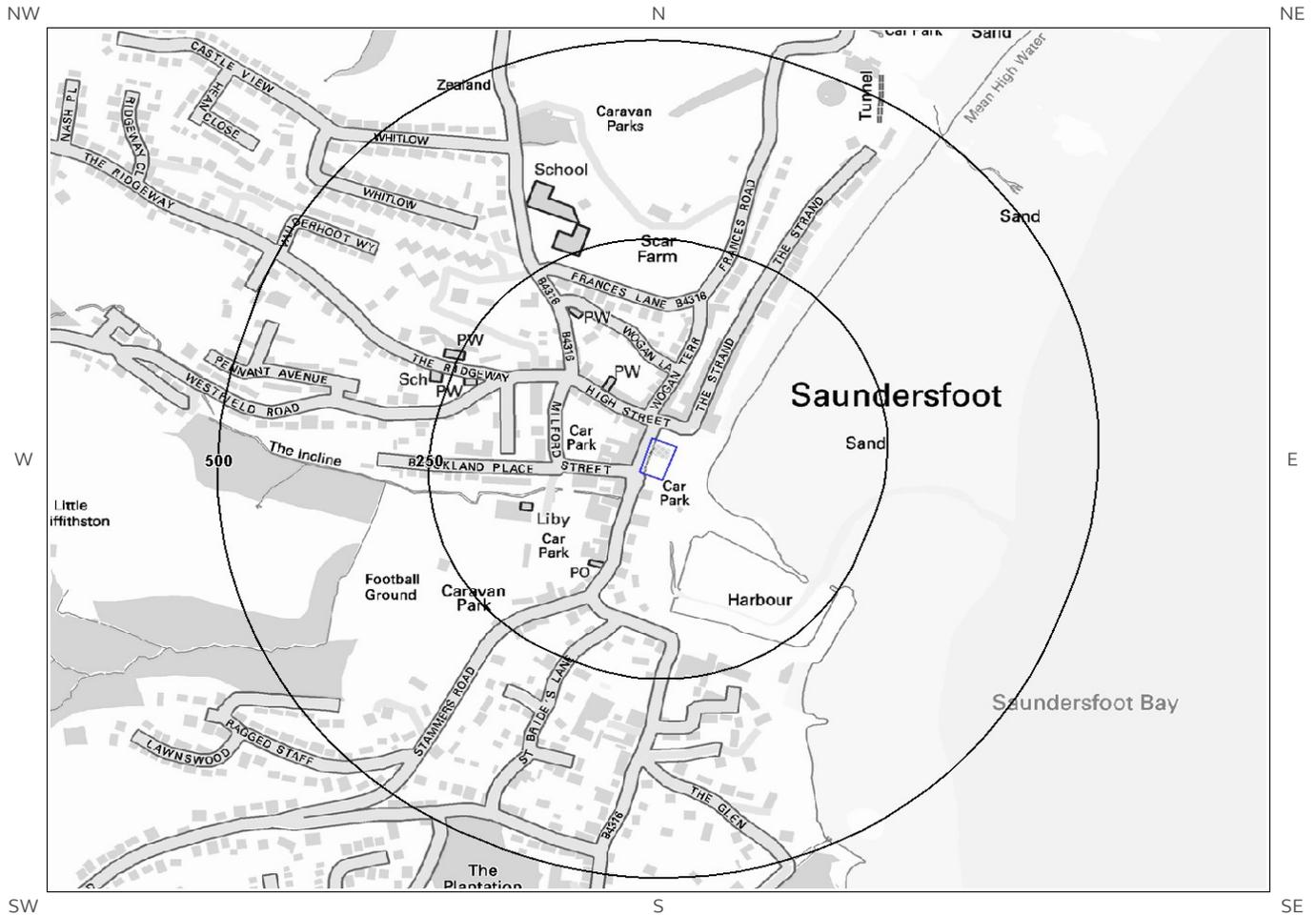
6b. Aquifer Within Bedrock Geology and Abstraction Licenses



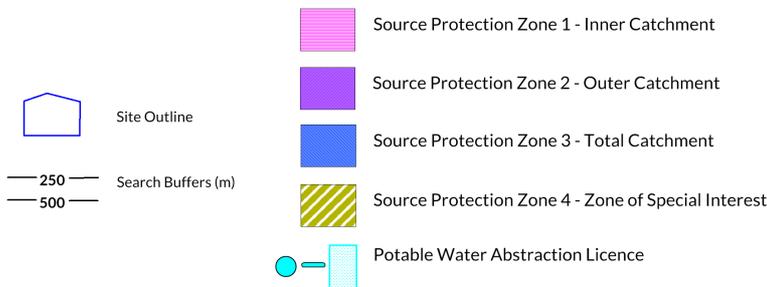
© Crown copyright and database rights 2018
Ordnance Survey license 100035207.



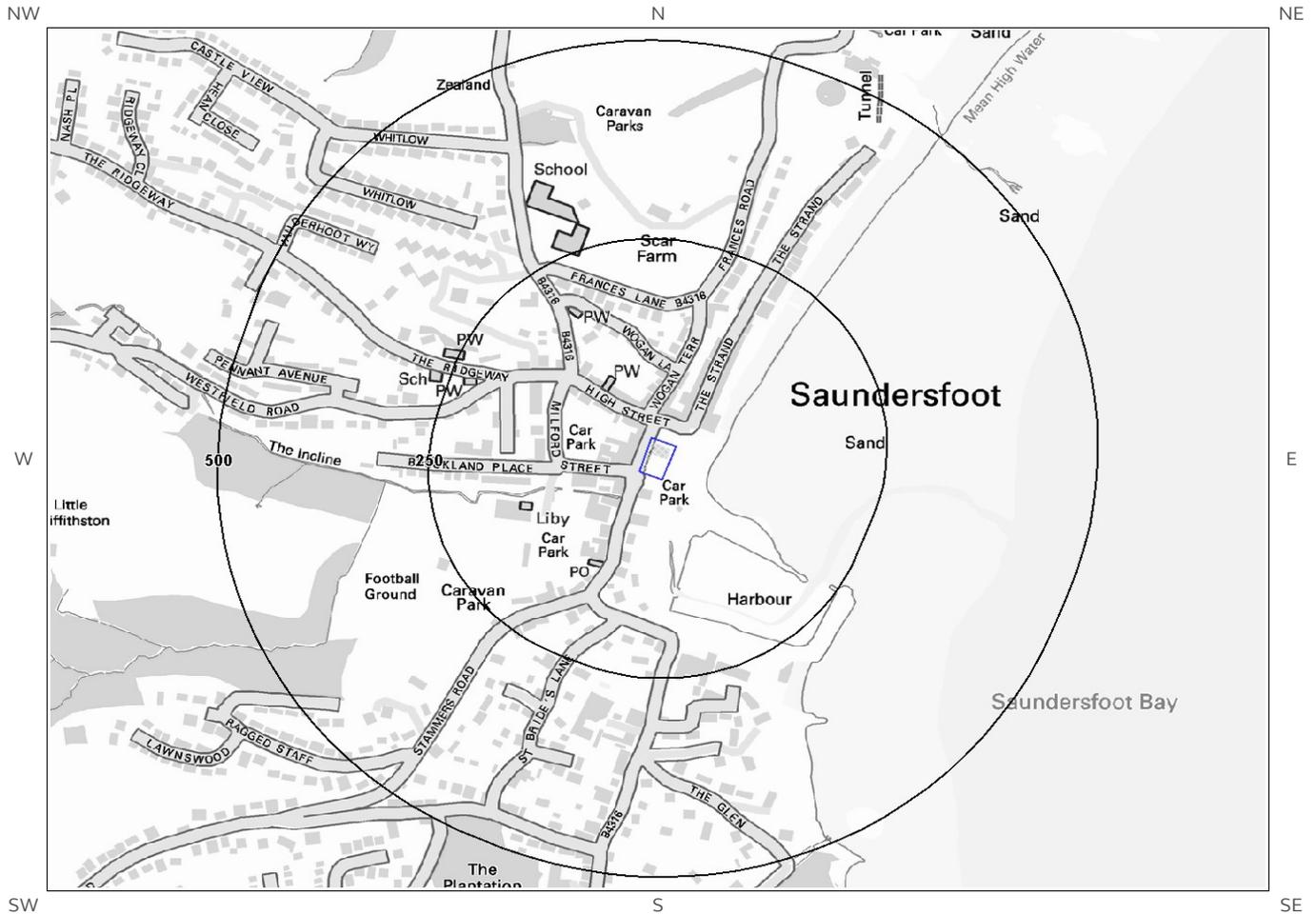
6c. Hydrogeology – Source Protection Zones and Potable Water Abstraction Licenses



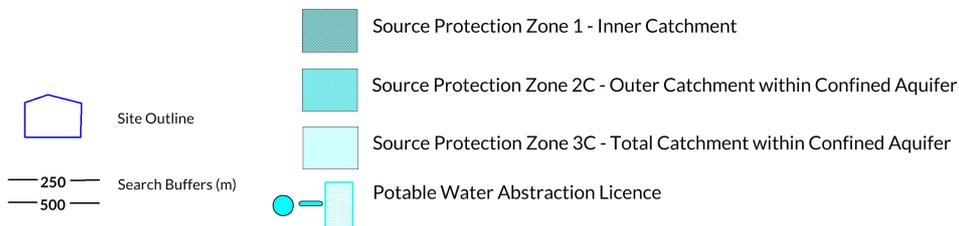
© Crown copyright and database rights 2018
Ordnance Survey license 100035207.



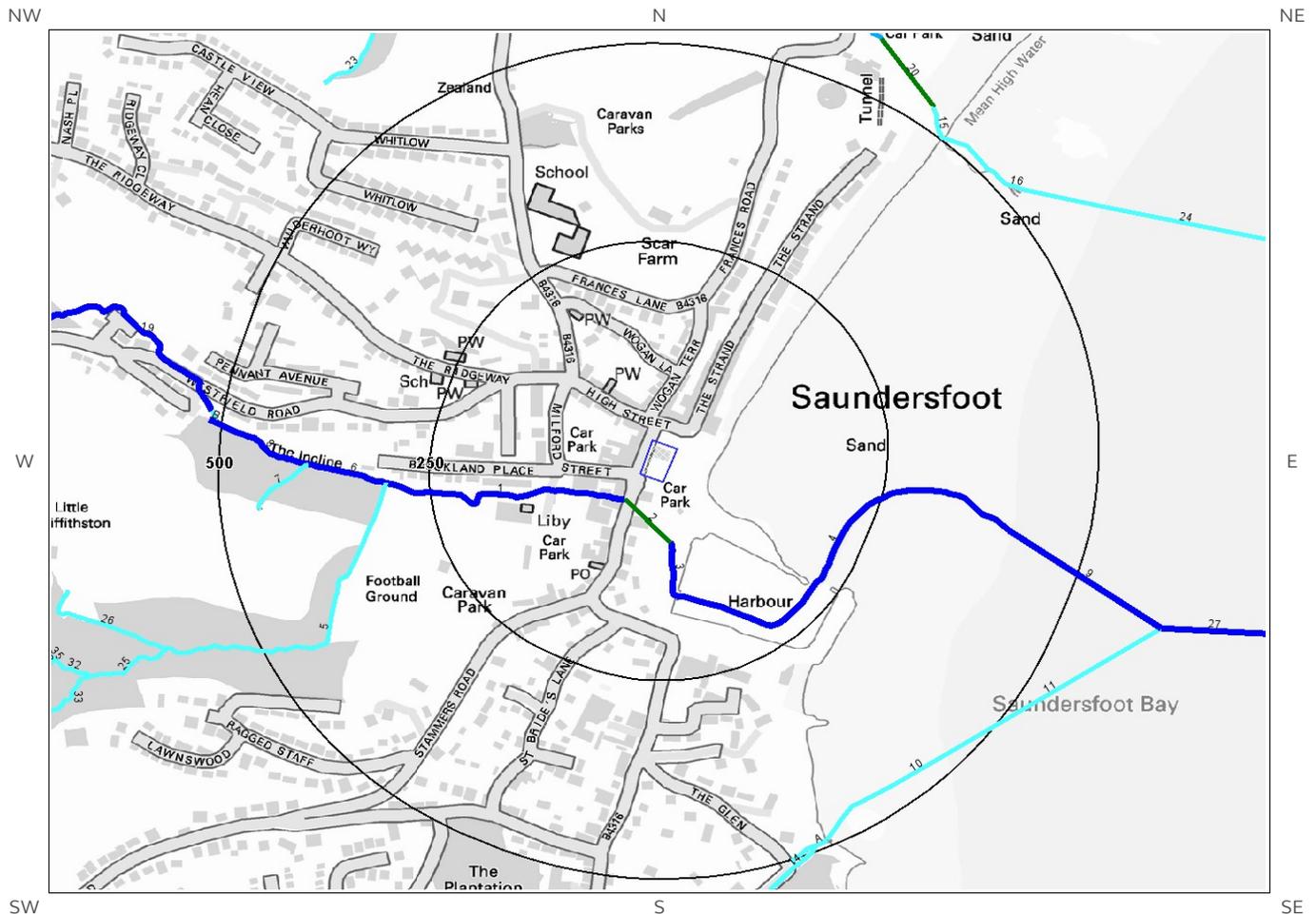
6d. Hydrogeology – Source Protection Zones within confined aquifer



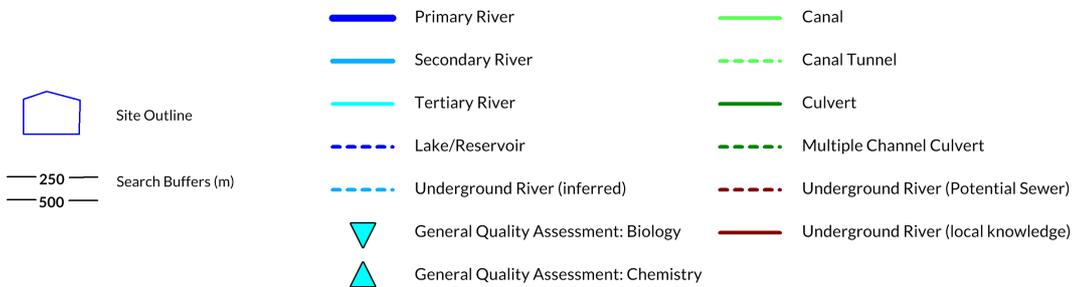
© Crown copyright and database rights 2018
Ordnance Survey license 100035207.



6e. Hydrology – Detailed River Network and River Quality



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



6. Hydrogeology and Hydrology

6.1 Aquifer within Superficial Deposits

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

From 1 April 2010, the Environment Agency/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):

ID	Distance (m)	Direction	Designation	Description
1	1	S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	46	E	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
6	184	NE	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

6.2 Aquifer within Bedrock Deposits

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

From 1 April 2010, the Environment Agency/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):

ID	Distance (m)	Direction	Designation	Description
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
2	144	N	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

6.3 Groundwater Abstraction Licences

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

No

Database searched and no data found.

6.4 Surface Water Abstraction Licences

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

Yes

The following Surface Water Abstraction Licences records are represented as points, lines and regions on the Aquifer within Bedrock Geology Map (6b):

ID	Distance (m)	Direction	NGR	Details
Not shown	1039	W	212600 205100	Status: Historical Licence No: 22/61/6/0095 Details: Spray Irrigation - Storage Direct Source: Eaw Surface Water Point: Unnamed Stream And Land Drains At Bonville's Court Data Type: Line Name: Shimmin Annual Volume (m ³): 1500.18 Max Daily Volume (m ³): 50 Application No: WR575 Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 1/4/2000 Version End Date:
Not shown	1266	S	213360 203570	Status: Historical Licence No: 22/61/6/0071 Details: Spray Irrigation - Direct Direct Source: Eaw Surface Water Point: Unnamed Stream At Clickett's Heath Used At Leisure Park Data Type: Point Name: Saundersfoot Bay Leisure Park Ltd Annual Volume (m ³): - Max Daily Volume (m ³): - Application No: - Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 1/4/2005 Version End Date:
Not shown	1778	SW	212480 203450	Status: Historical Licence No: 22/61/6/0083 Details: Spray Irrigation - Storage Direct Source: Eaw Surface Water Point: Reservoir Fed By Springs Feeding Knightston Brook Data Type: Point Name: Marden Annual Volume (m ³): - Max Daily Volume (m ³): - Application No: WR413 Original Start Date: - Expiry Date: - Issue No: 100 Version Start Date: 13/12/1993 Version End Date:

6.5 Potable Water Abstraction Licences

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

No

Database searched and no data found.

6.6 Source Protection Zones

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

No

Database searched and no data found.

6.7 Source Protection Zones within Confined Aquifer

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

No

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

Database searched and no data found.

6.8 Groundwater Vulnerability and Soil Leaching Potential

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

Yes

Distance (m)	Direction	Classification	Soil Vulnerability Category	Description
0	On Site	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.

6.9 River Quality

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.

Database searched and no data found.

6.10 Detailed River Network

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

Yes

The following Detailed River Network records are represented on the Hydrology Map (6e):

ID	Distance (m)	Direction	Details
1	37	SW	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
2	37	SW	River Name: - Welsh River Name: - Alternative Name: - River Type: Culvert Main River Status: Currently Undefined
3	77	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
4	144	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
5	302	W	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
6	302	W	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
7	393	W	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
8	393	W	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
9	406	E	River Name: - Welsh River Name: - Alternative Name: - River Type: Primary River Main River Status: Currently Undefined
10	466	SE	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
11	479	SE	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
12A	491	SE	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
13A	492	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined
14	493	S	River Name: - Welsh River Name: - Alternative Name: - River Type: Tertiary River Main River Status: Currently Undefined

6.11 Surface Water Features

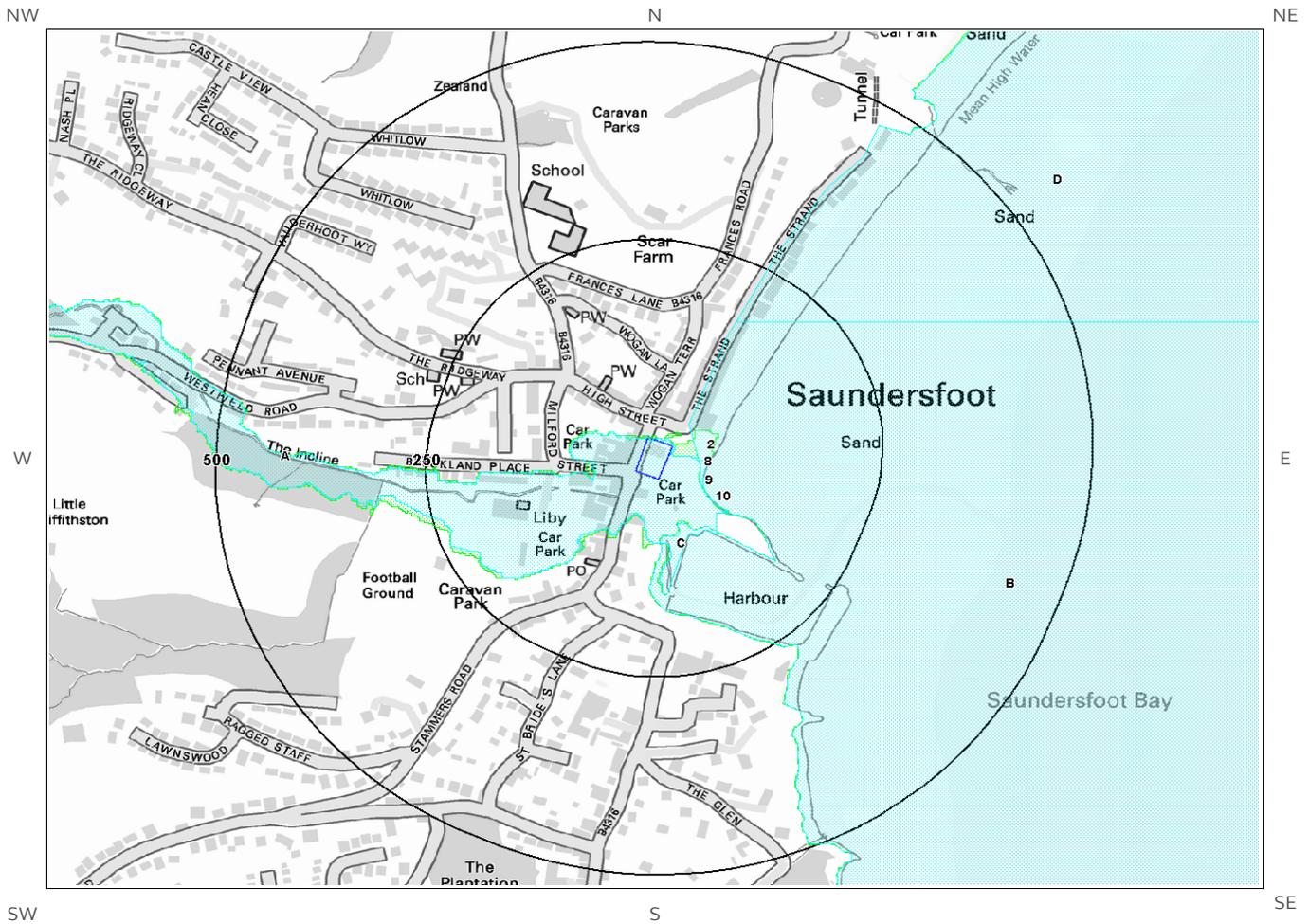
Are there any surface water features within 250m of the study site?

Yes

The following surface water records are not represented on mapping:

Distance (m)	Direction
47	E
115	W

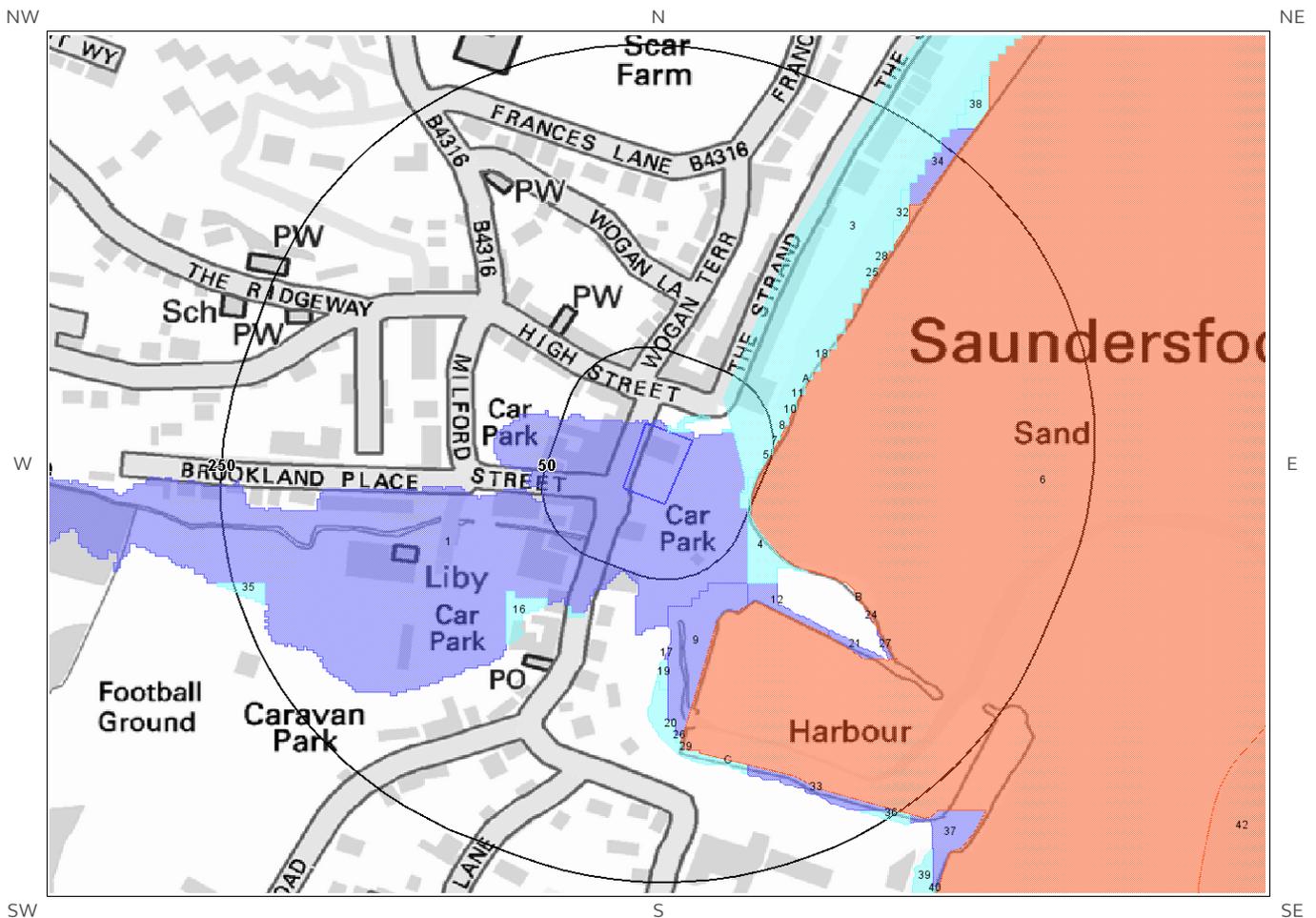
7a. Environment Agency/Natural Resources Wales Flood Map for Planning (from rivers and the sea)



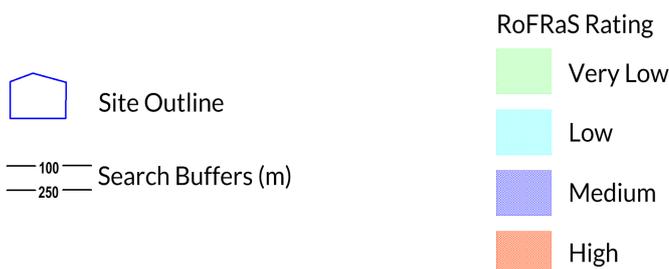
© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



7b. Environment Agency/Natural Resources Wales Risk of Flooding from Rivers and the Sea (RoFRaS) Map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



7 Flooding

7.1 River and Coastal Zone 2 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 2 floodplain? Yes

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:

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
2	26	E	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
3B	26	E	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
4C	58	SE	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)
5D	175	NE	24-Nov-2017	Zone 2 - (Fluvial /Tidal Models)

7.2 River and Coastal Zone 3 Flooding

Is the site within 250m of an Environment Agency/Natural Resources Wales Zone 3 floodplain? Yes

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.

ID	Distance (m)	Direction	Update	Type
1A	0	On Site	24-Nov-2017	Zone 3 - (Fluvial Models)
2	26	E	24-Nov-2017	Zone 3 - (Fluvial Models)
3B	36	E	24-Nov-2017	Zone 3 - (Fluvial Models)
4C	54	E	24-Nov-2017	Zone 3 - (Fluvial Models)
5D	57	E	24-Nov-2017	Zone 3 - (Fluvial Models)
	61	SE	24-Nov-2017	Zone 3 - (Fluvial Models)
	175	NE	24-Nov-2017	Zone 3 - (Fluvial Models)

7.3 Risk of Flooding from Rivers and the Sea (RoFRaS) Flood Rating

What is the highest risk of flooding onsite?

Medium

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 Medium (greater than 1 in 100 but less than 1 in 30) chance of flooding in any given year.

Any relevant data within 250m is represented on the RoFRaS Flood map. Data to 50m is reported in the table below.

ID	Distance (m)	Direction	RoFRaS flood Risk
1	0.0	On Site	Medium
2	0.0	On Site	Low
3	19.0	E	Low
4	40.0	E	Low
5	45.0	E	Low
6	46.0	E	High
7	49.0	E	Low

7.4 Flood Defences

Are there any Flood Defences within 250m of the study site?

No

Database searched and no data found.

7.5 Areas benefiting from Flood Defences

Are there any areas benefiting from Flood Defences within 250m of the study site?

No

7.6 Areas benefiting from Flood Storage

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

No

7.7 Groundwater Flooding Susceptibility Areas

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? Superficial Deposits 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 at Surface

Where potential for groundwater flooding to occur at surface is indicated, this means that given the geological conditions in the area groundwater flooding hazard should be considered in all land-use planning decisions. It is recommended that other relevant information e.g. records of previous incidence of groundwater flooding, rainfall, property type, and land drainage information be investigated in order to establish relative, but not absolute, risk of groundwater flooding.

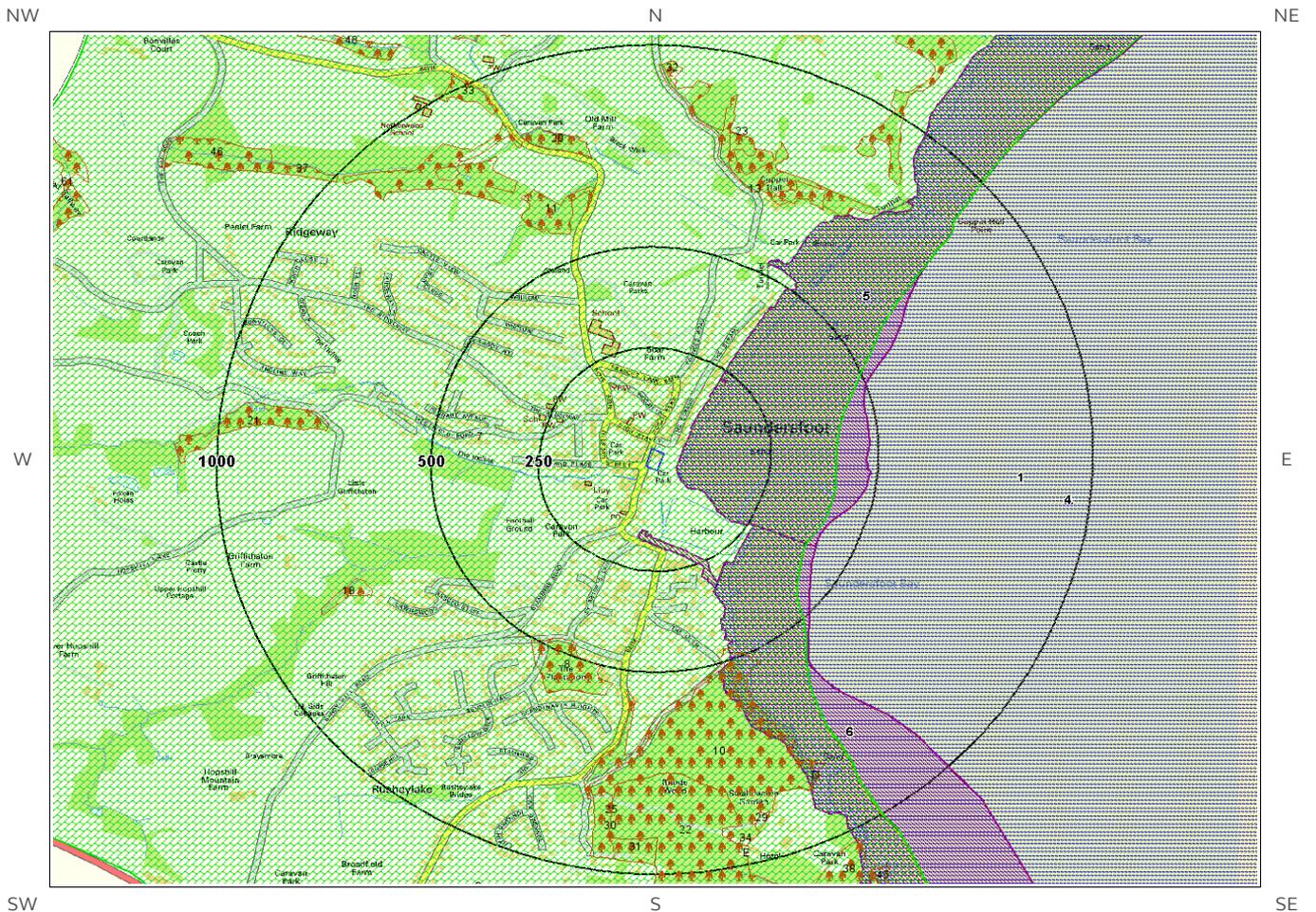
7.8 Groundwater Flooding Confidence Areas

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

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

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

8. Designated Environmentally Sensitive Sites Map



© Crown copyright and database rights 2018.
Ordnance Survey license 100035207.



8. Designated Environmentally Sensitive Sites

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

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

2

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

ID	Distance (m)	Direction	SSSI Name	Data Source
5	40	E	ARFORDIR SAUNDERSFOOT - TELPYN / SAUNDERSFOOT - TELPYN COAST	Natural Resources Wales
6	152	S	WATERWYNCH BAY TO SAUNDERSFOOT HARBOUR	Natural Resources Wales

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

0

Database searched and no data found.

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

3

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:

ID	Distance (m)	Direction	SAC Name	Data Source
1	40	E	Carmarthen Bay and Estuaries / Bae Caerfyrddin ac Aberoedd	Natural Resources Wales
2A	393	SE	Bristol Channel Approaches / Dynesfeydd Môr Hafren	Natural Resources Wales
3A	393	SE	Bristol Channel Approaches / Dynesfeydd Mor Hafren	Natural England

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

1

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

ID	Distance (m)	Direction	SPA Name	Data Source
4	393	SE	Bae Caerfyrddin / Carmarthen Bay	Natural Resources Wales

8.5 Records of Ramsar sites within 2000m of the study site:

0

Database searched and no data found.

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

65

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

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
8	465	S	Unknown	Restored Ancient Woodland Site
9	467	S	Unknown	Restored Ancient Woodland Site
10	513	S	Unknown	Ancient and Semi-Natural Woodland
11	565	N	Unknown	Ancient Replanted Woodland
12B	671	NE	COPPET HALL WOOD	Ancient Replanted Woodland
13	678	N	COPPET HALL WOOD	Ancient Replanted Woodland
14	679	N	Unknown	Restored Ancient Woodland Site
15C	680	N	Unknown	Restored Ancient Woodland Site
16B	685	N	Unknown	Restored Ancient Woodland Site
17	702	NW	Unknown	Ancient Replanted Woodland
18	707	SW	Unknown	Ancient and Semi-Natural Woodland
19C	713	N	COPPET HALL WOOD	Ancient Replanted Woodland
20	731	N	Unknown	Ancient and Semi-Natural Woodland
21	746	W	Unknown	Ancient and Semi-Natural Woodland
22	750	S	Unknown	Ancient Replanted Woodland
23	804	N	COPPET HALL WOOD	Ancient Replanted Woodland
24D	834	SE	RHODE & TREVAYNE WOODS	Ancient and Semi-Natural Woodland
25	836	S	Unknown	Ancient and Semi-Natural Woodland
26D	853	SE	RHODE & TREVAYNE WOODS	Ancient and Semi-Natural Woodland
27	858	NE	Unknown	Restored Ancient Woodland Site
28D	862	SE	RHODE & TREVAYNE WOODS	Ancient and Semi-Natural Woodland
29	885	S	Unknown	Ancient Replanted Woodland
30	890	S	Unknown	Ancient and Semi-Natural Woodland
31	897	S	Unknown	Ancient Replanted Woodland
32	898	N	Unknown	Restored Ancient Woodland Site
33	908	NW	Unknown	Ancient and Semi-Natural Woodland
34	931	S	Unknown	Ancient Replanted Woodland
35E	975	S	Unknown	Ancient Replanted Woodland
36E	985	S	Unknown	Ancient Replanted Woodland
37	989	NW	Unknown	Ancient Replanted Woodland
38	1028	SE	Unknown	Ancient Replanted Woodland
Not shown	1047	S	Unknown	Ancient Replanted Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1070	N	Unknown	Restored Ancient Woodland Site
41	1078	N	Unknown	Ancient Replanted Woodland
42	1087	N	Unknown	Ancient Replanted Woodland
Not shown	1093	S	Unknown	Ancient Replanted Woodland
44	1097	N	CHURCHTON WOOD	Ancient Replanted Woodland
45	1109	SE	Unknown	Ancient Replanted Woodland
46	1118	NW	Unknown	Restored Ancient Woodland Site
Not shown	1129	N	CHURCHTON WOOD	Ancient Replanted Woodland
48	1139	NW	STONECROSS WOOD	Ancient and Semi-Natural Woodland
Not shown	1168	N	CHURCHTON WOOD	Ancient Replanted Woodland
Not shown	1221	N	PEGGY JAMES WOOD	Ancient Replanted Woodland
Not shown	1233	N	Unknown	Ancient and Semi-Natural Woodland
Not shown	1252	N	Unknown	Restored Ancient Woodland Site
Not shown	1294	N	PEGGY JAMES WOOD	Ancient Replanted Woodland
Not shown	1317	N	Unknown	Ancient Replanted Woodland
Not shown	1321	N	Unknown	Ancient Replanted Woodland
Not shown	1326	NE	Unknown	Restored Ancient Woodland Site
Not shown	1360	SE	Unknown	Other Ancient Woodland
Not shown	1379	N	Unknown	Ancient Replanted Woodland
Not shown	1386	NW	Unknown	Ancient and Semi-Natural Woodland
Not shown	1395	N	CHURCHTON WOOD	Ancient Replanted Woodland
61	1435	NW	Unknown	Restored Ancient Woodland Site
Not shown	1445	N	CHURCHTON WOOD	Ancient Replanted Woodland
Not shown	1480	NW	STONECROSS WOOD	Ancient and Semi-Natural Woodland
Not shown	1511	NW	Unknown	Ancient Replanted Woodland
Not shown	1561	N	Unknown	Ancient Replanted Woodland
Not shown	1575	SE	Unknown	Ancient Replanted Woodland
Not shown	1582	NW	STONECROSS WOOD	Ancient and Semi-Natural Woodland

ID	Distance (m)	Direction	Ancient Woodland Name	Data Source
Not shown	1585	N	CHURCHTON WOOD	Ancient Replanted Woodland
Not shown	1608	N	Unknown	Ancient Replanted Woodland
Not shown	1649	NW	STONECROSS WOOD	Ancient and Semi-Natural Woodland
Not shown	1662	N	CHURCHTON WOOD	Ancient Replanted Woodland
Not shown	1670	NW	Unknown	Ancient and Semi-Natural Woodland

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

0

Database searched and no data found.

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

1

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

ID	Distance (m)	Direction	NP Name	Data Source
7	0	On Site	Pembrokeshire Coast	Natural Resources Wales

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

0

Database searched and no data found.

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

0

Database searched and no data found.

8.14 Records of Green Belt land within 2000m of the study site:

0

Database searched and no data found.

9. Natural Hazards Findings

9.1 Detailed BGS GeoSure Data

BGS GeoSure Data has been searched to 50m. The data is included in tabular format. If you require further information on geology and ground stability, please obtain a **Groundsure 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? Very Low

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

Hazard

Ground conditions predominantly low plasticity. 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 due to potential problems with shrink-swell clays.

9.1.2 Landslides

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

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

Hazard

Significant potential for slope instability with relatively small changes in ground conditions. Avoid large amounts of water entering the ground through pipe leakage or soak-aways. Do not undercut or place large amounts of material on slopes without technical advice. For new build consider the potential and consequences of ground movement during excavations, or consequence of changes to loading or drainage. For existing property probable increase in insurance risk is likely due to potential natural slope instability after changes to ground conditions such as a very long, excessively wet winter.

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:

Hazard

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? Moderate

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

Hazard

Significant potential for compressibility problems. Avoid large differential loadings of ground. Do not drain or de-water ground near the property without technical advice. For new build consider possibility of compressible ground in ground investigation, construction and building design. Consider effects of groundwater changes. Extra construction costs are likely. For existing property possible increase in insurance risk from compressibility, especially if water conditions or loading of the ground change significantly.

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:

Hazard

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

9.1.6 Running Sand

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

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

Hazard

Significant potential for running sand problems with relatively small changes in ground conditions. Avoid large amounts of water entering the ground (for example through pipe leakage or soak-aways). Do not dig (deep) holes into saturated ground near the property without technical advice. For new build consider the consequences of soil and groundwater conditions during and after construction. For existing property possible increase in insurance risk from running sand, for example, due to water leakage, high rainfall events or flooding.

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

9.2 Radon

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 in a Radon Affected Area, as between 1 and 3% 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.

10. Mining

10.1 Coal Mining

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

The following coal mining information provided by the Coal Authority is not represented on Mapping:

Distance (m)	Direction	Details
0	On Site	The study site is located within the specified search distance of an identified mining area. Further details concerning this can be obtained from the Coal Authority Helpline on 0845 762 6848.

10.2 Non-Coal Mining

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

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

Distance (m)	Direction	Name	Commodity	Assessment of likelihood
25.0	S	Not available	Iron Ore (Bedded)	Localised small scale underground mining may have occurred. Potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered

Past underground mine workings may occur. The rock types present in these areas are such that small mineral veins may be present on which it is possible that small scale mining has been undertaken and/or it is possible that limited underground extraction of other materials may have occurred. All such occurrences are likely to be of minor localised extent and infrequent. It should be noted, however, that there is always the possibility of the existence of other sub-surface excavations, such as wells, cess pits, follies, air raid shelters/bunkers and other military structures etc. that could affect surface ground stability but which are outside the scope of this dataset. However, if in a coalfield area you should still consider a Coal Authority mining search for the area of interest.

10.3 Brine Affected Areas

Are there any brine affected areas within 75m of the study site? No
Guidance: No Guidance Required.

Contact Details

Quantum Geotechnical
Telephone: 01554 744880
rmcdermott@quantum-gb.co.uk



British Geological Survey Enquiries

Kingsley Dunham Centre
Keyworth, Nottingham NG12 5GG
Tel: 0115 936 3143.
Fax: 0115 936 3276.
Email:



Web: www.bgs.ac.uk

BGS Geological Hazards Reports and general geological enquiries:
enquiries@bgs.ac.uk

Natural Resources Wales

Ty Cambria
29 Newport Road
Cardiff
CF24 0TP
Tel: 0300 065 3000
Email: enquiries@naturalresourceswales.gov.uk



Public Health England

Public information access office
Public Health England, Wellington House
133-155 Waterloo Road, London, SE1 8UG
www.gov.uk/phe
Email: enquiries@phe.gov.uk
Main switchboard: 020 7654 8000



The Coal Authority

200 Lichfield Lane
Mansfield
Notts NG18 4RG
Tel: 0345 7626 848
DX 716176 Mansfield 5
www.coal.gov.uk



Ordnance Survey

Adanac Drive, Southampton
SO16 0AS
Tel: 08456 050505



Local Authority

Authority: Sir Benfro - Pembrokeshire County Council
Phone: 01437 764 551
Web: <http://www.pembrokeshire.gov.uk>
Address: County Hall, Haverfordwest, Pembrokeshire, SA61 1TP

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



Acknowledgements: Site of Special Scientific Interest, National Nature Reserve, Ramsar Site, Special Protection Area, Special Area of Conservation data is provided by, and used with the permission of, 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.

Standard Terms and Conditions

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

APPENDIX V – COAL AUTHORITY MINING REPORT



The Coal
Authority

Resolving the **impacts** of mining

CON29M Residential Mining Report

THE BARBECUE
CAMBRIAN TERRACE
SAUNDERSFOOT
PEMBROKESHIRE
SA69 9ER

Date of enquiry: 24 January 2018
Date enquiry received: 24 January 2018
Issue date: 24 January 2018

Our reference: 51001775434001
Your reference: G40102-Ocean Square



CON29M Residential Mining Report

This report is based on, and limited to, the records held by the Coal Authority and the Cheshire Brine Subsidence Compensation Board's records, at the time we answer the search.

Client name

QUANTUM GEOTECHNICAL LTD

Enquiry address

THE BARBECUE, CAMBRIAN TERRACE,
SAUNDERSFOOT, PEMBROKESHIRE, SA69 9ER

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

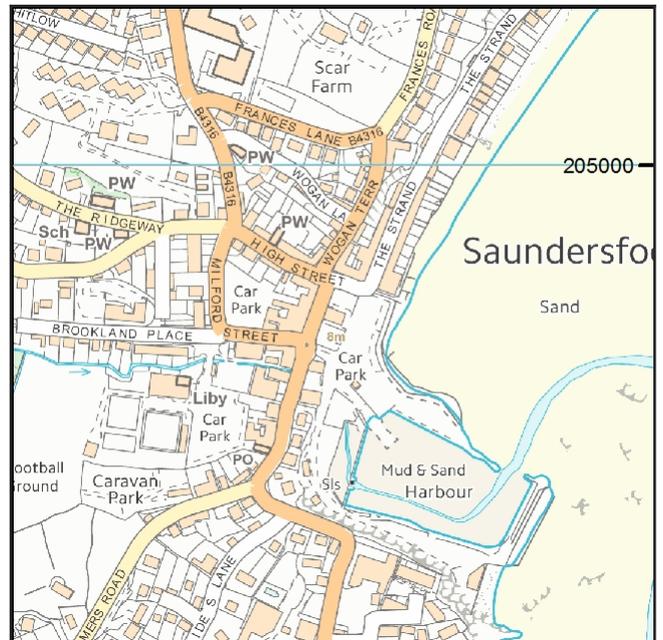
200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



Approximate position of property



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

Summary

Has the search report highlighted evidence or potential of		
1	Past underground coal mining	Yes
2	Present underground coal mining	No
3	Future underground coal mining	Yes
4	Mine entries	No
5	Coal mining geology	No
6	Past opencast coal mining	No
7	Present opencast coal mining	No
8	Future opencast coal mining	No
9	Coal mining subsidence	No
10	Mine gas	No
11	Hazards related to coal mining	No
12	Information from the Cheshire Brine Subsidence Compensation Board	No

For detailed findings, please go to page 4.

Detailed findings

1. Past underground coal mining

The property is in a surface area that could be affected by underground mining in 1 seam of coal at 190m depth, and last worked in 1919.

Any movement in the ground due to coal mining activity should have stopped.

In addition the property is in an area where the Coal Authority believe there is coal at or close to the surface. This coal may have been worked at some time in the past. The potential presence of coal workings at or close to the surface should be considered prior to any site works or future development activity. Your attention is drawn to the Comments on the Coal Authority information section of the report.

2. Present underground coal mining

The property is not within a surface area that could be affected by present underground mining.

3. Future underground coal mining

The property is not in an area where the Coal Authority has plans to grant a licence to remove coal using underground methods.

The property is not in an area where a licence has been granted to remove or otherwise work coal using underground methods.

The property is not in an area likely to be affected from any planned future underground coal mining.

However, reserves of coal exist in the local area which could be worked at some time in the future.

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

4. Mine entries

There are no known coal mine entries within, or within 20 metres of, the boundary of the property.

5. Coal mining geology

The Coal Authority is not aware of any damage due to geological faults or other lines of weakness that have been affected by coal mining.

6. Past opencast coal mining

The property is not within the boundary of an opencast site from which coal has been removed by opencast methods.

7. Present opencast coal mining

The property does not lie within 200 metres of the boundary of an opencast site from which coal is being removed by opencast methods.

8. Future opencast coal mining

There are no licence requests outstanding to remove coal by opencast methods within 800 metres of the boundary.

The property is not within 800 metres of the boundary of an opencast site for which a licence to remove coal by opencast methods has been granted.

9. Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31st October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

10. Mine gas

The Coal Authority has no record of a mine gas emission requiring action.

11. Hazards related to coal mining

The property has not been subject to remedial works, by or on behalf of the Authority, under its Emergency Surface Hazard Call Out procedures.

12. Information from the Cheshire Brine Subsidence Compensation Board

The property lies outside the Cheshire Brine Compensation District.

Comments on the Coal Authority information

The Coal Authority own the copyright in this report and the information used is protected by our database right.

In view of the mining circumstances a prudent developer would seek appropriate technical advice before any works are undertaken.

Therefore if development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply good engineering practice developed for mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or mines of coal without the permission of the Coal Authority. Developers should be aware that the investigation of coal seams/former mines of coal may have the potential to generate and/or displace underground gases and these risks both under and adjacent to the development should be fully considered in developing any proposals. The need for effective measures to prevent gases entering into public properties either during investigation or after development also needs to be assessed and properly addressed. This is necessary due to the public safety implications of any development in these circumstances.

Additional remarks

Information provided by the Coal Authority in this report is compiled in response to the Law Society's Con29M Coal Mining and Brine Subsidence Claim enquiries. The said enquiries are protected by copyright owned by the Law Society of 113 Chancery Lane, London WC2A 1PL. Please note that Brine Subsidence Claim enquiries are only relevant for England and Wales. This report is prepared in accordance with the Law Society's Guidance Notes 2006, the User Guide 2006 and the Coal Authority and Cheshire Brine Board's Terms and Conditions applicable at the time the report was produced.

If this Report is for a residential property, insurance is included to cover any loss in property value caused by any changes in the information contained in this report. Please see the attached certificate of insurance for the terms and conditions of this insurance. The insurance does not cover non-residential property or interpretive reports.

Disclaimer

The Coal Authority owns the copyright in this report and the information used to produce this report is protected by our database rights. All rights are reserved and unauthorised use is prohibited. If we provide a report for you, this does not mean that copyright and any other rights will pass to you. However, you can use the report for your own purposes.

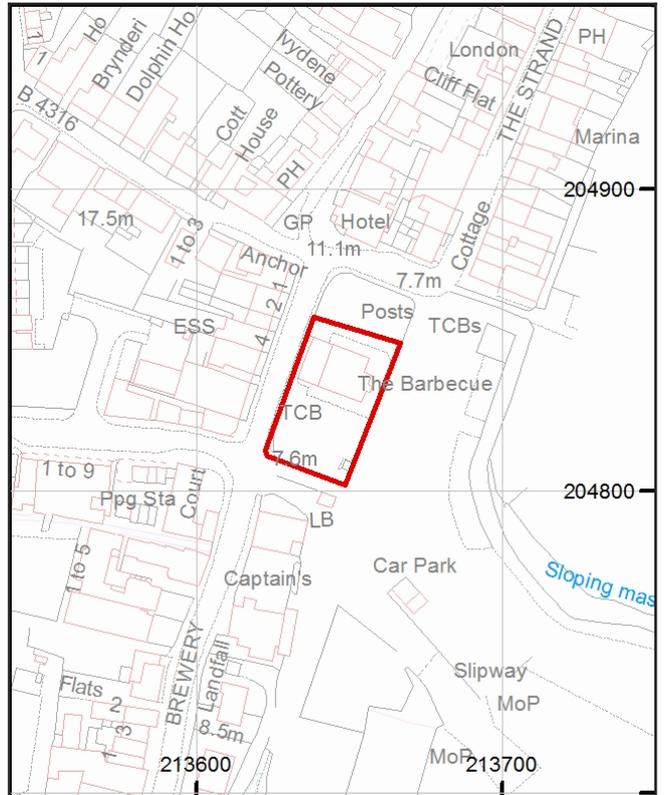
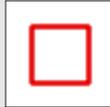
Alternative formats

If you would like this report in an alternative format, please contact our communications team.

Enquiry boundary

Key

Approximate position of enquiry boundary shown



How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 /company/the-coal-authority

 /thecoalauthority

 /coalauthority



Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

Key facts document

General summary

This is a summary of the policy and does not contain the full terms and conditions of the cover which can be found in the policy document. It is important that you read the policy document carefully when you receive it. If you are a solicitor you should also disclose this document to your client, their lender and/or the purchaser's solicitors for the benefit of their client.

Name of insurer

The insurer is Liberty Legal Indemnities, part of Liberty Mutual Insurance Europe Limited. The underwriting agency is Legal and Insurance Services Limited, PO Box 234, Tunbridge Wells, Kent TN3 0LX.

Legal and Insurance Services Limited is regulated by the Financial Conduct Authority (FCA) and authorised to arrange general insurance contracts. Register number: 305910.

The Coal Authority

The Coal Authority, a NDPB (non-departmental public body) sponsored by BEIS (Department for Business, Energy and Industrial Strategy) 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG, is responsible for producing the Coal & Brine Search Report, issuing the policy, collecting the premium and declaring the existence of the policy to Liberty Legal Indemnities.

Type of insurance and cover

- a. The policy is evidenced by the policy that is attached to the Coal & Brine Search Report provided by the Coal Authority in respect of a search in form CON29M (2006).
- b. Where a Coal & Brine Search Report has been obtained in connection with a sale of the property, cover is provided for the benefit of a purchaser and their lender; in the case of a re-mortgage or where the existing owner chooses to obtain a Coal & Brine Search Report, cover is provided for the benefit of the owner and their lender.
- c. The policy offers protection against loss sustained by the owner of the property if any new problems or adverse entries are revealed in a subsequent Coal & Brine Search Report which were not revealed by the original report to which the policy was attached.

Significant features or benefits under the policy and the term/duration of the policy

- a. Cover is provided for loss that you suffer up to an amount of £50,000.00.
- b. For the purposes of the policy loss includes:
 - (i) any reduction in the market value of the property directly attributable to changes in the information revealed in the Coal & Brine Search Report compiled against the property; and
 - (ii) all other costs and expenses incurred which we have agreed, in writing, to cover.
- c. A single premium has been paid in respect of the cover provided under the policy; the policy remains in effect until you sell the property, or if you are the lender, the debt secured by the mortgage has been repaid.
- d. You cannot transfer the benefits of the policy to anyone else. However, if you die whilst you still have the benefit of the cover provided by the policy, the benefit will pass to your estate and beneficiaries.

Significant or unusual Exclusions or Conditions under the policy

- a. Full details can be found in the Cover and Exclusions sections of the policy.
- b. The policy does not cover your costs in relation to the loss of a transaction for the sale or purchase of the property.
- c. The property must be an existing (i.e. it must have been lived in) single residential house, flat or maisonette in the United Kingdom.
- d. The policy does not cover loss relating to structural or other physical damage caused to the property by subsidence, flooding or otherwise.
- e. The policy does not cover you for any loss in relation to any matter revealed in the Coal & Brine Search Report to which the policy is attached nor in relation to any matter that you were otherwise aware of on or before the policy was issued.

Cancellation rights

You can cancel your policy within 14 days of the commencement date. Please telephone or email Legal and Insurance Services Limited on 01892 863863 or at enquiries@goodtitle.co.uk quoting your policy number.

How to claim

If you need to make a claim, please write to Legal and Insurance Services Limited, PO Box 234, Tunbridge Wells, Kent TH3 0LX quoting your policy number. You can also telephone 01892 863863 or contact them via email at enquiries@goodtitle.co.uk. Please enclose your policy and the Coal & Brine Search Report attached to it together with the subsequent report giving rise to the claim.

If you have a complaint

In the first instance, please contact the Underwriting Manager (Complaints) Legal and Insurance Services Limited, PO Box 234, Tunbridge Wells, Kent TN3 0LX.

Tel: 01892 863863

Fax: 01892 861025

Email: enquiries@goodtitle.co.uk

If you are unable to resolve your complaint with the above please contact:

Liberty Specialty Markets

20 Fenchurch Street

London

EC3M 3AW

Tel: 020 3758 0000

Complaints that cannot be resolved may be referred to the Financial Ombudsman Service (www.financial-ombudsman.org.uk). Further details will be provided at the appropriate stage of the complaints process.

Financial services compensation scheme

Legal and Insurance Services Limited are members of the Financial Services Compensation Scheme (FSCS). You may be entitled to compensation from this scheme if they cannot meet their obligations, depending on the type of insurance and the circumstances of your claim.

Further information about the scheme is available from:

The Financial Services Compensation Scheme, 10th Floor, Beaufort House, 15 St. Botolph Street, London, EC3A 7QU. The FSCS website may be viewed at www.fscs.org.uk



On behalf of the insurer

Coal & Brine Search Report Insurance Policy

Schedule

Policy number: **24912558**

The insurer: **Liberty Legal Indemnities – underwritten by Liberty Mutual Insurance Europe Limited**

Binding Authority contract number: **RNMFP1703841**

Property: **THE BARBECUE, CAMBRIAN TERRACE, SAUNDERSFOOT, PEMBROKESHIRE, SA69 9ER**

Report reference number: **51001775434001**

Limit of cover: **£50,000.00**

Dated: **24 January 2018**

This policy and schedule shall be read together and any word or expression to which a specific meaning has been attached in either shall bear such meaning wherever it may appear.

Where a Coal & Brine Search Report has been obtained in connection with a sale of the property, cover is provided for the benefit of a purchaser and their lender; in the case of a re-mortgage or where the existing owner chooses to obtain a Coal & Brine Search Report, cover is provided for the benefit of the owner and their lender.

The policy offers protection against loss sustained by the owner of the property if any new problems or adverse entries are revealed in a subsequent Coal & Brine Search Report which were not revealed by the original report to which the policy was attached.

The insured shall at all times comply with the requirements of the Conditions of this Policy.

Definitions

In this policy unless the context requires otherwise the following words or expressions shall have the following meanings:

Date of the report means the date of the Coal & Brine Search Report attached to this policy.

Coal & Brine Search Report means the attached Coal & Brine Search Report that the Coal Authority has prepared for the property following a Coal & Brine Search Report providing information compiled from:

- i. the Coal Authority's records in relation to past, present and future underground and opencast coal-mining activity, shafts and adits (vertical and horizontal entries to mines) coal-mining geology, coal-mining related hazards, coal-mining subsidence and mine gas and
- ii. the records of the Cheshire Brine Subsidence Compensation Board in relation to Cheshire Brine

The Coal Authority is a NDPB (non-departmental public body) sponsored by BEIS (Department for Business, Energy and Industrial Strategy) 200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG. The Coal Authority is responsible for producing the Coal & Brine Search Report, issuing this policy, collecting the premium and declaring the existence of this policy to the insurer.

Insurer means Liberty Legal Indemnities – part of Liberty Mutual Insurance Europe Limited.

Insured means the person insured by this policy. This may be:

- i. the person who asked for the Coal & Brine Search Report in connection with your purchase of the property (and your mortgagee)
- ii. the person who purchased the property (and your mortgagee) if the person selling the property has asked for a Coal & Brine Search Report for the benefit of the purchaser as part of a seller's pack or if the property has been purchased by way of auction
- iii. the owner of the property (and your mortgagee) if you are re-mortgaging the property or the owner of the property who has chosen to obtain a Coal & Brine Search Report

Knowledge means actual knowledge or notice but not knowledge or notice which may be imputed to the insured by reason of the public records as defined in this policy or any other records which impute notice of matters affecting the property.

Market value means the average of the estimates given by 2 independent valuers (one to be appointed by and paid for by the insurer and the other by the insured) as to the price which could have been obtained for the property on the open market at the date on which the insured first becomes aware of the existence of the defect and under normal sale conditions at the time.

Property means the residential property at each address shown in the Schedule to this Policy and in respect of which the Coal Authority has provided the attached Coal & Brine Search Report.

Public records means records established by the Crown or any local or statutory authority at the date of the mortgage pursuant to the Land Registration Acts 1925 and 2002 the Land Charges Act 1972 and the Local Land Charges Act 1975 including any replacement or amending legislation.

Period of insurance means the period from the date of the report until:

- i. the property is sold
- ii. the debt secured by the mortgage is repaid if the insured is a mortgagee

Premium means the total amount paid in consideration of the cover provided by this policy which includes Insurance Premium Tax at the appropriate rate.

Cover

Subject to the terms and conditions of this policy and provided the Coal Authority has collected the premium cover will be provided up to the limit of cover for all claims made during the period of insurance in respect of:

- i. the loss in market value of the property directly attributable to any changes in the information revealed in a subsequent Coal & Brine Search Report which was not revealed in the Coal & Brine Search Report attached to this policy which was carried out on the date of the report, such loss in market value to be calculated at the date of the subsequent Coal & Brine Search Report, and
- ii. any costs and expenses incurred with the consent of the insurer

Exclusions

This policy does not cover any loss:

1. if at the date of the claim you are not the legal or beneficial owner of the property
2. if the property is not a single private home in the United Kingdom which is used only for residential purposes
3. in relation to loss of a transaction for the sale or for the purchase of the property nor for any costs incurred by you in relation to the loss of such transaction
4. in respect of structural or other physical damage caused to the property by subsidence, flooding or otherwise
5. as a result of any change in information in response to questions 3(a), 3(b), 8(a) or 8(b) of a Coal & Brine Search Report (form CON29M (2006))
6. for any entry on any subsequent Coal & Brine Search Report after the date of the report if this entry also appears on the attached Coal & Brine Search Report

7. for any problem revealed by the first Coal & Brine Search Report after the date of the report if the insured or their legal representative knew about the problem on or before the date of the report
8. for any change in the interpretation of data upon which the Coal & Brine Search Report was produced provided such data remains unchanged

The insurer will not be responsible for any loss for which the Coal Authority or the Cheshire Brine Subsidence Compensation Board may be required to pay by law.

Conditions

1. On becoming aware of any potential or actual claim against this policy the insured must:
 - a) provide written notice and details to the insurer without unnecessary delay
 - b) provide all information and assistance that the insurer (and/or their agents solicitors or surveyors) require at the insured's own expense
2. Any act or omission by the insured or anyone acting on the insured's behalf which in whole or in part induces a claim under this policy (save as may already have occurred and be recorded in this policy or schedule and save in relation to carrying out the insured use) shall void this policy.
3. If at the time of a claim under this policy there is other insurance (whether incepted by the insured or any other party) under which the insured may be entitled to make a claim either wholly or partly in respect of the same interest or risk covered by this policy the insurer will not be liable to pay or contribute more than their rateable proportion of the claim.
4. The law of England and Wales will apply to this contract unless at the date of the report you are a resident of Scotland or Northern Ireland in which case the law of that country will apply.

Cancellation rights

You can cancel a policy by contacting us within 14 days of the policy commencement date provided all parties that have an interest in the policy (for example mortgage lender) also consent to the cancellation. Please telephone or email us in the first instance on 01892 863863 or at enquiries@goodtitle.co.uk referencing the policy number.

Non-invalidating clause

The interest of any insured under this policy will not be invalidated or affected by any other party breaching the policy terms and conditions, or providing false or misleading information to the insurer, unless:

- a) such party acted on the insured's behalf or with the insured's knowledge and consent
- b) where the insured is a successor in title or mortgagee, chargee or lessee, they had knowledge of a breach of the policy terms or conditions, or that false or misleading information has been provided to the insurer prior to the date of commencement

General

1. Unless otherwise indicated, no term of this insurance contract is intended to limit or affect the statutory rights or obligations of any of the parties to this contract under, and/or the effect of, parts 2, 3, 4 or 5 of the Insurance Act 2015 (the "2015 Act").
2. Any term of this insurance contract which would, but for this clause, put the insured in a worse position as respects any of the matters provided for in parts 2, 3, 4 or 5 of the 2015 Act than it would be by virtue of the provisions of those parts is, to that extent, of no effect, unless the insurer has complied with the transparency requirements in section 17 of the 2015 Act.
3. The insured should ask the insurer or its broker or solicitor for clarification of any matters which are not clear to it regarding the scope of disclosure required or the provisions of this insurance contract.

The duty of fair presentation

1. Before this insurance contract is entered into, the insured (including anyone acting on behalf of the insured in arranging this insurance contract) must make a fair presentation of the risk to the insurer, in accordance with section 3 of the 2015 Act. In summary, they must:
 - a) disclose to the insurer every material circumstance which the insured knows or ought to know. Failing that, they must give the insurer sufficient information to put a prudent insurer on notice that it needs to make further enquiries in order to reveal material circumstances. A matter is material if it would influence the judgement of a prudent insurer as to whether to accept the risk, or the terms of the insurance (including premium)
 - b) make the disclosure in clause 1 a) above in a reasonably clear and accessible way
 - c) ensure that every material representation of fact is substantially correct, and that every material representation of expectation or belief is made in good faith

2. For the purposes of clause 1 a) above, the insured is expected to know the following:
 - a) if the insured is an individual, what is known to the individual and anybody who is responsible for arranging his or her insurance
 - b) if the insured is not an individual, what is known to anybody who is part of the insured's management; or anybody who is responsible for arranging the insured's insurance
 - c) whether the insured is an individual or not, what should have reasonably been revealed by a reasonable search of information available to the insured. The information may be held within the insured's organisation, or by any third party (including but not limited to the broker, solicitor, subsidiaries, affiliates or any other person who will be covered under the insurance). If the insured is insuring subsidiaries, affiliates or other parties, the insurer expects that the insured will have included them in its enquiries, and that the insured will inform the insurer if it has not done so. The reasonable search may be conducted by making enquiries or by any other means

Breach of warranty: suspensory

If the insured breaches a warranty in this insurance contract, the insurer's liability under the contract shall be suspended from the time of the breach until the time when the breach is remedied (if it is capable of being remedied). The insurer will have no liability to the insured for any loss which occurs, or which is attributable to something happening, during the period when the insurer's liability is suspended.

Terms not relevant to the actual loss

Where: (i) there has been a failure to comply with a term (express or implied) of this insurance contract, other than a term that defines the risk as a whole; and (ii) compliance with such term would tend to reduce the risk of loss of a particular kind and/or loss at a particular location and/or loss at a particular time, the insurer cannot rely on the breach of such term to exclude, limit or discharge its liability if the insured shows that the failure to comply with such term could not have increased the risk of the loss which actually occurred in the circumstances in which it occurred.

Fraudulent claims clause

1. If the insured makes a fraudulent claim under this insurance contract, the insurer:
 - a) is not liable to pay the claim
 - b) may recover from the insured any sums paid by the insurer to the insured or to any third party in respect of the claim
 - c) may by notice to the insured treat the contract as having been terminated with effect from the time of the fraudulent act
2. If the insurer exercises its right under Clause 1 c) above:
 - a) the insurer shall not be liable to the insured in respect of a relevant event occurring after the time of the fraudulent act. A relevant event is whatever gives rise to the insurer's liability under the insurance contract (such as the occurrence of a loss, the making of a claim, or the notification of a potential claim)
 - b) the insurer need not return any of the premiums paid

Fraudulent claims - group insurance

If this insurance contract provides cover for any person or entity who is not a party to the contract (a covered person), and a fraudulent claim is made under the contract by or on behalf of a covered person, the insurer may exercise the rights set out in the preceding clause above as if there were an individual insurance contract between the insurer and the covered person. However the exercise of any of those rights shall not affect the cover provided under the contract for any other person or entity.

Remedies for breach of the duty of fair presentation

1. If, prior to entering into this insurance contract, the duty of fair presentation shall have been breached, the remedies available to the insurer are set out below:
 - a) if the breach of the duty of fair presentation is deliberate or reckless:
 - i) the insurer may avoid the contract, and refuse to pay all claims
 - ii) the insurer need not return any of the premiums paid

- b) if the breach of the duty of fair presentation is not deliberate or reckless, the insurer's remedy shall depend upon what the insurer would have done if the duty of fair presentation had been complied with:
 - i) if the insurer would not have entered into the contract at all, the insurer may avoid the contract and refuse all claims, but must return the premiums paid
 - ii) if the insurer would have entered into the contract, but on different terms (other than terms relating to the premium), the contract is to be treated as if it had been entered into on those different terms from the outset, if the insurer so requires
 - iii) in addition, if the insurer would have entered into the contract, but would have charged a higher premium, the insurer may reduce proportionately the amount to be paid on a claim (and, if applicable, the amount already paid on prior claims). In those circumstances, the insurer shall pay only X% of what it would otherwise have been required to pay, where $X = (\text{premium actually charged}/\text{higher premium}) \times 100$
2. If, prior to entering into a variation to this insurance contract, the duty of fair presentation shall have been breached, the remedies available to the insurer are set out below:
- a) if the breach of the duty of fair presentation is deliberate or reckless:
 - i) the insurer may by notice to the insured treat the contract as having been terminated from the time when the variation was concluded
 - ii) the insurer need not return any of the premiums paid
 - b) if the breach of the duty of fair presentation is not deliberate or reckless, the insurer's remedy shall depend upon what the insurer would have done if the duty of fair presentation had been complied with:
 - i) if the insurer would not have agreed to the variation at all, the insurer may treat the contract as if the variation was never made, but must in that event return any extra premium paid
 - ii) if the insurer would have agreed to the variation of the contract, but on different terms (other than terms relating to the premium), the variation is to be treated as if it had been entered into on those different terms, if the insurer so requires
 - iii) if the insurer would have increased the premium by more than it did or at all, then the insurer may reduce proportionately the amount to be paid on a claim arising out of events after the variation. In those circumstances, the insurer shall pay only X% of what it would otherwise have been required to pay, where $X = (\text{premium actually charged}/\text{higher premium}) \times 100$
 - iv) if the insurer would not have reduced the premium by more than it did or at all, then the insurer may reduce proportionately the amount to be paid on a claim arising out of events after the variation. In those circumstances, the insurer shall pay only X% of what it would otherwise have been required to pay, where $X = (\text{premium actually charged}/\text{reduced total premium}) \times 100$

Notice to the insured

Any enquiry or complaint should be addressed in the first instance to:

Legal and Insurance Services Limited
PO Box 234
Tunbridge Wells
Kent
TN3 0LX

Tel: 01892 863863

Fax: 01892 861025

Email: enquiries@goodtitle.co.uk

If you are unable to resolve your enquiry or complaint with the above please contact:

Liberty Specialty Markets
20 Fenchurch Street
London
EC3M 3AW

Tel: 020 3758 0000

Complaints that cannot be resolved may be referred to the Financial Ombudsman Service (www.financial-ombudsman.org.uk). Further details will be provided at the appropriate stage of the complaints process.

Notifying a claim

If anything should happen which might give rise to a claim under the policy please forward full details to Legal and Insurance Services Limited at the above address. Please include mention of the Policy Number shown at the top of the Schedule to the policy.

If you do not receive a reply or acknowledgement within 10 working days please forward the details to Liberty Specialty Markets at the above address.

VAT receipt

Issued by	The Coal Authority 200 Lichfield Lane Mansfield Nottinghamshire NG18 4RG
Tax point date	24 January 2018
Issued to	QUANTUM GEOTECHNICAL LTD TY BERWIG HEOL Y BWLCH BYNEA LLANELLI CARMARTHENSHIRE SA14 9ST
Property search for	THE BARBECUE CAMBRIAN TERRACE SAUNDERSFOOT PEMBROKESHIRE SA69 9ER
Reference number	51001775434001
Date of issue	24 January 2018
Cost	£33.00
VAT @ 20%	£6.60
Total received	£39.60
VAT registration	598 5850 68