

Hulbert Road, Havant

Phase 1 Geoenvironmental Assessment

Desk Top Study

A096474

Trustees of the GHM Jackson 1972 Settlement

July 2020

Prepared by WYG Environment Planning Transport Limited



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EXECUTIVE SUMMARY

The Site	Site Address: Hulbert Road, Havant, Hampshire. Site Description: The site is approximately 3.8 ha in area and located on the outskirts of Bedhampton adjacent to the A3(M) approximately 2.5km from Havant train station. The site is accessed off Hulbert Road via a padlocked gate in the northeast corner. Vehicular access to this gate has been blocked by concrete barriers. The site is largely comprised of a fenced field covered by long grass with dense vegetation around the fenced boundary. There is a worn asphalt track along the northern and western edges of the site which leads to a raised platform consisting of hardcore in the south west quadrant of the site. This area is bound to the north, east, and south with lined man-made drainage trenches and an approximately 2-3m high bund to its north. Within the raised platform are three concrete slabs. It is likely this development relates to the hydrocarbon exploration previously conducted on the site.
Site History	Historical mapping shows the site to be undeveloped throughout the recorded mapping, the current areas of hardstanding are not recorded within the most recent historical mapping. However, aerial photos from June 2017 show groundwork in the south west corner of the site. A search on the Havant Council planning portal identified that hydrocarbon exploration was granted permission from February 2009 for 36 months (Ref:08/53384/002). This was extended to 60 months in November 2012 (Ref: APP/12/01061). Significant fly-tipping is known to have occurred on the site following the completion of the exploratory drilling, however fly tipped materials have now been removed from the site. The wider area surrounding the site remained predominantly undeveloped until 1930 and comprised of fields, woodlands, several farms, cottages, and the small villages of Stakes and Waterloo to the northwest and Purbrook to the southeast by 1895. Development significantly increases and by 1980 the surrounding area is mostly developed. The A3(M) was completed between 1975 and 1984 traversing north south adjacent to the western boundary of the site.
Geology	Made Ground: BGS records none, however, localised areas of Made Ground are anticipated in relation to the previous hydrocarbon exploration on site. Superficial: None recorded on site. Bedrock: London Clay Formation
Hydrogeology and Hydrology	The bedrock geology onsite is designated an Unproductive Aquifer. The site is not situated within an EA defined groundwater Source Protection Zone; however, it is within a SPZ (confined aquifer) described as 'inner catchment within confined aquifer'. The risk of flooding at surface from groundwater varies from negligible in the southwest corner, low risk through the centre of site, to moderate risk in the northeast of the site. The risk of flooding from surface waters is recorded as negligible.
Radon	The site is in a low probability radon area as less than 1% of homes are above the action level.
Unexploded Ordnance (UXO)	Based on freely accessible Zetica UXO Risk mapping the site is in an area of Moderate Risk. A pre desk study assessment was obtained from Zetica and it is recommended that a detailed desk study is commissioned to assess, and potentially zone, the UXO hazard level on the site.

Environmental database search	One record of surface ground workings for A3(M) related cutting abutting the western site boundary. The site is within a Nitrate Vulnerable Zone. Six records for designated ancient woodland within 250m of the site. Two Habitat Networks onsite; Network Enhancement Zone 1 across the site and Priority Habitat (lowland meadows) abuts the far southwest corner of the site. Six current industrial land uses within 250m of the site. Nearest is an electrical substation 113m south.
Preliminary geotechnical assessment	The site has a varied topography with a raised platform, bunding of varying heights and several drainage trenches however significant cut and fill is not anticipated to facilitate any future development. Given the anticipated ground conditions it is considered possible that traditional shallow foundations may be suitable however larger buildings may require piled foundations into the London Clay. There is the potential for shallow groundwater and there is the possibility of inground obstructions associated with the previous hydrocarbon exploration on the site. This should all be confirmed through ground investigation in due process.
Preliminary ground contamination assessment	The previous hydrocarbon exploration in the south west quadrant of the site, and associated access tracks, indicate the potential for varying thicknesses of Made Ground and the potential presence of localised contamination associated with the hydrocarbon exploration works and infrastructure. Localised contamination associated with historical fly-tipping may potentially also be present. The Made Ground, where present, may represent a risk from land gas, although is likely to be of limited source potential.
Conclusions and Recommendations	Ground investigation will be required in due course to confirm ground conditions and identify suitable founding strata across the site. Investigation will also be required to assess the thickness of made ground across the site, confirm extents of potential constraints, and to identify the nature and extent of any localised areas of contamination associated with previous hydrocarbon exploration. A detailed UXO Desk Study will be required to confirm the risk associated with UXO on the site. Recommendations within this report will inform the need for a UXO specialist to be present on the site during any future site works. Attempts should be made to contact Northern Petroleum to confirm the nature and extent of any decommissioning works undertaken on the site.

1.0 INTRODUCTION

1.1 Instruction

WYG Environment Planning Transport Ltd (WYG) was commissioned by Trustees of the GHM Jackson 1972 Settlement (the client) to undertake a Phase 1 Geo-Environmental Desk Top Study for a site known as Hulbert Road (known hereafter as "the site").

The location of the site is shown on **Figure 1**.

1.2 Brief

The brief for this report was to provide a Phase 1 Geo-environmental Desk Study assessment report including a preliminary qualitative geotechnical and contamination risk assessment to support a planning application for the potential residential development proposals.

1.3 Proposed Development

The development masterplan comprises a mixture of apartment blocks and housing. A copy of the masterplan is presented at the end of this report and are current at time of reporting.

1.4 Report Scope

This report includes the following key elements:

- A discussion of the current site status and key associated environmental influences observable by general visual inspection around the site;
- An historical site and area review, primarily referring to past editions of Ordnance Survey Maps;
- A discussion of the general expected ground and groundwater conditions within the topographical and area context referring to our own geological and hydrogeological maps library;
- Details of an Environmental database search (Groundsure Insight report) of key relevant agencies, including Local and Statutory Authorities such as the Environment Agency;
- A geotechnical and ground contamination assessment discussing the results of the research above not only concerning potential on-site conditions/constraints and

contamination but also an overview of the potential for migration onto or off-site with respect to the surrounding neighbouring sites;

- A baseline UXO risk assessment using free on-line databases to classify the site with regards to UXO risk;
- Development of a preliminary conceptual site model;
- Preliminary geotechnical hazard assessment;
- Qualitative ground contamination risk assessment (compliant with CIRIA 552 (CIRIA, 2001) methodology);
- An executive summary of the report to allow a rapid, layman's overview.

1.5 Limitations

The recommendations and opinions expressed in this report are based on information obtained as part of the desk study or provided by others. Information provided from other sources is taken in good faith and WYG cannot guarantee its accuracy.

This report is subject to the report conditions presented in **Appendix A**.

The information contained in this report is intended for the use of Trustees of the GHM Jackson 1972 Settlement and WYG can take no responsibility for the use of this information by any third party or for uses other than that described in this report or detailed within the terms of our engagement.

2.0 SITE INFORMATION

2.1 Location

The site is located on the outskirts of Bedhampton on Hulbert Road, Havant, Hampshire. It is located approximately 2.5km from Havant train station and the A3(M) is located directly east.

The site is approximately 3.8ha in area and is centred on National Grid Reference (NGR) 469437, 108092. The nearest approximate postcode of the site is PO9 3QJ.

A site location plan is presented in **Figure 1**.

2.2 General Area Context

Table 1 - Surrounding land uses

	Description
North	Woodland (Nevilles Park)
East	Hulbert Road with woodland beyond and residential developments 450m from the site.
South	Woodland (Nevilles Park) with hardware store and supermarket complex beyond.
West	A3(M) with woodland and school / residential development beyond.

2.3 Site Description

A Site walkover was completed on 24th June 2020.

A Site layout plan with photos is attached as **Figure 2**, photo-plates are attached as **Appendix B**, and the site walkover proforma is attached as **Appendix C**.

The majority of site is a field covered by long grass except for an area in the southwest of the site which will be referred to as the south west quadrant. There is a worn asphalt track leading from Hulbert Road around the north and western edges of the site that leads to this area.

The south west quadrant is a large area of hardcore with three concrete slabs located within it. The area is bound on the north, east, and south with lined drainage trenches which contained algae covered standing water. The lining of the drainage trenches is comprised of black plastic mesh, over textile, over heavy-duty black plastic sheeting. It is not possible to identify if the lining continues beneath the entire south west quadrant. Beyond the lined drainage trenches directly to the north there is a roughly 2-3m high mound which is partly covered by long grass and part by dense vegetation (including brambles). The mound appears to be comprised of

reworked natural ground, likely to be derived from a topsoil strip prior to the placement of the hardcore in the south west quadrant. Directly beyond the lined drainage trench in the east of the south west quadrant the bund is approximately 1m high.

Three concrete slabs are located within the south west quadrant. A rectangular 3.5m by 6m slab is located in the north of the area and has a manhole with a 150mm diameter white plastic pipe visible on the surface. There was some blackened staining on the concrete surface. Two 7.5m square concrete slabs with infilled geometric shaped holes within them are located in the west of the area. There is some dark 'splash' like spotting to the ballast gravel surround the slabs. The eastern of these two geometric holes is not completely infilled and a ladder rung is visible on the inside wall. It is assumed that these relate to the hydrocarbon exploration that occurred previously on the site, this is discussed further in Section 3.0.

2.3.1 Current Site Usage

The site is currently disused.

2.3.2 Access and Boundaries

Access to the site is off Hulbert Road in the northeast corner of the site. The site entrance is secured by concrete barriers forming a roadblock and a metal fence with padlocked gate that is approximately 2m high.

A 2m high metal fence forms the eastern boundary, the rest of the site is bounded by dense vegetation and a wooden post and barbed wire fence

2.3.3 Topography

The topography varies by approximately 8-10m across the site. Generally, the site slopes from west to central east area of the site, with the north, west, and south edges of site being at a higher elevation.

The south west quadrant is formed by a raised level development platform with the eastern edge sloping steeply down in to the lower lying eastern half of the site.

An approximately 2-3m high mound directly north of the south west quadrant slopes steeply on its north, east, and south faces, however, it has a moderate slope on its west face that is easily walked up.

2.3.4 Ground Cover and Vegetation

The majority of the site covered by long grass with very sparsely spaced bushes. Under foot, hidden by the long grass, the field area is rutted and uneven.

The track that follows around the north and western site edges is comprised of a worn asphalt with compacted gravel utilised in places.

The south west quadrant is covered by compacted hardcore and there are also three concrete slabs located within this area.

The edges of the site are covered by dense vegetation which includes brambles and some trees. Woodlands are situated directly north and south of the site and in the north, some of these trees overhang the site.

2.3.5 Drainage

Three lined drainage trenches bound the south west quadrant to the north, east, and south. It is unknown if these ditches discharge on the site, however water was noted to be stagnant at the time of the site walkover. A gully strip-drain ran north to south across the site entrance adjacent to Hulbert Road.

2.3.6 Services

Services are not known to be present. A manhole was visible within the concrete slab in the north of the south west quadrant and as such services beneath the site cannot be discounted.

2.3.7 On-Site Structures and Fuel Tanks

There were three concrete slabs present in the south west quadrant of the site and are described in **Section 2.3**.

A manhole and 150mm white plastic pipe were visible in the northern concrete slab.

2.3.8 Asbestos Containing Materials

The site is known to have been subject to extensive fly tipping and as such the presence of asbestos containing materials cannot be discounted.

2.3.9 Signs of Contamination

Blackened staining is present on the surface of the concrete slab in the north of the south west quadrant. Dark 'splash' spots are present on the ballast gravel surrounding the two concrete slabs in the west of the south west quadrant.

2.4 Previous Investigations

No previous geo-environmental assessment reports relating to the site have been provided to WYG for review as part of this desk-based study.

3.0 HISTORICAL HYDROCARBON EXPLORATION

WYG have been informed that the site was formerly used as a hydrocarbon exploration site under the management of Northern Petroleum (GB) Limited. The infrastructure within the south west quadrant of the site is assumed to be associated with this former development and matches drawings and layouts referred to in reports associated with the exploration site.

WYG have not been provided with any information relating to the former use of the site, however several reports relating the site were available on the Hampshire County Council and Havant Council planning portals.

These records are detailed in the table below and reports deemed to be important to this report are summarised in the following sections.

Table 2 – Summary of Planning Applications pertaining to the site

Reference Number	Details
08/53384/002 (site reference: HV047)	Temporary permission to construct a hydrocarbon exploration site, mobilisation of a drilling rig, setting up and drilling of an exploratory well including flow testing, permission to include new highway access, access track, and passing place. - Applicant: Northern Petroleum (GB) Ltd - Granted on 16/03/2009 for 36 months. - 28 related documents available, including: - o Supporting Statement (12/2008) - o Drilling report (12/2008), - o Proposed Restoration Report (12/2008), - o ecological appraisal (10/2008), - o Archaeological Evaluation (12/2008), - o Tree Survey (02/2009), - o Noise Survey & Predictions (06/2007), - o several general layout and location plans, - o photograph files, - o decision notices, - o various policies, articles & licensing.
APP/12/01061	Variation of condition 2 of planning permission 08/53384/002 (extend the development from the permitted 36 months to the 60 months). - Applicant: Northern Petroleum (GB) Ltd. - Withdrawn by applicant 11/07/2013. - 11 related documents available.

3.1 Planning Application 08/53384/002

3.1.1 Northern Petroleum (GB) Ltd - Summary Statement

This document outlines the intent to drill an exploratory well on the site to identify if commercially viable reserves of hydrocarbons are present beneath the site. The statement indicates the potential for oil reserves to be present to the south of the Horndean Field associated with geological structures identified to be present underlying the wider site area.

The document states the planning application relates to the advancement of an exploratory well only, with the potential for flow testing in the event that hydrocarbons are encountered during the works. It also notes that on completion of the investigations the exploratory wells will be decommissioned.

Any fluids removed from the well were scheduled to be removed from site by tanker to an authorised establishment.

3.1.2 Northern Petroleum (GB) Ltd – Drilling Programme (December 2008)

In the front end of the programme an example of the drilling process and procedure are defined. Images of an example site, the drill rig, borehole casing set up, and well headworks set up, are shown. An example schedule of vehicle movements and deliveries during site set-up and drilling operation is presented.

The report also presents a plan outlining the proposal to create the working platform and bunds current observed on site in the southwest quadrant.

A License (reference: PEDL 155) is presented identifying the Well Name as Havant 1 with a provisional target depth of 6,839.5 ft MD BRT (circa 2,085m bgl) targeting the Oil bearing Carbonates of the Great Oolite Formation. The well type was proposed to be a deviated exploration well and side-tracking the well was being considered.

The document provides detailed information on the reasoning for the target, information on the reservoir potential, as well as detailed information on the expected geology.

A summary of well plan is provided on page 25 detailing the drill size, expected formation type, and azimuth at specified approximate depths based on geological formation intersections. Drill hole diameter decreases downhole from 17.5" to 6". Proposed trajectory information is presented in Figure 5 on page 40 of the document.

Drilling was anticipated to intersect twenty-one stratigraphic markers starting from the London Clay, through stratum including Cretaceous Chalks, Gault Clay, Purbeck Formations, Kimmeridge

Clay, Corallian Beds, Oxford Clay, Kellaway Beds, Cornbrash Formation, Forest Marble to the target strata of the Great Oolite Formation.

3.1.3 Northern Petroleum (GB) Ltd – Site Restoration Plan (December 2008)

The document describes the proposed reinstatement of the site to former usage. Including the following:

- The well will be plugged, hydrostatically tested, and abandoned with an agreed method approved by the Health and Safety Executive and the Department of Trade and Industry whilst the drilling rig was onsite.
- The wellhead and valve assembly unit will be removed, and the well casing cut off at a level not less than 1.83m (6ft) below finished ground level, a metal plate welded on top, and a concrete slab placed on top.
- Remaining plant, equipment, buildings, fencing, surface installations will be dismantled and removed from the site. The ditches, sumps, cellars, and cess tanks, present on site will be drained with contaminated materials removed from the site. All pipes, cables, ducting, and items above the impermeable lining will be disconnecting and removed from site.
- If weather conditions permit, all uncontaminated hardcore and stone will be removed. Concrete installations will be broken up and removed, stabilising membrane and sand will then be lifted and the membrane disposed of and then the impermeable lining will either be lifted or ripped in-situ. Any installations, cables, and pipes below the linings level will then be excavated and removed from the site. The cellar, sump, and ditching voids will be filled with any sub-soil stored on site ready for the area to be regraded
- Any weed growth on sub-soil stockpiles will be eliminated by non-persistent contact weed-killer such as 'roundup', prior to regrading of the sub-soil to reform the falls and gradients of the site prior to occupation to the sites' original contours. Works will be carried out in dry conditions, and as far as practical at right angles to the field drainage system. Topsoil to be replaced and cultivated.
- Removal of site boundary fencing if required, reinstatement of any fencing or gates that were removed during the use of the sites. If necessary, a field drainage scheme will be prepared and carried out if agreed with landowner. Annual aftercare inspections for a period of three years.

3.2 Planning Application APP/12/01061

This planning application relates to the potential extension of the three-year time limit which was applicable to the initial application.

The application was withdrawn; however a number of documents are presented in the online portal.

A Preliminary (Qualitative) Groundwater Risk Assessment dated June 2013 is referenced, however; it was not available for download.

3.2.1 Northern Petroleum (GB) Ltd - Havant Exploration Site Restoration Scheme – December 2012

This document states;

'The well was plugged, hydrostatically tested, and abandoned with an agreed programme and method approved by the Health & Safety Executive and the Department of Trade and Industry whilst the drilling rig was on site.'

It also details the proposed removal of the remaining infrastructure and reinstatement of the site as per the details presented above.

3.3 Summary

Based on the information presented above and observations made on site, two boreholes were potentially sunk on the site within the south western quadrant. These are deep boreholes designed for hydrocarbon exploration drilled by specialist contractors.

Prior to drilling, WYG understand that the raised platform was constructed in the southwest quadrant of the site to provide a stable drilling platform with associated surface water ditches and visual bunds to screen works. The structures remaining onsite, concrete pads with geometrical sumps are similar to those identified on other on shore exploration sites and as such are considered to represent the potential drilling locations.

No information is provided regarding the decommissioning of the works undertaken following the completion of the works, other than the Proposed Restoration Report.

No information has been provided regarding the potential for contamination to be present on the site.

4.0 GEOLOGY, HYDROGEOLOGY, HYDROLOGY AND RADON

4.1 Geology

Details of the geology underlying the site have been obtained from the following sources:

- Geology of Britain Viewer (British Geological Survey, 2020), 1:50 000 scale;
- Environmental database (Groundsure Insight; June 2020) presented in **Appendix D**.

4.1.1 Made Ground

The BGS does not record any Made Ground on the site, however Made Ground was noted to be present during the site walkover.

4.1.2 Superficial Geology

No superficial geology is recorded on site by BGS mapping.

BGS mapping shows head deposits comprised of clay, silt, sand, and gravel 4m northeast and to the south of the site associated with adjacent stream valleys.

4.1.3 Solid Geology

The BGS records the bedrock geology onsite to be the London Clay Formation. The London Clay Formation is comprised of clay, silt, and sand.

The Wittering Formation comprised of sand, silt, and clay is recorded 239m west of the site.

4.1.4 Historical Borehole Logs

British Geological Survey (BGS) logs within 100m of the site have been referred to for information only. A summary of reported ground conditions is presented in the table below with copies of the boreholes logs presented in **Appendix C**.

Table 3 – Summary of BGS Borehole Logs

Reference Number	Hole Type and Depth	Distance and Direction from Site	Details
SU60NE27	BH – 8m	Onsite	A3 Horndean-Broadmarsh (BH175). London Clay to depth. Dry.
SU60NE25	BH – 4m	13m W	A3 Horndean-Broadmarsh (BH173). Soft to Firm & Firm London Clay. Water struck at 3.2mbgl.
SU60NE28	BH – 10m	19m W	A3 Horndean-Broadmarsh (BH176).

Reference Number	Hole Type and Depth	Distance and Direction from Site	Details
			Firm London Clay. Dry.
SU60NE58	Shell & Auger – 8m	21m W	A3 Horndean-Broadmarsh (10). Firm and Stiff London Clay. Groundwater seepage noted from 2mbgl.
SU60NE26	Shell & Auger – 8m	37m W	A3 Horndean-Broadmarsh (BH174). Firm London Clay, Water seepage from 3mbgl.
SU60NE24	Shell & Auger – 6m	61m SW	A3 Horndean-Broadmarsh (BH172). Head deposits to 2mbgl over Stiff London Clay. Water seepage from 2.6mbgl.
SU60NE29	Shell & Auger – 20m	73m N	A3 Horndean-Broadmarsh (BH177). Top soil and head deposits to 0.95mbgl over soft to firm and firm London Clay. Water struck at 0.95mbgl.
SU60NE193	Hand Auger – 3m	88m NW	Stakes Hill/Southleigh Rd (BH18). Peat to 0.3mbgl over silty peat to 0.9 over organic clayey silt with traces of peat to 2.4mbgl over stiff London Clay. Water struck at 0.8 and 2.9mbgl.

4.1.5 BGS Soil Chemistry

The Groundsure Insight Report provides Estimated Background Soil Chemistry Averages for the site (source: Soil Chemistry data provided by the British Geological Survey). The information is summarised in the table below.

Table 4 – Estimated Background Soil Chemistry Averages

Determinand	Soil Concentration Range	
	Minimum (mg/kg)	Max (mg/kg)
Arsenic	15	
Cadmium	1.8	
Chromium	60	90
Lead	100	
Nickel	15	30

4.2 Hydrogeology

4.2.1 Aquifer Classification

The Groundsure Insight Report records no superficial aquifer on the site. The superficial geology 4m northeast and south of the site is reported as a Secondary Undifferentiated aquifer. This is

defined as: *'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.'*

The Groundsure Insight report records the bedrock geology onsite to be an Unproductive Aquifer. A Secondary A aquifer is recorded 239m west of the site.

4.2.2 Groundwater Vulnerability

Guidance released by the EA (Environment Agency, March 2017) states that activities that have the potential to affect the quality or quantity of groundwater must prevent groundwater pollution. All groundwater is vulnerable to pollution, and some geological formations are more vulnerable than others. The risks of groundwater pollution from any given activity depend in part on:

- The physical, chemical and biological properties of the underlying soil and rocks;
- Depth and quality of soil;
- The presence of glacial sediment and other materials – known as 'drift' deposits; and,
- Depth of the unsaturated zone.

All of the above affect how groundwater is more or less vulnerable to pollution, with type of vulnerability generally one of the following:

- Intrinsic vulnerability – this relates to the physical characteristics, it includes soil type, presence of superficial soils, or rock type; and,
- Specific vulnerability – this relates to the effect of the proposed activity including any contaminant and consequent risk to groundwater.

The Groundsure Insight report records that the soil / surface on site is of low leaching class and the groundwater vulnerability in site is unproductive. The groundwater vulnerability of the superficial geology 4m north east and to the south is medium of a low leaching class.

4.2.3 Groundwater Source Protection Zones

The EA defines groundwater Source Protection Zones (SPZs) around identified abstractions to aid the assessment of risk to groundwater or abstraction sources from development. SPZs have three subdivisions and bespoke SPZs are defined for all major abstraction sources intended for human consumption or food use, e.g. boreholes and springs. These sub-divisions are defined as follows:

- SPZ1 – Inner protection zone - defined as the 50-day travel time from any point below the water table to the abstraction source. This zone has a minimum radius of 50 metres;
- SPZ2 – Outer protection zone - defined by a 400-day travel time from a point below the water table. This zone has a minimum radius of 250 or 500 metres around the abstraction source, depending on the size of the abstraction;
- SPZ3 – Source catchment protection zone - defined as the area around an abstraction source within which all groundwater recharge is presumed to be discharged at the abstraction source.

The site is not shown to be situated within an EA defined groundwater SPZ associated with the near surface strata, however, it is recorded to be within a SPZ (confined aquifer) described as 'Inner catchment within confined aquifer'. This is assumed to relate to the underlying chalk aquifer.

4.2.4 Depth to Groundwater and Anticipated Groundwater Flow Direction

Historical borehole logs recorded within 100m of the site (**Appendix E**) record groundwater seepage or groundwater strikes between 0.8 – 3.2m bgl. However, SU60NE27 drilled on the western edge of the site was dry at 8m bgl.

Groundwater direction is unknown.

4.2.5 Groundwater Abstractions

The Groundsure Insight report records there are no groundwater abstractions are recorded within 250m of the site.

4.3 Hydrology

Details of the hydrology of the area have been obtained from the following sources:

- MAGIC interactive mapping website (DEFRA, 2020); and,
- Environmental database (Groundsure Insight – June 2020).

4.3.1 Watercourses

No watercourses are recorded on site.

Several watercourses identified from OS MasterMap Water Network mapping are recorded within 250m of the site boundary. The closest watercourse is a nameless stream 22m north of

the site running roughly west to east and under Hulbert Road. A nameless stream is located 49m south of the site and runs roughly west to east under Hulbert Road. These two streams converge approximately 200m east of the site.

The Water Framework Directive (WFD) records the site to be within Hermitage Stream River Catchment which is part of the East Hampshire Rivers operational catchment.

4.3.2 Surface Water Abstractions

No surface water abstractions are recorded within 250m of the site boundary.

4.3.3 Surface Water Discharge Consents

There are no current discharge consents to surface water within 250m of the site.

There are two revoked or historical discharge consents to surface water within 250m of the site. These are summarised in the table below.

Table 5 – Summary of Surface Water Discharge Consents within 250m of the site.

Location	Details
63m South	Site at Purbrook Way, Hubert Road, Havant, Hampshire. Permit: N01079 (version 1). Miscellaneous effluent type. Discharge to freshwater river. Issued 15/11/1984. Revoked 28/09/2000. (Pre NRA Legislation, Historic Only)
63m South	Site at Purbrook Way, Hubert Road, Havant, Hampshire. Permit: N01079 (version 2). Trade site drainage effluent type. Discharge to freshwater river. Issued 28/09/2000. (Pre NRA Legislation, Historic Only)

4.3.4 Pollution Incidents and Prosecutions

No pollution incidents or prosecutions are recorded within 250m of the site.

4.4 Radon

The BRE document 211 (Scivyer, 2015) mapping coverage for the site area was consulted on 25th June 2020 and indicates that the site is located within an area where no radon protection measures are required for new developments. This statement is supported by the Groundsure Insight Report (**Appendix D**) which confirms that the site is in a low probability radon area as less than 1% of homes are above the action level.

4.5 Historical Mining

According to the Groundsure Insight report there are no underground workings, no coal mining, or non-coal mining activities within 1km of the site.

One surface ground working is recorded on site and several surface ground workings are recorded within 250m of the site. These are summarised in the table below.

Table 6 – Summary of Surface Ground Workings within 250m of the site.

Location	Details
Onsite	Cuttings related to A3(M) abutting western site boundary. 1980, 1991 mapping.
121m S	Cuttings related to A3(M). 1980, 1991 mapping.
155m NW	Pond. 1898 mapping.
163m NW	Pond. 1963 mapping.
164m NW	Pond. 1866, 1895, 1907, 1930, 1938, 1980, and 1991 mapping.
168m W	Ponds. 1991.
224m N	Cuttings related to A3(M). 1980, 1991 mapping.

4.6 BGS Recorded Mineral Sites

The Environmental Database (Groundsure Insight, June 2020) and the BGS Geoindex database record no BGS recorded mineral sites within 1km of the site.

Details of the previous hydrocarbon exploration investigations on the site are presented in Section 3.0.

5.0 UNEXPLODED ORDNANCE

Based on freely available mapping data from Zetica UXO (Zetica UXO, 2008), accessed on 22nd June 2020, the site is located within a Moderate Risk Area with regards to Unexploded Ordnance (UXO).

A pre desktop study assessment (PDSA) was requested from Zetica and the following records of note have been identified within the vicinity of the site.

- Two strategic WWI targets were located within 5km of the site.
- British and American troops were stationed at Stake's Hill, in the immediate vicinity of the site, in 1944 during D-Day preparations.
- Three strategic WWII targets were located within 5km of the site; including military barracks and training areas, and AA and anti-invasion devices.
- During WWII the urban district of Havant and Waterlooville officially recorded 423 High Explosive (HE) bombs with a bombing density of 35 bombs per 405 hectares. Records have been found to indicate that several HE bombs fell within close proximity to the site.

Zetica recommend that a detailed desk study is commissioned to assess, and potentially zone, the UXO hazard level on the site. The full PDSA is attached as **Appendix F**.

6.0 SITE HISTORY

6.1 Introduction

The historical development of the site and surrounding area has been assessed using information available from historical Ordnance Survey (OS) maps within the Groundsure Insight Report for the site which is presented in **Appendix D** of this report.

In the context of the summary of historical development of the surrounding area, the descriptions are limited to within approximately 500m of the site boundary, unless specified in the following section.

6.2 Site History

6.2.1 Detailed Analysis of Site History

The table below provides a detailed account of the review of available OS mapping coverage and historical aerial imagery for the site and general area dating back to 1859.

Table 7 – Summary of Historical Data

Map Date & Scale	Within Site Boundary	Surrounding Area
1859 (1:2500) 1866 (1:10560) 1868 (1:2500) 1869 (1:2500)	The site remained undeveloped, agricultural land.	Majority of the area is woodland, agricultural fields, farms, and cottages. A sand pit is recorded approximately 300m west of site. Village of Stakes is around 600m northwest and Waterloo (now known as Waterlooville) is around 1.5km northwest of the site.
1895 (1:10560) 1897 (1:2500) 1898 (1:10560) 1907 (1:10560) 1909 (1:2500)		By 1895 Hulbert Road is present to the east of site and the sand pit is no longer recorded. Purbrook is present approximately 750m west of the site.
1930 (1:10560) 1932 (1:2500) 1938 (1:10560) 1939 (1:2500)		By 1930 mapping Purbrook is slightly more developed and there is significant new development approximately 800m southeast of the site.
1963 (1:10560) 1963-1966 (1:10560) 1966 (1:2500) 1967 (1:2500) 1973-1975 (1:1250)		Substantial development has occurred in the wider area to the west, east, and southeast of the site.
1974-1979 (1:1250) 1975-1980 (1:10000) 1984-1985 (1:1250)		A3(M) has been developed immediately to the west of the site running north south. Further residential development is also recorded.

1987-1990 (1:1250) 1990-1993 (1:1250) 1991 (1:10000) 1993 (1:1250) 2001 (1:10000) 2003 (1:1250) 2010 (1:10000) 2020 (1:10000)		A superstore is developed approximately 200m south of the site. The wider area is almost completely developed.
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6.2.2 Summary of Site History

The site remains undeveloped though out the available mapping with a gradual development within the surrounding area predominantly residential in nature from the 1960s onwards.

The A3(M), located immediately to the west of the site is first recorded in mapping from the 1970s.

7.0 ENVIRONMENTAL DATABASE SEARCH

7.1 Introduction

Regulatory authority information relevant to the site and its surroundings has been obtained from the undertaking of an environmental database search (Groundsure Insight, June 2020). The information is summarised below, and the environmental database records are enclosed in **Appendix D**. Distances stated are approximate and are taken from the boundary of the site to the database recorded entries.

The following summary is generally limited to locations within 250m of the site boundaries unless it is considered that installations or activities beyond that range could potentially have an impact on the site or be affected by the redevelopment of the site.

7.2 Online Search

An online search was completed on the site using the Havant and Hants planning portals (accessed 22nd and 26th June 2020). Several records of information were found and are detailed in the table below.

Table 8- Summary of Online Search Records

Record	Date	Details
08/53384/002	Issued 16/2/2009	Temporary permission to construct hydrocarbon exploration site, mobilising drilling rig, setting up, and drilling of an exploratory well including flow testing. Permission to include new highway access, access track, and passing places. No objections. Documents available included a drilling plan and restoration plan.
APP/12/01061	Issued 8/11/2012	Variation to Condition No2 of planning permission 08/53384/002 to alter from 36 months to 60 months from the start of development. Thirteen associated documents.

Further details are presented in Section 3.0.

7.3 Pollution Controls

The Groundsure Insight report identifies no Pollution Controls within 250m of the site.

7.4 Waste

The Groundsure Insight report records no waste disposal, management, or transfer facilities are located within 250m of the site.

7.4.1 Fly Tipping

WYG have been provided with information relating to extensive fly-tipping on the site. Photographs of the site dated November 2018 indicate waste deposited across the access track and adjacent to the bund in the south western quadrant. Material appears to consist of a mixture of rubble, furniture and bagged black waste.

The fly tipped materials have subsequently been removed from the site by the landowner and no evidence of fly tipped materials were noted on the site during the site walkover.

This is not recorded within the Environmental Database.

7.5 Hazardous Substances

There are no records relating to the storage and use of Hazardous Substances within 250m of the site boundary.

7.6 Environmentally Sensitive Areas

A list of the environmentally sensitive areas within 250m of the site are summarised in the table below.

Table 9 – Summary of Environmentally Sensitive Areas

Designation	Location	Details
Nitrate Vulnerable Zone (Surface Waters)	Onsite	Chichester, Langstone, and Portsmouth Harbours Eutrophic NVZ. ET2.
Designated Ancient Woodland	11m E 28m NE 66m N 97m NE 150m W 217m W	Ancient Replanted Woodland Ancient and Semi Natural Woodland Ancient and Semi Natural Woodland Ancient and Semi Natural Woodland Ancient and Semi Natural Woodland Ancient Replanted Woodland
SSSI Impact Risk Zone	Onsite	Consultation required for various types of development.
Agricultural Land Classification	Onsite	Grade 4. Poor quality agricultural land.
Habitat of Principal importance	Onsite	Deciduous woodland (abuts the southern boundary). 39 more records within 250m of the site.
Habitat Networks	Onsite Onsite	Network Enhancement Zone 1. Priority Habitat (Lowland meadows). 6 more records within 250m of the site.

A nitrate vulnerable zone is described in the Groundsure Report as '*areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC)*'. These are areas of

land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture’.

7.7 Flooding

The table below summarises the absence or presence of flooding potential obtained from information recorded in the Groundsure Insight report and the government flood map for planning website accessed 25th June 2020 (Gov.Uk, 2020).

Table 10 - Summary of Flooding Potential

Designation	On Site	Detail
Flooding at Surface (from Groundwater)	Yes	Varies from negligible in the southwest of the site to moderate risk in the northeast of the site. Risk is high within 50m of site associated with the unnamed streams north and south of the site.
Flooding below Ground Level (from Groundwater)	Yes	
Flooding from Surface Waters	No	Negligible risk onsite. 1 in 30year; 0.3m – 1.0m within 50m of site associated with the unnamed streams north and south of the site.
River and Coastal Flooding	No	-

7.8 Industrial Land Use

The following section outlines the surrounding and onsite industrial land uses within 250m that are relevant to the site and the proposed development.

Table 11 - Summary of Historical Industrial Land Use

Land Use	Location	Land Use	Details
Historical Industrial Land Use	Onsite	Cuttings abutting the western site boundary	Maps; 1980, 1991
	121m S	Cuttings associated with the A3(M) construction	Maps; 1980, 1991
	127m S	Unspecified Store	Maps; 1991
	224m N	Cuttings associated with the A3(M) construction	Maps; 1980, 1991

Table 12 - Summary of Industrial Land Use

Land Use	Location	Category	Detail
Recent Industrial Land Use	113m S	Electrical Substation	Electrical Features
	119m S	Pylon	Electrical Features
	148m S	Hertz Car Hire	Vehicle Hire and Rental
	168m N	Consumer Products	Furniture
	225m W	Recycling Services	Recycling, reclamation, disposal,
	244m W	Repair and services	Vehicle repair, testing, and servicing.

8.0 PRELIMINARY GEOTECHNICAL ASSESSMENT

Based on the information identified in the preceding sections, the section below summarises the anticipated ground conditions and associated geotechnical assessment for the site, including highlighting the potential constraints for future development. Actual ground conditions may need to be confirmed through ground investigation in due course.

8.1 Anticipated Ground Conditions

The following ground conditions are anticipated underlying the site:

- Localised Made Ground (associated with previous hydrocarbon exploration and A3(M) cuttings abutting the western site boundary);
- London Clay Formation

8.1.1 Shrinking and Swelling Clay

The Groundsure report recorded the shrink swell clay hazard risk is recorded as low. However, the London Clay Formation is known to comprise of high to very high plasticity clay soils that are susceptible to volume change with moisture content variation.

8.1.2 Running Sands

Given the anticipated ground conditions, the potential for running sands to be present is considered to be very low as recorded within the Groundsure report for the site and based on the anticipated geology.

8.1.3 Dissolution Features

The risk from ground dissolution of soluble rocks is considered to be negligible.

8.1.4 Compressible Ground

Compressible ground hazard risk for the site is considered to be negligible.

8.2 Slope Stability,

The site has a variable topography with manmade bunds and trenches. The ground beneath the site is recorded to be London Clay Formation.

Significant issues with slope stability are not anticipated.

8.3 Enabling Works

8.3.1 Anticipated Cut and Fill

Significant cut and fill is considered unlikely to be required to support the proposed development, however given the varying topography localised reprofiling may be required to facilitate individual structures. Existing raised areas will need to be re-profiled, should the material be suitable to be retained on site

8.3.2 Ground Improvement

Given the anticipated ground conditions, significant ground improvement works are not anticipated.

8.4 Anticipated Foundation Requirements

8.4.1 Foundations

Given the anticipated ground conditions it is considered likely that traditional shallow foundations may be suitable within the context of the proposed development, however larger structures may require piles to be advanced into the London Clay.

Depth to suitable founding strata should be confirmed through ground investigation in due course. Given the presence of London Clay at shallow depth and its likely plasticity, foundations will need to be deepened below the likely depth of moisture content variation, include heave protection and all floor slabs will likely need to be suspended.

8.5 Temporary Works

8.5.1 Excavations

Due to the anticipated ground conditions excavations should most likely be stable, however this should be confirmed through ground investigation in due course.

8.5.2 Groundwater

Based on historical drill logs there is the potential for shallow groundwater on the site, whereby localised dewatering may be required during the development. This should be confirmed through ground investigation.

8.5.3 Inground Obstructions

The site walkover identified several concrete slabs with possible associated underground

infrastructure. Documents on the Hampshire County Council planning portal report the potential presence of two deep Northern Petroleum (GB) Ltd hydrocarbon exploration boreholes in the south west quadrant of the site. The proposed restoration plan indicates that these boreholes were not backfilled, but the well casing cut off at a level not less than 1.83m (6 feet) below the finished ground level, a metal plate welded on top, and a concrete slab placed on top of the plate. This plan reported that if weather permits uncontaminated hardcore and stone will be removed, concrete installations broken up and removed, impermeable membrane, services, and structures beneath the impermeable membrane would be removed from the site. The concrete installations and impermeable membrane have not been removed from site and as such the presence of foundations for the concrete slabs, underground storage tanks, and services associated with the hydrocarbon exploration site cannot be discounted.

Attempts should be made to contact Northern Petroleum to determine the nature and extent of any decommissioning works in the area of the site used for hydrocarbon exploration as well as information on the diameter of boreholes and any directional drilling undertaken on the site.

The presence or absence of potential inground obstructions should be confirmed prior to future development.

8.6 Drainage

The bedrock soils of the London Clay underlying the site are anticipated to exhibit low permeabilities.

8.7 Potential Constraints

Within the context of this geotechnical assessment and based on the information above, the following potential constraints have been identified with respect to the proposed development.

- Variable topography.
- Potential for inground obstructions (foundations associated with the concrete slabs, underground storage tank/soakaway associated with manhole cover present in one concrete slabs, services).
- High plasticity shallow clay soils susceptible to volume change with moisture content variation
- Shallow groundwater.



- Low permeabilities.

It should, however, be noted that the actual ground conditions will need to be confirmed through intrusive investigation and laboratory testing in due course to inform foundation design.

9.0 SITE CONCEPTUAL MODEL AND PRELIMINARY GROUND CONTAMINATION RISK ASSESSMENT

9.1 Overview

The information presented in the previous sections of this report have been collated and evaluated to establish an initial qualitative risk assessment for the site. A conceptual model of the site has been generated based on information derived from this Phase 1 Geo-environmental Assessment, supplemented by information attained during the WYG site walkover.

The site has been considered with regard to current UK legislation and guidance, namely Part 2A of the Environmental Protection Act 1990 and the Contaminated Land (England) Regulations 2006, as amended, and in accordance with current UK good practice guidelines (for example BS10175:2011).

In general, ground contamination can occur through several causes, particularly from historical operations and activities. Contamination can result from either on-site sources or from on-site migration from off-site sources, leading to long term liabilities under recent legislation for any site owner.

For a risk of pollution or environmental harm to occur as a result of ground contamination, all of the following elements must be present:

- Source, i.e. a substance that is capable of causing pollution or harm;
- Pathway, i.e. a route by which the contaminant can reach a target; and
- Receptor (target), i.e. something which could be adversely affected by the contaminant.

If one of these elements is absent there can be no significant risk. If all are present then the magnitude of the risk is a function of the magnitude and mobility of the source, the sensitivity of the receptor and the nature of the migration pathway.

9.2 Current Site Usage and Proposed Development

The site is currently unoccupied and disused, however, it is recorded on the Havant and Hants planning portals and confirmed in a site walkover that the south west quadrant of the site has had hydrocarbon exploration conducted on it. There are structures above and below ground associated with that work. Significant fly-tipping is known to have occurred on the site, the fly-

tipping was subsequently removed, and the site was secured. No fly-tipping was present on the site during the site walkover.

It is understood that the current masterplan for the site comprises a mixed development of apartment blocks and housing and associated green space. A copy of the masterplan is presented at the end of this report.

9.3 Conceptual Site Model

The key source, pathways and receptor model is outlined below within the context of potential residential development of the site.

9.3.1 Potential Sources of Contamination

The main potential sources of contamination on the site are associated with existing features as well as historical land uses on the site as summarised below.

On site Sources:

- Made Ground associated with A3(M) cuttings abutting western site boundary, previous hydrocarbon exploration and associated structures, and previous fly-tipping;
- Localised contamination associated with previous hydrocarbon exploration completed on site and associated structures (potential for underground tank or soakaway, drilling footprint);
- Ground gas generation from Made Ground.

Off Site Sources:

- Current industrial land use (A3(M) directly west.

Table 13 -- Potential Sources of Contamination

Potential Hazard	Associated Contaminants	Does hazard form a plausible pollutant linkage?
Made Ground associated with previous hydrocarbon exploration and fly-tipping.	Hydrocarbons, PAH, heavy metals	Yes – localised areas of Made Ground around the site anticipated and substantial made ground anticipated in the south west quadrant (works area, man-made bunds, man-made drainage ditches).
	Asbestos containing materials	Yes – possibility for ACM to be present associated within Made Ground in the south west quadrant of the site where

Potential Hazard	Associated Contaminants	Does hazard form a plausible pollutant linkage?
		residual detritus from fly tipping is visible on the ground surface.
	Landgas	Yes – potential for landgas generation within Made Ground.
Localised contamination associated with former hydrocarbon exploration	Hydrocarbons	Yes – details of the output of the exploration test wells are not recorded. However, the potential for localised contamination cannot be discounted
Current offsite landuse use	Heavy metals, hydrocarbons, PAH	Yes – potential for some contamination from the A3(M) motorway running level to or at a higher elevation along the western boundary of site.

9.3.2 Potential Contaminant Pathways

The following contaminant pathways are considered to be potentially active based on the current site use and proposed development:

Human Exposure Pathways:

- Direct dermal contact or ingestion of soils, or inhalation of dust and/or vapours (i.e. human interaction with surface and sub-surface materials).

Environmental Pathways:

- Leaching and horizontal or vertical migration through the unsaturated ground, either through permeable sub-surface materials and/or preferential pathways such as underground services, drains, or plant roots;
- Lateral and vertical migration of groundwater through permeable sub-surface materials and/ or preferential pathways;
- Leaching to surface water run-off/drainage;
- The migration and accumulation of gases or vapours through permeable sub-surface materials and/ or preferential pathways.

9.3.3 Potential Receptors at Risk

The following potential receptors have been identified:

Human Health

- Current site users (visitors);
- Future site users (residents, workers, visitors);
- Site workers during the redevelopment of the site;

Wider Environment

- Plant up-take;
- Surface Waters / Groundwater (unproductive strata)
- Building Infrastructure and supply pipes; and

9.4 Ground Conditions Risk Assessment

The source, pathway, receptor linkages identified in the previous section are outlined and a qualitative risk assessment shown in the following tables.

The risk assessment considers the site within an area context and assesses potential risks to identified receptors in relation to the existing site setting and the proposed development. CIRIA C552 has been used to define the risk rating presented in the Qualitative Risk Assessment matrix, the methodology for which is presented in **Appendix G**.

Table 14- CIRIA C552 Qualitative Risk Assessment

<i>This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix D</i>						
Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements
General Contamination Associated with Made Ground	Direct Dermal Contact or Ingestion of Soils, or Inhalation of Dust or Vapours	Current Site Users	Medium	Unlikely (site is secure, visitors unlikely)	Low Risk	Increased exposure to Made Ground deposits are anticipated within the proposed residential development. Ground investigation will be required to confirm the nature and extent of any Made Ground Deposits. The risks to site construction workers should be managed through the use of appropriate PPE and RPE and good site management and hygiene practices.
		Future Site Users		Likely	Moderate Risk	
		Construction Workers		Likely	Moderate Risk	
	Leaching and horizontal or vertical migration	Surface Waters	Mild	Low Likelihood	Low Risk	The site is underlain by unproductive strata of the London Clay; however a confined aquifer is known to be present at depth. Risks to groundwater should be confirmed through ground investigation, including assessing likely depth to groundwater in bedrock strata.
Asbestos containing materials associated with Made Ground	Inhalation	Current site users	Medium	Low likelihood (site is secure, visitors unlikely)	Moderate/ Low Risk	The potential presence of asbestos containing materials should be assessed through ground investigation in due course. Risks to site workers if it is present should be controlled through use of appropriate PPE and RPE.
		Future site users		Likely	Moderate	



This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix D						
Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements
Ground gas	Accumulation of gases	Future site users	Medium	Low likelihood	Moderate/ Low Risk	Whilst on small amounts of localised Made Ground deposits are anticipated, assessment of the ground gas potential will be required as part of any future ground investigation.
Localised contamination associated with previous hydrocarbon exploration onsite	Direct Dermal Contact or Ingestion of Soils, or Inhalation of Dust or Vapours	Current Site Users	Medium	Unlikely (site is secure, visitors unlikely)	Low Risk	Localised contamination may be anticipated in the south west quadrant of the site associated with the previous hydrocarbon exploration on the site. This could potentially include localised spills from fuel storage and oil drilling. The south west quadrant where the hydrocarbon exploration was completed appears to be lined. That combined with anticipated ground conditions leaching to surface water or groundwater is of a low likelihood. A future ground investigation should be targeted to identify potential sources to assess the nature and extent of any contamination in this area of the site and areas of site surrounding it.
		Future Site Users		Likely	Moderate Risk	
		Construction Workers		Likely	Moderate Risk	
	Leaching and horizontal or vertical migration	Surface and Ground Waters	Mild	Low Likelihood	Low Risk	



This matrix is based on CIRIA C552 risk evaluation methodology, definitions for risk ratings is presented in Appendix D

Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements
Localised contamination from offsite industrial sources (A3M)	Direct Dermal Contact or Ingestion of Soils, or Inhalation of Dust or Vapours	Current Site Users	Mild	Unlikely (site is secure, visitors unlikely)	Low Risk	Localised contamination along the western boundary of the site has the potential to be present from vapours, dust, run off from the A3(M), although any impact is likely to be localised and of limited extent.
		Future Site Users		Low Likelihood	Low Risk	
		Construction Workers		Low Likelihood	Low Risk	
	Leaching and horizontal or vertical migration	Surface and Ground Waters	Mild	Low Likelihood	Low Risk	

10.0 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

10.1.1 Ground Contamination

The majority of the site has remained largely undeveloped with the exception of the use of the site for hydrocarbon exploration in 2008. This was focussed on the south west quadrant of the site with an access road constructed from Hulbert Road.

Limited information has been provided to WYG regarding the nature and extent of the exploratory works, however information within the public domain suggests that one or potentially two test wells were advanced into the sub-strata to assess the feasibility of the site for hydrocarbon exploration. Works are no longer on going and the majority of the infrastructure has been removed from the site with the exception of three concrete slabs located within a raised platform which appeared to be lined and surrounded by lined surface water drainage ditches. No information has been provided regarding the works undertaken to decommission the site other than proposed works presented as part of the planning application.

It is likely that procedures would be put in place to place to reduce the impact of hydrocarbon spillages and if present these are likely to be located within the raised platform and will have been captured by the basal liner (if present). Hydrocarbon contamination of the wider site is considered unlikely.

Made Ground deposits are associated across the site associated with the raised platform in the south west quadrant and associated access tracks and reprofiling works, although these are anticipated to be limited across the majority of the site. The Made Ground, where present, may represent a risk from land gas, although is likely to be of limited source potential.

The site has been subject to extensive fly tipping, although this material has been removed, fragments of material remain on the site, including the potential for asbestos containing materials.

Risks to current site users is considered to be limited by the minimal interaction with the site, however the proposed development for residential purposes will increase the anticipated interaction with near surface soils and therefore increase potential risks from Made Ground and localised contamination. The potential presence of asbestos within the Made Ground deposits cannot be discounted.

Risks to site construction workers should be limited through the use of appropriate PPE/RPE and

the adoption of good hygiene practices on site during the construction phase.

Risks to the wider environment are likely to be mitigated through the presence of London Clay underlying the site. This is defined as unproductive strata and is anticipated to be of low permeability. Surface water bodies are located the north and south of the site, however lateral migration is likely to be limited. The site is defined as a SPZ relating to a confined aquifer associated with strata at depth.

10.1.2 Geotechnical

Superficial deposits are not recorded on the site with underlying bedrock geology is anticipated to be the London Clay Formation. This stratum is likely to comprise high plasticity clay soil. Ground investigation will be required in due course to confirm ground conditions and identify suitable founding strata.

It is advised that attempts should be made to contact Northern Petroleum to obtain information. Further information will need to be obtained regarding the nature and extent of the decommissioning works undertaken on the site. This should include specific information on the diameter, depth and orientation of the boreholes and the nature of any decommissioning works undertaken. Any available information identified will need to feed into a constraints plan for the final design phase.

10.1.3 Unexploded Ordnance (UXO)

The site has been classified as medium risk with respect to UXO. A Pre-Desk Study Assessment states that readily available information indicates several high explosive bombs fell in close proximity of the site. As such a full UXO DTS is required to assess and potentially zone the unexploded ordnance hazard level at the site.

10.2 Recommendations

The following recommendations are presented within the context of the site and the proposed development:

- Attempts should be made to obtain confirmation from Northern Petroleum regarding the nature and extent of any decommissioning and remedial work undertaken on the site.
- A full UXO DTS should be obtained for the site outlining
 - The hazard level associated with the site.

- Recommendations for any mitigation works which will be required during future ground investigation or development works.
- Prior to the development of the site, ground investigation will be required to confirm ground conditions and identify the nature and extent of any ground contamination.
 - Investigations should assess the general nature of the underlying geology and assess the possibility and thickness of localised made ground across the general site.
 - Investigations should also assess the potential inground obstructions such as foundations, drilling footprint, and underground storage tank/ soakaway associated with the concrete slabs located within the south west quadrant.
 - Assessment should be made of the raised platform to establish the nature of the material used in its construction and identify the possibility of any localised contamination within this material.

10.2.1 Phase 2 Site Investigation

A ground investigation is recommended to support the proposed development and confirm the ground model. The aims of the ground investigation would be:

- Investigation, logging and sampling of general ground conditions (made ground and underlying strata) to assess the variability of soils and assess the depth to competent strata;
- Investigation of soil mounds identified on site, associated infrastructure from the previous hydrocarbon drilling operations including extent on in ground obstructions;
- In-situ California Bearing Ration (CBR) testing to aide pavement design;
- Installation of land gas and groundwater monitoring wells to aid further monitoring and sampling and confirm onsite groundwater level;
- Drainage assessment via trial pit soakaway testing;
- Geotechnical testing of soils (in-situ and laboratory);
- Chemical laboratory testing of soils, soil derived leachate, and groundwater chemistry for a range of contaminants including asbestos, heavy metals, polycyclic aromatic hydrocarbons (PAHs), speciated hydrocarbons;
- Return visits to monitor land gas (in line with CIRIA 665 guidance) and groundwater levels;
- An interpretive land quality assessment including development of a refined conceptual site model (based on site specific data) and a qualitative risk assessment (compliant with

UK CLR guidance and CIRIA 552 methodology) within the context of a residential land use scenario; and

- An interpretive geotechnical assessment of ground properties with respect to the proposed development of the site, including assessment of likely solutions for foundations, floor slabs and hard surface areas, feasibility of soakaway drainage and sulphate chemical attack.

10.2.2 Potential Constraints

There is potential for several constraints in the south west quadrant of the site such as foundations and an underground storage tank/ soakaway tank associated with the concrete slabs currently situated in this area. These structures and the made ground present in the south west quadrant of the site are related to the previous Northern Petroleum (GB) Ltd hydrocarbon exploration known to have occurred on the site.

The information available on Northern Petroleum (GB) Ltd hydrocarbon exploration work were proposed plans only. Therefore, the details of the exact surface extent of the works and the extent of the restoration plan completed in the area is unknown. As such there is also potential for additional unknown constraints.

11.0 GLOSSARY

AOD	above Ordnance Datum
bgl	below ground level
BGS	British Geological Survey
BTEX	Benzene, Toluene, Ethylbenzene and Xylenes
C4SL	Category 4 Screening Levels
CIEH	Chartered Institute of Environmental Health
CLEA	Contaminated Land Exposure Assessment
CoC	Constituent of Concern
CSM	Conceptual Site Model
DEFRA	Department of Environment, food and Rural Affairs
DQRA	Detailed Quantitative Risk Assessment
DTS	Desktop Study
DRO	Diesel Range Organics
DWS	Drinking Water Standard
EA	Environment Agency (England)
EPH	Extractable Petroleum Hydrocarbons
EQS	Environmental Quality Standards
FOC	Fraction Organic Carbon
GPR	Ground Penetrating Radar
LOD	Limit of detection
LQM	Land Quality Management
OS	Ordnance Survey
PAH	Polycyclic aromatic hydrocarbon
PCB	Polychlorinated biphenyl
PPE	Personal Protection Equipment
ppm	parts per million
PRO	Petroleum Range Organics
SGV	Soil Guideline Values
SOM	Soil Organic Matter
SVOC	Semi-volatile organic compounds
TPH	Total Petroleum Hydrocarbon
TSV	Tier 1 Screening Values
VOC	Volatile Organic Carbon
VPH	Volatile Petroleum Hydrocarbons

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DEVELOPMENT MASTER PLANS

(Current at time of reporting)



NOTES
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REV	DESCRIPTION	DATE	AUTHOR	CHK'D
A	Masterplan updated	03/04/20	BA	-
B	Masterplan updated	09/04/20	BA	-
C	Annotations updated	09/04/20	BA	-
D	Title block updated	22/04/20	BA	-

KEY
Indicative Site Boundary



Urban & Landscape Design

Southampton Office
The Pavilion, Botleigh Grange Office Campus, Hedge End, Southampton, SO30 2AF
t: 02382 022 800 w: www.wyg.com

PROJECT
Hulbert Road
Havant
For: The Trustees of the GHM Jackson 1972 Settlement

DRAWING
Concept Masterplan - 01

SCALE	DATE	AUTHOR	CHK'D
1:1000 @ A2	11/03/19	BA	CL
JOB NO.	DRAWING NO.	REV	
A096474	CMP-01	D	



FIGURES



Figure 1 – Site Location Plan



THE SITE



HAVANT

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WYGG GROUP
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e-mail: info@wygg.com



Client:
**TRUSTEES OF THE GHM
JACKSON 1972 SETTLEMENT**

Project:
HULBERT ROAD, HAVANT

Drawing Title:
SITE LOCATION PLAN

REV	DESCRIPTION	BY	CHK	APP	DATE
	Scale @ A4	Drawn	Date	Checked	Date
		RP	24.04.20	BR	25.04.20
	Project No.	Office	Type	Drawing No.	Revision
	A096474	SH	N	1	00



Figure 2 – Site Layout Plan

PHOTO 8



PHOTO 9



PHOTO 11



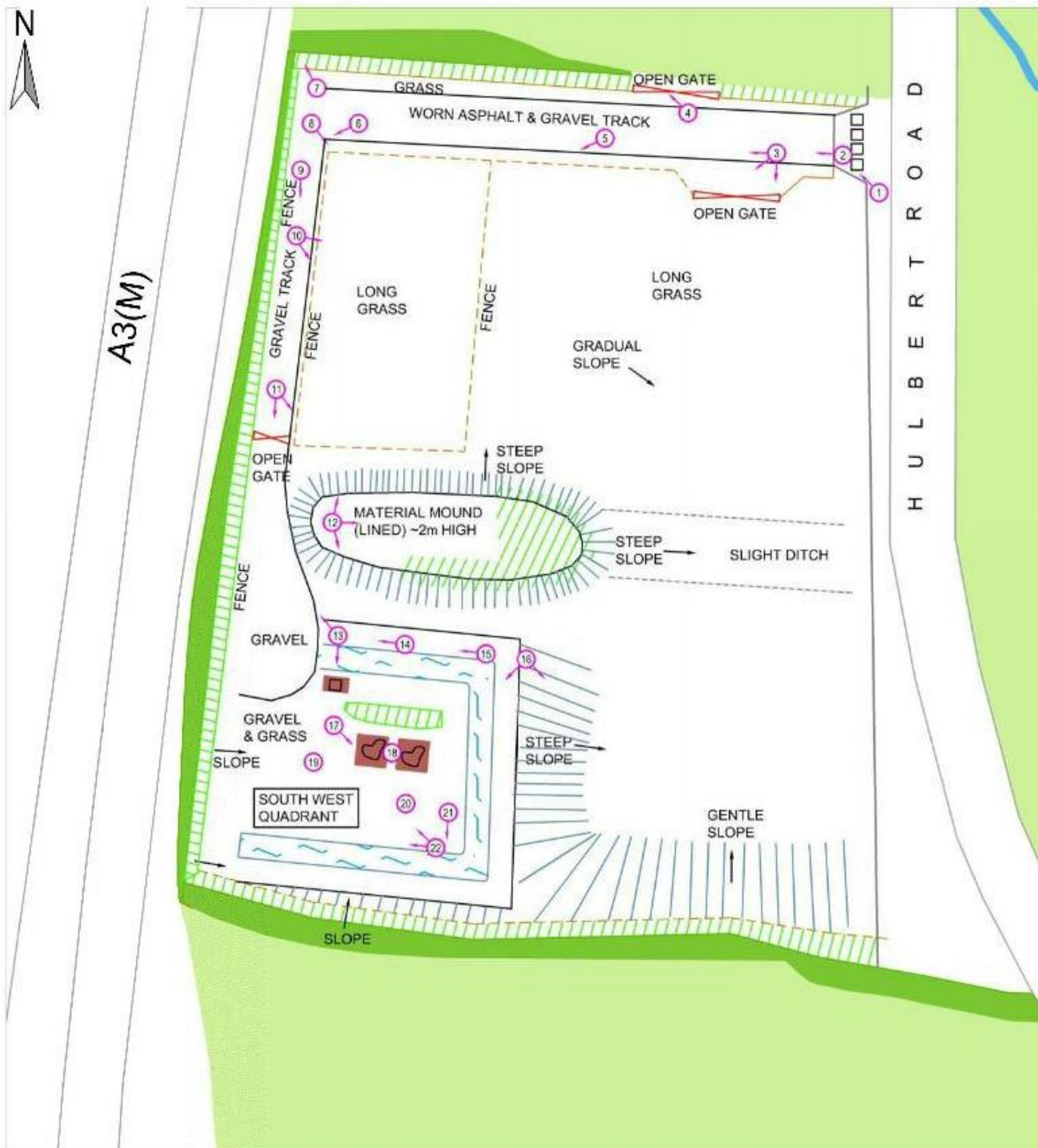
PHOTO 12



PHOTO 13



PHOTO 17



LEGEND:

- PHOTOGRAPHIC PLATE LOCATIONS
- WOODEN POST & WIRE FENCE
- GATE
- HEAVY TALL METAL FENCE
- WOODLAND
- DENSE VEGETATION & BRAMBLES
- MAN MADE WATER TRENCH
- SLOPE
- MANHOLE
- CONCRETE

PHOTO 1



PHOTO 3



PHOTO 15



PHOTO 16



PHOTO 21



PHOTO 22



PHOTO 18



REV	DESCRIPTION	BY	CHK	APP	DATE
-----	-------------	----	-----	-----	------

Client:
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Project:
HULBERT RD, HAVANT

Drawing Title:
SITE LAYOUT PLAN

Scale @	Drawn	Date	Checked	Date	Approved	Date
	PP	25.06.20	EH	25.06.20	SR	25.06.20
Project No.	Office	Type	Drawing No.	Revision		
A096474	SH	N	2 DRAFT	00		



APPENDICES



APPENDIX A – REPORT CONDITIONS



**APPENDIX A - REPORT CONDITIONS
GEO-ENVIRONMENTAL DESK TOP REVIEW**

This report is produced solely for the benefit of *Trustees of the GHM Jackson 1972 Settlement* and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise.

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

This report is based on a study of readily accessible referenced historical records. Some of the opinions are based on unconfirmed data and information and are presented in good faith without exhaustive clarification. Where ground conditions are discussed but no physical site test results are available to confirm this, the report must be regarded as initial advice only, and further assessment should be undertaken prior to detailed activities related to the site. Where test results undertaken by others have been made available these can only be regarded as a limited sample.

Whilst confident in the findings detailed within this report because there are no exact UK definitions of these matters, we are unable to give categorical assurances that they will be accepted by Authorities or Funds etc. without question, as such bodies may have unpublished, often more stringent objectives. This report is prepared for the proposed uses stated in the report and should not be used in a different context without reference to WYG. In time improved practices or amended guidance may necessitate a re-assessment. The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous use and abuse of the site and adjacent sites. The report concentrates on the site as defined in the report and provides an opinion on surrounding sites.



APPENDIX B – SITE WALKOVER PHOTO-PLATES



Plate 1

(PLEASE USE SITE LAYOUT PLAN FOR PHOTO LOCATION REFERENCES) 1a - Site Access off Hulbert Road



Plate 2

1b - Site Access off Hulbert Road

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Project :-

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Client: WYG Planning

Project No.: A096474

Date : June 2020



Plate 3

2a - Minor fly-tipping behind concrete barriers in the access area.



Plate 4

2b - Gate to the site

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Plate 5

3a



Plate 6

3b

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Plate 7

3c - Worn asphalt track running along the north and west of the site



Plate 8

4 - Woodland and gate on north boundary of the site

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Plate 9

5



Plate 10

6

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Plate 11

7



Plate 12

8

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Plate 13

9



Plate 14

10 - Site looking southeast from the north of the site. Mound forming the northern bund to the south west quadrant can be seen in the distance.

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Plate 15

11a - Track and open gate into the south west quadrant.



Plate 16

11b

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Plate 17

12a - Overview of the south west quadrant.



Plate 18

12b - Overview of the northern half of the site.

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Plate 19

13a - Concrete slab in the north of the south west quadrant.



Plate 20

13b - Manhole and debris filled plastic pipe (150mm diameter).

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Plate 21 13c - Dark staining (no odour) to concrete slab.



Plate 22 13d - lining visible beneath southwest corner of the mound.

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Plate 23

14 - Lined alage and surface water drainage ditch. Various lining layers visible.



Plate 24

15a

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Plate 25

15b



Plate 26

16a - Looking across the south west quadrant from its northeastern corner.

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Plate 27

16b - Looking to the south east area of the site from the northeast of the south west quadrant.



Plate 28

17a - Two concrete slabs with infilled geometric shaped holes within them.

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Plate 29

17b - Dark coloured 'splash spots' on the ballast gravel around the concrete slabs.



Plate 30

18a - Western most concrete slab of the pair.

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Plate 31 18b - Eastern concrete slab of the pair



Plate 32 18c - Plastic sheeting lining some of the smaller cuts into the concrete slab.

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Plate 33 18d - Ladder rungs within the eastern slab hole (which was not completely infilled)



Plate 34 19a - Southwest Quadrant ground surface of ballast gravel with some debris

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Plate 35

19b - Plasterboard occasionally amongst the debris.



Plate 36

20 - ceramic tiles amongst the ground debris.

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Plate 37

21a - Lined drainage ditch in the south east corner of the southwest quadrant.



Plate 38

21b - A pipe extending east into the lined drainage ditch bund in the south east corner of the south west quadrant.

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Plate 39

21c



Plate 40

22a - Lined drainage ditch in the along the southern edge of the south west quadrant.

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Plate 41

22b - Looking north west across the south west quadrant from the south east corner of the quadrant.

Plate 42

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Date : June 2020



APPENDIX C – SITE WALKOVER PROFORMA

To be used as a guide by staff during Phase I LQA site visit.

Phase I Site Visit Checklist

Site Name:	Hulbert Road		
Site Address:	Hulbert Road, Havant, PO9 3QJ		
Visit conducted by:	EH (24/06/2020)		
During site visit discussions were held with the following people:			
Name	Company	Position	Time on site
N/A			
Note areas of the site where access could not be gained:	NA		
Surrounding Land uses (include identification of sensitive receptors)			

Site Setting	
North	Woodland sloping down into a gully
East	Hulbert Road
South	Woodland
West	A3(M)
Current use and site operations	Site is currently not used.

Site Description	
Former site uses	Environmental database search & historical mapping reviewed prior to visit did not show the site to be developed. The Havant planning portal held information about oil exploration historically on the site. Oil exploration previously occurring on the site was supported by the current site layout see during the site walkover.

Site layout	Access to the site is in the NE corner off of Hulbert Road. There are concrete barriers in the entrance and a ~2m high metal fence with padlocked gate. There is a worn asphalt and gravel track around the northern and western edges of the site which leads to an area of made ground in the southwest corner (southwest quadrant). There is an open gate to the southwest quadrant. The site is fenced around the boundary and there are several wooden post + barbed wire fences within the site (see site layout sketch). However all areas of the site are accessible. Majority of site is covered by long grass areas except the south west quadrant. The southwest quadrant is a large area of lined of ballast gravel with several concrete slabs. This area has lined drainage ditches with algae covered standing water along its north, west, and south edges (see sketch). There is a ~2-3m high mound directly to the north of the southwest quadrant, it is partly covered by long grass and part by dense vegetation including brambles. It appears to have black plastic lining beneath it (though can't tell if the entire of the mound is). The ballast gravel in the southwest quadrant has some brick, ceramic tiles, rare plasterboard, wood, scattered throughout it. Some pieces of site rubbish too (tow bar, measuring tape, empty buckets, pallets). The lining of the drainage ditches around the southwest quadrant is comprised of a black plastic grid mesh over a fabric/felt geotextile, over heavy duty thick black plastic. The lining of the ditch running along the east side also has a pipe extending into the bund wall (see photos). The concrete slabs (see site layout plan): - One is in the north of the south west quadrant. It is 3.5m x 6m and there is a manhole and a 150mm diameter plastic white pipe (debris filled) visible on it. - There are two 7.5m x 7.5m concrete slabs in the central east of the south west quadrant. They have a geometric (mickey mouse head) shaped infilled hole within them. One of the holes is not as infilled and a ladder rung is visible in the wall.
-------------	--

Topography	The Topography across site is variable: - Generally the site slopes from west to central east area of the site with the north, west, and south edges of site being higher. - There is a mound (2-3m high of made ground/ reworked natural) running along the north of the south west quadrant area that has steep slopes on its north, east, south edges. - The eastern side of the south west quadrant has a slight bund and then slopes steeply down to the eastern long grass covered field. The topography of the surrounding areas are variable also: - Off the north boundary the ground slopes to the north. - Hulbert Road sits slightly below the site level. - The A3(M) site level with site on the NE of the site, however it sits higher than site in the SE where the ground slope down to the site. - The woodland directly south of the site is significantly higher than the site.
Ground cover	- The majority of site is covered by fields of long grass with some occasional bushes. The ground beneath appears to be clayey with some gravel and sand (based on what the mound and slopes consist of). - The access to site is concrete/asphalt. - The track running around the north and western edges of site is a worn asphalt and gravel. - The southwest quadrant is covered by a ballast gravel with some bricks, flint, tiles, etc amongst it. There are manmade lined drainage ditches around the quadrant of the site. The lining could run under the entirety of the area. There are 3 concrete slabs in this area also.
On-site Buildings	None
Bulk fuel storage	Possibly an underground storage tank beneath a concrete slab in the north of the south west quadrant.
Areas of potential concern	
POL / Chemical storage	NA
Motor Transport	NA
Vehicle washdown	NA
Electricity substations	NA
Boiler Houses current and former	NA
Water supply	NA
Drainage – waste water	The southwest quadrant has lined manmade drainage ditches along it north, east, and south. This was likely set up to catch waste water from the previous oil exploration completed on this section of the site.

Drainage – surface water	NA
Sewage Treatment works / septic tanks	NA
Soakaways or areas of informal drainage	The drainage ditches around the southwest quadrant had algae covered standing water within them.
Flooding	NA – However the groundsure insight report reviewed prior to visit reports none.
Waste Storage Areas	None
Waste Disposal Areas inc. burial	Some fly-tipping behind the concrete bunds in the site access area. Site site rubbish in the south west quadrant which is likely to be from the previous oil exploration (several pallets, a couple buckets, tow bar, measuring tape).
Areas of infill / backfill (WWI trenches, air raid shelters, reclaimed land)	None visible
Burning Grounds	None visible
Fire Training Areas	NA
Firing ranges	NA
Asbestos	Potentially in the made ground of the southwest quadrant. Some tiles and plasterboard visible on the ground surface.
Unexploded Ordnance	NA – a UXO risk map revealed the area to be moderate risk, a free pre desk study assessment has been requested.
Defensive Gas Training	NA
Radiological Contamination	None visible
Have there been any of the following incidents known to have occurred during or prior to this period: Ask site contact if they have any knowledge / records / reports of the following:	

Site History	
Significant spill / leak	NA
Fire	NA
Explosion	NA

Evidence of ground contamination

Vegetation dieback	None
Staining/ discolouration	- Some dark staining on the concrete slab in the north of the south west quadrant. - Some dark 'splash spots' staining on the ballast gravel around the two concrete slabs in the central west area of the southwest quadrant (which could be related to the previous oil exploration drilling). Photos taken and presented in the photo-plates appendix.
Fly tipping	Minor fly-tipping behind the concrete bunds in the site access area (general rubbish and a car bumper).
Disturbed ground / fill	The mound to the north of the southwest quadrant appears to be made ground or reworked natural ground that has been dug up from the surrounding site area to create the bund.
Any unusual odours ever been noted from drains, basements etc?	No
Settlement or subsidence in any part of the site?	No

Previous Investigation / Reports	
Previous Phase I ESAs, Phase 2 intrusive ground investigations, geotechnical investigations etc?	The two concrete slabs with large infilled holes are likely to be from previous oil exploration drilling that is known to have occurred on the site. There are no reports available.
Have any remedial works been carried out at the site? Any on-going or planned?	NA
Does the site hold a permit to operate?	NA

Regulatory Issues

Any concerns from regulator? (Local Authority / EA / EPA)	NA
Any complaints made against site?	NA
Old or derelict buildings on- site	No

Ecology Reminders	
Scrub or areas of rough vegetation on-site	Yes – dense vegetation around site edges, fields are covered in long grass and occasional bushes.
Mature trees or woodland on-site	Woodlands directly adjacent to the north and south site boundaries. These may encroach on the site in localised areas.
On-site Waterbody (river, stream, or pond)	Manmade lined drainage ditches around the south west quadrant contain algae covered standing water. Reeds and other water plants are growing in this standing water.
Off-site Waterbody (river, stream, or pond)	On maps a creek/stream is shown 50m N in the gully off the site and similar to the south of the site.

Table 1 Underground Storage Tanks

Unidentified
pipework/ manhole
covers?

Manhole cover and a pipe beside it on a concrete slab in the north of the southwest quadrant. Could relate to a possible underground tank beneath it.

Unidentified vent
pipes?

No

Underground tanks as follows:

Tank Identifier	Tank capacity (specify units)	Tank contents	Date & details of installation if known	Integrity testing Frequency? By whom?	How is the tank filled and dispersed	Length of underground pipework
1	unknown	unknown	unknown	unknown	unknown	unknown

Any previous
underground tanks?



APPENDIX D – GROUNDSURE INSIGHT REPORT (JUNE 2020)

HULBERT ROAD, HAVANT, PO9 3QJ

Order Details

Date: 22/06/2020
Your ref: C20-363
Our Ref: GS-6807382
Client: WYG Environment Planning Transport Limited

Site Details

Location: 469437 108092
Area: 3.8 ha
Authority: [Havant Borough Council](#)



Summary of findings

p. 2

Aerial image

p. 8

OS MasterMap site plan

p.12

groundsure.com/insightuserguide

Summary of findings

Page	Section	Past land use	On site	0-50m	50-250m	250-500m	500-2000m
13	1.1	Historical industrial land uses	1	0	3	4	-
14	1.2	Historical tanks	0	0	0	5	-
14	1.3	Historical energy features	0	0	0	12	-
15	1.4	Historical petrol stations	0	0	0	2	-
16	1.5	Historical garages	0	0	0	3	-
16	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped	On site	0-50m	50-250m	250-500m	500-2000m
17	2.1	Historical industrial land uses	2	0	5	7	-
18	2.2	Historical tanks	0	0	0	6	-
19	2.3	Historical energy features	0	0	0	30	-
20	2.4	Historical petrol stations	0	0	0	3	-
20	2.5	Historical garages	0	0	0	5	-
Page	Section	Waste and landfill	On site	0-50m	50-250m	250-500m	500-2000m
22	3.1	Active or recent landfill	0	0	0	0	-
22	3.2	Historical landfill (BGS records)	0	0	0	0	-
22	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
22	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
22	3.5	Historical waste sites	0	0	0	0	-
23	3.6	Licensed waste sites	0	0	0	0	-
23	3.7	Waste exemptions	0	0	0	0	-
Page	Section	Current industrial land use	On site	0-50m	50-250m	250-500m	500-2000m
24	4.1	Recent industrial land uses	0	0	6	-	-
25	4.2	Current or recent petrol stations	0	0	0	2	-
25	4.3	Electricity cables	0	0	0	0	-
25	4.4	Gas pipelines	0	0	0	0	-
26	4.5	Sites determined as Contaminated Land	0	0	0	0	-



26	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
26	4.7	Regulated explosive sites	0	0	0	0	-
26	4.8	Hazardous substance storage/usage	0	0	0	0	-
26	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
27	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
27	4.11	<u>Licensed pollutant release (Part A(2)/B)</u>	0	0	0	1	-
27	4.12	Radioactive Substance Authorisations	0	0	0	0	-
27	4.13	<u>Licensed Discharges to controlled waters</u>	0	0	2	1	-
28	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
28	4.15	Pollutant release to public sewer	0	0	0	0	-
28	4.16	List 1 Dangerous Substances	0	0	0	0	-
29	4.17	List 2 Dangerous Substances	0	0	0	0	-
29	4.18	<u>Pollution Incidents (EA/NRW)</u>	0	0	0	4	-
29	4.19	Pollution inventory substances	0	0	0	0	-
30	4.20	Pollution inventory waste transfers	0	0	0	0	-
30	4.21	Pollution inventory radioactive waste	0	0	0	0	-
Page	Section	Hydrogeology	On site	0-50m	50-250m	250-500m	500-2000m
31	5.1	<u>Superficial aquifer</u>	Identified (within 500m)				
33	5.2	<u>Bedrock aquifer</u>	Identified (within 500m)				
35	5.3	<u>Groundwater vulnerability</u>	Identified (within 50m)				
37	5.4	Groundwater vulnerability- soluble rock risk	None (within 0m)				
37	5.5	Groundwater vulnerability- local information	None (within 0m)				
38	5.6	<u>Groundwater abstractions</u>	0	0	0	0	2
39	5.7	Surface water abstractions	0	0	0	0	0
39	5.8	<u>Potable abstractions</u>	0	0	0	0	2
40	5.9	Source Protection Zones	0	0	0	0	-
40	5.10	<u>Source Protection Zones (confined aquifer)</u>	1	0	0	0	-
Page	Section	Hydrology	On site	0-50m	50-250m	250-500m	500-2000m
41	6.1	<u>Water Network (OS MasterMap)</u>	0	2	20	-	-



43	6.2	<u>Surface water features</u>	0	3	12	-	-
44	6.3	<u>WFD Surface water body catchments</u>	1	-	-	-	-
44	6.4	<u>WFD Surface water bodies</u>	0	0	0	-	-
44	6.5	WFD Groundwater bodies	0	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
45	7.1	Risk of Flooding from Rivers and Sea (RoFRaS)	None (within 50m)				
45	7.2	Historical Flood Events	0	0	0	-	-
45	7.3	Flood Defences	0	0	0	-	-
45	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
46	7.5	Flood Storage Areas	0	0	0	-	-
47	7.6	Flood Zone 2	None (within 50m)				
47	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding					
48	8.1	<u>Surface water flooding</u>	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding					
50	9.1	<u>Groundwater flooding</u>	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
51	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
52	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
52	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
52	10.4	Special Protection Areas (SPA)	0	0	0	0	0
52	10.5	National Nature Reserves (NNR)	0	0	0	0	0
53	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
53	10.7	<u>Designated Ancient Woodland</u>	0	2	4	6	11
54	10.8	Biosphere Reserves	0	0	0	0	0
54	10.9	Forest Parks	0	0	0	0	0
54	10.10	Marine Conservation Zones	0	0	0	0	0
55	10.11	Green Belt	0	0	0	0	0
55	10.12	Proposed Ramsar sites	0	0	0	0	0



55	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
55	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
55	10.15	Nitrate Sensitive Areas	0	0	0	0	0
56	10.16	<u>Nitrate Vulnerable Zones</u>	1	0	0	0	0
57	10.17	<u>SSSI Impact Risk Zones</u>	1	-	-	-	-
58	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
59	11.1	World Heritage Sites	0	0	0	-	-
59	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
59	11.3	National Parks	0	0	0	-	-
59	11.4	Listed Buildings	0	0	0	-	-
60	11.5	Conservation Areas	0	0	0	-	-
60	11.6	Scheduled Ancient Monuments	0	0	0	-	-
60	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations	On site	0-50m	50-250m	250-500m	500-2000m
61	12.1	<u>Agricultural Land Classification</u>	Grade 4 (within 250m)				
62	12.2	Open Access Land	0	0	0	-	-
62	12.3	Tree Felling Licences	0	0	0	-	-
62	12.4	Environmental Stewardship Schemes	0	0	0	-	-
62	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
63	13.1	<u>Priority Habitat Inventory</u>	1	6	33	-	-
65	13.2	<u>Habitat Networks</u>	2	0	6	-	-
66	13.3	Open Mosaic Habitat	0	0	0	-	-
66	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
67	14.1	<u>10k Availability</u>	Identified (within 500m)				
68	14.2	<u>Artificial and made ground (10k)</u>	0	0	0	2	-
69	14.3	<u>Superficial geology (10k)</u>	0	1	0	2	-



70	14.4	Landslip (10k)	0	0	0	0	-
71	14.5	<u>Bedrock geology (10k)</u>	1	0	1	1	-
72	14.6	Bedrock faults and other linear features (10k)	0	0	0	0	-
Page	Section	Geology 1:50,000 scale	On site	0-50m	50-250m	250-500m	500-2000m
73	15.1	<u>50k Availability</u>	Identified (within 500m)				
74	15.2	<u>Artificial and made ground (50k)</u>	0	0	0	2	-
75	15.3	Artificial ground permeability (50k)	0	0	-	-	-
76	15.4	<u>Superficial geology (50k)</u>	0	1	0	0	-
77	15.5	<u>Superficial permeability (50k)</u>	Identified (within 50m)				
77	15.6	Landslip (50k)	0	0	0	0	-
77	15.7	Landslip permeability (50k)	None (within 50m)				
78	15.8	<u>Bedrock geology (50k)</u>	1	0	1	0	-
79	15.9	<u>Bedrock permeability (50k)</u>	Identified (within 50m)				
79	15.10	Bedrock faults and other linear features (50k)	0	0	0	0	-
Page	Section	Boreholes	On site	0-50m	50-250m	250-500m	500-2000m
80	16.1	<u>BGS Boreholes</u>	1	4	12	-	-
Page	Section	Natural ground subsidence					
82	17.1	<u>Shrink swell clays</u>	Low (within 50m)				
83	17.2	<u>Running sands</u>	Very low (within 50m)				
84	17.3	<u>Compressible deposits</u>	Negligible (within 50m)				
85	17.4	<u>Collapsible deposits</u>	Very low (within 50m)				
86	17.5	<u>Landslides</u>	Very low (within 50m)				
87	17.6	<u>Ground dissolution of soluble rocks</u>	Negligible (within 50m)				
Page	Section	Mining, ground workings and natural cavities	On site	0-50m	50-250m	250-500m	500-2000m
88	18.1	Natural cavities	0	0	0	0	-
89	18.2	BritPits	0	0	0	0	-
89	18.3	<u>Surface ground workings</u>	2	0	14	-	-
90	18.4	Underground workings	0	0	0	0	0
90	18.5	<u>Historical Mineral Planning Areas</u>	0	0	0	1	-



90	18.6	Non-coal mining	0	0	0	0	0
90	18.7	Mining cavities	0	0	0	0	0
91	18.8	JPB mining areas	None (within 0m)				
91	18.9	Coal mining	None (within 0m)				
91	18.10	Brine areas	None (within 0m)				
91	18.11	Gypsum areas	None (within 0m)				
91	18.12	Tin mining	None (within 0m)				
92	18.13	Clay mining	None (within 0m)				
Page	Section	Radon					
93	19.1	Radon	Less than 1% (within 0m)				
Page	Section	Soil chemistry	On site	0-50m	50-250m	250-500m	500-2000m
94	20.1	BGS Estimated Background Soil Chemistry	2	11	-	-	-
95	20.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
95	20.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects	On site	0-50m	50-250m	250-500m	500-2000m
96	21.1	Underground railways (London)	0	0	0	-	-
96	21.2	Underground railways (Non-London)	0	0	0	-	-
96	21.3	Railway tunnels	0	0	0	-	-
96	21.4	Historical railway and tunnel features	0	0	0	-	-
96	21.5	Royal Mail tunnels	0	0	0	-	-
97	21.6	Historical railways	0	0	0	-	-
97	21.7	Railways	0	0	0	-	-
97	21.8	Crossrail 1	0	0	0	0	-
97	21.9	Crossrail 2	0	0	0	0	-
97	21.10	HS2	0	0	0	0	-



Recent aerial photograph



Capture Date: 21/06/2017

Site Area: 3.8ha



Recent site history - 2013 aerial photograph



Capture Date: 20/08/2013

Site Area: 3.8ha



Recent site history - 2005 aerial photograph



Capture Date: 17/04/2005

Site Area: 3.8ha



Recent site history - 1999 aerial photograph

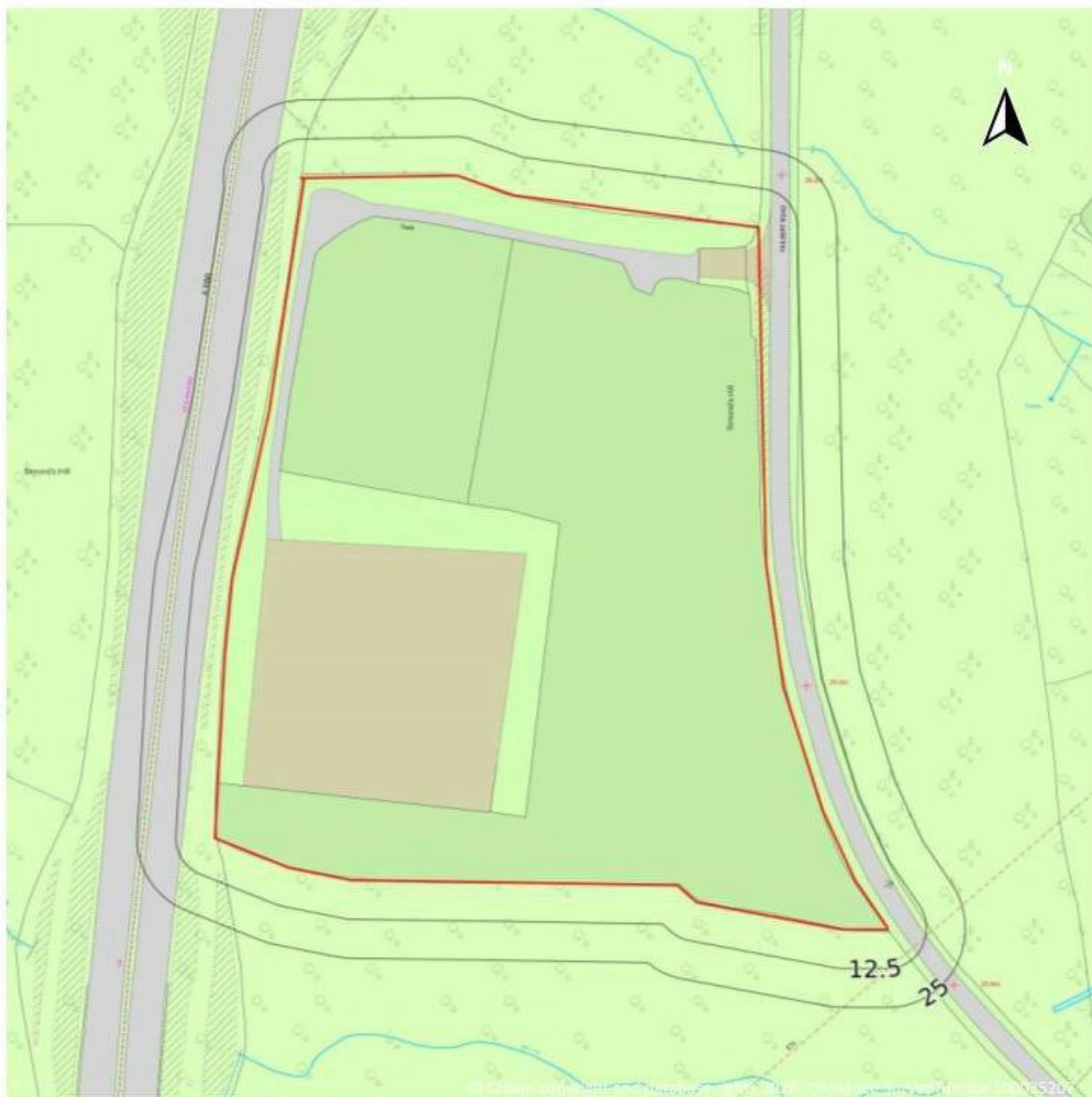


Capture Date: 04/09/1999

Site Area: 3.8ha



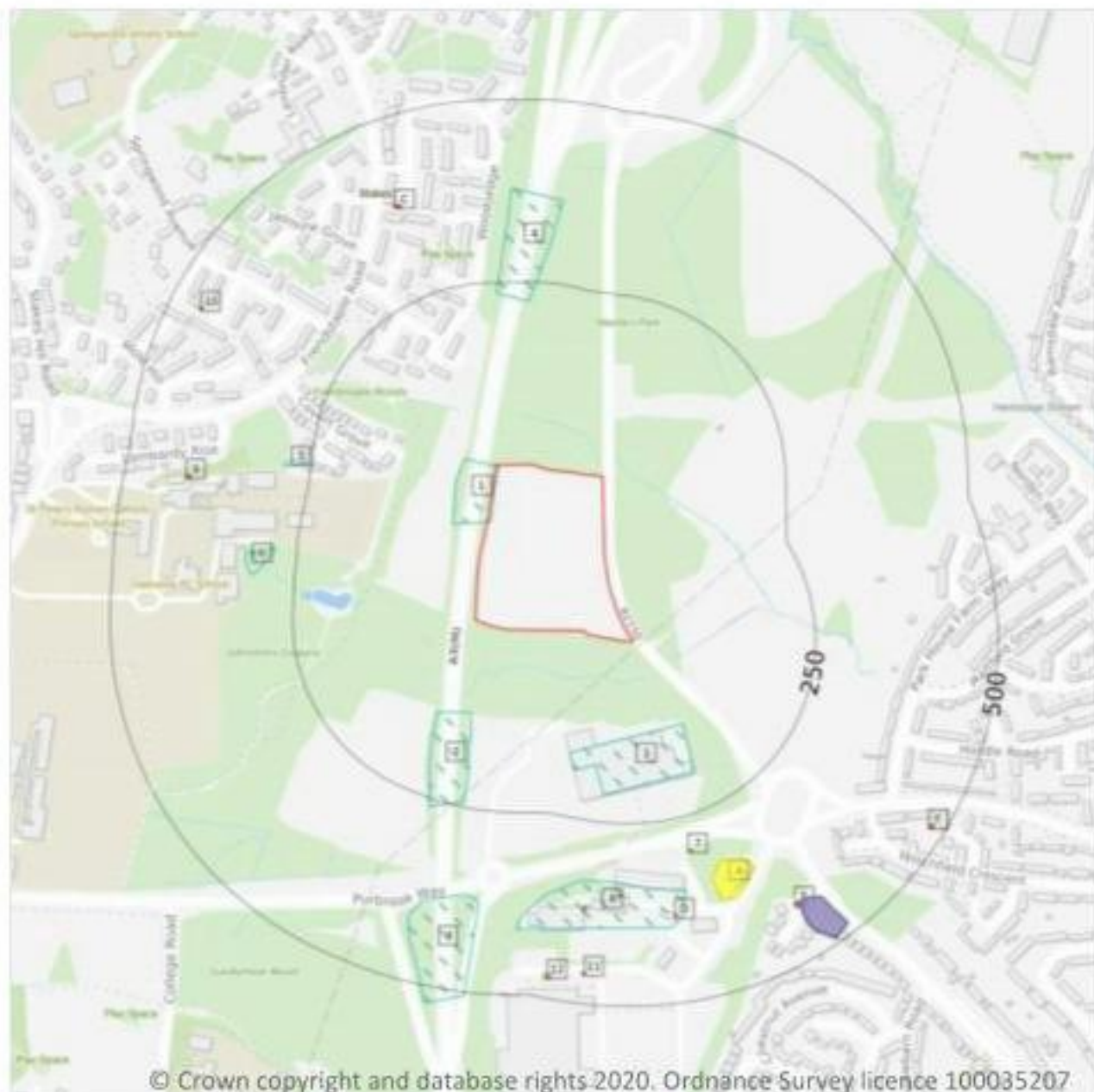
OS MasterMap site plan



Site Area: 3.8ha



1 Past land use



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

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1.1 Historical industrial land uses

Records within 500m

8

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 1:10,560 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
1	On site	Cuttings	1980 - 1991	1940576



ID	Location	Land use	Dates present	Group ID
2	121m S	Cuttings	1980 - 1991	1935668
3	127m S	Unspecified Store	1991	1872813
4	224m N	Cuttings	1980 - 1991	1959461
5	258m W	Sand Pit	1866	1873582
6	279m W	Unspecified Pit	1980 - 1991	1891686
B	330m S	Unspecified Works	1980 - 1991	1925029
8	368m S	Cuttings	1980 - 1991	1906437

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m

5

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
B	367m S	Tanks	1973 - 1985	324872
D	379m S	Unspecified Tank	1987	324461
D	379m S	Unspecified Tank	1979	328056
D	380m S	Unspecified Tank	1993	326664
12	466m S	Tanks	1985	311361

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m

12

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or



succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
7	296m S	Gas Governor	1993	191960
B	348m S	Electricity Substation	1975 - 1993	207696
C	376m N	Electricity Substation	1993	204165
C	376m N	Electricity Substation	1984 - 1989	198950
D	379m S	Electricity Substation	1985	191120
9	410m W	Electricity Substation	1973 - 1993	204972
E	423m SE	Electricity Substation	1975 - 1979	208007
E	424m SE	Electricity Substation	1985 - 1993	209673
10	455m NW	Electricity Substation	1983 - 1993	210262
11	456m S	Electricity Substation	1985 - 1993	204944
F	478m SE	Electricity Substation	1985 - 1993	202469
F	478m SE	Electricity Substation	1975 - 1979	206932

This data is sourced from Ordnance Survey / Groundsure.

1.4 Historical petrol stations

Records within 500m

2

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
A	324m SE	Filling Station	1985 - 1987	3478
A	325m S	Filling Station	1993	3395

This data is sourced from Ordnance Survey / Groundsure.



1.5 Historical garages

Records within 500m

3

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original ungrouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use map on **page 13**

ID	Location	Land use	Dates present	Group ID
E	422m SE	Garage	1985 - 1987	63646
E	423m SE	Garage	1993	62429
E	424m SE	Garage	1975 - 1979	65237

This data is sourced from Ordnance Survey / Groundsure.

1.6 Historical military land

Records within 500m

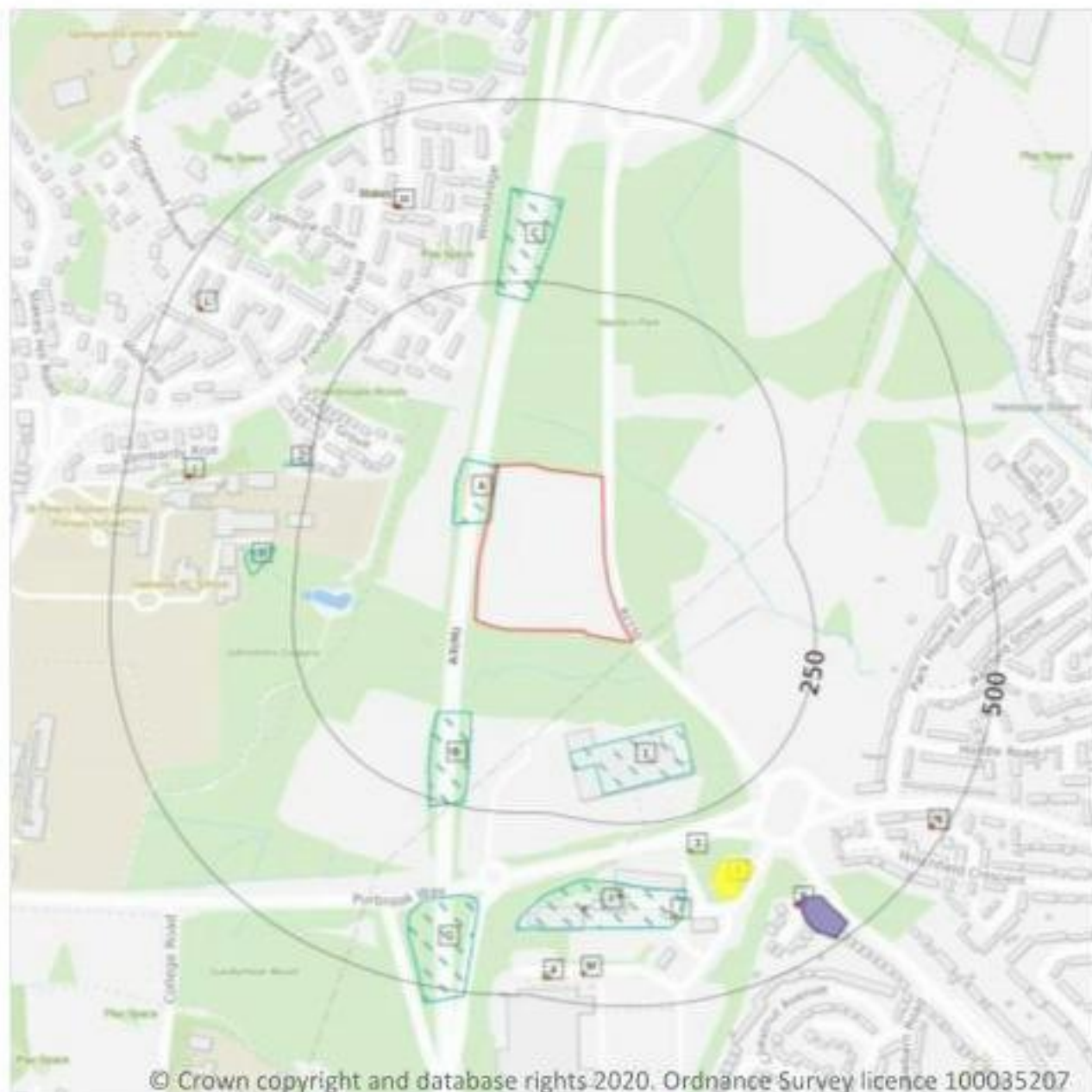
0

Areas of military land digitised from multiple sources including the National Archives, local records, MOD records and verified other sources, intelligently grouped into contiguous features.

This data is sourced from Ordnance Survey / Groundsure / other sources.



2 Past land use - un-grouped



- Site Outline
- Search buffers in metres (m)
- Historical industrial land uses
- Historical tanks
- Historical energy features
- Historical petrol stations
- Historical garages

2.1 Historical industrial land uses

Records within 500m

14

Potentially contaminative land use features digitised from historical Ordnance Survey mapping at 1:10,000 and 10,560 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
A	On site	Cuttings	1991	1940576
A	On site	Cuttings	1980	1940576
B	121m S	Cuttings	1991	1935668



ID	Location	Land Use	Date	Group ID
B	121m S	Cuttings	1980	1935668
1	127m S	Unspecified Store	1991	1872813
C	224m N	Cuttings	1991	1959461
C	224m N	Cuttings	1980	1959461
2	258m W	Sand Pit	1866	1873582
D	279m W	Unspecified Pit	1991	1891686
D	279m W	Unspecified Pit	1980	1891686
F	330m S	Unspecified Works	1991	1925029
F	330m S	Unspecified Works	1980	1925029
G	368m S	Cuttings	1991	1906437
G	368m S	Cuttings	1980	1906437

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m

6

Tank features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
F	367m S	Tanks	1985	324872
F	368m S	Tanks	1973	324872
I	379m S	Unspecified Tank	1987	324461
I	379m S	Unspecified Tank	1979	328056
I	380m S	Unspecified Tank	1993	326664
4	466m S	Tanks	1985	311361

This data is sourced from Ordnance Survey / Groundsure.



2.3 Historical energy features

Records within 500m

30

Energy features digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
3	296m S	Gas Governor	1993	191960
F	348m S	Electricity Substation	1979	207696
F	348m S	Electricity Substation	1975	207696
F	348m S	Electricity Substation	1993	207696
F	348m S	Electricity Substation	1987	207696
H	376m N	Electricity Substation	1993	204165
H	376m N	Electricity Substation	1989	198950
H	376m N	Electricity Substation	1984	198950
H	376m N	Electricity Substation	1987	198950
I	379m S	Electricity Substation	1985	191120
J	410m W	Electricity Substation	1983	204972
J	410m W	Electricity Substation	1988	204972
J	410m W	Electricity Substation	1973	204972
J	410m W	Electricity Substation	1993	204972
K	423m SE	Electricity Substation	1979	208007
K	423m SE	Electricity Substation	1975	208007
K	424m SE	Electricity Substation	1985	209673
K	424m SE	Electricity Substation	1987	209673
K	424m SE	Electricity Substation	1993	209673
L	455m NW	Electricity Substation	1983	210262
L	455m NW	Electricity Substation	1993	210262
L	455m NW	Electricity Substation	1988	210262
M	456m S	Electricity Substation	1985	204944



ID	Location	Land Use	Date	Group ID
M	457m S	Electricity Substation	1989	204944
M	457m S	Electricity Substation	1993	204944
N	478m SE	Electricity Substation	1985	202469
N	478m SE	Electricity Substation	1987	202469
N	478m SE	Electricity Substation	1979	206932
N	478m SE	Electricity Substation	1975	206932
N	478m SE	Electricity Substation	1993	202469

This data is sourced from Ordnance Survey / Groundsure.

2.4 Historical petrol stations

Records within 500m

3

Petrol stations digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
E	324m SE	Filling Station	1987	3478
E	324m SE	Filling Station	1985	3478
E	325m S	Filling Station	1993	3395

This data is sourced from Ordnance Survey / Groundsure.

2.5 Historical garages

Records within 500m

5

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 17**

ID	Location	Land Use	Date	Group ID
K	422m SE	Garage	1985	63646



ID	Location	Land Use	Date	Group ID
K	422m SE	Garage	1987	63646
K	423m SE	Garage	1993	62429
K	424m SE	Garage	1979	65237
K	424m SE	Garage	1975	65237

This data is sourced from Ordnance Survey / Groundsure.



3 Waste and landfill

3.1 Active or recent landfill

Records within 500m

0

Active or recently closed landfill sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.2 Historical landfill (BGS records)

Records within 500m

0

Landfill sites identified on a survey carried out on behalf of the DoE in 1973. These sites may have been closed or operational at this time.

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m

0

Landfill sites identified from Local Authority records and high detail historical mapping.

This data is sourced from the Ordnance Survey/Groundsure and Local Authority records.

3.4 Historical landfill (EA/NRW records)

Records within 500m

0

Known historical (closed) landfill sites (e.g. sites where there is no PPC permit or waste management licence currently in force). This includes sites that existed before the waste licensing regime and sites that have been licensed in the past but where a licence has been revoked, ceased to exist or surrendered and a certificate of completion has been issued.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.5 Historical waste sites

Records within 500m

0

Waste site records derived from Local Authority planning records and high detail historical mapping.

This data is sourced from Ordnance Survey/Groundsure and Local Authority records.



3.6 Licensed waste sites

Records within 500m
0

Active or recently closed waste sites under Environment Agency/Natural Resources Wales regulation.

This data is sourced from the Environment Agency and Natural Resources Wales.

3.7 Waste exemptions

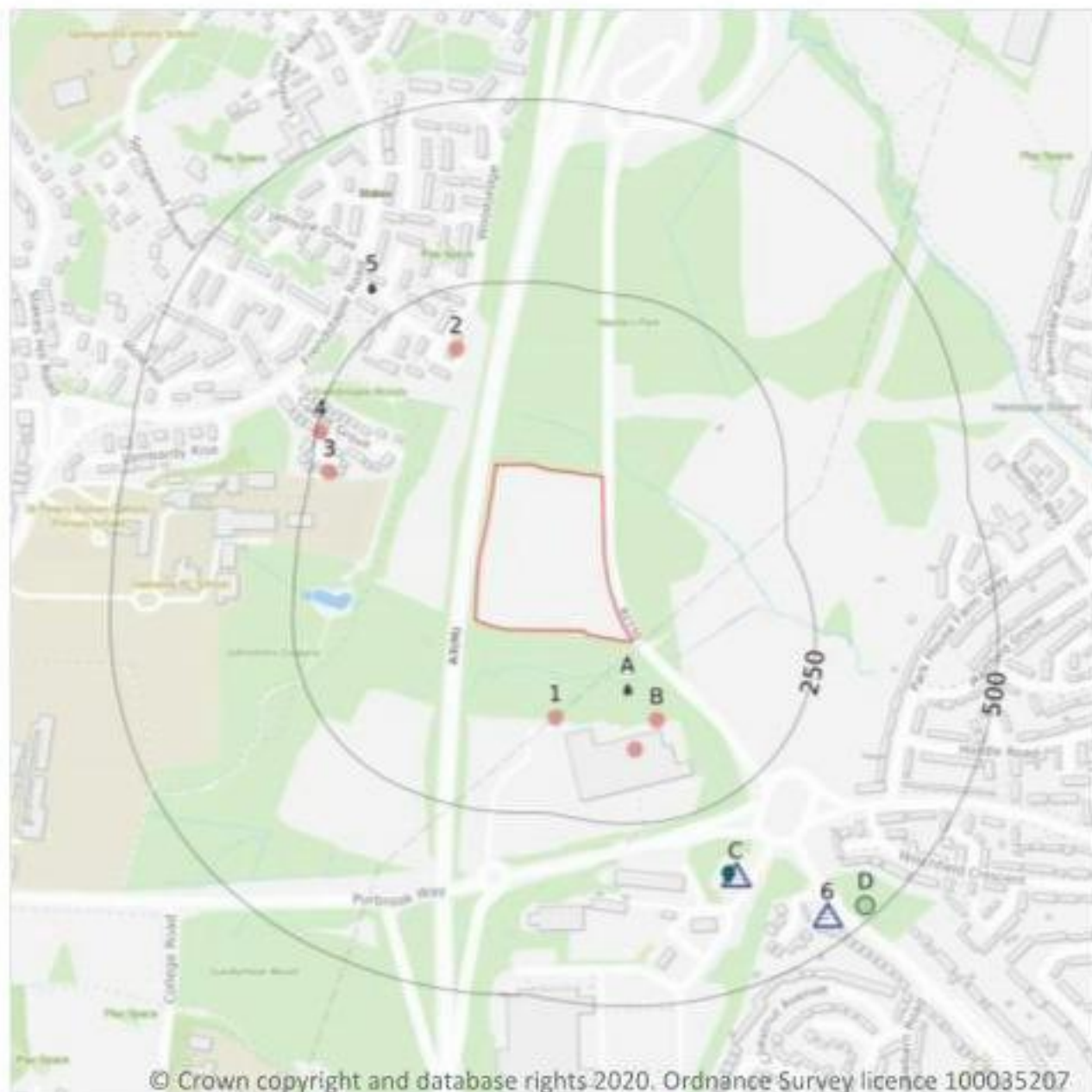
Records within 500m
0

Activities involving the storage, treatment, use or disposal of waste that are exempt from needing a permit. Exemptions have specific limits and conditions that must be adhered to.

This data is sourced from the Environment Agency and Natural Resources Wales.



4 Current industrial land use



- Site Outline
- Search buffers in metres (m)
- Recent industrial land uses
- △ Current or recent petrol stations
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m

6

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 24**

ID	Location	Company	Address	Activity	Category
B	113m S	Electricity Sub Station	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
1	119m S	Pylon	Hampshire, PO9	Electrical Features	Infrastructure and Facilities
B	148m S	Hertz Car Hire	Purbrook Way, Havant, Hampshire, PO9 3QJ	Vehicle Hire and Rental	Hire Services



ID	Location	Company	Address	Activity	Category
2	168m N	Woodsedge Upholstery	42, Woodsedge, Waterlooville, Hampshire, PO7 8EX	Furniture	Consumer Products
3	225m W	Tasc 2	11, Laurus Close, Waterlooville, Hampshire, PO7 8EZ	Recycling, Reclamation and Disposal	Recycling Services
4	244m W	J C B Motorcycle Services	14, Covert Grove, Waterlooville, Hampshire, PO7 8EY	Vehicle Repair, Testing and Servicing	Repair and Servicing

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m

2

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 24**

ID	Location	Company	Address	LPG	Status
C	349m SE	ASDA	Willowdene Close, Bedhampton, Havant, Hampshire, PO9 3QP	No	Open
6	460m SE	TEXACO	Hulbert Road, Bedhampton, Havant, Hampshire, PO9 3RH	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m

0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m

0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.



4.5 Sites determined as Contaminated Land

Records within 500m**0**

Contaminated Land Register of sites designated under Part 2a of the Environmental Protection Act 1990.

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m**0**

Control of Major Accident Hazards (COMAH) sites. This data includes upper and lower tier sites, and includes a historical archive of COMAH sites and Notification of Installations Handling Hazardous Substances (NIHHS) records.

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m**0**

Sites registered and licensed by the Health and Safety Executive under the Manufacture and Storage of Explosives Regulations 2005 (MSER). The last update to this data was in April 2011.

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m**0**

Consents granted for a site to hold certain quantities of hazardous substances at or above defined limits in accordance with the Planning (Hazardous Substances) Regulations 2015.

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m**0**

Integrated Pollution Control (IPC) records of substance releases to air, land and water. This data represents a historical archive as the IPC regime has been superseded.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.10 Licensed industrial activities (Part A(1))

Records within 500m

0

Records of Part A(1) installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.11 Licensed pollutant release (Part A(2)/B)

Records within 500m

1

Records of Part A(2) and Part B installations regulated under the Environmental Permitting (England and Wales) Regulations 2016 for the release of substances to the environment.

Features are displayed on the Current industrial land use map on **page 24**

ID	Location	Address	Details	
C	346m S	ASDA Stores Ltd, ASDA Havant Petrol Filling Station, Larchwood Road, Bedhampton, Havant, Hampshire, PO7 3QW	Process: Unloading of Petrol into Storage at Service Stations Status: Current Permit Permit Type: Part B	Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified Comment: No Enforcement Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m

0

Records of the storage, use, accumulation and disposal of radioactive substances regulated under the Radioactive Substances Act 1993.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.13 Licensed Discharges to controlled waters

Records within 500m

3

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 1991.

Features are displayed on the Current industrial land use map on **page 24**



ID	Location	Address	Details	
A	65m S	SITE AT PURBROOK WAY, HUBERT RD, HAVANT, HAMPSHIRE	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: N01079 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 15/11/1984 Effective Date: 15/11/1984 Revocation Date: 28/09/2000
A	65m S	SITE AT PURBROOK WAY, HUBERT RD, HAVANT, HAMPSHIRE	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: N01079 Permit Version: 2 Receiving Water: FRESHWATER RIVER	Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 28/09/2000 Effective Date: 28/09/2000 Revocation Date: -
5	296m NW	SEPTEMBER COTTAGE, FROGMORE LANE, L, SEPTEMBER COTTAGE FROGMORE LANE, LONG CRENDON BUCKS	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CTWC.2667 Permit Version: 1 Receiving Water: PORTLAND BEDS	Status: REVOKED - UNSPECIFIED Issue date: 29/07/1988 Effective Date: 29/07/1988 Revocation Date: 18/09/1996

This data is sourced from the Environment Agency and Natural Resources Wales.

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0
----------------------------	----------

Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.15 Pollutant release to public sewer

Records within 500m	0
----------------------------	----------

Discharges of Special Category Effluents to the public sewer.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.16 List 1 Dangerous Substances

Records within 500m	0
----------------------------	----------

Discharges of substances identified on List I of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.



4.17 List 2 Dangerous Substances

Records within 500m

0

Discharges of substances identified on List II of European Directive E 2006/11/EC, and regulated under the Environmental Damage (Prevention and Remediation) Regulations 2015.

This data is sourced from the Environment Agency and Natural Resources Wales.

4.18 Pollution Incidents (EA/NRW)

Records within 500m

4

Records of substantiated pollution incidents. Since 2006 this data has only included category 1 (major) and 2 (significant) pollution incidents.

Features are displayed on the Current industrial land use map on **page 24**

ID	Location	Details	
D	482m SE	Incident Date: 12/09/2018 Incident Identification: 1650782 Pollutant: Atmospheric Pollutants and Effects Pollutant Description: Smoke	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
D	482m SE	Incident Date: 12/09/2018 Incident Identification: 1650782 Pollutant: Inert Materials and Wastes Pollutant Description: Construction and Demolition Materials and Wastes	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
D	482m SE	Incident Date: 12/09/2018 Incident Identification: 1650782 Pollutant: Specific Waste Materials Pollutant Description: Commercial Waste	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)
D	482m SE	Incident Date: 12/09/2018 Incident Identification: 1650782 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 3 (Minor) Land Impact: Category 2 (Significant) Air Impact: Category 3 (Minor)

This data is sourced from the Environment Agency and Natural Resources Wales.

4.19 Pollution inventory substances

Records within 500m

0

The pollution inventory (substances) includes reporting on annual emissions of certain regulated substances to air, controlled waters and land. A reporting threshold for each substance is also included. Where emissions fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.



This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.20 Pollution inventory waste transfers

Records within 500m

0

The pollution inventory (waste transfers) includes reporting on annual transfers and recovery/disposal of controlled wastes from a site. A reporting threshold for each waste type is also included. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

4.21 Pollution inventory radioactive waste

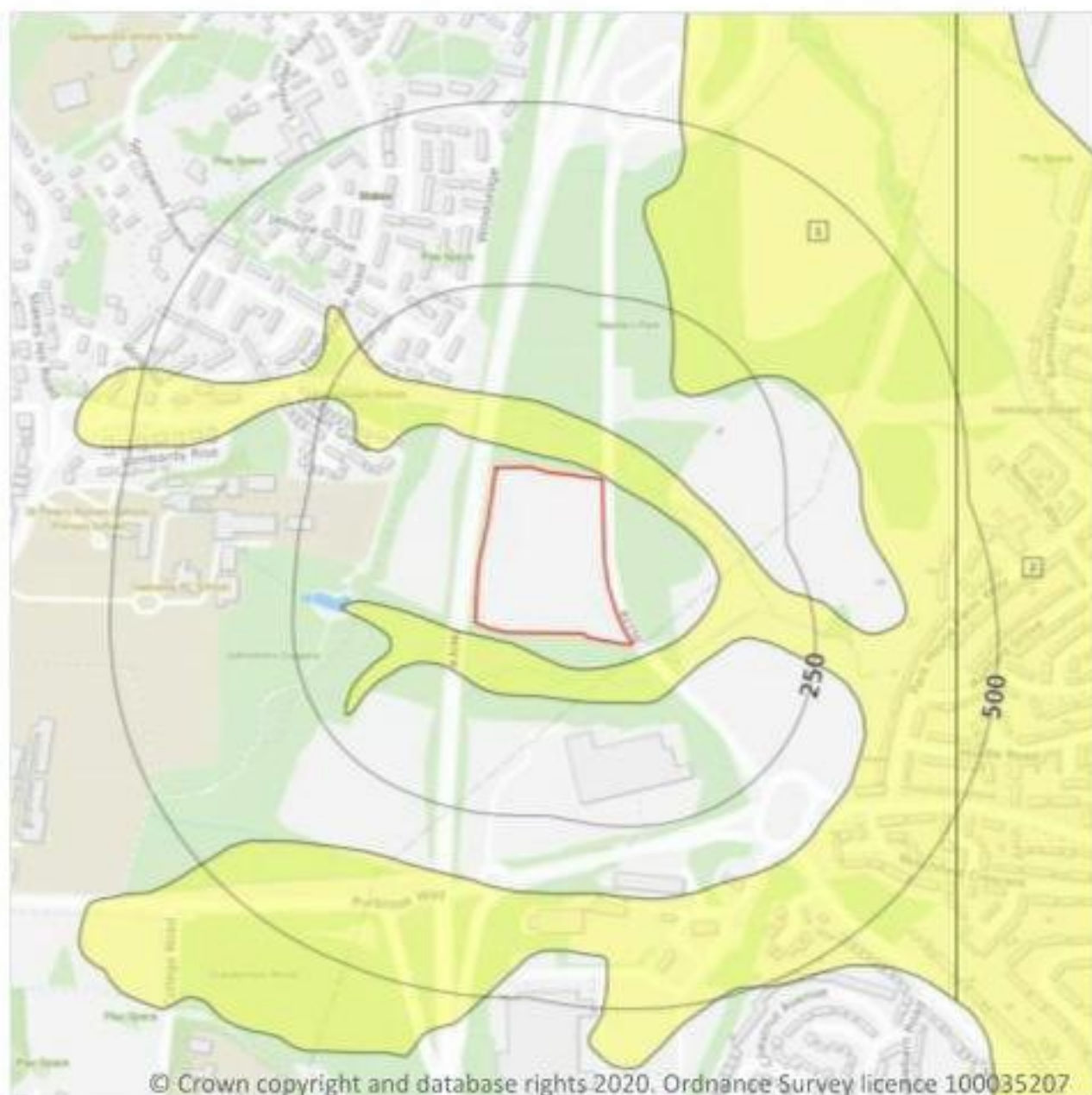
Records within 500m

0

The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. The data is given for the most recent complete year available.

This data is sourced from the Environment Agency and the Scottish Environment Protection Agency.

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive
- Unknown

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5.1 Superficial aquifer

Records within 500m

2

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on **page 31**

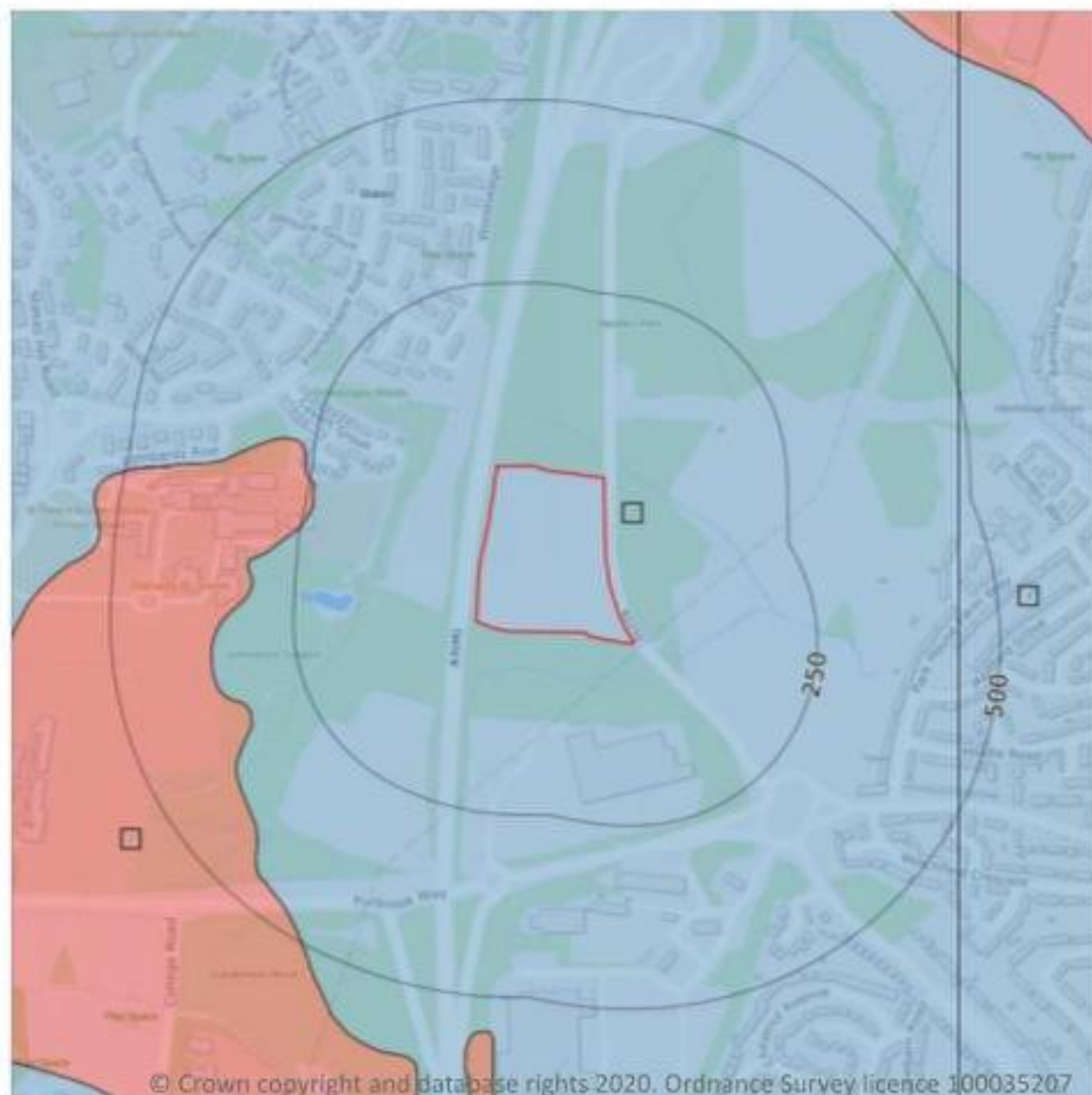
ID	Location	Designation	Description
1	4m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
2	443m 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



This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Bedrock aquifer



— Site Outline

Search buffers in metres (m)

- Principal
- Secondary A
- Secondary B
- Secondary Undifferentiated
- Unproductive

5.2 Bedrock aquifer

Records within 500m

3

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on **page 33**

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	239m W	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers.

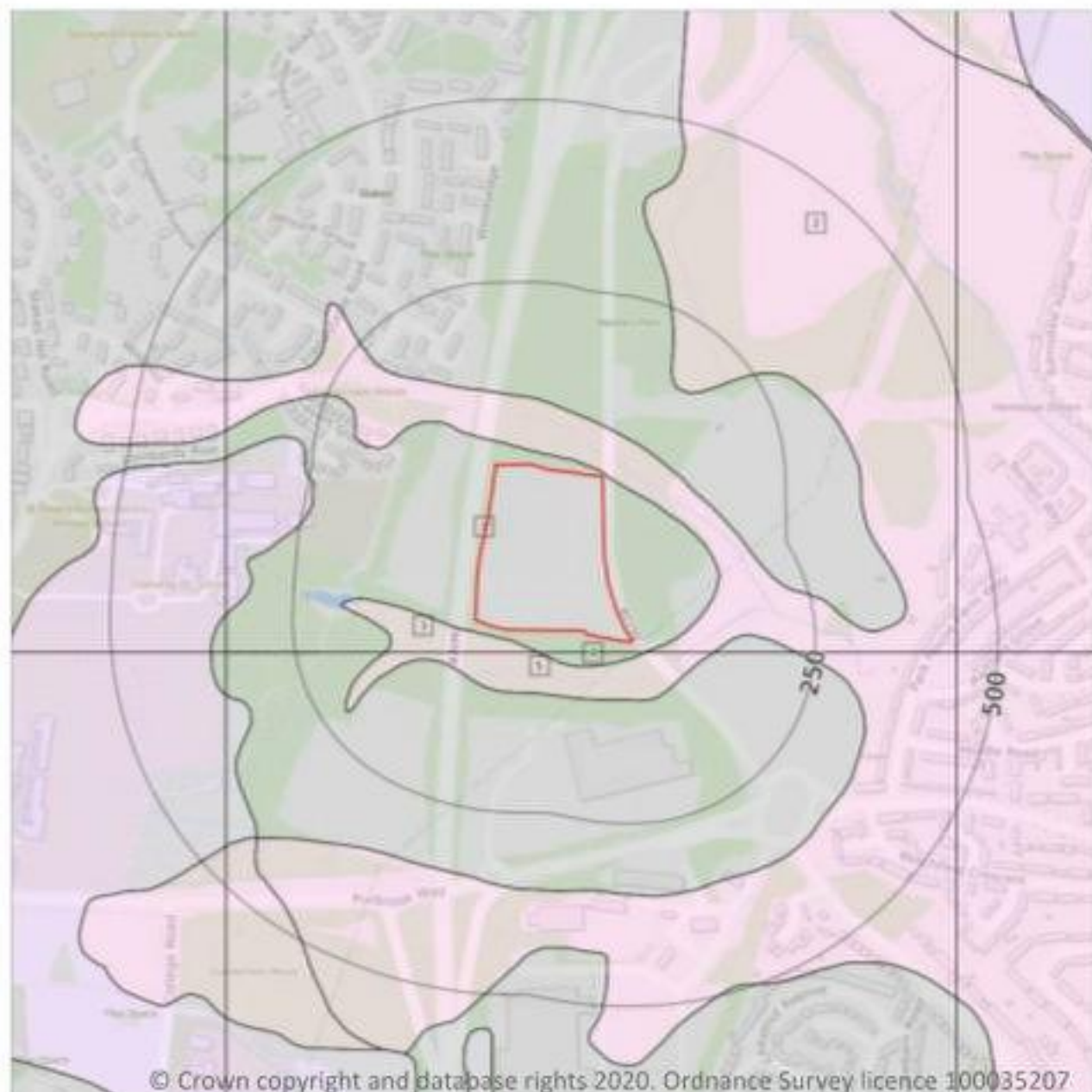


ID	Location	Designation	Description
3	443m E	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



Groundwater vulnerability



5.3 Groundwater vulnerability

Records within 50m

5

An assessment of the vulnerability of groundwater to a pollutant discharged at ground level based on the hydrological, geological, hydrogeological and soil properties within a one kilometre square grid. Groundwater vulnerability is described as High, Medium or Low as follows:

- High - Areas able to easily transmit pollution to groundwater. They are likely to be characterised by high leaching soils and the absence of low permeability superficial deposits.
- Medium - Intermediate between high and low vulnerability.
- Low - Areas that provide the greatest protection from pollution. They are likely to be characterised by low leaching soils and/or the presence of superficial deposits characterised by a low permeability.

Features are displayed on the Groundwater vulnerability map on **page 35**



ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
2	4m NE	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
3	12m S	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
4	15m S	Summary Classification: Unproductive aquifer (may have productive aquifer beneath) Combined classification: Unproductive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed
5	21m SE	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Low Infiltration value: 40-70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Mixed

This data is sourced from the British Geological Survey, the Environment Agency and Natural Resources Wales.



5.4 Groundwater vulnerability- soluble rock risk

Records on site**0**

This dataset identifies areas where solution features that enable rapid movement of a pollutant may be present within a 1km grid square.

This data is sourced from the British Geological Survey and the Environment Agency.

5.5 Groundwater vulnerability- local information

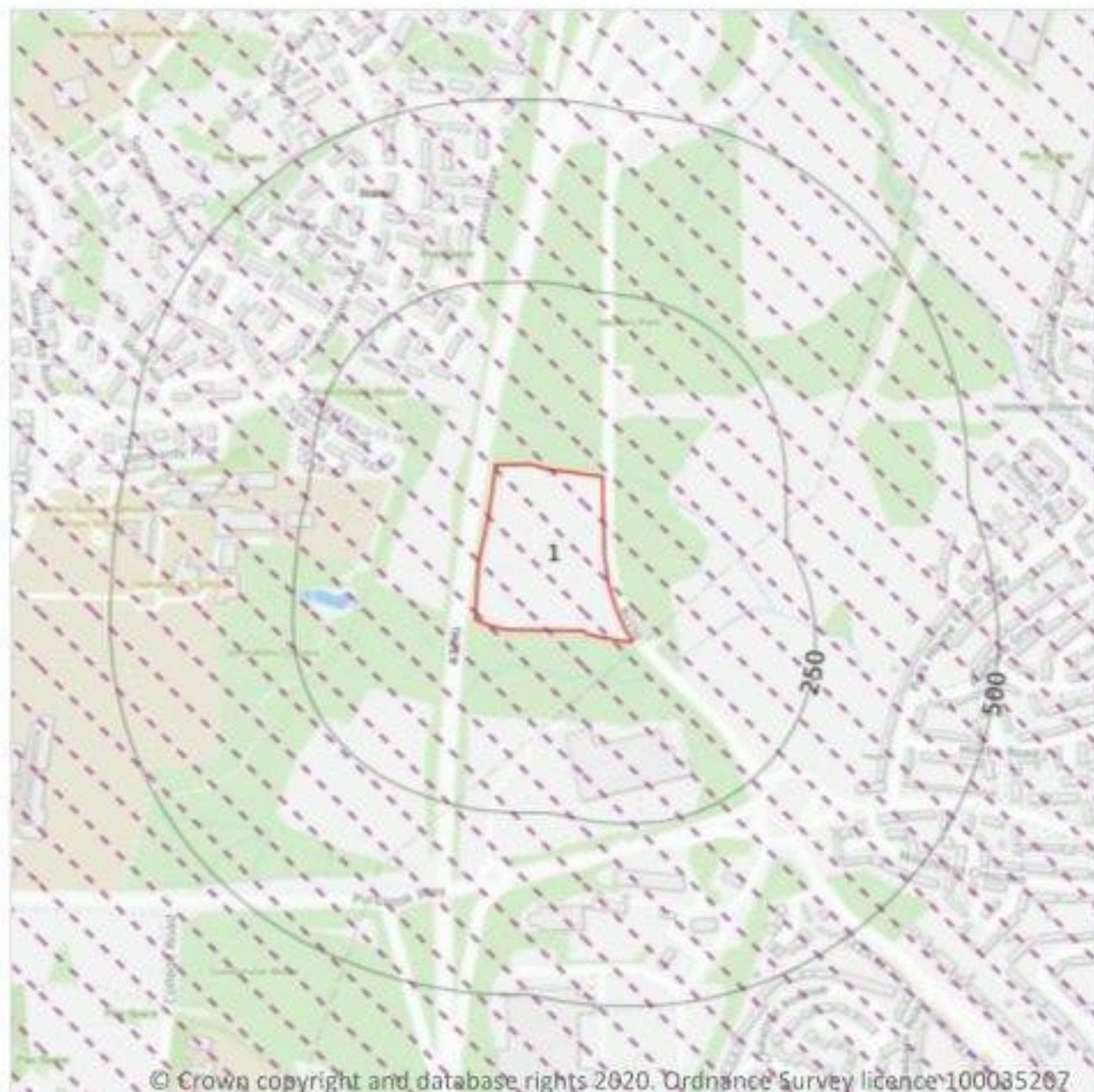
Records on site**0**

This dataset identifies areas where additional local information affecting vulnerability is held by the Environment Agency. Further information can be obtained by contacting the Environment Agency local Area groundwater team through the Environment Agency National Customer Call Centre on 03798 506 506 or by email on enquiries@environment-agency.gov.uk.

This data is sourced from the British Geological Survey and the Environment Agency.



Abstractions and Source Protection Zones



- Site Outline
- Search buffers in metres (m)
- Source Protection Zone 1
Inner catchment
- Source Protection Zone 2
Outer catchment
- Source Protection Zone 3
Total catchment
- Source Protection Zone 4
Zone of Special Interest
- Source Protection Zone 1c
Inner catchment - confined aquifer
- Source Protection Zone 2c
Outer catchment - confined aquifer
- Source Protection Zone 3c
Total catchment - confined aquifer
- Drinking water abstraction licences
Polygon features
- Drinking water abstraction licences
Linear features
- Groundwater abstraction licence (point)
- Groundwater abstraction licence (area)
- Groundwater abstraction licence (linear)
- Surface Water Abstractions (point)
- Surface Water Abstractions (area)
- Surface Water Abstractions (linear)

5.6 Groundwater abstractions

Records within 2000m

2

Licensed groundwater abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, between two points (line data) or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 38**

ID	Location	Details	
-	1937m SE	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 1 Data Type: Point Name: Portsmouth Water Ltd Easting: 470580 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
-	1974m SE	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: HAVANT PS Data Type: Point Name: Portsmouth Water Ltd Easting: 470480 Northing: 106270	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.7 Surface water abstractions

Records within 2000m

0

Licensed surface water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.8 Potable abstractions

Records within 2000m

2

Licensed potable water abstractions for sites extracting more than 20 cubic metres of water a day and includes active and historical records. The data may be for a single abstraction point, a stretch of watercourse or a larger area.

Features are displayed on the Abstractions and Source Protection Zones map on **page 38**



ID	Location	Details	
-	1937m SE	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BEDHAMPTON PS SPRING NO 1 Data Type: Point Name: Portsmouth Water Ltd Easting: 470580 Northing: 106370	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -
-	1974m SE	Status: Active Licence No: 11/42/36.2/1 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: HAVANT PS Data Type: Point Name: Portsmouth Water Ltd Easting: 470480 Northing: 106270	Annual Volume (m ³): 35,770,000 Max Daily Volume (m ³): 137,000 Original Application No: - Original Start Date: 23/12/1965 Expiry Date: - Issue No: 102 Version Start Date: 09/06/2009 Version End Date: -

This data is sourced from the Environment Agency and Natural Resources Wales.

5.9 Source Protection Zones

Records within 500m	0
----------------------------	----------

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination.

This data is sourced from the Environment Agency and Natural Resources Wales.

5.10 Source Protection Zones (confined aquifer)

Records within 500m	1
----------------------------	----------

Source Protection Zones in the confined aquifer define the sensitivity around a deep groundwater abstraction to contamination. A confined aquifer would normally be protected from contamination by overlying geology and is only considered a sensitive resource if deep excavation/drilling is taking place.

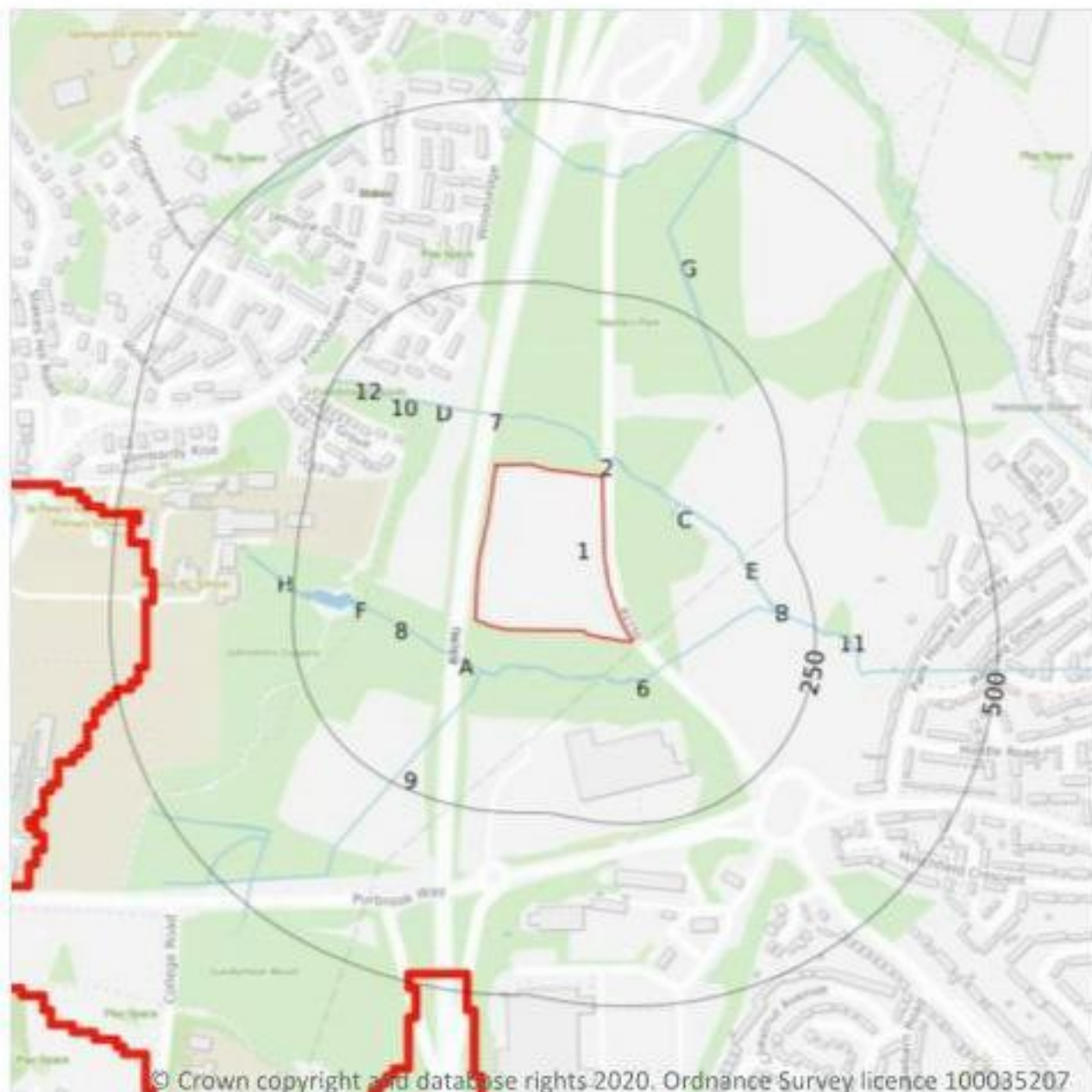
Features are displayed on the Abstractions and Source Protection Zones map on **page 38**

ID	Location	Type	Description
1	On site	1c	Inner catchment within confined aquifer

This data is sourced from the Environment Agency and Natural Resources Wales.



6 Hydrology



- Site Outline
- Search buffers in metres (m)
- Water Network (OS MasterMap)
- Surface water features (wider than 5m)
- Surface water features (narrower than 5m)
- ... WFD River, canal and surface water transfer water bodies
- WFD Lake water bodies
- WFD Transitional and coastal water bodies
- WFD Surface water body catchments boundaries
- WFD Groundwater body boundaries

6.1 Water Network (OS MasterMap)

Records within 250m

22

Detailed water network of Great Britain showing the flow and precise central course of every river, stream, lake and canal.

Features are displayed on the Hydrology map on **page 41**

ID	Location	Type of water feature	Ground level	Permanence	Name
2	22m N	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

ID	Location	Type of water feature	Ground level	Permanence	Name
6	49m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	58m SW	Inland river not influenced by normal tidal action.	Underground	Watercourse contains water year round (in normal circumstances)	-
A	61m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	61m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
A	61m S	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
7	65m N	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
A	68m SW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
8	73m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
D	90m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
C	92m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
9	97m S	Inland river not influenced by normal tidal action.	Not provided	Watercourse contains water year round (in normal circumstances)	-
C	103m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
10	150m NW	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-



ID	Location	Type of water feature	Ground level	Permanence	Name
E	156m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	159m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
F	177m W	Lake, loch or reservoir.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
B	192m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
11	198m E	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
12	199m NW	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
G	207m NE	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-
H	239m W	Inland river not influenced by normal tidal action.	On ground surface	Watercourse contains water year round (in normal circumstances)	-

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m

15

Covering rivers, streams and lakes (some overlap with OS MasterMap Water Network data in previous section) but additionally covers smaller features such as ponds. Rivers and streams narrower than 5m are represented as a single line. Lakes, ponds and rivers or streams wider than 5m are represented as polygons.

Features are displayed on the Hydrology map on **page 41**

This data is sourced from the Ordnance Survey.



6.3 WFD Surface water body catchments

Records on site

1

The Water Framework Directive is an EU-led framework for the protection of inland surface waters, estuaries, coastal waters and groundwater through river basin-level management planning. In terms of surface water, these basins are broken down into smaller units known as management, operational and water body catchments.

Features are displayed on the Hydrology map on **page 41**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	On site	River WB catchment	Hermitage Stream	GB107042016370	East Hampshire Rivers	East Hampshire

This data is sourced from the Environment Agency and Natural Resources Wales.

6.4 WFD Surface water bodies

Records identified

1

Surface water bodies under the Directive may be rivers, lakes, estuary or coastal. To achieve the purpose of the Directive, environmental objectives have been set and are reported on for each water body. The progress towards delivery of the objectives is then reported on by the relevant competent authorities at the end of each six-year cycle. The river water body directly associated with the catchment listed in the previous section is detailed below, along with any lake, canal, coastal or artificial water body within 250m of the site. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each water body listed.

Features are displayed on the Hydrology map on **page 41**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	541m NE	River	Hermitage Stream	GB107042016370	Moderate	Good	Moderate	2016

This data is sourced from the Environment Agency and Natural Resources Wales.

6.5 WFD Groundwater bodies

Records on site

0

Groundwater bodies are also covered by the Directive and the same regime of objectives and reporting detailed in the previous section is in place. Click on the water body ID in the table to visit the EA Catchment Explorer to find out more about each groundwater body listed.

This data is sourced from the Environment Agency and Natural Resources Wales.



7 River and coastal flooding

7.1 Risk of Flooding from Rivers and Sea (RoFRaS)

Records within 50m

0

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 100 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 100 chance) or High (greater than or equal to 1 in 30 chance).

This data is sourced from the Environment Agency and Natural Resources Wales.

7.2 Historical Flood Events

Records within 250m

0

Records of historic flooding from rivers, the sea, groundwater and surface water. Records began in 1946 when predecessor bodies started collecting detailed information about flooding incidents, although limited details may be included on flooding incidents prior to this date. Takes into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding, and includes flood extents that may have been affected by overtopping, breaches or blockages.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.3 Flood Defences

Records within 250m

0

Records of flood defences owned, managed or inspected by the Environment Agency and Natural Resources Wales. Flood defences can be structures, buildings or parts of buildings. Typically these are earth banks, stone and concrete walls, or sheet-piling that is used to prevent or control the extent of flooding.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.4 Areas Benefiting from Flood Defences

Records within 250m

0

Areas that would benefit from the presence of flood defences in a 1 in 100 (1%) chance of flooding each year from rivers or 1 in 200 (0.5%) chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



7.5 Flood Storage Areas

Records within 250m

0

Areas that act as a balancing reservoir, storage basin or balancing pond to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel or to delay the timing of a flood peak so that its volume is discharged over a longer period.

This data is sourced from the Environment Agency and Natural Resources Wales.



River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land between Flood Zone 3 (see next section) and the extent of the flooding from rivers or the sea with a 1 in 1000 (0.1%) chance of flooding each year.

This data is sourced from the Environment Agency and Natural Resources Wales.

7.7 Flood Zone 3

Records within 50m

0

Areas of land at risk of flooding, when the presence of flood defences are ignored. Covering land with a 1 in 100 (1%) or greater chance of flooding each year from rivers or a 1 in 200 (0.5%) or greater chance of flooding each year from the sea.

This data is sourced from the Environment Agency and Natural Resources Wales.



8 Surface water flooding



8.1 Surface water flooding

Highest risk on site

Negligible

Highest risk within 50m

1 in 30 year, 0.3m - 1.0m

Ambiental Risk Analytics surface water (pluvial) FloodMap identifies areas likely to flood as a result of extreme rainfall events, i.e. land naturally vulnerable to surface water ponding or flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1,000 year rainfall events. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though some older ones may flood in a 1 in 5 year rainfall event.

Features are displayed on the Surface water flooding map on **page 48**

The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

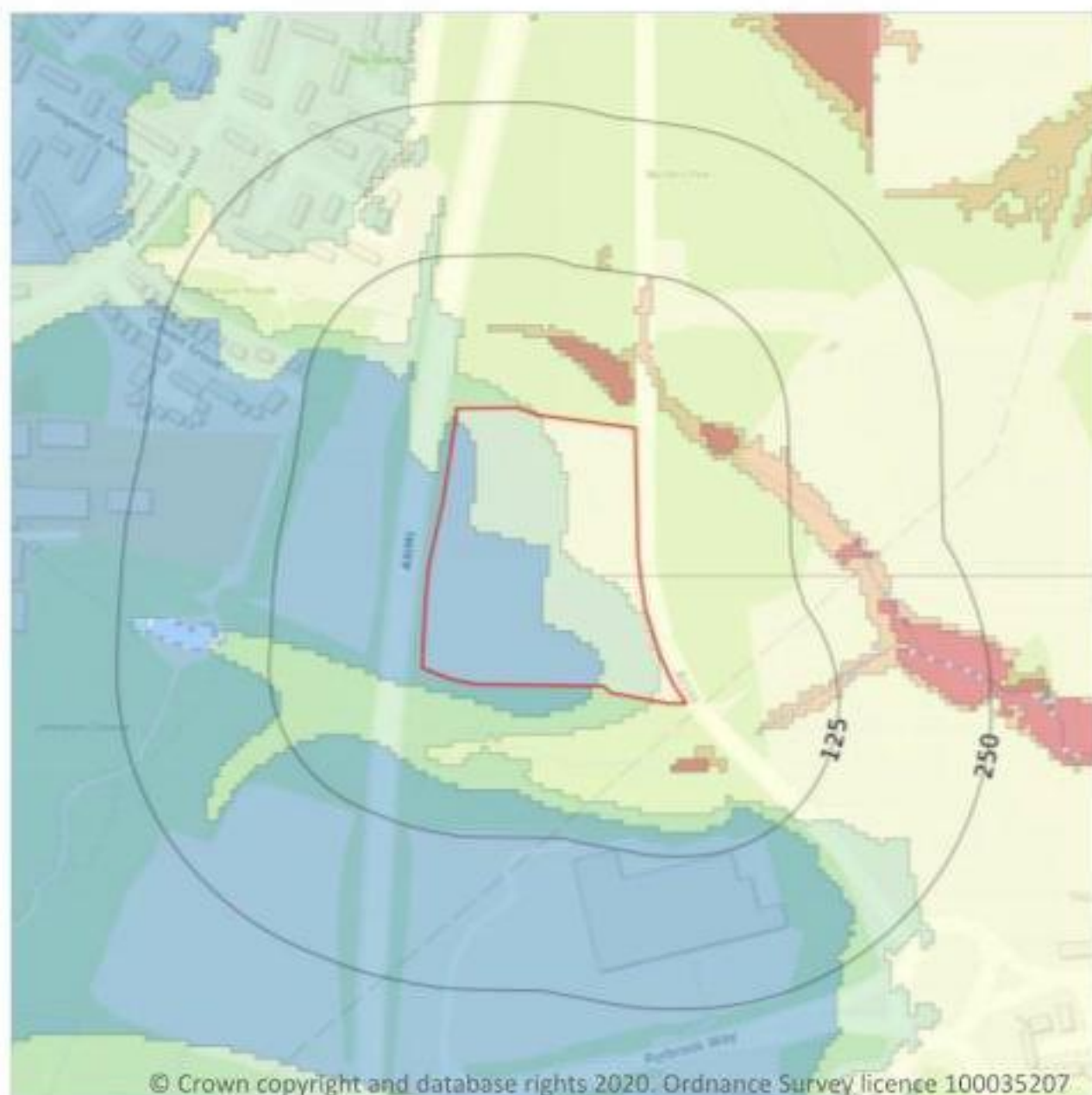
The table below shows the maximum flood depths for a range of return periods for the site.

Return period	Maximum modelled depth
1 in 1000 year	Negligible
1 in 250 year	Negligible
1 in 100 year	Negligible
1 in 30 year	Negligible

This data is sourced from Ambiental Risk Analytics.



9 Groundwater flooding



— Site Outline
Search buffers in metres (m)

- High
- Moderate - High
- Moderate
- Low
- Negligible

9.1 Groundwater flooding

Highest risk on site

Moderate

Highest risk within 50m

High

Groundwater flooding is caused by unusually high groundwater levels. It occurs when the water table rises above the ground surface or within underground structures such as basements or cellars. Groundwater flooding tends to exhibit a longer duration than surface water flooding, possibly lasting for weeks or months, and as a result it can cause significant damage to property. This risk assessment is based on a 1 in 100 year return period and a 5m Digital Terrain Model (DTM).

Features are displayed on the Groundwater flooding map on **page 50**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

0

Sites providing statutory protection for the best examples of UK flora, fauna, or geological or physiographical features. Originally notified under the National Parks and Access to the Countryside Act 1949, SSSIs were re-notified under the Wildlife and Countryside Act 1981. Improved provisions for the protection and management of SSSIs were introduced by the Countryside and Rights of Way Act 2000 (in England and Wales) and (in Scotland) by the Nature Conservation (Scotland) Act 2004 and the Wildlife and Natural Environment (Scotland) Act 2010.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m**0**

Ramsar sites are designated under the Convention on Wetlands of International Importance, agreed in Ramsar, Iran, in 1971. They cover all aspects of wetland conservation and wise use, recognizing wetlands as ecosystems that are extremely important for biodiversity conservation in general and for the well-being of human communities. These sites cover a broad definition of wetland; marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, and even some marine areas.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.3 Special Areas of Conservation (SAC)

Records within 2000m**0**

Areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.4 Special Protection Areas (SPA)

Records within 2000m**0**

Sites classified by the UK Government under the EC Birds Directive, SPAs are areas of the most important habitat for rare (listed on Annex I to the Directive) and migratory birds within the European Union.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.5 National Nature Reserves (NNR)

Records within 2000m**0**

Sites containing examples of some of the most important natural and semi-natural terrestrial and coastal ecosystems in Great Britain. They are managed to conserve their habitats, provide special opportunities for scientific study or to provide public recreation compatible with natural heritage interests.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.6 Local Nature Reserves (LNR)

Records within 2000m

0

Sites managed for nature conservation, and to provide opportunities for research and education, or simply enjoying and having contact with nature. They are declared by local authorities under the National Parks and Access to the Countryside Act 1949 after consultation with the relevant statutory nature conservation agency.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.7 Designated Ancient Woodland

Records within 2000m

23

Ancient woodlands are classified as areas which have been wooded continuously since at least 1600 AD. This includes semi-natural woodland and plantations on ancient woodland sites. 'Wooded continuously' does not mean there is or has previously been continuous tree cover across the whole site, and not all trees within the woodland have to be old.

Features are displayed on the Environmental designations map on **page 51**

ID	Location	Name	Woodland Type
A	11m E	Unknown	Ancient Replanted Woodland
A	28m NE	Unknown	Ancient & Semi-Natural Woodland
A	66m N	Unknown	Ancient & Semi-Natural Woodland
1	97m NE	Unknown	Ancient & Semi-Natural Woodland
2	150m W	Unknown	Ancient & Semi-Natural Woodland
3	217m W	Unknown	Ancient Replanted Woodland
4	269m NE	BUSHY LEASE	Ancient & Semi-Natural Woodland
5	347m E	Unknown	Ancient & Semi-Natural Woodland
6	468m S	Unknown	Ancient & Semi-Natural Woodland
7	480m E	Unknown	Ancient & Semi-Natural Woodland
8	482m SW	Unknown	Ancient Replanted Woodland
9	487m N	Unknown	Ancient & Semi-Natural Woodland
10	596m SW	Unknown	Ancient & Semi-Natural Woodland
11	659m S	Unknown	Ancient & Semi-Natural Woodland
12	674m S	Unknown	Ancient & Semi-Natural Woodland
13	789m S	Unknown	Ancient Replanted Woodland



ID	Location	Name	Woodland Type
14	823m W	Unknown	Ancient & Semi-Natural Woodland
15	1603m NE	Cabbagefield Row	Ancient & Semi-Natural Woodland
-	1788m NE	Bells Copse	Ancient & Semi-Natural Woodland
-	1850m SW	PURBROCK PARK WOOD	Ancient & Semi-Natural Woodland
-	1868m SW	PURBROCK PARK WOOD	Ancient & Semi-Natural Woodland
-	1931m N	THE QUEENS INCLOSURE	Ancient Replanted Woodland
-	1951m SW	PURBROCK PARK WOOD	Ancient & Semi-Natural Woodland

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.8 Biosphere Reserves

Records within 2000m

0

Biosphere Reserves are internationally recognised by UNESCO as sites of excellence to balance conservation and socioeconomic development between nature and people. They are recognised under the Man and the Biosphere (MAB) Programme with the aim of promoting sustainable development founded on the work of the local community.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.

10.9 Forest Parks

Records within 2000m

0

These are areas managed by the Forestry Commission designated on the basis of recreational, conservation or scenic interest.

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m

0

A type of marine nature reserve in UK waters established under the Marine and Coastal Access Act (2009). They are designated with the aim to protect nationally important, rare or threatened habitats and species.

This data is sourced from Natural England, Natural Resources Wales and Scottish Natural Heritage.



10.11 Green Belt

Records within 2000m

0

Areas designated to prevent urban sprawl by keeping land permanently open.

This data is sourced from the Ministry of Housing, Communities and Local Government.

10.12 Proposed Ramsar sites

Records within 2000m

0

Ramsar sites are areas listed as a Wetland of International Importance under the Convention on Wetlands of International Importance especially as Waterfowl Habitat (the Ramsar Convention) 1971. The sites here supplied have a status of 'Proposed' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m

0

Special Areas of Conservation are areas which have been identified as best representing the range and variety within the European Union of habitats and (non-bird) species listed on Annexes I and II to the Directive. SACs are designated under the EC Habitats Directive. Those sites supplied here are those with a status of 'Possible' having been identified for potential adoption under the framework.

This data is sourced from Natural England and Natural Resources Wales.

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m

0

Special Protection Areas (SPAs) are areas designated (or 'classified') under the European Union Wild Birds Directive for the protection of nationally and internationally important populations of wild birds. Those sites supplied here are those with a status of 'Potential' having been identified for potential adoption under the framework.

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m

0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was



closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

Records within 2000m

1

Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

Location	Name	Type	NVZ ID	Status
On site	Chichester,Langstone and Portsmouth Harbours Eutrophic NVZ (TraC)	Eutrophic Water	ET2	Existing

This data is sourced from Natural England and Natural Resources Wales.

