



# Phase One Geotechnical and Environmental Desk Study

## E-Scrap Sample Preparation Plant

### Britannia Refined Metals Ltd

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## 1.0 Introduction

### 1.1 Appointment

SLR Consulting Ltd (SLR) was instructed by Britannia Refined Metals (BRM) Limited to prepare a Phase One Desk Study for the proposed Sample Preparation Facility at the BRM site on Botany Road, Northfleet, Gravesend, Kent, DA11 9BG.

The Site location is shown on Drawing 01.

### 1.1 Background and Objectives

A geo-environmental ground investigation was proposed for the original option of raft foundations for two smaller buildings to house a sample preparation facility. A geo-environmental assessment was required to assess the risk to construction workers due to anticipated high levels of heavy metals, and elevated ground gases of methane and carbon dioxide.

However, following a review of the ground conditions and the nature of the proposed development, the preferred design option for construction of one larger building with piled foundations is now being considered. Therefore, a ground investigation is required to provide an overview of the general site conditions, inform geotechnical parameters for piled foundations, assess the geotechnical and geo-environmental risks and provide outline piled foundation design.

Prior to a ground investigation, a Phase One report has been prepared to provide an initial understanding of conceptual ground risks from both geotechnical and land contamination perspectives. It will also identify any liabilities associated with the Site and what actions, if any, that may need to be undertaken to further characterise and/or mitigate the identified risks. The report will also allow a refined and targeted ground investigation to be devised.

### 1.2 Scope of Works

The scope of work comprised the following tasks:

- review of available historical maps to establish previous uses of the Site and surrounding areas;
- assessment of site sensitivity and environmental setting including a review of geological and hydrogeological records (e.g., geological maps, groundwater sensitivity and vulnerability maps etc.). The likely quality of nearby surface waters and underlying groundwater is also assessed, as well as any data available on pollution incidents, abstractions and discharges;
- collection of information from public registers and regulators that is available via the GroundSure database, which can be obtained more quickly than through direct contact with the regulators and other public bodies; and,
- data assimilation and risk assessment involving an assessment of potential sources (e.g., chemical storage, spillages etc), pathways (e.g., surface water drainage) and receptors (e.g., human health and/or controlled surface watercourse) at or adjacent to the site. A conceptual site model (CSM) and the level of risk associated with identified potential pollutant linkages (PPLs) is determined qualitatively from the model.



## 1.3 Sources of Information

This report has been produced following consultation with the sources of information summarised in Table 1-1.

**Table 1-1: Sources of Information**

| Information Type                    | Source                                                                                                                                                                                                                                                 |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Topography                          | Ordnance Survey (OS) mapping                                                                                                                                                                                                                           |
| Site Setting, Geology, Hydrogeology | Google Earth<br>GroundSure Enviro + Geo Insight Report EMS-882585_1128445, purchased 21st July 2023 (Appendix B).<br>British Geological Survey (BGS) website.<br>MAGIC website ( <a href="http://www.magic.defra.gov.uk">www.magic.defra.gov.uk</a> ). |
| Site History                        | GroundSure Historical Ordnance Survey Map Extracts EMS-882585_1128444, purchased 21st July 2023 (Appendix C).                                                                                                                                          |



## 2.0 Site Description

### 2.1 Summary Site Details

Table 2-1 summarises the property details. Information has been obtained from Ordnance Survey (OS), Environment Agency (EA) and British Geological Survey (BGS) mapping, and data supplied by Groundsure.

**Table 2-1: Site Details**

| Site Details            |                                                                                                                                                                                                                                                                                                                  |                                                                                                         |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Site Address            | Britannia Refined Metals (BRM) site located at Botany Road, Northfleet, Gravesend, Kent, DA11 9BG.                                                                                                                                                                                                               |                                                                                                         |
| National Grid Reference | The Site is centred on National Grid reference TQ 61385 75330                                                                                                                                                                                                                                                    |                                                                                                         |
| Site Area               | Approximately 560m <sup>2</sup>                                                                                                                                                                                                                                                                                  |                                                                                                         |
| Site Description        | The Site currently comprises concrete hardstanding and is situated adjacent to the existing silver plant building. The west of the Site is bounded by heras fencing, with above ground services. There are three concrete plinths supporting the overhead ducting. The Site is currently used for storing skips. |                                                                                                         |
| Surrounding Land Use    | North                                                                                                                                                                                                                                                                                                            | BRM Site with other industrial land uses beyond including transportation services and concrete plant.   |
|                         | East                                                                                                                                                                                                                                                                                                             | BRM silver plant building and River Thames beyond.                                                      |
|                         | South                                                                                                                                                                                                                                                                                                            | BRM site with other industrial land uses beyond including transportation services and concrete supplier |
|                         | West                                                                                                                                                                                                                                                                                                             | BRM offices and site entrance with Manor Way road and Botany Marshes beyond.                            |

### 2.2 Physical Site Setting

The Site environmental setting including geography, geology, hydrogeology and hydrology is summarised in Table 2-2.

**Table 2-2: Site Setting**

| Site Setting            |                                    |                                                                                                                                                                                                                                                                                                                           |
|-------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Geography and Hydrology | Topography, Elevation and Gradient | The Site is flat and level situated between 3.78m and 3.96m Above Ordnance Datum (AOD)                                                                                                                                                                                                                                    |
|                         | Surface Water                      | There are no surface water features onsite. However, within a 500m radius towards the southwest, there are eight surface water features located at Botany Marshes comprising inland rivers. The River Thames is located 180m east of the Site.                                                                            |
|                         | Flooding                           | The Site is at very low risk of flooding and is an area benefitting from flood defences. There was one historical flood event onsite in 1953 associated with a tidal flood event when sea water overtopped the flood defences.<br>When ignoring the presence of flood defences, the Site is classified as a Flood Zone 3. |



| Site Setting             |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                      | <p>The highest risk of surface water flooding onsite is along the western boundary with a 1 in 30 year event (0.3 – 1.0m).</p> <p>Groundwater flooding risk onsite is classified as moderate to high, with a high risk on the southwestern boundary.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Geology and Hydrogeology | Geology              | <p>A review of the British Geological Survey (BGS) indicates the following ground conditions:</p> <p><b>Made Ground</b> is mapped onsite and across the wider BRM site.</p> <p><b>Superficial Deposits</b> of Alluvium is mapped onsite and across the wider BRM site comprising clay, silt, sand and gravel.</p> <p>The underlying <b>Bedrock Geology</b> is recorded as the Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (Undifferentiated).</p> <p>Historic reports discussed in Section 3.0 identify superficial deposits of the Boyn Hill Gravel comprising gravel, occasionally gravelly sand beneath the Alluvium.</p>                                                                                                                                                                                                                                                                                                                                                                                           |
|                          | BGS Borehole         | <p>A review of publicly available boreholes revealed a borehole approximately 115m southeast of the Site. The BGS borehole record (Ref: TQ67NW79/B) identified Made Ground to 1.2m below ground level (bgl), underlain by clay and peat to 10m bgl, sand and gravel to 22m bgl onto the bedrock chalk.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                          | Natural Ground Risks | <p>The Site has been classified with hazard ratings for the following natural ground risks:</p> <ul style="list-style-type: none"> <li>• Shrink swell clays – Low. Ground conditions predominately medium plasticity.</li> <li>• Running sands – very low with running sand conditions unlikely.</li> <li>• Compressible ground – very low with compressible and uneven settlement hazards unlikely to be significant.</li> <li>• Collapsible deposits – negligible with presence of deposits with potential to collapse not present.</li> <li>• Landslides – very low with slope instability unlikely to occur.</li> <li>• Ground dissolution – negligible with dissolution features unlikely to be present.</li> </ul> <p>Although the Site has been classified as very low for compressible deposits, following a review of existing reports in Section 3.0, SLRs understanding of the Alluvium onsite and site observations by SLR's Civil and Structural Engineering Team, it is considered as a high risk with compressible deposits present onsite.</p> |



| Site Setting |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Radon                                        | Less than 1%, no radon protection measures required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|              | Mining, ground workings and natural cavities | <p>There are no records of natural cavities, BritPits, and mining cavities on-site.</p> <p>There are two recorded BritPits between 350m and 423m southeast of the Site for sand and gravel and crushed rock. There are 39 records of surface ground workings within 250m of the Site. The closest records are approximately 35m northwest of the Site for a pond. Other surface workings include unspecified pits, wharfs, heaps, and ground workings.</p> <p>There are 9 records of underground workings within a 1,000m radius of the Site, all of which are associated with tunnels, with the closest located 670m southeast of the Site.</p> <p>There are 3 non-coal mining records within a 1,000m radius, located between 269m and 745m south for chalk. These are considered unlikely to impact the proposed developed.</p> |
|              | Groundwater                                  | <p>Groundwater strikes of 3.7m and 5.8m bgl were recorded in BGS boreholes in the vicinity of the Site (TQ67NW366 &amp; TQ67NW79/B).</p> <p>Groundwater is anticipated to be relatively shallow considering the above, and the proximity to the River Thames and surrounding surface water bodies.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|              | Aquifer status                               | The underlying superficial deposits are designated as a Secondary Undifferentiated Aquifer. The underlying bedrock is designated a Principal Aquifer.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|              | Abstractions                                 | <p>There are no groundwater abstractions onsite. However, there are 24 within a 2,000m radius. The closest active abstraction is 714m northwest for mineral washing. There are no potable abstractions onsite or within a 2,000m radius.</p> <p>There is one record of a surface water abstraction 518m southeast for mineral washing.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Sensitivity  | Groundwater                                  | <p>The Site falls within the West Kent Daren and Cray Chalk groundwater water body catchment under the Water Framework Directive (WFD). It has an overall poor rating.</p> <p>The Site is situated within a Source Protection Zone (SPZ) 2. An SPZ 3 is located 84m northwest of the Site.</p> <p>The groundwater within superficial deposit are classified as high vulnerability and the bedrock classified as medium vulnerability.</p> <p>Although the superficial Alluvium, Secondary Undifferentiated Aquifer, is of relatively low, the sensitivity the underlying Principal chalk bedrock aquifer is judged to be of high sensitivity, particularly as the study area is within an EA</p>                                                                                                                                   |



| Site Setting         |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                      |                           | designated an SPZ 2 with abstraction located in the vicinity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                      | Surface Water             | There are no surface waters onsite. It is assumed that there are interceptors onsite and therefore, surface water sensitivity is considered moderate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Site Specifics Risks | Unexploded Ordnance (UXO) | <p>Risk mapping identified the Site at high risk of UXO. Therefore, a Pre-Desk Study Assessment (PDSA) was carried out which is included in Appendix D. The report identified WW1 and WWII strategic targets within 5km of the Site, and that there was a WWII military camp at Botany Marshes. The Urban District of Northfleet which the Site is situated in recorded 374No. High Explosive bombs with a bombing density of 99.2 bombs per 204ha. Records identify several HE bombs fell in close proximity to the Site.</p> <p>A detailed desk study was recommended by the UXO consultants, Zetica.</p> <p>Amec Foster Wheeler previously commissioned a UXO survey by MACC International Ltd which is included in Appendix D. A review of this report indicates it has been produced in accordance with the CIRIA guidance. The Site is considered as post war worked ground with the installation of underground services, nearby piled foundations and hardstanding. The risk rating for hand dug and mechanical excavations, and drilling works has been classified as low.</p> <p>Therefore, based on this report, another survey is not required, and the recommendations detailed in the report should be adhered to. This included risk communication &amp; safety planning with stakeholders to be made aware of the UXO risk and the possible impact to the project and third parties. Safety training in the form of a toolbox talk should be provided prior to intrusive works.</p> |

## 2.3 Environmental Site Setting

The Groundsure report provides information on current and historical industrial activities in the vicinity of the Site, pollution incidents and activities that required environmental regulatory permitting to indicate the nature of surrounding site operations and identify those permitted activities that might be a source of soil or groundwater contaminant impact with respect to the site. The resulting detail on relevant permits, licenses and designations within 500m of the Site is summarised below.

- There are 242 historical land uses within a 500m radius of the Site, 16 of which are situated onsite. These comprise a tramway and railway sidings, lead works, cement works and other unspecified works. Surrounding uses comprise the above, in addition to chalk pit, paper mills, tanks, wharfs, tar distilleries, an industrial estate and refuse heaps.
- There are 97 records of historical tanks recorded within 500m of the Site. The closest is 10m north for an unspecified tank denoted by mapping dated 1999.



- There are 16 historic energy features are recorded within a 500m radius of the Site, including electricity substation, transformers and gas works. The closest is an electricity substation 148m southeast of the Site dating between 1993 and 1995.
- There are 2 records of historical garages within a 500m radius, the closest is 405m south.
- There is 1 known historical landfill record located 52m west of the Site which accepted inert and industrial waste under special environmental permitting regulations. This was operated by BRM and was first recorded in 1977.
- There are 4 historical waste sites within a 500m radius of the Site. The closest is 16m southwest comprising the E-Scrap Facility.
- There are 5 licensed waste sites within a 500m radius of the Site. The closest is an industrial waste landfill (Factory Curtilage) 60m northwest.
- There are 15 waste exemptions within a 500m radius of the Site. The closet is 40m southwest at the BRM site for crushing waste fluorescent tubes.
- There 27 recent industrial land uses within a 250m radius including tanks, electricity substations, chimneys, pylons, a wharf, travelling crane, BRM, Seacon, Sargent Brothers Thames Ltd, CPP, and Lindab Kent Ltd.
- There is 1 record of an open petrol station located 491m south that is operated by Shell.
- There is 1 record of a Control of Major Accident Hazards (COMAH) onsite.
- There is 1 record of hazardous substance storage/usage on the BRM site, 40m southwest of the Site. The approved application was for the storge of various hazardous materials.
- There are 3 records of historical Licensed Industrial Activities (IPC) at the BRM facility. There are 10 IPCs (Part A(1)) at the BRM facility for non-ferrous metals and 2 located 479m southwest at Urban Reserve (ASSETCO) Ltd for a combustion plant.
- There 11 licensed pollutant release (Part A(2)/B) within a 500m radius of the Site. The closest was at N.T.C Lumber (Southern) Ltd 190m south.
- There are 9 records of Licensed Discharges to controlled waters within a 500m radius of the Site. 8 are records on the BRM site, the closest 57m north of the Site for sewage discharge.
- There is one record of List 1 Dangerous Substances at the BRM site, 253m north of the Site boundary for Mercury and Cadmium and 1 record of List 2 Dangerous Substances for Arsenic, Copper, Lead, Nickel and Zinc.
- There are 5 records of Pollution Incidents (EA/NRW) within a 500m radius of the Site. The closest is 40m southwest in 2002 involving gas and fuel oils. This is reported to have had no significant impact to water, land and air. 325m south is the second closest incident in 2001 involving firefighting run-off water which had no impact to land and air, but a minor impact to water.
- There 4 records of pollution inventory substances within a 500m radius. All 4 are at the BRM site to air and controlled water involving lead, nickel, zinc, copper, arsenic, cadmium, dioxins, non-methane volatile organic compounds (NMVOCs), and sulphur oxides.
- There is 1 record of a pollution inventory waste transfers at the BRM site, 260m northwest of the Site boundary for non-hazardous waste of wood, iron, steel, mixed municipal waste and packaging, cables and paper. Hazardous waste includes



discarded electrical equipment, fluorescent tubes and other mercury-containing waste, absorbents, chlorofluorocarbons, oil filters, lead and Ni-Cd batteries, halons, slag, and mixture of wastes from grit chambers and oil/water separators.

- There are 10 records of Sites of Special Scientific Interest (SSSI) within a 2,000m radius of the Site. The closest is Swanscombe Peninsula 46m west of the Site. There is 1 record of a National Nature Reserve 1,821m southwest, Swanscombe Skull site. There is Marine Conservation Zone 1,254m northwest at Swanscombe. There is 1 record of a Nitrate Vulnerable Zone 531m southwest.
- There are no existing or proposed Conserved Wetland Sites (Ramsar), Special Areas of Conservation (SAC), Special Protection Areas (SPA), Local Nature Reserve (LNR), Designated Ancient Woodland, Biosphere Reserves, Forest Parks, Green Belt or Nitrate Sensitive Areas within a 500m radius of the Site.
- There are no records of any of the following within 500m of the Site: historic petrol stations, historic military land, active or historic landfills, sites determined as contaminated land, electricity cables, gas pipelines, regulated explosive sites, radioactive substance authorisations, pollutant release to surface waters (red List), pollutant release to public sewer, and pollution inventory radioactive waste.

## 2.4 Site History

The Site history is based on a review of historical maps (Appendix C).

**On-site** – From the first available maps dated 1863, the Site is undeveloped marshland situated between Northfleet Marshes and Botany Marshes. From 1932, the Site has a flue around the northern, western and southern perimeter boundary associated with Britannia Lead Works. However, by 1955, this structure was no longer evident. Mapping dated 1971 shows a small rectangular structure in the southwest corner of the Site and fencing along the western boundary. No further changes were identified in subsequent mapping.

**Off-site** – from earliest mapping 1863, the surrounding area to the north, east and west was undeveloped marshland. There was a creek mapped approximately 250m north of the Site. The south of the site was developed with industrial land uses including a railway line, cement mill and wharf. By 1895, 250m west, the land was developed on with the construction of Portland Cement Works. 500m southwest, other industrial uses such as Britannia Cement Works, Northfleet Paper Works, chalk pits and railway lines were constructed. In 1932 mapping, the cement works became Britannia Lead Work with the expansion of the existing BRM site. Within a 750m radius of the Site, there is continued industrial development with the construction of reservoirs and tar distilleries. By 2001 mapping, the surrounding area is primarily similar to the present day.



## 3.0 Previous Reports

Two ground investigation reports relating to works undertaken on the Site have been provided by the Client that. These include the Amec Foster Wheeler (AFW) ground investigation report<sup>1</sup> and the Mchallams General Soil Conditions Report<sup>2</sup>. The site conditions including geology, hydrogeology, land quality and geotechnical risks and conclusions and recommendations are summarised below. Additionally, a BRM Site Wide Boreholes Report has been provided. The reports are included in Appendix E.

SLR have not been provided with details on the construction and foundations of existing buildings such as pile type and lengths. Following a site visit by SLRs Civil and Structural Engineering Team, a site contractor informed SLR that a building onsite was previously piled to 15m bgl. However, this information is only anecdotal. The AFW report understands that the existing pile foundations on the BRM site are founded in the Boyn Hill Gravel.

### 3.1 Geology

Mchallams completed four boreholes to the east of the Site. Boreholes 1 and 2 encountered Made Ground to a maximum depth of 2.1m bgl and comprises silty clay, sand and gravel with inclusions of brick, concrete, flint and clinker/slag material. This was underlain by a very soft to soft silty clay with layers of peat to a maximum depth of 14.5m. In Boreholes 3 and 4, this was encountered from ground level. Medium dense to dense gavel with sand was encountered beneath the clay to a maximum depth of 23.3m bgl which was underlain by weathered chalk where the boreholes were terminated.

The AFW investigation comprised four boreholes: one to the north, two southeast, and BH02 onsite. Made Ground was encountered in all locations to a maximum depth of 2.1m bgl. This was underlain by Alluvium in all locations to a maximum depth of 15.2m bgl. This was described as very soft to soft, silty, locally sandy, clay with bands of peat. This was underlain by the Boyn Hill Gravel which was described as medium dense to dense silty sandy gravel and gravelly sand. Bedrock chalk was encountered at depths of between 22.1m and 22.5m bgl comprising Grade Dc and Dm chalk.

Two boreholes BH7S and BH2, are located onsite. However, BH7S only extends to 5m bgl. This recorded Made Ground to 2.3m bgl underlain by very soft silty clay with peat. BH2 extends to an appropriate depth of 30m bgl and encountered Made Ground to 1.09m bgl overlying soft clay to 14.3m bgl. Very sandy gravel was encountered underneath to 20.70m bgl overlying the chalk bedrock, recovered as grade Dc to 30m bgl.

The investigations encountered similar geology at correlating depths, which is comparable to BGS mapping and publicly available boreholes.

### 3.2 Hydrogeology

Groundwater levels recorded in the Mchallams boreholes were at depths of between 3.8m and 14.5m bgl, rising to depths of between ground level and 12.1m bgl after 24 hours.

The AFW investigation encountered perched groundwater within the Made Ground at one location (BH04, southeast of the Site) at a depth of 2.0m bgl. Within BH02, located onsite, groundwater was recorded at 8.0m bgl. Within BH01, north of the Site, groundwater was

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<sup>1</sup> Amec Foster Wheeler (2107) Water Storage Tank & Silver Plant Baghouse Development Ground Investigation Report. Prepared for Britannia Refined Metals Ltd.

<sup>2</sup> Mchallams (2005) General Soil Conditions Found at Britannia Refined Metals Site Affecting Storage of Lead Ingots and Plant.



recorded at 13.08m bgl within the gravel. Therefore, groundwater onsite showed a high variability.

The site wide borehole report, in BH7S, groundwater was encountered at 1.2m bgl within the Made Ground. In BH2, groundwater was perched within the Made Ground at 1.5m bgl, within the Alluvium at 3.0m bgl, and at the boundary of the Alluvium and Gravel at 14.3m bgl.

### 3.3 Geotechnical Properties

The AFW report includes in-situ and laboratory analysis of the underlying geology. Table 3-1 below presents a summary of the geotechnical properties recorded by AFW.

In summary, the values show a variability within the granular Made Ground Deposits. The fine-grained Made Ground and Alluvium have low undrained shear strength values with high plasticity which will impact the construction of shallow foundations. The underlying chalk bedrock was weathered and recorded as low density.

### 3.4 Geotechnical Recommendations

The Mchallams report identified that the Alluvium is of high compressibility, and shallow foundations would result in excessively large settlements and is considered an inadequate bearing stratum. Piled foundations constructed into the medium dense gravel was recommended. Mchallams emphasised the underlying chalk is a suitable for piles, however, the chalk was not encountered during the investigation. It should be noted that this formation may be susceptible to dissolution features and the structural quality of the chalk should be investigated.

AFW recommended in the vicinity of the proposed sample preparation building that the Made Ground and Alluvium were unsuitable foundation strata due to variable nature and consistency and the susceptibility to settlement. Therefore, piled foundations were recommended into the underlying gravels. It was recommended that piles were not installed into the chalk bedrock due to the sensitivity of this aquifer.

### 3.5 Land Quality Recommendations

The AFW report references a preceding Desk Study (ref: 39166R005i2, May 2017). Section 2.9 of their report subsequent make reference to potential environmental risks identified by the desk study that were primarily as a result of the site's current and historical usage. Furthermore, a review of existing annual monitoring data identified the following:

- Groundwater analysis identified 'non-detectable to moderately high' concentrations of metals. The source of these metals was considered most likely to be historical inclusions in the Made Ground, in particular slag. It was also stated that the neutral to slightly alkaline pH of the groundwater is likely to have inhibited metal solubility; and
- Significantly elevated concentrations of methane and carbon dioxide have been routinely detected.



**Table 3-1: Historic Geotechnical Parameters**

| Geology              | SPT N Value | Bulk Density (kN/m <sup>3</sup> ) | Angle of Shearing Resistance (°) | Drained Stiffness Modulus (MN/m <sup>2</sup> ) | Undrained Stiffness Modulus (MN/m <sup>2</sup> ) | Modulus of Volume Compressibility (m <sup>2</sup> /MN) | Undrained Shear Strength (kN/m <sup>2</sup> ) | Plasticity                             | Saturation Moisture Content (%) | Ground Aggressivity |
|----------------------|-------------|-----------------------------------|----------------------------------|------------------------------------------------|--------------------------------------------------|--------------------------------------------------------|-----------------------------------------------|----------------------------------------|---------------------------------|---------------------|
| Granular Made Ground | 10 – 47     | 19                                | 32                               | 30                                             | -                                                | -                                                      | -                                             | -                                      | -                               | DS-1 and AC-1       |
| Cohesive Made Ground | 1 – 2       | 16                                | 20                               | 1.2                                            | 2                                                | 2                                                      | 5                                             | -                                      | -                               |                     |
| Alluvium             | 0 - 16      | 11                                | 21                               | 3.6                                            | 6                                                | 1                                                      | 15                                            | Very high to extremely high plasticity | -                               | -                   |
| Boyn Hill Gravel     | 4 - 125     | 19                                | 33                               | 400                                            | -                                                | -                                                      | -                                             | -                                      | -                               | -                   |
| Chalk Bedrock        | 8 - 56      | 15 – 20.9                         | -                                | -                                              | -                                                | -                                                      | -                                             | -                                      | 37 – 45<br>Low density Chalk    | -                   |



## 4.0 Outline Conceptual Model and Preliminary Risk Assessment

### 4.1 Preliminary Land Quality Risk Assessment

#### 4.1.1 Approach

Potential contaminants, pathways and receptors are assessed within the context of contaminant or pollutant linkages. An evaluation of the risks associated with each linkage drives decisions regarding the status of the land as contaminated and requiring remediation, uncontaminated or requiring further investigation.

The revised statutory guidance for Part IIA, DEFRA publication PB13735, defines the following:

- Contaminant: “a substance which is in, on or under the land and which has the potential to cause harm to a relevant receptor, or to cause significant pollution of controlled waters”;
- Pathway: “a route by which a receptor is or might be affected by the contaminant”; and
- Receptor: “something that could be adversely affected by a contaminant, for example a person, an organism, an ecosystem, property, or Controlled Waters.”

The term “contaminant linkage” means the relationship between a contaminant, a pathway and a receptor. All three elements of a contaminant linkage must exist in relation to particular land use before the land can be considered potentially to be contaminated land under Part IIA, including evidence of the actual presence of contaminants. The term “significant contaminant linkage”, as used in the Guidance, means a contaminant linkage which gives rise to a level of risk sufficient to justify a piece of land being determined as contaminated land. The term “significant contaminant” means the contaminant which forms part of a significant contaminant linkage.

#### 4.1.2 Assumptions

The information summarised in the previous sections has been used to identify the likely contaminant sources, receptors and pathways present at the site. The elements of the preliminary conceptual site model, Table 4-1, have been used to consider the potential contaminant linkages (PCL), their significance and acceptability.

When developing the Conceptual Model, the following findings were taken into consideration:

- The proposed construction a single large structure that will house a sample preparation facility. Based upon the size of this structure and the anticipated ground conditions a piled foundation solution is most likely;
- Historical maps indicate that the site comprised marshland until c.1932 when it became part of Britannia Lead Works. Although the site remained unoccupied it was noted to be encircled by a flue around the northern, western and southern perimeter boundaries. By c.1955, this structure was no longer evident, and from 1971 onwards the site was depicted a predominantly vacant area with a small rectangular structure in the southwest corner;
- The site is currently utilised as a hard surfaced, external storage area within the wider Britannia Refined Metals facility and is located adjacent to the existing silver processing plant;



- The underlying geology is anticipated to comprise Made Ground of depths of some 2m bgl. The underlying superficial soils comprise soft, silty, locally sandy, peaty, alluvial clay that was proved to come 15m bgl. This was in turn underlain by the Boyn Hill Gravel, described as dense silty sandy gravel and gravelly sand, which was provided to approximately 22m bgl. The underlying solid bedrock geology comprises chalk;
- The superficial alluvium has been classified as a Secondary Undifferentiated Aquifer whereas the underlying chalk is a Principal Aquifer;
- The site is located within an EA designated SPZ II, although no potable groundwater abstractions were identified within a 2km radius of the Site; and
- A series of surface water ditches associated with Botany Marshes are located some 75m to the west of the site at their closest point. The River Thames is located approximately 180m east.

#### 4.1.3 Sources

As the wider study has been subject to phases of historical redevelopment it is anticipated to be underlain by deposits of potentially contaminated Made Ground. This assumption is supported by the previous ground investigation carried out across the wider site that identified Made Ground to depths of some 2m bgl. These shallow soils were noted to include varying qualities of fill materials such as brick, concrete and clinker/slag. Such deposits are likely to represent a conceptual source of contaminants including metals, poly aromatic hydrocarbons (PAH) and asbestos. Routine groundwater monitoring is also reported to have detected 'non-detectable to moderately high' concentrations of metals.

The Made Ground and underlying natural alluvium is also judged to represent a potentially significant source of hazardous ground gases including methane and carbon dioxide. These gases are understood to have measured at elevated concentrations by routine on site monitoring.

Although evidence a specific source of mobile organic contaminants was not identified on site, due to the commercial/industrial use of the Site's surroundings it is judged that there is a risk of shallow/perched groundwater in the general study area to be impacted by contaminants including petroleum hydrocarbons and volatile/semi volatile organic compounds (VOCs/SVOCs), and for this contamination to migrate onto the Site. Unfortunately, supplied reports reviewed as part of this assessment provide no groundwater monitoring data that could enable the presence of these contaminants to be discounted.

#### 4.1.4 Pathways

Potential exposure pathways specific to the site are:

Human Health:

- Direct contact, ingestion and dust inhalation; and
- Ingress and accumulation of ground gases and subsequent risk of asphyxiation and explosion.

Controlled Waters

- Vertical migration of contaminants and impacts to deeper groundwater receptors; and
- Lateral migration of contaminants.

Buried Structures and Services:

- Direct contact.



#### **4.1.5 Receptors**

Potential receptors specific to the site are:

- Future site users;
- Construction and maintenance workers;
- Off site human receptors including occupants of the adjoining commercial premises;
- The Principal Chalk aquifer known to be present at depths of some 20m bgl beneath the Site;
- Surface water receptors including Botany Marshes some 75m to the west of the site and the River Thames is located approximately 180m east; and,
- Buried structures and services laid in direct contact with potentially contaminated, 'aggressive' ground.



**Table 4-1: Preliminary Conceptual Site Model**

| Sources                                                                                 | Receptor(s)                                   | Pathway(s)                                    | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Risk Classification |
|-----------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Potentially contaminated Made Ground Soils                                              | Construction workers                          | Direct contact, ingestion and dust inhalation | <p>There is potential for construction workers to come in contact with contaminated soils during the construction phase. However, when considering the anticipated nature and extent of Made Ground soils beneath the study area, it is judged that associated risks could be ameliorated by the use of robust personal protective equipment (PPE) and health and hygiene practices.</p> <p>Consideration may have to be given to control measures that consider the Control of Asbestos Regulations (CAR 2012) if Made Ground soils are found to be impacted by asbestos.</p> <p>Construction workers are unlikely to be impacted by hazardous gases and vapours unless they are required to operate in deeper excavations within which poor air quality could accumulate.</p> | Low                 |
| Ground gases generated by Made Ground and/or alluvial soils                             | Future site users                             | Gas/vapour ingress and accumulation           | <p>The proposed development is to be surfaced by hardstanding, and this will provide a physical barrier that will prevent future site being exposed to any potentially contaminated Made Ground soils.</p> <p>It is understood that previous monitoring conducted by others across the wider study site has identified significantly elevated concentrations of ground gases including methane and carbon dioxide. Furthermore, shallow groundwater impacted by volatile organic contaminants could also represent a source of hazardous vapours. Such contaminants could migrate through cracks and joints in hardstanding, accumulate in confined spaces and pose a long-term risk to human health via asphyxiation and explosion.</p>                                        | Low to Moderate     |
| Shallow/perched groundwater impacted by off-site sources of mobile organic contaminants | Occupants of neighbouring commercial premises | Dust inhalation                               | <p>Dust could be generated during the construction phase, particularly if the ground is disturbed during periods of dry weather. The associated risks would be more pertinent in the event that asbestos impacted Made Ground soils are identified beneath the site. However, the conceptual risk to human health is considered to be relatively low, particularly as best practice dictates that appropriate dust suppression measures should be implemented regardless of the presence of contamination.</p>                                                                                                                                                                                                                                                                  | Low                 |



| Sources                                                                                 | Receptor(s)                    | Pathway(s)         | Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Risk Classification |
|-----------------------------------------------------------------------------------------|--------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| Potentially contaminated Made Ground soils                                              | Chalk Aquifer                  | Vertical migration | The clayey alluvium is likely to be acting as a relatively impermeable aquitard that prevents significant vertical migration of shallow contaminants. In the event that deep exploratory holes or piled foundations utilised, these would have a high likelihood of forming preferential pathways by which contaminants could migrate to depth and impact the sensitive chalk aquifer.<br>Certain piling techniques, in particular pre-cast driven piles, could also physically push contaminated Made Ground to depth, thus increasing the risk of impact to the chalk. | Moderate to High    |
| Ground gases generated by Made Ground and/or alluvial soils                             | Surface water receptors        | Lateral migration  | Deeper boreholes and/or piles could also create pathways between shallow/perched groundwater within the Made Ground and that in the underlying, relatively permeable Boyn Hill Gravel. This could in turn exacerbate the lateral migration of contaminants resulting in a risk to off-site surface water receptors.<br>The low risk rating has been attributed with consideration of the identified conceptual onsite sources of contamination and the distance of some 75m to the closest receptor.                                                                     | Low                 |
| Shallow/perched groundwater impacted by off-site sources of mobile organic contaminants | Buried Structures and services | Direct contact     | Consideration will need to be given to potentially 'aggressive' ground conditions when selecting an appropriate buried concrete classification.<br>Buried services, in particular polyethylene (PE) potable water supply pipes, could be impacted if laid in direct contact with contaminated Made Ground soils/shallow groundwater.                                                                                                                                                                                                                                     | Low                 |



## 5.0 Conclusions

Based on the review of the available information, Table 5-1 provides a summary of the main geotechnical and land quality issues at the subject Site.

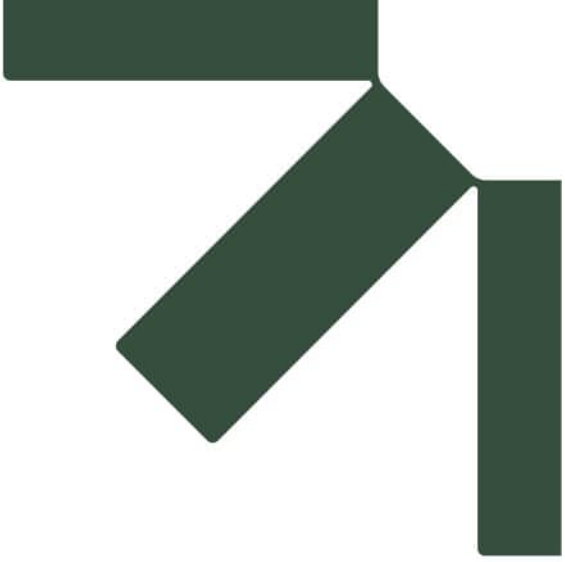
**Table 5-1: Summary and Conclusions**

|                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site Setting, Existing Use and Planned Development | <p>The Site is located at Britannia Refined Metals (BRM) site located at Botany Road, Northfleet, Gravesend, Kent, DA11 9BG centred on National Grid reference TQ 61385 75330.</p> <p>The Site is approximately 560m<sup>2</sup> and currently comprises concrete hardstanding and is situated adjacent to the existing silver plant building. The west of the Site is bounded by hears fencing, with above ground services. There are three concrete plinths supporting the overhead ducting. The Site is currently used for storing skips.</p> <p>The proposed development comprises the construction of a singular building to house the Sample Preparation Facility.</p>                                                                                                                                                                                                                                                                                                                                                                                                    |
| History                                            | <p>The Site was undeveloped until 1932 where the construction of a flue was built around the perimeter of the Site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Geology                                            | <p>The Site is underlain by Made Ground, Alluvium, Boyn Hill Gravel and Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Hydrogeology                                       | <p>The underlying superficial deposits are classified as a Secondary Undifferentiated Aquifer whilst the underlying bedrock is a Principal Aquifer.</p> <p>Groundwater is recorded at varying depths, with perched groundwater within the Made Ground, and with strikes recorded in the Alluvium, Gravel and Chalk.</p> <p>The site is within an SPZ 2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Hydrology                                          | <p>There are no surface water features onsite. However, within a 500m radius towards the west, there are eight surface water features located at Botany Marshes comprising inland rivers. The River Thames is located 180m east of the Site. The Site is situated within Flood Zone 3. However, this risk has been mitigated by the presence of existing sea defences.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Contamination Issue and Risk Assessment            | <p>The Site is known to be underlain by Made Ground, and previous assessments prepared by others indicate that these soils could be impacted by contaminants due to the presence of fill materials including clinker and slag. Although these soils are unlikely to pose a long-term risk to users of the proposed commercial development, consideration would need to be given to short term impacts to site workers during construction. The inhalation of asbestos impacted dusts by construction workers and off site human receptors may also need to be considered if shallow soils are identified as containing asbestos.</p> <p>Routine monitoring discussed by supplied reports indicate that the soils beneath the site have the potential to represent a source of hazardous ground gases that could pose a long term risk to users of the proposed development.</p> <p>The underlying chalk, a Principal Aquifer, could be impacted by shallow contaminants in the event that piled foundations or deep exploratory holes form preferential migration pathways.</p> |
| Contaminated Land Recommendations                  | <p>Based upon the findings of the desk study it is judged that a Phase II intrusive ground investigation and risk assessment will be required to</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |



|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              | <p>establish the nature and survey of the potential risks identified by the Conceptual Model. These works should include the following:</p> <ul style="list-style-type: none"> <li>• Assessment of shallow soils to establish if they are significantly impacted by contaminants that could impact on and off site human receptors;</li> <li>• Ground gas and vapour monitoring to identify whether the proposed structure may need to incorporate protection measures; and</li> <li>• An assessment of groundwater to inform the selection of an appropriate piling technique that will afford protection to the sensitive chalk aquifer at depth.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Geotechnical Hazards         | <p>The underlying Made Ground deposits and soft compressible Alluvial deposits are not suitable load bearing strata and pose a high risk of settlement. The material has a low undrained shear strength and high plasticity index.</p> <p>Groundwater depths vary onsite, recorded at ground level and 13m bgl. It is anticipated that groundwater is at a shallow depth and consideration will need to be taken when undertaking excavations.</p> <p>The underlying chalk may be susceptible to dissolution, and the strength and density of the chalk needs to be investigated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Geotechnical Recommendations | <p>Although there have been numerous boreholes on the wider BRM site, with one situated within the Site boundary, the boreholes provided have not been constructed to an appropriate depth or provided sufficient in-situ or laboratory analysis to conduct outline pile design and inform a piling contractor for detailed design. In addition, site-specific geotechnical and environmental hazards associated with the construction of the proposed building have not been assessed.</p> <p>Therefore, an intrusive ground investigation is recommended prior to the commencement of the redevelopment to determine the geotechnical properties of the underlying ground conditions.</p> <p>It is recommended that two boreholes to 30m are positioned beneath the proposed structure. In-situ Standard Penetration Tests (SPTs) should be conducted at 1.0m intervals to 5m bgl, and 1.5m intervals thereafter. Samples should be recovered for geotechnical and environmental analysis. This should include undisturbed samples to undertake quick undrained triaxial analysis to determine undrained shear strength, and oedometer consolidation testing to determine the settlement.</p> <p>Although historic reports recommend installing piles into the gravel, it would be prudent to investigate the underlying chalk in the event that the gravel is not suitable for the piled foundation. The gravels can vary in composition and have a relatively limited thickness. Therefore, the chalk should be investigated as a potential stratum to install piles. Nevertheless, if the gravel is a suitable material; the potentially weaker weathered chalk should be investigated as it should be noted that it is best practice to install piles with known ground conditions a minimum of 5m or 3 pile diameters below the base of the pile, whichever is greater.</p> <p>Coring of the underlying chalk should be undertaken to determine the strength and density and weathering grade of the material.</p> <p>Groundwater wells should be installed to monitor fluctuating groundwater levels.</p> |





# Appendix A    Site Drawings

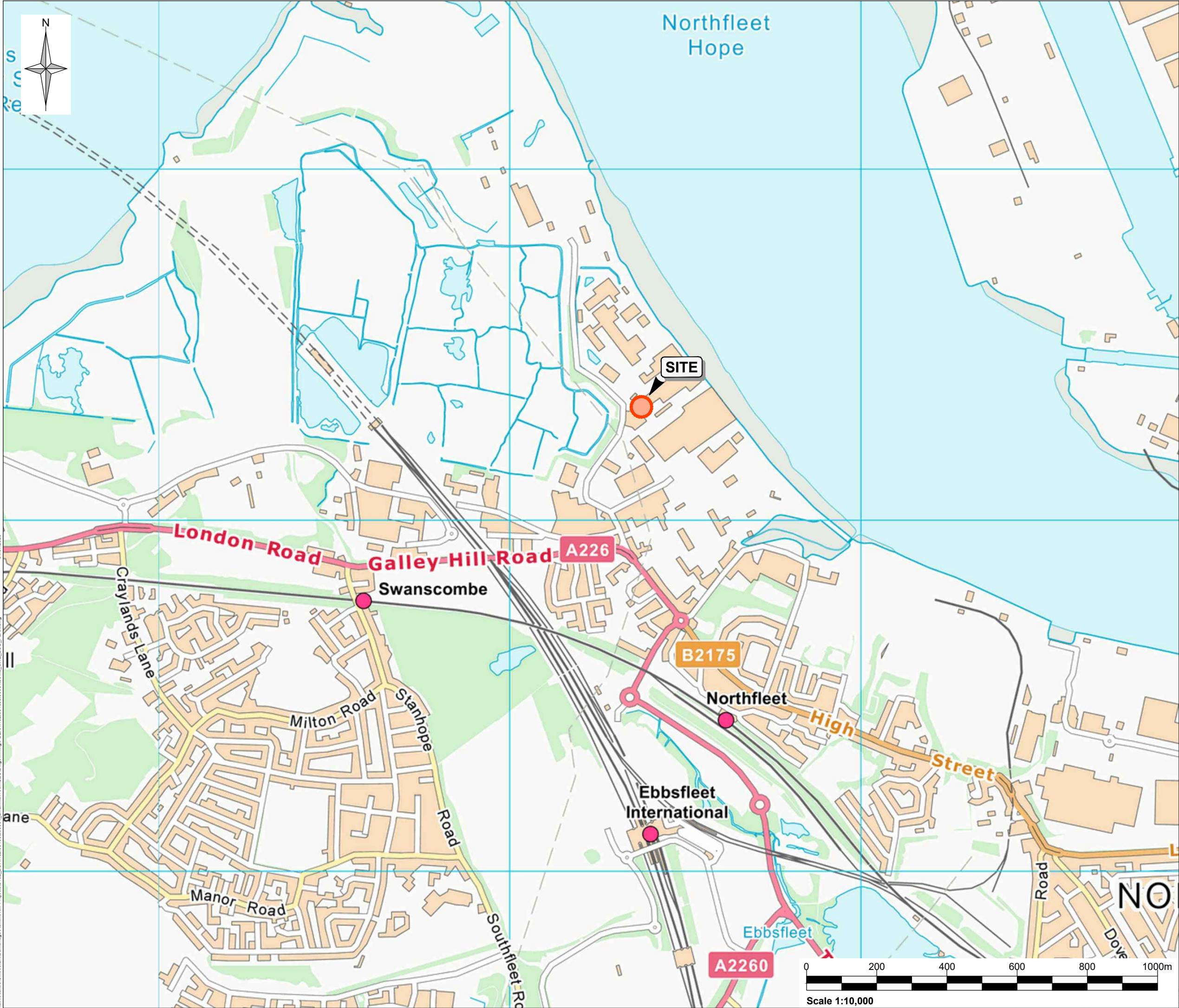
## **Phase One Geotechnical and Environmental Desk Study**

### **E-Scrap Sample Preparation Plant**

**Britannia Refined Metals Ltd**

SLR Project No.: 402.064683.00001

11 August 2023



Notes:

|     |            |      |    |     |      |
|-----|------------|------|----|-----|------|
| Rev | Amendments | Date | By | Chk | Auth |
|-----|------------|------|----|-----|------|



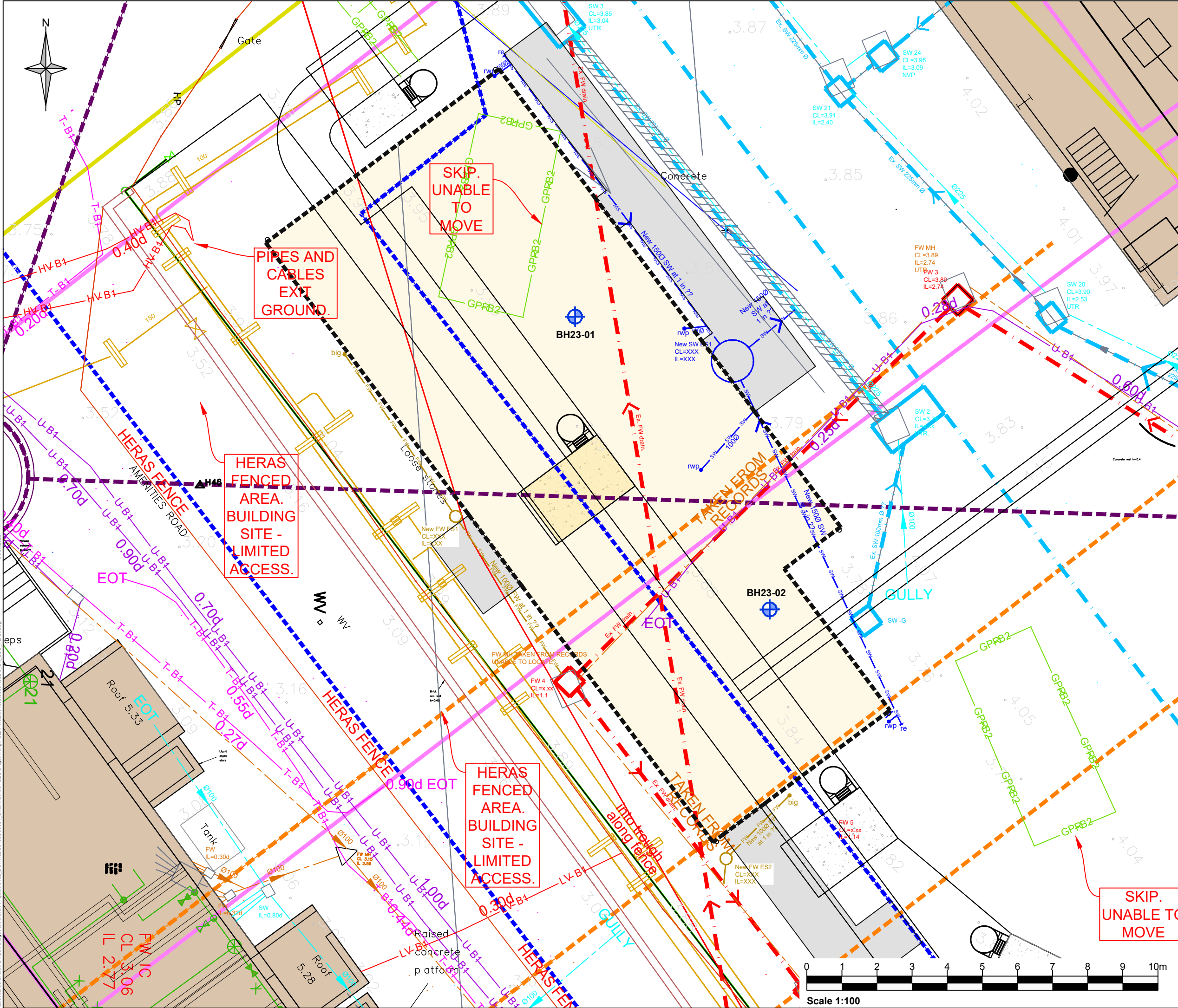
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Client  
BRITANNIA REFINED METALS LTD

Project  
SAMPLE PREPARATION BUILDING PHASE 1  
GEOTECHNICAL AND ENVIRONMENTAL  
ASSESSMENT

Figure Title  
SITE LOCATION PLAN

|                     |                   |                                     |            |
|---------------------|-------------------|-------------------------------------|------------|
| Scale<br>1:10,000   | @ A3              | SLR Project No.<br>402.064683.00001 |            |
| Designed<br>AK      | Drawn<br>TKS      | Checked<br>SK                       | Authorised |
| Date<br>JULY 2023   | Date<br>JULY 2023 | Date<br>JULY 2023                   | Date       |
| Figure Number<br>01 |                   |                                     | Rev.<br>0  |



**Notes:**

1. DRAWING IS BASED ON SLR PLANS UTLS-01 P0 AND SITE LAYOUT SINGLE BUILDING OPTION SK01 P5.

**Legend:**

- BOREHOLE LOCATION
- LUG GPR LINEAR
- LUG UNIDENTIFIED UTILITIES
- WATER SURFACE
- WATER REDUNDANT
- SLR FW DRAINAGE EXISTING
- LUG FWS
- SLR FW DRAINAGE NEW
- SLR SW DRAINAGE NEW
- SLR SW DRAINAGE EXISTING
- LUG SWS
- DRAINAGE REPAIRS 2009
- FIRE
- ELECTRIC CABLES
- PCME CABLES
- OPTIC NEW
- GAS
- WIFI FORK TRUCK

| Rev | Amendments | Date | By | Chk | Auth |
|-----|------------|------|----|-----|------|
|     |            |      |    |     |      |



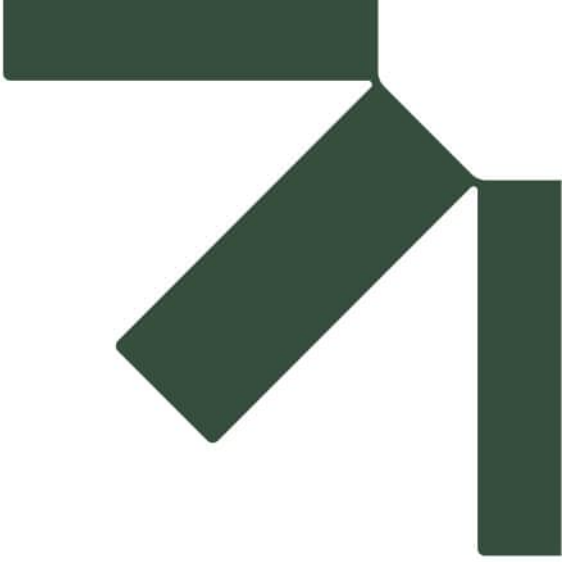
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Client  
**BRITANNIA REFINED METALS LTD**

Project  
**SAMPLE PREPARATION BUILDING PHASE 1  
GEOTECHNICAL AND ENVIRONMENTAL  
ASSESSMENT**

Figure Title  
**BOREHOLE LOCATION PLAN**

|                            |                                            |                          |                  |
|----------------------------|--------------------------------------------|--------------------------|------------------|
| Scale<br><b>1:100</b>      | SLR Project No.<br><b>402.064683.00001</b> |                          |                  |
| Designed<br><b>AK</b>      | Drawn<br><b>TKS</b>                        | Checked<br><b>SK</b>     | Authorised       |
| Date<br><b>JULY 2023</b>   | Date<br><b>JULY 2023</b>                   | Date<br><b>JULY 2023</b> | Date             |
| Figure Number<br><b>02</b> |                                            |                          | Rev.<br><b>0</b> |



# **Appendix B    Groundsure Enviro+Geo Insight Report**

## **Phase One Geotechnical and Environmental Desk Study**

**E-Scrap Sample Preparation Plant**

**Britannia Refined Metals Ltd**

SLR Project No.: 402.064683.00001

11 August 2023

unspecified

## Order Details

**Date:** 21/07/2023  
**Your ref:** EMS\_882585\_1092154  
**Our Ref:** EMS-882585\_1128445

## Site Details

**Location:** 561380 175325  
**Area:** 0.07 ha  
**Authority:** [Gravesham Borough Council](#) ↗



**Summary of findings**

[p. 2 >](#)

**Aerial image**

[p. 9 >](#)

**OS MasterMap site plan**

[p.14 >](#)

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Contact us with any questions at:

[info@groundsure.com](mailto:info@groundsure.com) ↗

01273 257 755

## Summary of findings

| Page                    | Section                  | <a href="#">Past land use &gt;</a>                        | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
|-------------------------|--------------------------|-----------------------------------------------------------|---------|-------|---------|----------|-----------|
| <a href="#">15 &gt;</a> | <a href="#">1.1 &gt;</a> | <a href="#">Historical industrial land uses &gt;</a>      | 16      | 20    | 61      | 145      | -         |
| <a href="#">24 &gt;</a> | <a href="#">1.2 &gt;</a> | <a href="#">Historical tanks &gt;</a>                     | 0       | 4     | 51      | 42       | -         |
| <a href="#">28 &gt;</a> | <a href="#">1.3 &gt;</a> | <a href="#">Historical energy features &gt;</a>           | 0       | 0     | 8       | 8        | -         |
| 29                      | 1.4                      | Historical petrol stations                                | 0       | 0     | 0       | 0        | -         |
| <a href="#">29 &gt;</a> | <a href="#">1.5 &gt;</a> | <a href="#">Historical garages &gt;</a>                   | 0       | 0     | 0       | 2        | -         |
| 30                      | 1.6                      | Historical military land                                  | 0       | 0     | 0       | 0        | -         |
| Page                    | Section                  | <a href="#">Past land use - un-grouped &gt;</a>           | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">31 &gt;</a> | <a href="#">2.1 &gt;</a> | <a href="#">Historical industrial land uses &gt;</a>      | 21      | 23    | 92      | 195      | -         |
| <a href="#">43 &gt;</a> | <a href="#">2.2 &gt;</a> | <a href="#">Historical tanks &gt;</a>                     | 0       | 4     | 99      | 75       | -         |
| <a href="#">50 &gt;</a> | <a href="#">2.3 &gt;</a> | <a href="#">Historical energy features &gt;</a>           | 0       | 0     | 23      | 8        | -         |
| 51                      | 2.4                      | Historical petrol stations                                | 0       | 0     | 0       | 0        | -         |
| <a href="#">52 &gt;</a> | <a href="#">2.5 &gt;</a> | <a href="#">Historical garages &gt;</a>                   | 0       | 0     | 0       | 2        | -         |
| Page                    | Section                  | <a href="#">Waste and landfill &gt;</a>                   | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| 53                      | 3.1                      | Active or recent landfill                                 | 0       | 0     | 0       | 0        | -         |
| 53                      | 3.2                      | Historical landfill (BGS records)                         | 0       | 0     | 0       | 0        | -         |
| 54                      | 3.3                      | Historical landfill (LA/mapping records)                  | 0       | 0     | 0       | 0        | -         |
| <a href="#">54 &gt;</a> | <a href="#">3.4 &gt;</a> | <a href="#">Historical landfill (EA/NRW records) &gt;</a> | 0       | 0     | 1       | 0        | -         |
| <a href="#">54 &gt;</a> | <a href="#">3.5 &gt;</a> | <a href="#">Historical waste sites &gt;</a>               | 0       | 1     | 3       | 0        | -         |
| <a href="#">56 &gt;</a> | <a href="#">3.6 &gt;</a> | <a href="#">Licensed waste sites &gt;</a>                 | 0       | 0     | 3       | 2        | -         |
| <a href="#">57 &gt;</a> | <a href="#">3.7 &gt;</a> | <a href="#">Waste exemptions &gt;</a>                     | 0       | 1     | 1       | 13       | -         |
| Page                    | Section                  | <a href="#">Current industrial land use &gt;</a>          | On site | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">60 &gt;</a> | <a href="#">4.1 &gt;</a> | <a href="#">Recent industrial land uses &gt;</a>          | 0       | 5     | 22      | -        | -         |
| <a href="#">62 &gt;</a> | <a href="#">4.2 &gt;</a> | <a href="#">Current or recent petrol stations &gt;</a>    | 0       | 0     | 0       | 1        | -         |
| 62                      | 4.3                      | Electricity cables                                        | 0       | 0     | 0       | 0        | -         |
| 63                      | 4.4                      | Gas pipelines                                             | 0       | 0     | 0       | 0        | -         |
| 63                      | 4.5                      | Sites determined as Contaminated Land                     | 0       | 0     | 0       | 0        | -         |



| <a href="#">63</a> > | <a href="#">4.6</a> >  | <a href="#">Control of Major Accident Hazards (COMAH)</a> >       | 1                        | 0     | 0       | 0        | -         |
|----------------------|------------------------|-------------------------------------------------------------------|--------------------------|-------|---------|----------|-----------|
| 63                   | 4.7                    | Regulated explosive sites                                         | 0                        | 0     | 0       | 0        | -         |
| <a href="#">64</a> > | <a href="#">4.8</a> >  | <a href="#">Hazardous substance storage/usage</a> >               | 0                        | 1     | 0       | 0        | -         |
| <a href="#">64</a> > | <a href="#">4.9</a> >  | <a href="#">Historical licensed industrial activities (IPC)</a> > | 0                        | 3     | 0       | 0        | -         |
| <a href="#">65</a> > | <a href="#">4.10</a> > | <a href="#">Licensed industrial activities (Part A(1))</a> >      | 0                        | 1     | 0       | 11       | -         |
| <a href="#">67</a> > | <a href="#">4.11</a> > | <a href="#">Licensed pollutant release (Part A(2)/B)</a> >        | 0                        | 0     | 1       | 10       | -         |
| 68                   | 4.12                   | Radioactive Substance Authorisations                              | 0                        | 0     | 0       | 0        | -         |
| <a href="#">68</a> > | <a href="#">4.13</a> > | <a href="#">Licensed Discharges to controlled waters</a> >        | 0                        | 0     | 7       | 2        | -         |
| 70                   | 4.14                   | Pollutant release to surface waters (Red List)                    | 0                        | 0     | 0       | 0        | -         |
| 70                   | 4.15                   | Pollutant release to public sewer                                 | 0                        | 0     | 0       | 0        | -         |
| <a href="#">70</a> > | <a href="#">4.16</a> > | <a href="#">List 1 Dangerous Substances</a> >                     | 0                        | 0     | 0       | 1        | -         |
| <a href="#">71</a> > | <a href="#">4.17</a> > | <a href="#">List 2 Dangerous Substances</a> >                     | 0                        | 0     | 0       | 1        | -         |
| <a href="#">71</a> > | <a href="#">4.18</a> > | <a href="#">Pollution Incidents (EA/NRW)</a> >                    | 0                        | 1     | 0       | 4        | -         |
| <a href="#">72</a> > | <a href="#">4.19</a> > | <a href="#">Pollution inventory substances</a> >                  | 0                        | 0     | 0       | 4        | -         |
| <a href="#">74</a> > | <a href="#">4.20</a> > | <a href="#">Pollution inventory waste transfers</a> >             | 0                        | 0     | 0       | 1        | -         |
| 77                   | 4.21                   | Pollution inventory radioactive waste                             | 0                        | 0     | 0       | 0        | -         |
| Page                 | Section                | <a href="#">Hydrogeology</a> >                                    | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">78</a> > | <a href="#">5.1</a> >  | <a href="#">Superficial aquifer</a> >                             | Identified (within 500m) |       |         |          |           |
| <a href="#">80</a> > | <a href="#">5.2</a> >  | <a href="#">Bedrock aquifer</a> >                                 | Identified (within 500m) |       |         |          |           |
| <a href="#">82</a> > | <a href="#">5.3</a> >  | <a href="#">Groundwater vulnerability</a> >                       | Identified (within 50m)  |       |         |          |           |
| <a href="#">83</a> > | <a href="#">5.4</a> >  | <a href="#">Groundwater vulnerability- soluble rock risk</a> >    | Identified (within 0m)   |       |         |          |           |
| <a href="#">83</a> > | <a href="#">5.5</a> >  | <a href="#">Groundwater vulnerability- local information</a> >    | Identified (within 0m)   |       |         |          |           |
| <a href="#">84</a> > | <a href="#">5.6</a> >  | <a href="#">Groundwater abstractions</a> >                        | 0                        | 0     | 0       | 0        | 24        |
| <a href="#">90</a> > | <a href="#">5.7</a> >  | <a href="#">Surface water abstractions</a> >                      | 0                        | 0     | 0       | 0        | 1         |
| 91                   | 5.8                    | Potable abstractions                                              | 0                        | 0     | 0       | 0        | 0         |
| <a href="#">91</a> > | <a href="#">5.9</a> >  | <a href="#">Source Protection Zones</a> >                         | 1                        | 0     | 1       | 0        | -         |
| 91                   | 5.10                   | Source Protection Zones (confined aquifer)                        | 0                        | 0     | 0       | 0        | -         |
| Page                 | Section                | <a href="#">Hydrology</a> >                                       | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">92</a> > | <a href="#">6.1</a> >  | <a href="#">Water Network (OS MasterMap)</a> >                    | 0                        | 0     | 10      | -        | -         |



| <a href="#">93</a> >  | <a href="#">6.2</a> >   | <a href="#">Surface water features</a> >                      | 0                                      | 0     | 3       | -        | -         |
|-----------------------|-------------------------|---------------------------------------------------------------|----------------------------------------|-------|---------|----------|-----------|
| <a href="#">94</a> >  | <a href="#">6.3</a> >   | <a href="#">WFD Surface water body catchments</a> >           | 1                                      | -     | -       | -        | -         |
| <a href="#">94</a> >  | <a href="#">6.4</a> >   | <a href="#">WFD Surface water bodies</a> >                    | 0                                      | 0     | 1       | -        | -         |
| <a href="#">94</a> >  | <a href="#">6.5</a> >   | <a href="#">WFD Groundwater bodies</a> >                      | 1                                      | -     | -       | -        | -         |
| Page                  | Section                 | <a href="#">River and coastal flooding</a> >                  | On site                                | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">96</a> >  | <a href="#">7.1</a> >   | <a href="#">Risk of flooding from rivers and the sea</a> >    | Very Low (within 50m)                  |       |         |          |           |
| <a href="#">97</a> >  | <a href="#">7.2</a> >   | <a href="#">Historical Flood Events</a> >                     | 1                                      | 0     | 0       | -        | -         |
| 97                    | 7.3                     | Flood Defences                                                | 0                                      | 0     | 0       | -        | -         |
| <a href="#">97</a> >  | <a href="#">7.4</a> >   | <a href="#">Areas Benefiting from Flood Defences</a> >        | 1                                      | 0     | 0       | -        | -         |
| 98                    | 7.5                     | Flood Storage Areas                                           | 0                                      | 0     | 0       | -        | -         |
| <a href="#">99</a> >  | <a href="#">7.6</a> >   | <a href="#">Flood Zone 2</a> >                                | Identified (within 50m)                |       |         |          |           |
| <a href="#">100</a> > | <a href="#">7.7</a> >   | <a href="#">Flood Zone 3</a> >                                | Identified (within 50m)                |       |         |          |           |
| Page                  | Section                 | <a href="#">Surface water flooding</a> >                      |                                        |       |         |          |           |
| <a href="#">101</a> > | <a href="#">8.1</a> >   | <a href="#">Surface water flooding</a> >                      | 1 in 30 year, 0.3m - 1.0m (within 50m) |       |         |          |           |
| Page                  | Section                 | <a href="#">Groundwater flooding</a> >                        |                                        |       |         |          |           |
| <a href="#">103</a> > | <a href="#">9.1</a> >   | <a href="#">Groundwater flooding</a> >                        | High (within 50m)                      |       |         |          |           |
| Page                  | Section                 | <a href="#">Environmental designations</a> >                  | On site                                | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">104</a> > | <a href="#">10.1</a> >  | <a href="#">Sites of Special Scientific Interest (SSSI)</a> > | 0                                      | 1     | 0       | 0        | 9         |
| 105                   | 10.2                    | Conserved wetland sites (Ramsar sites)                        | 0                                      | 0     | 0       | 0        | 0         |
| 105                   | 10.3                    | Special Areas of Conservation (SAC)                           | 0                                      | 0     | 0       | 0        | 0         |
| 106                   | 10.4                    | Special Protection Areas (SPA)                                | 0                                      | 0     | 0       | 0        | 0         |
| <a href="#">106</a> > | <a href="#">10.5</a> >  | <a href="#">National Nature Reserves (NNR)</a> >              | 0                                      | 0     | 0       | 0        | 1         |
| 106                   | 10.6                    | Local Nature Reserves (LNR)                                   | 0                                      | 0     | 0       | 0        | 0         |
| 106                   | 10.7                    | Designated Ancient Woodland                                   | 0                                      | 0     | 0       | 0        | 0         |
| 107                   | 10.8                    | Biosphere Reserves                                            | 0                                      | 0     | 0       | 0        | 0         |
| 107                   | 10.9                    | Forest Parks                                                  | 0                                      | 0     | 0       | 0        | 0         |
| <a href="#">107</a> > | <a href="#">10.10</a> > | <a href="#">Marine Conservation Zones</a> >                   | 0                                      | 0     | 0       | 0        | 1         |
| 107                   | 10.11                   | Green Belt                                                    | 0                                      | 0     | 0       | 0        | 0         |
| 108                   | 10.12                   | Proposed Ramsar sites                                         | 0                                      | 0     | 0       | 0        | 0         |



| 108                   | 10.13                   | Possible Special Areas of Conservation (pSAC)      | 0                        | 0     | 0       | 0        | 0         |
|-----------------------|-------------------------|----------------------------------------------------|--------------------------|-------|---------|----------|-----------|
| 108                   | 10.14                   | Potential Special Protection Areas (pSPA)          | 0                        | 0     | 0       | 0        | 0         |
| 108                   | 10.15                   | Nitrate Sensitive Areas                            | 0                        | 0     | 0       | 0        | 0         |
| <a href="#">109</a> > | <a href="#">10.16</a> > | <a href="#">Nitrate Vulnerable Zones</a> >         | 0                        | 0     | 0       | 0        | 1         |
| <a href="#">110</a> > | <a href="#">10.17</a> > | <a href="#">SSSI Impact Risk Zones</a> >           | 2                        | -     | -       | -        | -         |
| <a href="#">111</a> > | <a href="#">10.18</a> > | <a href="#">SSSI Units</a> >                       | 0                        | 1     | 0       | 2        | 24        |
| Page                  | Section                 | Visual and cultural designations                   | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| 125                   | 11.1                    | World Heritage Sites                               | 0                        | 0     | 0       | -        | -         |
| 125                   | 11.2                    | Area of Outstanding Natural Beauty                 | 0                        | 0     | 0       | -        | -         |
| 125                   | 11.3                    | National Parks                                     | 0                        | 0     | 0       | -        | -         |
| 125                   | 11.4                    | Listed Buildings                                   | 0                        | 0     | 0       | -        | -         |
| 126                   | 11.5                    | Conservation Areas                                 | 0                        | 0     | 0       | -        | -         |
| 126                   | 11.6                    | Scheduled Ancient Monuments                        | 0                        | 0     | 0       | -        | -         |
| 126                   | 11.7                    | Registered Parks and Gardens                       | 0                        | 0     | 0       | -        | -         |
| Page                  | Section                 | <a href="#">Agricultural designations</a> >        | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">127</a> > | <a href="#">12.1</a> >  | <a href="#">Agricultural Land Classification</a> > | Urban (within 250m)      |       |         |          |           |
| 128                   | 12.2                    | Open Access Land                                   | 0                        | 0     | 0       | -        | -         |
| 128                   | 12.3                    | Tree Felling Licences                              | 0                        | 0     | 0       | -        | -         |
| 128                   | 12.4                    | Environmental Stewardship Schemes                  | 0                        | 0     | 0       | -        | -         |
| 128                   | 12.5                    | Countryside Stewardship Schemes                    | 0                        | 0     | 0       | -        | -         |
| Page                  | Section                 | <a href="#">Habitat designations</a> >             | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">129</a> > | <a href="#">13.1</a> >  | <a href="#">Priority Habitat Inventory</a> >       | 0                        | 1     | 7       | -        | -         |
| <a href="#">130</a> > | <a href="#">13.2</a> >  | <a href="#">Habitat Networks</a> >                 | 1                        | 1     | 3       | -        | -         |
| 130                   | 13.3                    | Open Mosaic Habitat                                | 0                        | 0     | 0       | -        | -         |
| 131                   | 13.4                    | Limestone Pavement Orders                          | 0                        | 0     | 0       | -        | -         |
| Page                  | Section                 | <a href="#">Geology 1:10,000 scale</a> >           | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">132</a> > | <a href="#">14.1</a> >  | <a href="#">10k Availability</a> >                 | Identified (within 500m) |       |         |          |           |
| <a href="#">133</a> > | <a href="#">14.2</a> >  | <a href="#">Artificial and made ground (10k)</a> > | 1                        | 0     | 0       | 6        | -         |
| <a href="#">135</a> > | <a href="#">14.3</a> >  | <a href="#">Superficial geology (10k)</a> >        | 1                        | 0     | 2       | 6        | -         |

| 136                   | 14.4                   | Landslip (10k)                                         | 0                        | 0     | 0       | 0        | -         |
|-----------------------|------------------------|--------------------------------------------------------|--------------------------|-------|---------|----------|-----------|
| <a href="#">137</a> > | <a href="#">14.5</a> > | <a href="#">Bedrock geology (10k)</a> >                | 1                        | 0     | 0       | 1        | -         |
| 138                   | 14.6                   | Bedrock faults and other linear features (10k)         | 0                        | 0     | 0       | 0        | -         |
| Page                  | Section                | <a href="#">Geology 1:50,000 scale</a> >               | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">139</a> > | <a href="#">15.1</a> > | <a href="#">50k Availability</a> >                     | Identified (within 500m) |       |         |          |           |
| <a href="#">140</a> > | <a href="#">15.2</a> > | <a href="#">Artificial and made ground (50k)</a> >     | 1                        | 0     | 0       | 4        | -         |
| <a href="#">141</a> > | <a href="#">15.3</a> > | <a href="#">Artificial ground permeability (50k)</a> > | 1                        | 0     | -       | -        | -         |
| <a href="#">142</a> > | <a href="#">15.4</a> > | <a href="#">Superficial geology (50k)</a> >            | 1                        | 0     | 1       | 3        | -         |
| <a href="#">143</a> > | <a href="#">15.5</a> > | <a href="#">Superficial permeability (50k)</a> >       | Identified (within 50m)  |       |         |          |           |
| 143                   | 15.6                   | Landslip (50k)                                         | 0                        | 0     | 0       | 0        | -         |
| 143                   | 15.7                   | Landslip permeability (50k)                            | None (within 50m)        |       |         |          |           |
| <a href="#">144</a> > | <a href="#">15.8</a> > | <a href="#">Bedrock geology (50k)</a> >                | 1                        | 0     | 0       | 0        | -         |
| <a href="#">145</a> > | <a href="#">15.9</a> > | <a href="#">Bedrock permeability (50k)</a> >           | Identified (within 50m)  |       |         |          |           |
| 145                   | 15.10                  | Bedrock faults and other linear features (50k)         | 0                        | 0     | 0       | 0        | -         |
| Page                  | Section                | <a href="#">Boreholes</a> >                            | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">146</a> > | <a href="#">16.1</a> > | <a href="#">BGS Boreholes</a> >                        | 0                        | 0     | 14      | -        | -         |
| Page                  | Section                | <a href="#">Natural ground subsidence</a> >            |                          |       |         |          |           |
| <a href="#">148</a> > | <a href="#">17.1</a> > | <a href="#">Shrink swell clays</a> >                   | Low (within 50m)         |       |         |          |           |
| <a href="#">149</a> > | <a href="#">17.2</a> > | <a href="#">Running sands</a> >                        | Very low (within 50m)    |       |         |          |           |
| <a href="#">150</a> > | <a href="#">17.3</a> > | <a href="#">Compressible deposits</a> >                | Very low (within 50m)    |       |         |          |           |
| <a href="#">151</a> > | <a href="#">17.4</a> > | <a href="#">Collapsible deposits</a> >                 | Negligible (within 50m)  |       |         |          |           |
| <a href="#">152</a> > | <a href="#">17.5</a> > | <a href="#">Landslides</a> >                           | Very low (within 50m)    |       |         |          |           |
| <a href="#">153</a> > | <a href="#">17.6</a> > | <a href="#">Ground dissolution of soluble rocks</a> >  | Negligible (within 50m)  |       |         |          |           |
| Page                  | Section                | <a href="#">Mining and ground workings</a> >           | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">155</a> > | <a href="#">18.1</a> > | <a href="#">BritPits</a> >                             | 0                        | 0     | 0       | 2        | -         |
| <a href="#">156</a> > | <a href="#">18.2</a> > | <a href="#">Surface ground workings</a> >              | 0                        | 6     | 33      | -        | -         |
| <a href="#">157</a> > | <a href="#">18.3</a> > | <a href="#">Underground workings</a> >                 | 0                        | 0     | 0       | 0        | 9         |
| 158                   | 18.4                   | Underground mining extents                             | 0                        | 0     | 0       | 0        | -         |
| <a href="#">158</a> > | <a href="#">18.5</a> > | <a href="#">Historical Mineral Planning Areas</a> >    | 0                        | 1     | 0       | 0        | -         |

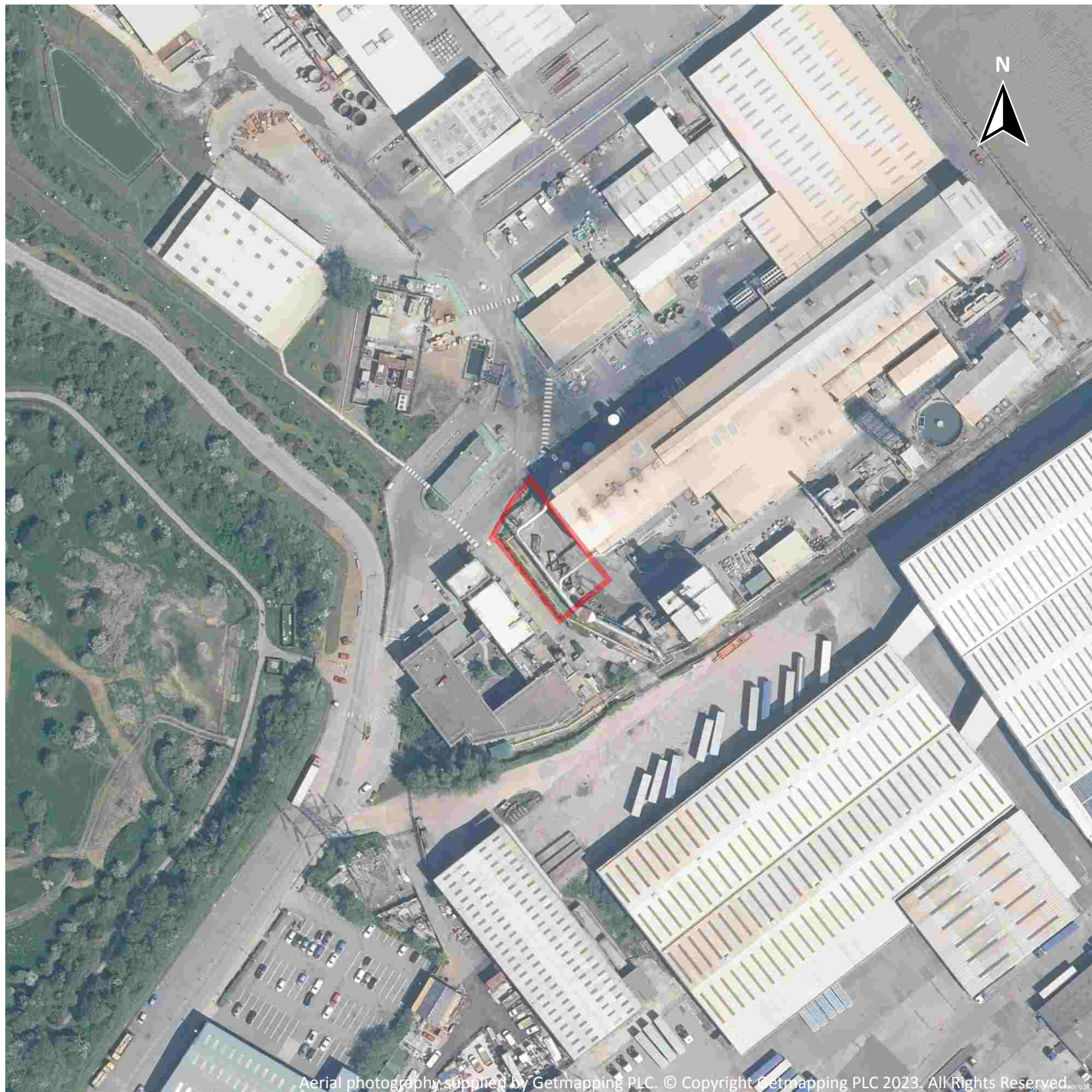


| <a href="#">159 &gt;</a> | <a href="#">18.6 &gt;</a> | <a href="#">Non-coal mining &gt;</a>                         | 0                        | 0     | 0       | 2        | 1         |
|--------------------------|---------------------------|--------------------------------------------------------------|--------------------------|-------|---------|----------|-----------|
| 159                      | 18.7                      | JPB mining areas                                             | None (within 0m)         |       |         |          |           |
| 159                      | 18.8                      | The Coal Authority non-coal mining                           | 0                        | 0     | 0       | 0        | -         |
| 160                      | 18.9                      | Researched mining                                            | 0                        | 0     | 0       | 0        | -         |
| 160                      | 18.10                     | Mining record office plans                                   | 0                        | 0     | 0       | 0        | -         |
| 160                      | 18.11                     | BGS mine plans                                               | 0                        | 0     | 0       | 0        | -         |
| 160                      | 18.12                     | Coal mining                                                  | None (within 0m)         |       |         |          |           |
| 160                      | 18.13                     | Brine areas                                                  | None (within 0m)         |       |         |          |           |
| 161                      | 18.14                     | Gypsum areas                                                 | None (within 0m)         |       |         |          |           |
| 161                      | 18.15                     | Tin mining                                                   | None (within 0m)         |       |         |          |           |
| 161                      | 18.16                     | Clay mining                                                  | None (within 0m)         |       |         |          |           |
| Page                     | Section                   | Ground cavities and sinkholes                                | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| 162                      | 19.1                      | Natural cavities                                             | 0                        | 0     | 0       | 0        | -         |
| 162                      | 19.2                      | Mining cavities                                              | 0                        | 0     | 0       | 0        | 0         |
| 162                      | 19.3                      | Reported recent incidents                                    | 0                        | 0     | 0       | 0        | -         |
| 162                      | 19.4                      | Historical incidents                                         | 0                        | 0     | 0       | 0        | -         |
| 163                      | 19.5                      | National karst database                                      | 0                        | 0     | 0       | 0        | -         |
| Page                     | Section                   | <a href="#">Radon &gt;</a>                                   |                          |       |         |          |           |
| <a href="#">164 &gt;</a> | <a href="#">20.1 &gt;</a> | <a href="#">Radon &gt;</a>                                   | Less than 1% (within 0m) |       |         |          |           |
| Page                     | Section                   | <a href="#">Soil chemistry &gt;</a>                          | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| <a href="#">166 &gt;</a> | <a href="#">21.1 &gt;</a> | <a href="#">BGS Estimated Background Soil Chemistry &gt;</a> | 1                        | 0     | -       | -        | -         |
| 166                      | 21.2                      | BGS Estimated Urban Soil Chemistry                           | 0                        | 0     | -       | -        | -         |
| 166                      | 21.3                      | BGS Measured Urban Soil Chemistry                            | 0                        | 0     | -       | -        | -         |
| Page                     | Section                   | <a href="#">Railway infrastructure and projects &gt;</a>     | On site                  | 0-50m | 50-250m | 250-500m | 500-2000m |
| 167                      | 22.1                      | Underground railways (London)                                | 0                        | 0     | 0       | -        | -         |
| 167                      | 22.2                      | Underground railways (Non-London)                            | 0                        | 0     | 0       | -        | -         |
| 168                      | 22.3                      | Railway tunnels                                              | 0                        | 0     | 0       | -        | -         |
| <a href="#">168 &gt;</a> | <a href="#">22.4 &gt;</a> | <a href="#">Historical railway and tunnel features &gt;</a>  | 9                        | 16    | 4       | -        | -         |
| 169                      | 22.5                      | Royal Mail tunnels                                           | 0                        | 0     | 0       | -        | -         |



|     |       |                     |   |   |   |   |   |
|-----|-------|---------------------|---|---|---|---|---|
| 169 | 22.6  | Historical railways | 0 | 0 | 0 | - | - |
| 170 | 22.7  | Railways            | 0 | 0 | 0 | - | - |
| 170 | 22.8  | Crossrail 1         | 0 | 0 | 0 | 0 | - |
| 170 | 22.9  | Crossrail 2         | 0 | 0 | 0 | 0 | - |
| 170 | 22.10 | HS2                 | 0 | 0 | 0 | 0 | - |

## Recent aerial photograph



Capture Date: 31/05/2021

Site Area: 0.07ha



## Recent site history - 2018 aerial photograph

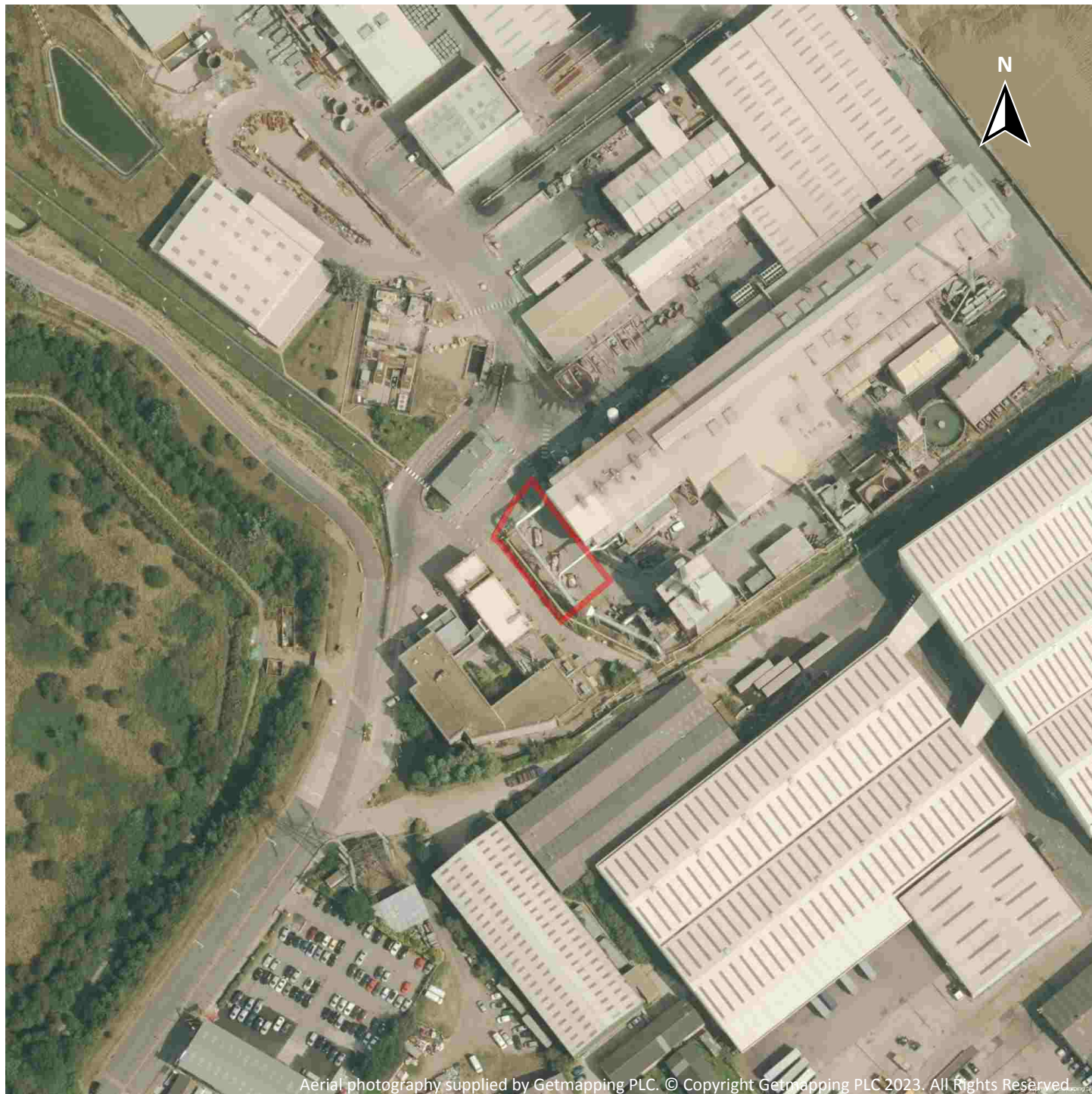


Capture Date: 01/09/2018

Site Area: 0.07ha



## Recent site history - 2014 aerial photograph

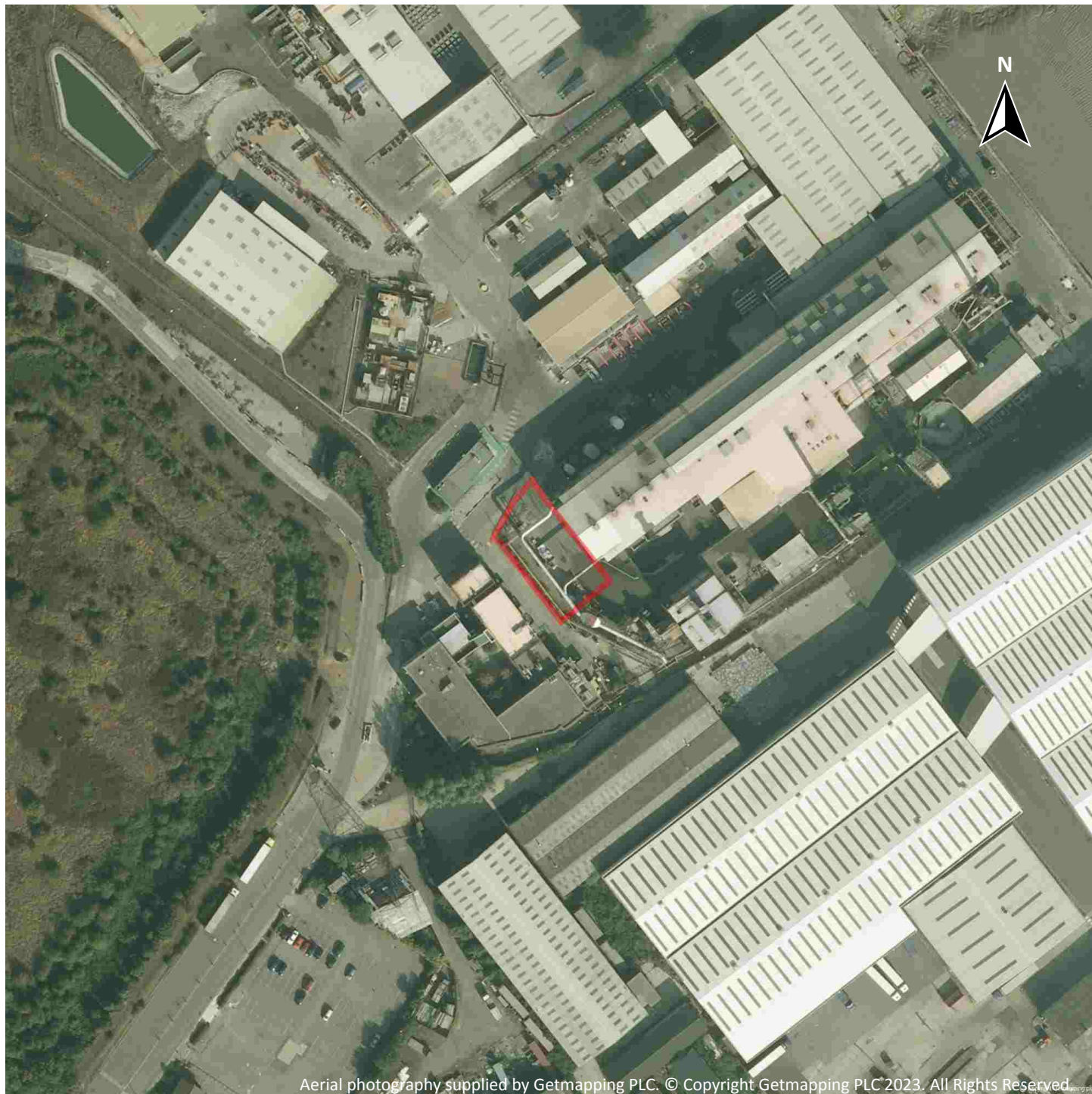


Capture Date: 31/07/2014

Site Area: 0.07ha



## Recent site history - 2010 aerial photograph

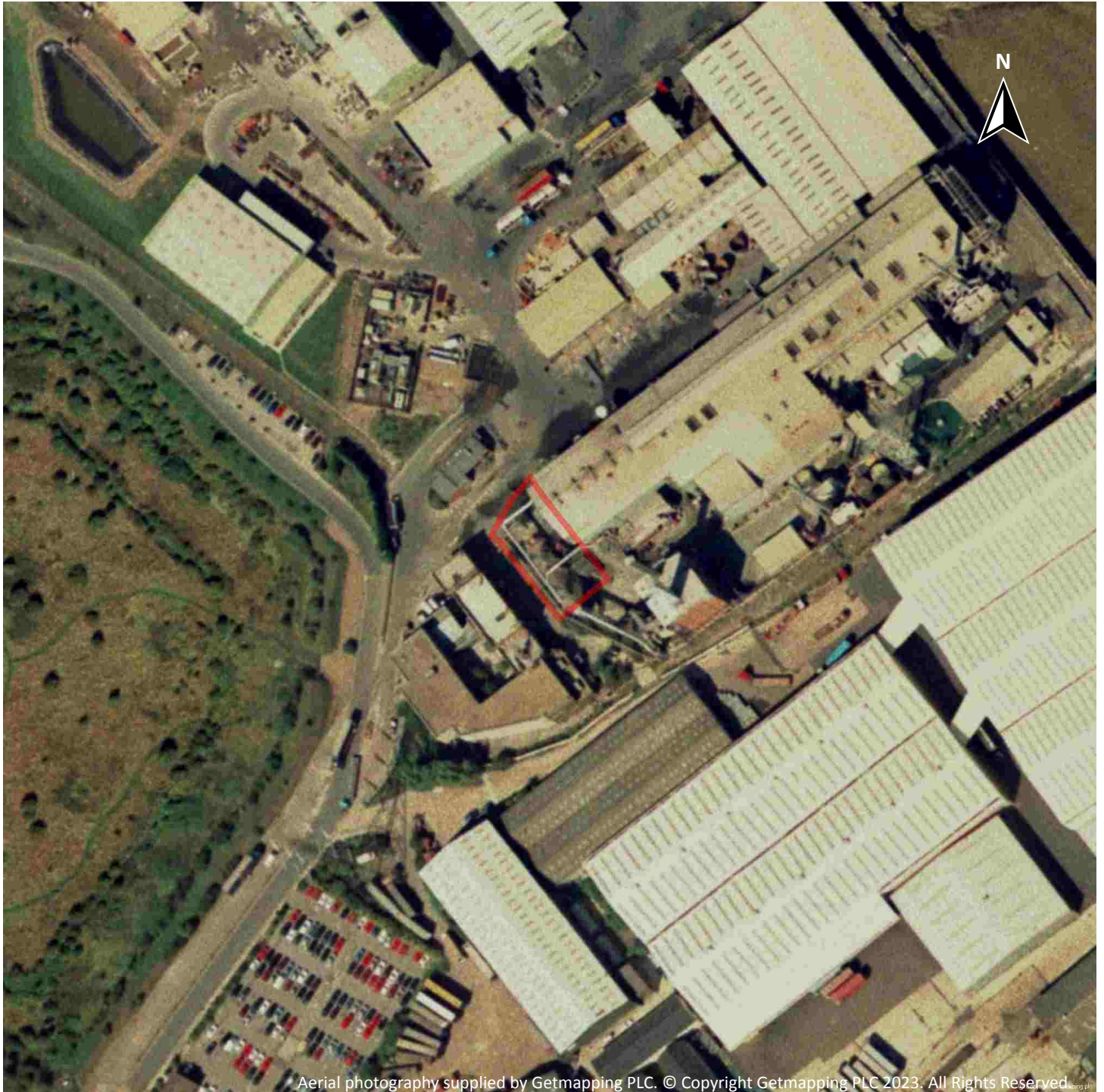


Capture Date: 24/04/2010

Site Area: 0.07ha



## Recent site history - 1999 aerial photograph



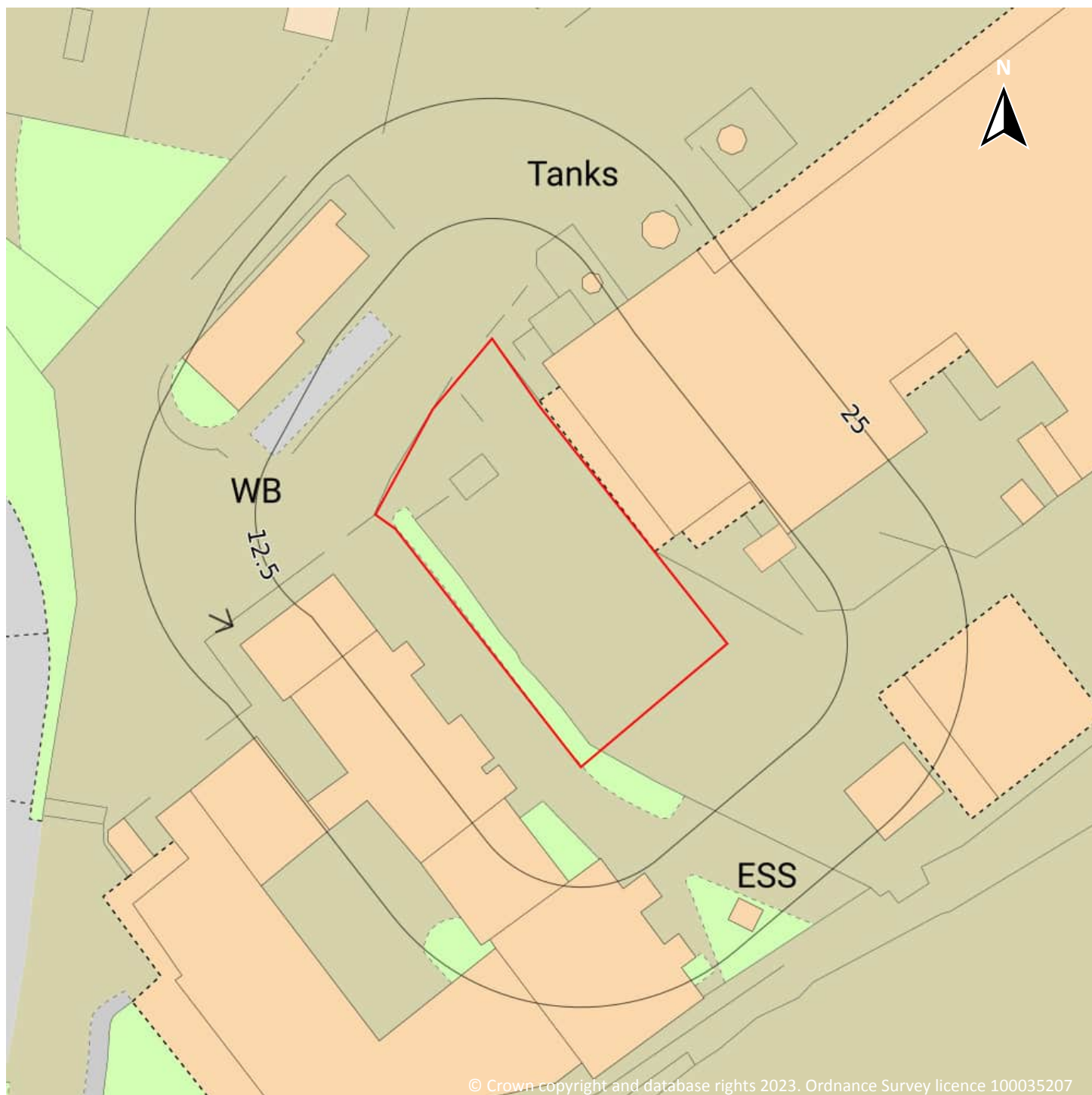
Aerial photography supplied by Getmapping PLC. © Copyright Getmapping PLC 2023. All Rights Reserved.

Capture Date: 03/09/1999

Site Area: 0.07ha



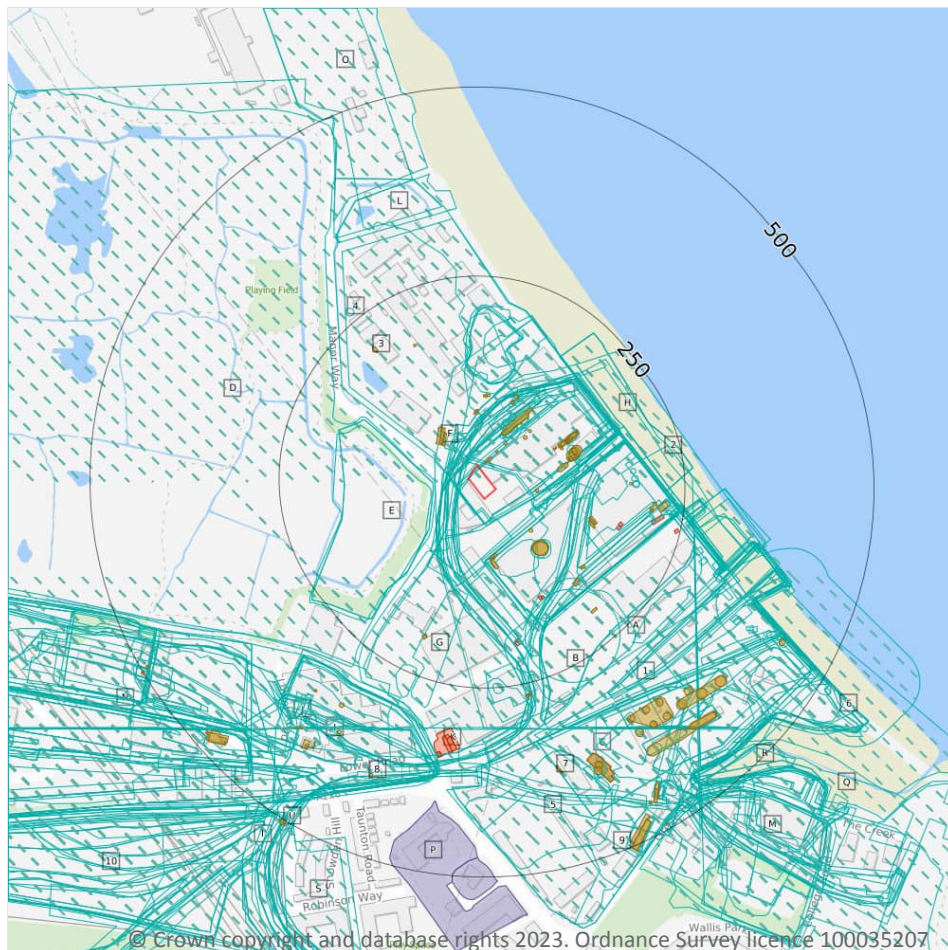
## OS MasterMap site plan



Site Area: 0.07ha



## 1 Past land use



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

### 1.1 Historical industrial land uses

Records within 500m

242

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 15 >](#)

| ID | Location | Land use        | Dates present | Group ID |
|----|----------|-----------------|---------------|----------|
| A  | On site  | Tramway Sidings | 1895          | 2183477  |



| ID | Location | Land use                          | Dates present | Group ID |
|----|----------|-----------------------------------|---------------|----------|
| A  | On site  | Cement Works                      | 1895          | 2199106  |
| A  | On site  | Railway Sidings                   | 1973          | 2202766  |
| A  | On site  | Railway Sidings                   | 1955 - 1966   | 2205830  |
| A  | On site  | Tramway Sidings                   | 1946          | 2211957  |
| A  | On site  | Unspecified Works                 | 1993          | 2216490  |
| A  | On site  | Lead Works                        | 1932          | 2223432  |
| A  | On site  | Railway Sidings                   | 1982          | 2230046  |
| A  | On site  | Lead Works                        | 1938 - 1946   | 2233327  |
| A  | On site  | Tramway Sidings                   | 1932          | 2247739  |
| A  | On site  | Unspecified Works                 | 1973          | 2260716  |
| A  | On site  | Cement Works                      | 1923          | 2266415  |
| A  | On site  | Cement Works                      | 1895 - 1898   | 2275278  |
| A  | On site  | Unspecified Works                 | 1955 - 1966   | 2277588  |
| A  | On site  | Unspecified Works                 | 1982 - 1992   | 2284101  |
| B  | On site  | Tramway Sidings                   | 1938          | 2232919  |
| A  | 1m N     | Cement Works                      | 1923          | 2236115  |
| A  | 3m N     | Railway Sidings                   | 1992          | 2241092  |
| A  | 5m N     | Cement Works                      | 1907          | 2287388  |
| A  | 7m W     | Tramway Sidings                   | 1907          | 2192430  |
| A  | 8m N     | Cement Works                      | 1888 - 1895   | 2290552  |
| A  | 10m W    | Railway Sidings                   | 1895          | 2225407  |
| A  | 11m NW   | Tramway Sidings                   | 1923          | 2207417  |
| C  | 11m W    | Railway Sidings                   | 1888          | 2291106  |
| C  | 12m W    | Railway Sidings                   | 1898          | 2202160  |
| C  | 12m W    | Railway Sidings                   | 1898          | 2279978  |
| C  | 15m NW   | Tramway Sidings                   | 1923          | 2177258  |
| A  | 23m S    | Unspecified Commercial/Industrial | 1982 - 1992   | 2293562  |
| D  | 25m W    | Marshes                           | 1898          | 2215152  |



| ID | Location | Land use          | Dates present | Group ID |
|----|----------|-------------------|---------------|----------|
| D  | 44m W    | Marshes           | 1888          | 2239504  |
| E  | 47m W    | Unspecified Pit   | 1895          | 2176598  |
| E  | 47m W    | Unspecified Pit   | 1907          | 2218767  |
| A  | 47m NE   | Unspecified Tanks | 1907 - 1923   | 2190850  |
| A  | 49m E    | Unspecified Wharf | 1966          | 2177417  |
| A  | 49m E    | Unspecified Wharf | 1955          | 2242180  |
| A  | 49m NE   | Unspecified Tanks | 1923          | 2255843  |
| E  | 52m W    | Unspecified Pit   | 1923          | 2290959  |
| A  | 52m NE   | Unspecified Tanks | 1888          | 2225554  |
| A  | 52m E    | Unspecified Wharf | 1973          | 2179164  |
| A  | 52m NE   | Unspecified Tanks | 1895          | 2224084  |
| A  | 53m SE   | Cement Works      | 1907 - 1923   | 2252125  |
| A  | 56m NE   | Unspecified Tanks | 1898          | 2267791  |
| A  | 61m SE   | Tower Works       | 1932          | 2173363  |
| A  | 61m SE   | Tower Works       | 1946          | 2194506  |
| A  | 63m N    | Unspecified Wharf | 1955 - 1966   | 2269240  |
| A  | 63m N    | Unspecified Tank  | 1895          | 2155405  |
| A  | 64m SE   | Tower Works       | 1938          | 2239514  |
| A  | 70m SE   | Cement Works      | 1888          | 2288980  |
| A  | 74m SE   | Refuse Heap       | 1955 - 1966   | 2193731  |
| A  | 75m NE   | Unspecified Tank  | 1895          | 2155406  |
| A  | 87m SE   | Unspecified Tank  | 1907          | 2244381  |
| A  | 87m SE   | Unspecified Tank  | 1923          | 2220508  |
| A  | 88m N    | Unspecified Tank  | 1923          | 2155404  |
| A  | 90m SE   | Unspecified Tank  | 1923 - 1946   | 2286370  |
| A  | 93m NE   | Unspecified Tank  | 1895          | 2227228  |
| A  | 97m N    | Refuse Heap       | 1923          | 2283173  |
| A  | 98m N    | Unspecified Tank  | 1898          | 2275096  |



| ID | Location | Land use                          | Dates present | Group ID |
|----|----------|-----------------------------------|---------------|----------|
| A  | 105m E   | Unspecified Tanks                 | 1938          | 2201545  |
| A  | 106m E   | Unspecified Tank                  | 1973 - 1993   | 2211821  |
| A  | 107m N   | Unspecified Tank                  | 1895          | 2155403  |
| A  | 107m E   | Unspecified Tanks                 | 1946          | 2249898  |
| A  | 107m E   | Unspecified Tanks                 | 1932          | 2290281  |
| A  | 108m N   | Unspecified Heaps                 | 1938          | 2259815  |
| A  | 109m N   | Unspecified Heaps                 | 1946          | 2232165  |
| A  | 109m N   | Unspecified Ground Workings       | 1955 - 1966   | 2234949  |
| A  | 110m N   | Unspecified Ground Workings       | 1932          | 2257618  |
| A  | 111m E   | Unspecified Wharf                 | 1888          | 2261354  |
| 1  | 112m E   | Tramway Sidings                   | 1923          | 2180973  |
| A  | 112m E   | Unspecified Wharf                 | 1895          | 2239342  |
| A  | 112m NE  | Unspecified Tanks                 | 1932 - 1938   | 2278662  |
| G  | 124m S   | Unspecified Heap                  | 1955 - 1966   | 2266392  |
| A  | 131m N   | Refuse Heap                       | 1895          | 2189143  |
| A  | 148m SE  | Unspecified Wharf                 | 1982 - 1992   | 2258821  |
| A  | 150m NE  | Unspecified Wharf                 | 1898          | 2257834  |
| A  | 153m SE  | Unspecified Wharf                 | 1993          | 2205242  |
| A  | 158m SE  | Unspecified Tanks                 | 1932 - 1946   | 2262080  |
| H  | 174m NE  | Unspecified Wharf                 | 1982          | 2278448  |
| H  | 174m NE  | Unspecified Wharf                 | 1992          | 2214482  |
| H  | 174m NE  | Unspecified Wharf                 | 1993          | 2180024  |
| A  | 177m SE  | Unspecified Industrial/Commercial | 1888          | 2164941  |
| A  | 178m SE  | Cement Works                      | 1907          | 2177695  |
| A  | 178m SE  | Cement Works                      | 1895          | 2215752  |
| A  | 180m E   | Unspecified Tank                  | 1895          | 2155395  |
| A  | 180m E   | Unspecified Tank                  | 1898          | 2169808  |
| A  | 181m E   | Unspecified Tank                  | 1895          | 2236599  |

| ID | Location | Land use                          | Dates present | Group ID |
|----|----------|-----------------------------------|---------------|----------|
| A  | 182m E   | Unspecified Tank                  | 1888          | 2224325  |
| 2  | 183m NE  | Unspecified Wharf                 | 1895          | 2197254  |
| A  | 201m E   | Unspecified Wharf                 | 1895          | 2270363  |
| A  | 218m E   | Unspecified Tank                  | 1938 - 1946   | 2208493  |
| A  | 218m E   | Unspecified Tank                  | 1932          | 2189436  |
| C  | 220m S   | Disused Windmill                  | 1895          | 2205238  |
| A  | 227m E   | Unspecified Wharf                 | 1888          | 2287459  |
| A  | 233m E   | Unspecified Wharf                 | 1898          | 2214407  |
| C  | 238m S   | Corn Windmill                     | 1865          | 2138220  |
| B  | 241m S   | Refuse Heap                       | 1955          | 2158974  |
| C  | 244m S   | Disused Windmill                  | 1888 - 1898   | 2280248  |
| A  | 248m E   | Unspecified Wharf                 | 1973          | 2287000  |
| A  | 255m E   | Railway Sidings                   | 1982          | 2181180  |
| A  | 255m E   | Railway Sidings                   | 1992          | 2240122  |
| A  | 257m SE  | Refuse Heap                       | 1955 - 1966   | 2216286  |
| 4  | 258m NW  | Unspecified Tank                  | 1982 - 1993   | 2213283  |
| A  | 269m E   | Unspecified Commercial/Industrial | 1938          | 2196340  |
| A  | 269m E   | Railway Sidings                   | 1938          | 2252216  |
| A  | 269m E   | Railway Sidings                   | 1916          | 2168847  |
| A  | 269m E   | Unspecified Commercial/Industrial | 1916          | 2221348  |
| A  | 273m E   | Railway Building                  | 1895          | 2150197  |
| A  | 285m E   | Railway Building                  | 1888          | 2150196  |
| A  | 287m SE  | Unspecified Commercial/Industrial | 1932          | 2176370  |
| I  | 287m SW  | Cement Works                      | 1895          | 2189520  |
| A  | 289m SE  | Unspecified Commercial/Industrial | 1946          | 2292404  |
| I  | 295m SW  | Cement Works                      | 1888          | 2279459  |
| I  | 295m SW  | Cement Works                      | 1907 - 1923   | 2195031  |
| I  | 295m SW  | Unspecified Commercial/Industrial | 1932          | 2285345  |

| ID | Location | Land use                          | Dates present | Group ID |
|----|----------|-----------------------------------|---------------|----------|
| J  | 296m S   | Cement Works                      | 1898          | 2281629  |
| J  | 297m S   | Paper Mills                       | 1946          | 2193553  |
| J  | 297m S   | Tramway Sidings                   | 1946          | 2195082  |
| A  | 299m SE  | Unspecified Commercial/Industrial | 1938          | 2238313  |
| I  | 302m SW  | Unspecified Ground Workings       | 1973          | 2134124  |
| I  | 303m S   | Cement Works                      | 1923          | 2215290  |
| A  | 303m E   | Railway Building                  | 1895          | 2150195  |
| J  | 304m S   | Mineral Railway Sidings           | 1955 - 1966   | 2226248  |
| J  | 304m S   | Mineral Railway Sidings           | 1971          | 2281821  |
| A  | 309m SE  | Cement Works                      | 1888 - 1898   | 2258944  |
| A  | 316m SE  | Unspecified Ground Workings       | 1907          | 2134378  |
| A  | 317m SE  | Unspecified Depot                 | 1982 - 1992   | 2241419  |
| J  | 318m S   | Industrial Estate                 | 1990          | 2138491  |
| A  | 321m S   | Unspecified Depot                 | 1971          | 2185477  |
| A  | 321m S   | Unspecified Depot                 | 1977          | 2199659  |
| A  | 321m S   | Unspecified Depot                 | 1990          | 2217955  |
| J  | 321m S   | Unspecified Mills                 | 1971          | 2180278  |
| J  | 321m S   | Paper Mills                       | 1966          | 2214628  |
| J  | 321m S   | Unspecified Mills                 | 1977          | 2269081  |
| J  | 321m S   | Unspecified Mills                 | 1955          | 2274612  |
| A  | 324m SE  | Cement Works                      | 1923          | 2272142  |
| A  | 324m SE  | Unspecified Wharf                 | 1895          | 2196951  |
| A  | 325m SE  | Cement Works                      | 1923          | 2267209  |
| A  | 330m SE  | Railway Sidings                   | 1916          | 2276920  |
| A  | 330m SE  | Unspecified Depot                 | 1973          | 2170910  |
| L  | 334m N   | Unspecified Depot                 | 1973          | 2185803  |
| A  | 334m SE  | Unspecified Tanks                 | 1973 - 1992   | 2224432  |
| I  | 338m SW  | Unspecified Ground Workings       | 1932          | 2243792  |



| ID | Location | Land use                    | Dates present | Group ID |
|----|----------|-----------------------------|---------------|----------|
| J  | 338m S   | Railway Sidings             | 1895          | 2287603  |
| L  | 341m N   | Unspecified Depot           | 1982 - 1992   | 2263526  |
| I  | 341m SW  | Unspecified Ground Workings | 1938          | 2246430  |
| M  | 342m SE  | Railway Sidings             | 1865          | 2202900  |
| J  | 342m SW  | Tramway Sidings             | 1895          | 2287693  |
| J  | 344m SW  | Tramway Sidings             | 1907          | 2235680  |
| 5  | 346m S   | Unspecified Pit             | 1865          | 2126089  |
| I  | 355m SW  | Unspecified Heap            | 1946          | 2137188  |
| A  | 355m SE  | Railway Building            | 1898          | 2209071  |
| J  | 357m S   | Tramway Sidings             | 1932          | 2173702  |
| A  | 359m SE  | Railway Building            | 1888          | 2286322  |
| N  | 360m SW  | Paper Works                 | 1895          | 2217633  |
| N  | 360m SW  | Paper Mills                 | 1907          | 2237201  |
| N  | 361m SW  | Chalk Pit                   | 1898          | 2283865  |
| A  | 363m SE  | Unspecified Tank            | 1977          | 2256445  |
| A  | 363m SE  | Unspecified Tank            | 1971          | 2295195  |
| 6  | 364m SE  | Unspecified Wharf           | 1895          | 2270164  |
| I  | 368m SW  | Unspecified Ground Workings | 1966          | 2228492  |
| A  | 373m SE  | Unspecified Tank            | 1895          | 2155390  |
| O  | 374m NW  | Unspecified Depot           | 1973 - 1992   | 2280218  |
| N  | 375m SW  | Chalk Pit                   | 1895          | 2186218  |
| N  | 377m SW  | Unspecified Pit             | 1907          | 2180056  |
| N  | 377m SW  | Chalk Pit                   | 1895          | 2222286  |
| A  | 378m SE  | Railway Building            | 1898          | 2186647  |
| N  | 379m SW  | Chalk Pit                   | 1888          | 2243277  |
| A  | 382m SE  | Railway Building            | 1888          | 2210554  |
| A  | 383m SE  | Unspecified Tank            | 1898          | 2200012  |
| N  | 383m SW  | Chalk Pits                  | 1923          | 2129001  |



| ID | Location | Land use          | Dates present | Group ID |
|----|----------|-------------------|---------------|----------|
| A  | 384m SE  | Railway Building  | 1898          | 2264365  |
| A  | 386m SE  | Unspecified Tanks | 1971          | 2227147  |
| A  | 386m SE  | Unspecified Tanks | 1977          | 2227853  |
| A  | 386m SE  | Unspecified Tank  | 1888          | 2196240  |
| A  | 386m SE  | Unspecified Tank  | 1907 - 1923   | 2178462  |
| A  | 386m SE  | Unspecified Tank  | 1895          | 2253354  |
| O  | 388m N   | Unspecified Depot | 1993          | 2262232  |
| A  | 388m SE  | Railway Building  | 1888          | 2283566  |
| A  | 389m S   | Unspecified Tank  | 1923          | 2214638  |
| A  | 393m SE  | Unspecified Tanks | 1982 - 1992   | 2178549  |
| A  | 393m SE  | Unspecified Tanks | 1973          | 2292858  |
| A  | 401m SE  | Railway Building  | 1898          | 2203807  |
| A  | 402m SE  | Unspecified Kiln  | 1865          | 2157509  |
| A  | 404m SE  | Unspecified Kilns | 1865          | 2151949  |
| A  | 405m SE  | Railway Building  | 1888          | 2248786  |
| A  | 412m SE  | Unspecified Wharf | 1898          | 2243522  |
| A  | 416m SE  | Unspecified Wharf | 1888          | 2293046  |
| A  | 425m SE  | Unspecified Tank  | 1973 - 1992   | 2174681  |
| A  | 433m SE  | Cement Mill       | 1865          | 2140071  |
| A  | 434m SE  | Unspecified Tank  | 1895          | 2155376  |
| N  | 436m SW  | Unspecified Mills | 1932 - 1966   | 2230497  |
| N  | 438m SW  | Paper Works       | 1895          | 2189798  |
| A  | 441m SE  | Unspecified Tank  | 1895          | 2155377  |
| A  | 442m SE  | Unspecified Tanks | 1898          | 2272322  |
| N  | 443m SW  | Railway Sidings   | 1955          | 2174201  |
| N  | 443m SW  | Paper Works       | 1888          | 2250075  |
| N  | 444m SW  | Paper Works       | 1898          | 2218460  |
| A  | 446m SE  | Unspecified Tanks | 1888          | 2286627  |



| ID | Location | Land use                          | Dates present | Group ID |
|----|----------|-----------------------------------|---------------|----------|
| A  | 447m SE  | Unspecified Tanks                 | 1895          | 2284373  |
| N  | 448m SW  | Paper Mills                       | 1938          | 2294610  |
| N  | 451m SW  | Tramway Sidings                   | 1923          | 2195007  |
| N  | 451m SW  | Paper Mills                       | 1923          | 2226448  |
| N  | 453m SW  | Tar Distilleries                  | 1932 - 1938   | 2292004  |
| 9  | 455m S   | Unspecified Works                 | 1977 - 1990   | 2230303  |
| Q  | 456m SE  | Unspecified Wharf                 | 1966 - 1990   | 2243828  |
| N  | 457m SW  | Industrial Estate                 | 1993          | 2138492  |
| N  | 458m SW  | Unspecified Works                 | 1992          | 2176102  |
| N  | 458m SW  | Unspecified Works                 | 1982          | 2283234  |
| N  | 461m SW  | Unspecified Works                 | 1966          | 2229930  |
| N  | 461m SW  | Unspecified Works                 | 1955          | 2176507  |
| M  | 465m SE  | Cement Works                      | 1895          | 2290804  |
| R  | 467m SE  | Unspecified Wharf                 | 1932          | 2280904  |
| R  | 467m SE  | Unspecified Wharf                 | 1946          | 2243799  |
| N  | 470m SW  | Unspecified Works                 | 1973          | 2247869  |
| A  | 472m SE  | Unspecified Tanks                 | 1932          | 2283748  |
| A  | 473m SE  | Unspecified Tanks                 | 1938 - 1946   | 2281441  |
| M  | 473m SE  | Unspecified Commercial/Industrial | 1916          | 2188444  |
| M  | 473m SE  | Cement Works                      | 1888          | 2252066  |
| Q  | 474m SE  | Unspecified Wharf                 | 1938          | 2171706  |
| Q  | 477m SE  | Unspecified Wharf                 | 1865          | 2205425  |
| S  | 484m S   | Unspecified Factory               | 1955 - 1966   | 2197884  |
| M  | 484m SE  | Cement Works                      | 1898          | 2210077  |
| M  | 486m SE  | Railway Sidings                   | 1938          | 2187730  |
| M  | 486m SE  | Unspecified Commercial/Industrial | 1938          | 2223398  |
| M  | 486m SE  | Unspecified Commercial/Industrial | 1907          | 2239738  |
| M  | 486m SE  | Cement Works                      | 1865          | 2258945  |



| ID | Location | Land use            | Dates present | Group ID |
|----|----------|---------------------|---------------|----------|
| M  | 488m SE  | Railway Sidings     | 1916          | 2259121  |
| M  | 488m SE  | Cement Works        | 1895          | 2256562  |
| M  | 490m SE  | Cement Works        | 1923          | 2227374  |
| M  | 490m SE  | Tramway Sidings     | 1923          | 2284630  |
| T  | 491m SW  | Tramway Sidings     | 1923          | 2228599  |
| A  | 491m SE  | Unspecified Works   | 1971 - 1990   | 2189410  |
| N  | 492m SW  | Unspecified Tanks   | 1932          | 2247470  |
| N  | 492m SW  | Unspecified Tanks   | 1938 - 1946   | 2236721  |
| S  | 494m SW  | Unspecified Factory | 1971 - 1977   | 2266114  |
| T  | 495m SW  | Unspecified Pit     | 1971 - 1990   | 2215360  |
| U  | 496m SW  | Unspecified Tank    | 1977 - 1990   | 2267403  |
| T  | 496m SW  | Chalk Pit           | 1888          | 2239282  |
| T  | 497m SW  | Chalk Pits          | 1923          | 2129002  |
| T  | 497m SW  | Old Chalk Pits      | 1938          | 2142456  |
| T  | 498m SW  | Chalk Pit           | 1895 - 1898   | 2185040  |
| T  | 499m SW  | Chalk Pit           | 1895          | 2254754  |
| 10 | 500m SW  | Unspecified Pit     | 1955 - 1966   | 2188458  |

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## 1.2 Historical tanks

### Records within 500m

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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 15 >](#)

| ID | Location | Land use | Dates present | Group ID |
|----|----------|----------|---------------|----------|
| A  | 10m N    | Tanks    | 1999          | 377624   |



| ID | Location | Land use          | Dates present | Group ID |
|----|----------|-------------------|---------------|----------|
| A  | 30m NE   | Unspecified Tank  | 1999          | 368878   |
| A  | 45m NE   | Unspecified Tank  | 1999          | 368882   |
| F  | 50m NW   | Unspecified Tank  | 1970          | 368883   |
| A  | 52m NE   | Unspecified Tanks | 1907          | 379235   |
| A  | 52m NE   | Tanks             | 1897 - 1898   | 387561   |
| F  | 52m NW   | Tanks             | 1989          | 386103   |
| A  | 52m E    | Unspecified Tank  | 1907          | 368879   |
| F  | 54m NW   | Unspecified Tank  | 1978          | 368884   |
| A  | 68m N    | Unspecified Tank  | 1970          | 368885   |
| A  | 69m N    | Unspecified Tank  | 1978          | 368889   |
| A  | 69m SE   | Unspecified Tank  | 1932 - 1939   | 397664   |
| A  | 70m NE   | Unspecified Tank  | 1907          | 368881   |
| A  | 74m S    | Tanks             | 1993 - 1995   | 387875   |
| A  | 77m S    | Tanks             | 1993 - 1995   | 381581   |
| A  | 77m S    | Tanks             | 1978 - 1989   | 381277   |
| A  | 81m NE   | Unspecified Tank  | 1898          | 368890   |
| A  | 84m S    | Tanks             | 1993 - 1995   | 396456   |
| A  | 85m E    | Tanks             | 1970 - 1999   | 406173   |
| A  | 87m SE   | Unspecified Tank  | 1907          | 368822   |
| A  | 89m SE   | Tanks             | 1932 - 1939   | 408605   |
| A  | 90m N    | Unspecified Tank  | 1970          | 404712   |
| A  | 92m N    | Unspecified Tank  | 1978          | 390064   |
| A  | 92m NE   | Unspecified Tank  | 1993 - 1995   | 407140   |
| A  | 92m N    | Unspecified Tank  | 1897 - 1907   | 407459   |
| A  | 96m NE   | Unspecified Tank  | 1978 - 1989   | 392140   |
| A  | 100m NE  | Tanks             | 1993 - 1995   | 401757   |
| A  | 100m NE  | Tanks             | 1970          | 409145   |
| A  | 101m NE  | Tanks             | 1999          | 402239   |



| ID | Location | Land use         | Dates present | Group ID |
|----|----------|------------------|---------------|----------|
| A  | 101m N   | Unspecified Tank | 1898          | 368888   |
| A  | 102m E   | Unspecified Tank | 1952          | 396537   |
| A  | 103m E   | Unspecified Tank | 1932 - 1939   | 389974   |
| A  | 103m NE  | Tanks            | 1978 - 1989   | 393649   |
| A  | 104m E   | Tanks            | 1970          | 385624   |
| A  | 108m E   | Tanks            | 1993 - 1999   | 385616   |
| A  | 111m NE  | Unspecified Tank | 1932          | 368880   |
| A  | 112m E   | Tanks            | 1978 - 1989   | 411064   |
| A  | 112m NE  | Tanks            | 1939          | 398750   |
| A  | 112m E   | Tanks            | 1970          | 383620   |
| A  | 114m NE  | Tanks            | 1970          | 403976   |
| A  | 117m NE  | Tanks            | 1952 - 1970   | 397733   |
| A  | 128m E   | Tanks            | 1970 - 1989   | 388222   |
| A  | 129m E   | Tanks            | 1993          | 386271   |
| A  | 131m NE  | Unspecified Tank | 1952          | 368897   |
| A  | 152m SE  | Tanks            | 1952          | 377663   |
| A  | 159m SE  | Tanks            | 1932 - 1939   | 404226   |
| A  | 177m E   | Unspecified Tank | 1897          | 368900   |
| A  | 177m NW  | Unspecified Tank | 1999          | 368886   |
| G  | 195m S   | Unspecified Tank | 1978 - 1999   | 389161   |
| 3  | 199m NW  | Tanks            | 1999          | 377625   |
| A  | 205m SE  | Tanks            | 1995 - 1999   | 409534   |
| A  | 205m E   | Unspecified Tank | 1897          | 401653   |
| A  | 205m E   | Unspecified Tank | 1907          | 406726   |
| A  | 209m E   | Unspecified Tank | 1898          | 368899   |
| A  | 215m E   | Tanks            | 1932 - 1939   | 381673   |
| C  | 263m S   | Unspecified Tank | 1978 - 1989   | 404962   |
| C  | 265m S   | Unspecified Tank | 1993 - 1999   | 410383   |



| ID | Location | Land use         | Dates present | Group ID |
|----|----------|------------------|---------------|----------|
| I  | 328m SW  | Unspecified Tank | 1897 - 1907   | 406424   |
| I  | 336m SW  | Unspecified Tank | 1907          | 368823   |
| A  | 345m SE  | Tanks            | 1970          | 403465   |
| A  | 346m SE  | Tanks            | 1978 - 1989   | 380847   |
| A  | 347m SE  | Tanks            | 1970          | 397354   |
| A  | 350m SE  | Tanks            | 1970          | 385545   |
| I  | 360m SW  | Unspecified Tank | 1897          | 368824   |
| A  | 364m SE  | Tanks            | 1970 - 1989   | 409224   |
| 7  | 365m S   | Tanks            | 1973 - 1993   | 408250   |
| A  | 366m S   | Gas Works        | 1898          | 380468   |
| A  | 366m SE  | Tanks            | 1970          | 377667   |
| A  | 368m SE  | Tanks            | 1970          | 411091   |
| A  | 369m SE  | Tanks            | 1970          | 391760   |
| A  | 370m SE  | Tanks            | 1978 - 1989   | 410165   |
| A  | 370m SE  | Tanks            | 1970          | 396268   |
| A  | 376m SE  | Tanks            | 1970          | 401936   |
| A  | 379m SE  | Gasometer        | 1898          | 374085   |
| A  | 384m SE  | Tanks            | 1970          | 382147   |
| A  | 384m S   | Unspecified Tank | 1897 - 1907   | 390327   |
| I  | 387m SW  | Unspecified Tank | 1978 - 1989   | 385410   |
| I  | 392m SW  | Unspecified Tank | 1952          | 399355   |
| 8  | 392m S   | Unspecified Tank | 1897 - 1939   | 404435   |
| A  | 393m SE  | Tanks            | 1970          | 405153   |
| I  | 395m SW  | Unspecified Tank | 1973 - 1993   | 403683   |
| I  | 400m SW  | Unspecified Tank | 1907          | 389134   |
| A  | 403m SE  | Tanks            | 1978 - 1989   | 394689   |
| A  | 403m SE  | Tanks            | 1970          | 389031   |
| A  | 426m SE  | Unspecified Tank | 1970 - 1989   | 392228   |

| ID | Location | Land use          | Dates present | Group ID |
|----|----------|-------------------|---------------|----------|
| A  | 439m SE  | Tanks             | 1897 - 1898   | 404682   |
| A  | 446m SE  | Unspecified Tanks | 1907          | 379243   |
| A  | 456m SE  | Unspecified Tank  | 1907          | 368826   |
| J  | 461m SW  | Tanks             | 1897 - 1952   | 384372   |
| J  | 465m SW  | Tanks             | 1932 - 1939   | 405425   |
| A  | 468m SE  | Tanks             | 1897 - 1898   | 391238   |
| A  | 474m SE  | Unspecified Tanks | 1907          | 379254   |
| N  | 489m SW  | Tanks             | 1939          | 377659   |
| A  | 491m SE  | Tank or Trough    | 1898          | 379961   |
| J  | 493m SW  | Unspecified Tank  | 1907          | 368847   |
| N  | 498m SW  | Tanks             | 1932 - 1939   | 400014   |
| U  | 499m SW  | Unspecified Tank  | 1993          | 368843   |

*This data is sourced from Ordnance Survey / Groundsure.*

### 1.3 Historical energy features

#### Records within 500m

**16**

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 15 >](#)

| ID | Location | Land use               | Dates present | Group ID |
|----|----------|------------------------|---------------|----------|
| A  | 148m SE  | Electricity Substation | 1993 - 1995   | 258167   |
| A  | 149m SE  | Electricity Substation | 1978 - 1989   | 281851   |
| A  | 167m E   | Electricity Substation | 1993          | 248058   |
| A  | 169m E   | Electricity Substation | 1978 - 1989   | 282980   |
| C  | 190m S   | Electricity Substation | 1978 - 1989   | 268079   |
| C  | 193m S   | Electricity Substation | 1993 - 1999   | 269764   |



| ID | Location | Land use                 | Dates present | Group ID |
|----|----------|--------------------------|---------------|----------|
| A  | 210m E   | Electricity Substation   | 1995 - 1999   | 274521   |
| A  | 242m E   | Electricity Substation   | 1995 - 1999   | 273854   |
| K  | 307m S   | Electricity Substation   | 1973          | 256837   |
| K  | 315m S   | Electricity Transformers | 1973          | 251657   |
| K  | 318m S   | Electricity Substation   | 1993          | 254340   |
| K  | 318m S   | Electricity Substation   | 1993          | 258289   |
| K  | 339m S   | Electricity Substation   | 1952          | 253918   |
| K  | 339m S   | Electricity Substation   | 1952          | 253461   |
| A  | 365m S   | Gas Works                | 1898          | 250261   |
| A  | 378m SE  | Gasometer                | 1898          | 251567   |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.4 Historical petrol stations

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>0</b> |
|----------------------------|----------|

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'.

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.5 Historical garages

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>2</b> |
|----------------------------|----------|

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 15 >](#)

| ID | Location | Land use | Dates present | Group ID |
|----|----------|----------|---------------|----------|
| P  | 405m S   | Garage   | 1993          | 81061    |



| ID | Location | Land use        | Dates present | Group ID |
|----|----------|-----------------|---------------|----------|
| P  | 474m S   | Service Station | 1993          | 73971    |

*This data is sourced from Ordnance Survey / Groundsure.*

## 1.6 Historical military land

**Records within 500m**

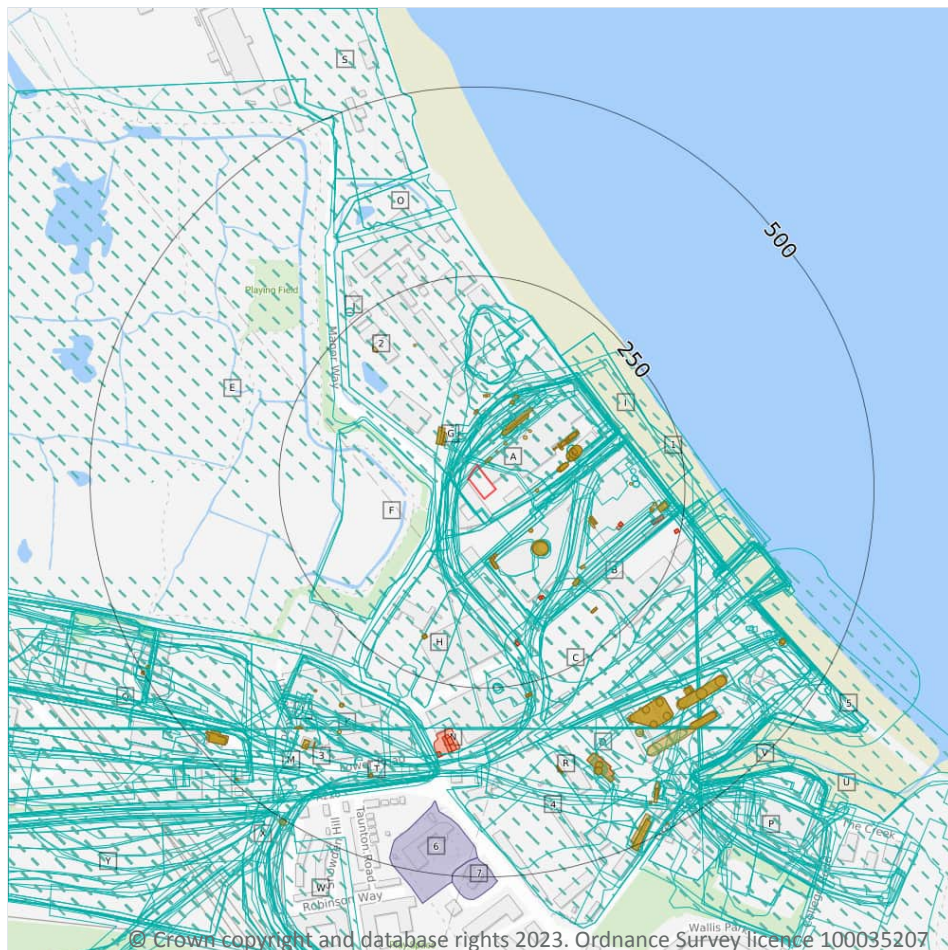
**0**

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 garages

### 2.1 Historical industrial land uses

Records within 500m

331

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 31](#) >

| ID | Location | Land Use     | Date | Group ID |
|----|----------|--------------|------|----------|
| A  | On site  | Cement Works | 1895 | 2199106  |
| A  | On site  | Cement Works | 1923 | 2266415  |
| A  | On site  | Lead Works   | 1946 | 2233327  |



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| A  | On site  | Lead Works        | 1932 | 2223432  |
| A  | On site  | Cement Works      | 1898 | 2275278  |
| A  | On site  | Cement Works      | 1898 | 2275278  |
| A  | On site  | Unspecified Works | 1993 | 2216490  |
| A  | On site  | Unspecified Works | 1982 | 2284101  |
| A  | On site  | Railway Sidings   | 1982 | 2230046  |
| A  | On site  | Unspecified Works | 1973 | 2260716  |
| A  | On site  | Lead Works        | 1938 | 2233327  |
| A  | On site  | Unspecified Works | 1992 | 2284101  |
| A  | On site  | Unspecified Works | 1955 | 2277588  |
| A  | On site  | Unspecified Works | 1966 | 2277588  |
| B  | On site  | Tramway Sidings   | 1946 | 2211957  |
| B  | On site  | Tramway Sidings   | 1932 | 2247739  |
| B  | On site  | Tramway Sidings   | 1895 | 2183477  |
| B  | On site  | Railway Sidings   | 1973 | 2202766  |
| B  | On site  | Railway Sidings   | 1955 | 2205830  |
| B  | On site  | Railway Sidings   | 1966 | 2205830  |
| C  | On site  | Tramway Sidings   | 1938 | 2232919  |
| A  | 1m N     | Cement Works      | 1923 | 2236115  |
| A  | 3m N     | Railway Sidings   | 1992 | 2241092  |
| A  | 5m N     | Cement Works      | 1907 | 2287388  |
| B  | 7m W     | Tramway Sidings   | 1907 | 2192430  |
| A  | 8m N     | Cement Works      | 1895 | 2290552  |
| A  | 9m N     | Cement Works      | 1888 | 2290552  |
| B  | 10m W    | Railway Sidings   | 1895 | 2225407  |
| A  | 11m NW   | Tramway Sidings   | 1923 | 2207417  |
| D  | 11m W    | Railway Sidings   | 1888 | 2291106  |
| D  | 12m W    | Railway Sidings   | 1898 | 2202160  |



| ID | Location | Land Use                          | Date | Group ID |
|----|----------|-----------------------------------|------|----------|
| D  | 12m W    | Railway Sidings                   | 1898 | 2279978  |
| D  | 15m NW   | Tramway Sidings                   | 1923 | 2177258  |
| B  | 23m S    | Unspecified Commercial/Industrial | 1982 | 2293562  |
| B  | 23m S    | Unspecified Commercial/Industrial | 1992 | 2293562  |
| E  | 25m W    | Marshes                           | 1898 | 2215152  |
| E  | 25m W    | Marshes                           | 1898 | 2215152  |
| E  | 44m W    | Marshes                           | 1888 | 2239504  |
| F  | 47m W    | Unspecified Pit                   | 1907 | 2218767  |
| F  | 47m W    | Unspecified Pit                   | 1895 | 2176598  |
| A  | 47m NE   | Unspecified Tanks                 | 1923 | 2190850  |
| A  | 49m E    | Unspecified Wharf                 | 1955 | 2242180  |
| A  | 49m E    | Unspecified Wharf                 | 1966 | 2177417  |
| A  | 49m NE   | Unspecified Tanks                 | 1923 | 2255843  |
| F  | 52m W    | Unspecified Pit                   | 1923 | 2290959  |
| A  | 52m NE   | Unspecified Tanks                 | 1888 | 2225554  |
| A  | 52m E    | Unspecified Wharf                 | 1973 | 2179164  |
| A  | 52m NE   | Unspecified Tanks                 | 1895 | 2224084  |
| A  | 53m NE   | Unspecified Tanks                 | 1907 | 2190850  |
| B  | 53m SE   | Cement Works                      | 1923 | 2252125  |
| B  | 55m SE   | Cement Works                      | 1895 | 2275278  |
| A  | 56m NE   | Unspecified Tanks                 | 1898 | 2267791  |
| A  | 56m NE   | Unspecified Tanks                 | 1898 | 2267791  |
| B  | 59m SE   | Cement Works                      | 1898 | 2275278  |
| B  | 59m SE   | Cement Works                      | 1898 | 2275278  |
| B  | 60m SE   | Cement Works                      | 1923 | 2252125  |
| B  | 61m SE   | Tower Works                       | 1946 | 2194506  |
| B  | 61m SE   | Tower Works                       | 1932 | 2173363  |
| B  | 61m SE   | Cement Works                      | 1907 | 2252125  |



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| B  | 61m SE   | Cement Works      | 1895 | 2275278  |
| A  | 63m N    | Unspecified Wharf | 1955 | 2269240  |
| A  | 63m N    | Unspecified Wharf | 1966 | 2269240  |
| A  | 63m N    | Unspecified Tank  | 1895 | 2155405  |
| B  | 64m SE   | Tower Works       | 1938 | 2239514  |
| B  | 70m SE   | Cement Works      | 1888 | 2288980  |
| B  | 74m SE   | Refuse Heap       | 1966 | 2193731  |
| A  | 75m NE   | Unspecified Tank  | 1895 | 2155406  |
| B  | 76m SE   | Refuse Heap       | 1955 | 2193731  |
| B  | 87m SE   | Unspecified Tank  | 1907 | 2244381  |
| B  | 87m SE   | Unspecified Tank  | 1923 | 2220508  |
| A  | 88m N    | Unspecified Tank  | 1923 | 2155404  |
| B  | 90m SE   | Unspecified Tank  | 1932 | 2286370  |
| B  | 91m SE   | Unspecified Tank  | 1938 | 2286370  |
| B  | 91m SE   | Unspecified Tank  | 1946 | 2286370  |
| B  | 93m SE   | Unspecified Tank  | 1923 | 2286370  |
| A  | 93m NE   | Unspecified Tank  | 1895 | 2227228  |
| A  | 97m N    | Refuse Heap       | 1923 | 2283173  |
| A  | 98m N    | Unspecified Tank  | 1898 | 2275096  |
| A  | 98m N    | Unspecified Tank  | 1898 | 2275096  |
| A  | 105m E   | Unspecified Tanks | 1938 | 2201545  |
| A  | 106m E   | Unspecified Tank  | 1993 | 2211821  |
| A  | 106m E   | Unspecified Tank  | 1982 | 2211821  |
| A  | 106m E   | Unspecified Tank  | 1973 | 2211821  |
| A  | 106m E   | Unspecified Tank  | 1992 | 2211821  |
| A  | 107m N   | Unspecified Tank  | 1895 | 2155403  |
| A  | 107m E   | Unspecified Tanks | 1946 | 2249898  |
| A  | 107m E   | Unspecified Tanks | 1932 | 2290281  |



| ID | Location | Land Use                          | Date | Group ID |
|----|----------|-----------------------------------|------|----------|
| A  | 108m N   | Unspecified Heaps                 | 1938 | 2259815  |
| A  | 108m N   | Unspecified Heaps                 | 1938 | 2259815  |
| A  | 109m N   | Unspecified Heaps                 | 1946 | 2232165  |
| A  | 109m N   | Unspecified Ground Workings       | 1955 | 2234949  |
| A  | 109m N   | Unspecified Ground Workings       | 1966 | 2234949  |
| A  | 110m N   | Unspecified Ground Workings       | 1932 | 2257618  |
| A  | 111m E   | Unspecified Wharf                 | 1888 | 2261354  |
| A  | 112m E   | Unspecified Wharf                 | 1895 | 2239342  |
| B  | 112m E   | Tramway Sidings                   | 1923 | 2180973  |
| A  | 112m NE  | Unspecified Tanks                 | 1938 | 2278662  |
| A  | 115m NE  | Unspecified Tanks                 | 1932 | 2278662  |
| H  | 124m S   | Unspecified Heap                  | 1955 | 2266392  |
| H  | 124m S   | Unspecified Heap                  | 1966 | 2266392  |
| A  | 131m N   | Refuse Heap                       | 1895 | 2189143  |
| B  | 148m SE  | Unspecified Wharf                 | 1982 | 2258821  |
| B  | 148m SE  | Unspecified Wharf                 | 1992 | 2258821  |
| A  | 150m NE  | Unspecified Wharf                 | 1898 | 2257834  |
| A  | 150m NE  | Unspecified Wharf                 | 1898 | 2257834  |
| B  | 153m SE  | Unspecified Wharf                 | 1993 | 2205242  |
| B  | 158m SE  | Unspecified Tanks                 | 1932 | 2262080  |
| B  | 160m SE  | Unspecified Tanks                 | 1938 | 2262080  |
| B  | 160m SE  | Unspecified Tanks                 | 1946 | 2262080  |
| I  | 174m NE  | Unspecified Wharf                 | 1982 | 2278448  |
| I  | 174m NE  | Unspecified Wharf                 | 1992 | 2214482  |
| I  | 174m NE  | Unspecified Wharf                 | 1993 | 2180024  |
| B  | 177m SE  | Unspecified Industrial/Commercial | 1888 | 2164941  |
| B  | 178m SE  | Cement Works                      | 1907 | 2177695  |
| B  | 178m SE  | Cement Works                      | 1895 | 2215752  |

| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| B  | 180m E   | Unspecified Tank  | 1895 | 2155395  |
| B  | 180m E   | Unspecified Tank  | 1898 | 2169808  |
| B  | 180m E   | Unspecified Tank  | 1898 | 2169808  |
| B  | 181m E   | Unspecified Tank  | 1895 | 2236599  |
| B  | 182m E   | Unspecified Tank  | 1888 | 2224325  |
| 1  | 183m NE  | Unspecified Wharf | 1895 | 2197254  |
| B  | 201m E   | Unspecified Wharf | 1895 | 2270363  |
| B  | 218m E   | Unspecified Tank  | 1938 | 2208493  |
| B  | 218m E   | Unspecified Tank  | 1932 | 2189436  |
| B  | 219m E   | Unspecified Tank  | 1946 | 2208493  |
| D  | 220m S   | Disused Windmill  | 1895 | 2205238  |
| B  | 227m E   | Unspecified Wharf | 1888 | 2287459  |
| B  | 233m E   | Unspecified Wharf | 1898 | 2214407  |
| B  | 233m E   | Unspecified Wharf | 1898 | 2214407  |
| D  | 238m S   | Corn Windmill     | 1865 | 2138220  |
| C  | 241m S   | Refuse Heap       | 1955 | 2158974  |
| D  | 244m S   | Disused Windmill  | 1898 | 2280248  |
| D  | 244m S   | Disused Windmill  | 1898 | 2280248  |
| D  | 245m S   | Disused Windmill  | 1888 | 2280248  |
| D  | 246m S   | Disused Windmill  | 1895 | 2280248  |
| B  | 248m E   | Unspecified Wharf | 1973 | 2287000  |
| B  | 255m E   | Railway Sidings   | 1982 | 2181180  |
| B  | 255m E   | Railway Sidings   | 1992 | 2240122  |
| B  | 257m SE  | Refuse Heap       | 1955 | 2216286  |
| B  | 258m SE  | Refuse Heap       | 1966 | 2216286  |
| J  | 258m NW  | Unspecified Tank  | 1993 | 2213283  |
| J  | 258m NW  | Unspecified Tank  | 1982 | 2213283  |
| J  | 258m NW  | Unspecified Tank  | 1992 | 2213283  |



| ID | Location | Land Use                          | Date | Group ID |
|----|----------|-----------------------------------|------|----------|
| B  | 269m E   | Railway Sidings                   | 1938 | 2252216  |
| B  | 269m E   | Unspecified Commercial/Industrial | 1938 | 2196340  |
| B  | 269m E   | Unspecified Commercial/Industrial | 1916 | 2221348  |
| B  | 269m E   | Railway Sidings                   | 1916 | 2168847  |
| B  | 270m E   | Unspecified Commercial/Industrial | 1938 | 2196340  |
| B  | 270m E   | Railway Sidings                   | 1938 | 2252216  |
| B  | 273m E   | Railway Building                  | 1895 | 2150197  |
| B  | 285m E   | Railway Building                  | 1888 | 2150196  |
| B  | 287m SE  | Unspecified Commercial/Industrial | 1932 | 2176370  |
| K  | 287m SW  | Cement Works                      | 1895 | 2189520  |
| B  | 289m SE  | Unspecified Commercial/Industrial | 1946 | 2292404  |
| K  | 295m SW  | Cement Works                      | 1888 | 2279459  |
| K  | 295m SW  | Unspecified Commercial/Industrial | 1932 | 2285345  |
| K  | 295m SW  | Cement Works                      | 1907 | 2195031  |
| K  | 295m SW  | Cement Works                      | 1895 | 2189520  |
| L  | 296m S   | Cement Works                      | 1898 | 2281629  |
| L  | 296m S   | Cement Works                      | 1898 | 2281629  |
| L  | 297m S   | Paper Mills                       | 1946 | 2193553  |
| L  | 297m S   | Tramway Sidings                   | 1946 | 2195082  |
| B  | 299m SE  | Unspecified Commercial/Industrial | 1938 | 2238313  |
| K  | 302m SW  | Unspecified Ground Workings       | 1973 | 2134124  |
| K  | 303m S   | Cement Works                      | 1923 | 2215290  |
| B  | 303m E   | Railway Building                  | 1895 | 2150195  |
| K  | 303m SW  | Cement Works                      | 1923 | 2195031  |
| L  | 304m S   | Mineral Railway Sidings           | 1971 | 2281821  |
| L  | 304m S   | Mineral Railway Sidings           | 1966 | 2226248  |
| M  | 304m S   | Mineral Railway Sidings           | 1955 | 2226248  |
| B  | 309m SE  | Cement Works                      | 1895 | 2258944  |



| ID | Location | Land Use                    | Date | Group ID |
|----|----------|-----------------------------|------|----------|
| B  | 316m SE  | Unspecified Ground Workings | 1907 | 2134378  |
| B  | 317m SE  | Unspecified Depot           | 1982 | 2241419  |
| B  | 317m SE  | Unspecified Depot           | 1992 | 2241419  |
| B  | 317m SE  | Cement Works                | 1898 | 2258944  |
| B  | 317m SE  | Cement Works                | 1898 | 2258944  |
| L  | 318m S   | Industrial Estate           | 1990 | 2138491  |
| B  | 321m S   | Unspecified Depot           | 1990 | 2217955  |
| B  | 321m S   | Unspecified Depot           | 1977 | 2199659  |
| B  | 321m S   | Unspecified Depot           | 1971 | 2185477  |
| L  | 321m S   | Unspecified Mills           | 1955 | 2274612  |
| L  | 321m S   | Unspecified Mills           | 1977 | 2269081  |
| L  | 321m S   | Unspecified Mills           | 1971 | 2180278  |
| L  | 321m S   | Paper Mills                 | 1966 | 2214628  |
| B  | 323m SE  | Cement Works                | 1888 | 2258944  |
| B  | 324m SE  | Cement Works                | 1923 | 2272142  |
| B  | 324m SE  | Unspecified Wharf           | 1895 | 2196951  |
| B  | 325m SE  | Cement Works                | 1923 | 2267209  |
| B  | 330m SE  | Railway Sidings             | 1916 | 2276920  |
| B  | 330m SE  | Unspecified Depot           | 1973 | 2170910  |
| O  | 334m N   | Unspecified Depot           | 1973 | 2185803  |
| B  | 334m SE  | Unspecified Tanks           | 1982 | 2224432  |
| B  | 334m SE  | Unspecified Tanks           | 1973 | 2224432  |
| B  | 334m SE  | Unspecified Tanks           | 1992 | 2224432  |
| K  | 338m SW  | Unspecified Ground Workings | 1932 | 2243792  |
| L  | 338m S   | Railway Sidings             | 1895 | 2287603  |
| O  | 341m N   | Unspecified Depot           | 1982 | 2263526  |
| O  | 341m N   | Unspecified Depot           | 1992 | 2263526  |
| K  | 341m SW  | Unspecified Ground Workings | 1938 | 2246430  |



| ID | Location | Land Use                    | Date | Group ID |
|----|----------|-----------------------------|------|----------|
| K  | 341m SW  | Unspecified Ground Workings | 1938 | 2246430  |
| P  | 342m SE  | Railway Sidings             | 1865 | 2202900  |
| L  | 342m SW  | Tramway Sidings             | 1895 | 2287693  |
| L  | 344m SW  | Tramway Sidings             | 1907 | 2235680  |
| 3  | 344m SW  | Tramway Sidings             | 1923 | 2180973  |
| 4  | 346m S   | Unspecified Pit             | 1865 | 2126089  |
| K  | 355m SW  | Unspecified Heap            | 1946 | 2137188  |
| B  | 355m SE  | Railway Building            | 1898 | 2209071  |
| B  | 355m SE  | Railway Building            | 1898 | 2209071  |
| L  | 357m S   | Tramway Sidings             | 1932 | 2173702  |
| B  | 359m SE  | Railway Building            | 1888 | 2286322  |
| Q  | 360m SW  | Paper Mills                 | 1907 | 2237201  |
| Q  | 360m SW  | Paper Works                 | 1895 | 2217633  |
| Q  | 361m SW  | Chalk Pit                   | 1898 | 2283865  |
| Q  | 361m SW  | Chalk Pit                   | 1898 | 2283865  |
| B  | 363m SE  | Unspecified Tank            | 1977 | 2256445  |
| B  | 363m SE  | Unspecified Tank            | 1971 | 2295195  |
| 5  | 364m SE  | Unspecified Wharf           | 1895 | 2270164  |
| K  | 368m SW  | Unspecified Ground Workings | 1966 | 2228492  |
| B  | 373m SE  | Unspecified Tank            | 1895 | 2155390  |
| S  | 374m NW  | Unspecified Depot           | 1982 | 2280218  |
| S  | 374m NW  | Unspecified Depot           | 1973 | 2280218  |
| S  | 374m NW  | Unspecified Depot           | 1992 | 2280218  |
| Q  | 375m SW  | Chalk Pit                   | 1895 | 2186218  |
| Q  | 377m SW  | Unspecified Pit             | 1907 | 2180056  |
| Q  | 377m SW  | Chalk Pit                   | 1895 | 2222286  |
| B  | 378m SE  | Railway Building            | 1898 | 2186647  |
| B  | 378m SE  | Railway Building            | 1898 | 2186647  |



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| Q  | 379m SW  | Chalk Pit         | 1888 | 2243277  |
| B  | 382m SE  | Railway Building  | 1888 | 2210554  |
| B  | 383m SE  | Unspecified Tank  | 1898 | 2200012  |
| B  | 383m SE  | Unspecified Tank  | 1898 | 2200012  |
| Q  | 383m SW  | Chalk Pits        | 1923 | 2129001  |
| B  | 384m SE  | Railway Building  | 1898 | 2264365  |
| B  | 384m SE  | Railway Building  | 1898 | 2264365  |
| B  | 386m SE  | Unspecified Tanks | 1977 | 2227853  |
| B  | 386m SE  | Unspecified Tanks | 1971 | 2227147  |
| B  | 386m SE  | Unspecified Tank  | 1888 | 2196240  |
| B  | 386m SE  | Unspecified Tank  | 1907 | 2178462  |
| B  | 386m SE  | Unspecified Tank  | 1895 | 2253354  |
| S  | 388m N   | Unspecified Depot | 1993 | 2262232  |
| B  | 388m S   | Unspecified Tank  | 1923 | 2178462  |
| B  | 388m SE  | Railway Building  | 1888 | 2283566  |
| B  | 389m S   | Unspecified Tank  | 1923 | 2214638  |
| B  | 393m SE  | Unspecified Tanks | 1973 | 2292858  |
| B  | 393m SE  | Unspecified Tanks | 1992 | 2178549  |
| B  | 393m SE  | Unspecified Tanks | 1982 | 2178549  |
| B  | 401m SE  | Railway Building  | 1898 | 2203807  |
| B  | 401m SE  | Railway Building  | 1898 | 2203807  |
| B  | 402m SE  | Unspecified Kiln  | 1865 | 2157509  |
| B  | 404m SE  | Unspecified Kilns | 1865 | 2151949  |
| B  | 405m SE  | Railway Building  | 1888 | 2248786  |
| B  | 412m SE  | Unspecified Wharf | 1898 | 2243522  |
| B  | 412m SE  | Unspecified Wharf | 1898 | 2243522  |
| B  | 416m SE  | Unspecified Wharf | 1888 | 2293046  |
| B  | 425m SE  | Unspecified Tank  | 1982 | 2174681  |



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| B  | 425m SE  | Unspecified Tank  | 1973 | 2174681  |
| B  | 425m SE  | Unspecified Tank  | 1992 | 2174681  |
| B  | 433m SE  | Cement Mill       | 1865 | 2140071  |
| B  | 434m SE  | Unspecified Tank  | 1895 | 2155376  |
| L  | 436m SW  | Unspecified Mills | 1946 | 2230497  |
| Q  | 438m SW  | Paper Works       | 1895 | 2189798  |
| B  | 441m SE  | Unspecified Tank  | 1895 | 2155377  |
| B  | 442m SE  | Unspecified Tanks | 1898 | 2272322  |
| B  | 442m SE  | Unspecified Tanks | 1898 | 2272322  |
| Q  | 443m SW  | Railway Sidings   | 1955 | 2174201  |
| Q  | 443m SW  | Paper Works       | 1888 | 2250075  |
| Q  | 444m SW  | Paper Works       | 1898 | 2218460  |
| Q  | 444m SW  | Paper Works       | 1898 | 2218460  |
| B  | 446m SE  | Unspecified Tanks | 1888 | 2286627  |
| B  | 447m SE  | Unspecified Tanks | 1895 | 2284373  |
| Q  | 448m SW  | Paper Mills       | 1938 | 2294610  |
| Q  | 451m SW  | Paper Mills       | 1923 | 2226448  |
| Q  | 451m SW  | Tramway Sidings   | 1923 | 2195007  |
| Q  | 453m SW  | Tar Distilleries  | 1932 | 2292004  |
| Q  | 453m SW  | Paper Mills       | 1923 | 2226448  |
| B  | 455m S   | Unspecified Works | 1990 | 2230303  |
| B  | 455m S   | Unspecified Works | 1977 | 2230303  |
| Q  | 455m SW  | Tar Distilleries  | 1938 | 2292004  |
| U  | 456m SE  | Unspecified Wharf | 1990 | 2243828  |
| U  | 456m SE  | Unspecified Wharf | 1977 | 2243828  |
| U  | 456m SE  | Unspecified Wharf | 1971 | 2243828  |
| U  | 456m SE  | Unspecified Wharf | 1966 | 2243828  |
| Q  | 457m SW  | Industrial Estate | 1993 | 2138492  |



| ID | Location | Land Use                          | Date | Group ID |
|----|----------|-----------------------------------|------|----------|
| Q  | 458m SW  | Unspecified Works                 | 1982 | 2283234  |
| Q  | 458m SW  | Unspecified Works                 | 1992 | 2176102  |
| Q  | 461m SW  | Unspecified Works                 | 1966 | 2229930  |
| Q  | 461m SW  | Unspecified Works                 | 1955 | 2176507  |
| P  | 465m SE  | Cement Works                      | 1895 | 2290804  |
| V  | 467m SE  | Unspecified Wharf                 | 1932 | 2280904  |
| V  | 467m SE  | Unspecified Wharf                 | 1946 | 2243799  |
| Q  | 470m SW  | Unspecified Works                 | 1973 | 2247869  |
| B  | 472m SE  | Unspecified Tanks                 | 1932 | 2283748  |
| B  | 473m SE  | Unspecified Tanks                 | 1946 | 2281441  |
| P  | 473m SE  | Unspecified Commercial/Industrial | 1916 | 2188444  |
| P  | 473m SE  | Cement Works                      | 1888 | 2252066  |
| U  | 474m SE  | Unspecified Wharf                 | 1938 | 2171706  |
| U  | 474m SE  | Unspecified Wharf                 | 1938 | 2171706  |
| B  | 474m SE  | Unspecified Tanks                 | 1938 | 2281441  |
| U  | 477m SE  | Unspecified Wharf                 | 1865 | 2205425  |
| W  | 484m S   | Unspecified Factory               | 1966 | 2197884  |
| P  | 484m SE  | Cement Works                      | 1898 | 2210077  |
| P  | 484m SE  | Cement Works                      | 1898 | 2210077  |
| P  | 486m SE  | Unspecified Commercial/Industrial | 1938 | 2223398  |
| P  | 486m SE  | Railway Sidings                   | 1938 | 2187730  |
| P  | 486m SE  | Unspecified Commercial/Industrial | 1907 | 2239738  |
| P  | 486m SE  | Cement Works                      | 1865 | 2258945  |
| P  | 488m SE  | Railway Sidings                   | 1916 | 2259121  |
| P  | 488m SE  | Railway Sidings                   | 1938 | 2187730  |
| P  | 488m SE  | Cement Works                      | 1895 | 2256562  |
| P  | 490m SE  | Cement Works                      | 1923 | 2227374  |
| P  | 490m SE  | Tramway Sidings                   | 1923 | 2284630  |



| ID | Location | Land Use            | Date | Group ID |
|----|----------|---------------------|------|----------|
| X  | 491m SW  | Tramway Sidings     | 1923 | 2228599  |
| B  | 491m SE  | Unspecified Works   | 1990 | 2189410  |
| B  | 491m SE  | Unspecified Works   | 1977 | 2189410  |
| B  | 491m SE  | Unspecified Works   | 1971 | 2189410  |
| Q  | 492m SW  | Unspecified Tanks   | 1932 | 2247470  |
| Q  | 492m SW  | Unspecified Tanks   | 1946 | 2236721  |
| Q  | 494m SW  | Unspecified Tanks   | 1938 | 2236721  |
| W  | 494m SW  | Unspecified Factory | 1977 | 2266114  |
| X  | 495m SW  | Unspecified Pit     | 1990 | 2215360  |
| X  | 495m SW  | Unspecified Pit     | 1977 | 2215360  |
| X  | 495m SW  | Unspecified Pit     | 1971 | 2215360  |
| M  | 496m SW  | Unspecified Tank    | 1990 | 2267403  |
| M  | 496m SW  | Unspecified Tank    | 1977 | 2267403  |
| X  | 496m SW  | Chalk Pit           | 1888 | 2239282  |
| X  | 497m SW  | Chalk Pits          | 1923 | 2129002  |
| X  | 497m SW  | Old Chalk Pits      | 1938 | 2142456  |
| X  | 498m SW  | Chalk Pit           | 1895 | 2185040  |
| X  | 499m SW  | Chalk Pit           | 1895 | 2254754  |
| Y  | 500m SW  | Unspecified Pit     | 1955 | 2188458  |
| Y  | 500m SW  | Unspecified Pit     | 1966 | 2188458  |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.2 Historical tanks

**Records within 500m**

**178**

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 31 >](#)



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| A  | 10m N    | Tanks             | 1999 | 377624   |
| A  | 30m NE   | Unspecified Tank  | 1999 | 368878   |
| A  | 45m NE   | Unspecified Tank  | 1999 | 368882   |
| G  | 50m NW   | Unspecified Tank  | 1970 | 368883   |
| A  | 52m NE   | Unspecified Tanks | 1907 | 379235   |
| A  | 52m NE   | Tanks             | 1897 | 387561   |
| G  | 52m NW   | Tanks             | 1989 | 386103   |
| G  | 52m NW   | Tanks             | 1989 | 386103   |
| A  | 52m E    | Unspecified Tank  | 1907 | 368879   |
| G  | 54m NW   | Unspecified Tank  | 1978 | 368884   |
| A  | 60m NE   | Tanks             | 1898 | 387561   |
| A  | 68m N    | Unspecified Tank  | 1970 | 368885   |
| A  | 69m N    | Unspecified Tank  | 1978 | 368889   |
| B  | 69m SE   | Unspecified Tank  | 1939 | 397664   |
| B  | 69m SE   | Unspecified Tank  | 1932 | 397664   |
| A  | 70m NE   | Unspecified Tank  | 1907 | 368881   |
| B  | 74m S    | Tanks             | 1995 | 387875   |
| B  | 74m S    | Tanks             | 1993 | 387875   |
| B  | 74m S    | Tanks             | 1995 | 387875   |
| B  | 77m S    | Tanks             | 1995 | 381581   |
| B  | 77m S    | Tanks             | 1993 | 381581   |
| B  | 77m S    | Tanks             | 1995 | 381581   |
| B  | 77m S    | Tanks             | 1978 | 381277   |
| B  | 77m S    | Tanks             | 1989 | 381277   |
| B  | 77m S    | Tanks             | 1989 | 381277   |
| A  | 81m NE   | Unspecified Tank  | 1898 | 368890   |
| B  | 84m S    | Tanks             | 1995 | 396456   |
| B  | 84m S    | Tanks             | 1993 | 396456   |



| ID | Location | Land Use         | Date | Group ID |
|----|----------|------------------|------|----------|
| B  | 84m S    | Tanks            | 1995 | 396456   |
| A  | 85m E    | Tanks            | 1995 | 406173   |
| A  | 85m E    | Tanks            | 1993 | 406173   |
| A  | 85m E    | Tanks            | 1999 | 406173   |
| A  | 85m E    | Tanks            | 1995 | 406173   |
| A  | 86m E    | Tanks            | 1970 | 406173   |
| B  | 87m SE   | Unspecified Tank | 1907 | 368822   |
| A  | 88m E    | Tanks            | 1978 | 406173   |
| A  | 88m E    | Tanks            | 1989 | 406173   |
| A  | 88m E    | Tanks            | 1989 | 406173   |
| B  | 89m SE   | Tanks            | 1939 | 408605   |
| B  | 89m SE   | Tanks            | 1932 | 408605   |
| A  | 90m N    | Unspecified Tank | 1970 | 404712   |
| A  | 92m N    | Unspecified Tank | 1978 | 390064   |
| A  | 92m NE   | Unspecified Tank | 1995 | 407140   |
| A  | 92m NE   | Unspecified Tank | 1993 | 407140   |
| A  | 92m NE   | Unspecified Tank | 1995 | 407140   |
| A  | 92m N    | Unspecified Tank | 1907 | 407459   |
| A  | 93m N    | Unspecified Tank | 1897 | 407459   |
| A  | 96m NE   | Unspecified Tank | 1978 | 392140   |
| A  | 96m NE   | Unspecified Tank | 1989 | 392140   |
| A  | 96m NE   | Unspecified Tank | 1989 | 392140   |
| A  | 100m NE  | Tanks            | 1995 | 401757   |
| A  | 100m NE  | Tanks            | 1993 | 401757   |
| A  | 100m NE  | Tanks            | 1995 | 401757   |
| A  | 100m NE  | Tanks            | 1970 | 409145   |
| A  | 101m NE  | Tanks            | 1999 | 402239   |
| A  | 101m N   | Unspecified Tank | 1898 | 368888   |



| ID | Location | Land Use         | Date | Group ID |
|----|----------|------------------|------|----------|
| A  | 102m E   | Unspecified Tank | 1952 | 396537   |
| A  | 103m E   | Unspecified Tank | 1939 | 389974   |
| A  | 103m E   | Unspecified Tank | 1932 | 389974   |
| A  | 103m NE  | Tanks            | 1978 | 393649   |
| A  | 103m NE  | Tanks            | 1989 | 393649   |
| A  | 103m NE  | Tanks            | 1989 | 393649   |
| A  | 104m E   | Tanks            | 1970 | 385624   |
| A  | 108m E   | Tanks            | 1995 | 385616   |
| A  | 108m E   | Tanks            | 1993 | 385616   |
| A  | 108m E   | Tanks            | 1999 | 385616   |
| A  | 108m E   | Tanks            | 1995 | 385616   |
| A  | 111m NE  | Unspecified Tank | 1932 | 368880   |
| A  | 112m E   | Tanks            | 1978 | 411064   |
| A  | 112m E   | Tanks            | 1989 | 411064   |
| A  | 112m E   | Tanks            | 1989 | 411064   |
| A  | 112m NE  | Tanks            | 1939 | 398750   |
| A  | 112m E   | Tanks            | 1970 | 383620   |
| A  | 114m NE  | Tanks            | 1970 | 403976   |
| A  | 117m NE  | Tanks            | 1952 | 397733   |
| A  | 117m NE  | Tanks            | 1970 | 397733   |
| B  | 128m E   | Tanks            | 1970 | 388222   |
| B  | 129m E   | Tanks            | 1993 | 386271   |
| B  | 130m E   | Tanks            | 1978 | 388222   |
| B  | 130m E   | Tanks            | 1989 | 388222   |
| B  | 130m E   | Tanks            | 1989 | 388222   |
| A  | 131m NE  | Unspecified Tank | 1952 | 368897   |
| B  | 152m SE  | Tanks            | 1952 | 377663   |
| B  | 159m SE  | Tanks            | 1939 | 404226   |

| ID | Location | Land Use         | Date | Group ID |
|----|----------|------------------|------|----------|
| B  | 159m SE  | Tanks            | 1932 | 404226   |
| B  | 177m E   | Unspecified Tank | 1897 | 368900   |
| A  | 177m NW  | Unspecified Tank | 1999 | 368886   |
| H  | 195m S   | Unspecified Tank | 1978 | 389161   |
| H  | 195m S   | Unspecified Tank | 1989 | 389161   |
| H  | 195m S   | Unspecified Tank | 1989 | 389161   |
| H  | 195m S   | Unspecified Tank | 1995 | 389161   |
| H  | 195m S   | Unspecified Tank | 1993 | 389161   |
| H  | 195m S   | Unspecified Tank | 1999 | 389161   |
| H  | 195m S   | Unspecified Tank | 1995 | 389161   |
| 2  | 199m NW  | Tanks            | 1999 | 377625   |
| B  | 205m SE  | Tanks            | 1995 | 409534   |
| B  | 205m SE  | Tanks            | 1999 | 409534   |
| B  | 205m SE  | Tanks            | 1995 | 409534   |
| B  | 205m E   | Unspecified Tank | 1897 | 401653   |
| B  | 205m E   | Unspecified Tank | 1907 | 406726   |
| B  | 209m E   | Unspecified Tank | 1898 | 368899   |
| B  | 215m E   | Tanks            | 1939 | 381673   |
| B  | 215m E   | Tanks            | 1932 | 381673   |
| D  | 263m S   | Unspecified Tank | 1978 | 404962   |
| D  | 263m S   | Unspecified Tank | 1989 | 404962   |
| D  | 263m S   | Unspecified Tank | 1989 | 404962   |
| D  | 265m S   | Unspecified Tank | 1995 | 410383   |
| D  | 265m S   | Unspecified Tank | 1993 | 410383   |
| D  | 265m S   | Unspecified Tank | 1999 | 410383   |
| D  | 265m S   | Unspecified Tank | 1995 | 410383   |
| K  | 328m SW  | Unspecified Tank | 1897 | 406424   |
| K  | 330m SW  | Unspecified Tank | 1907 | 406424   |

| ID | Location | Land Use         | Date | Group ID |
|----|----------|------------------|------|----------|
| K  | 336m SW  | Unspecified Tank | 1907 | 368823   |
| B  | 345m SE  | Tanks            | 1970 | 403465   |
| B  | 346m SE  | Tanks            | 1978 | 380847   |
| B  | 346m SE  | Tanks            | 1989 | 380847   |
| B  | 346m SE  | Tanks            | 1989 | 380847   |
| B  | 347m SE  | Tanks            | 1970 | 397354   |
| B  | 350m SE  | Tanks            | 1970 | 385545   |
| K  | 360m SW  | Unspecified Tank | 1897 | 368824   |
| B  | 364m SE  | Tanks            | 1978 | 409224   |
| B  | 364m SE  | Tanks            | 1989 | 409224   |
| B  | 364m SE  | Tanks            | 1989 | 409224   |
| B  | 364m SE  | Tanks            | 1970 | 409224   |
| R  | 365m S   | Tanks            | 1993 | 408250   |
| B  | 366m S   | Gas Works        | 1898 | 380468   |
| B  | 366m SE  | Tanks            | 1970 | 377667   |
| R  | 366m S   | Tanks            | 1973 | 408250   |
| B  | 368m SE  | Tanks            | 1970 | 411091   |
| B  | 369m SE  | Tanks            | 1970 | 391760   |
| B  | 370m SE  | Tanks            | 1978 | 410165   |
| B  | 370m SE  | Tanks            | 1989 | 410165   |
| B  | 370m SE  | Tanks            | 1989 | 410165   |
| B  | 370m SE  | Tanks            | 1970 | 396268   |
| B  | 376m SE  | Tanks            | 1970 | 401936   |
| B  | 379m SE  | Gasometer        | 1898 | 374085   |
| B  | 384m SE  | Tanks            | 1970 | 382147   |
| B  | 384m S   | Unspecified Tank | 1907 | 390327   |
| B  | 385m S   | Unspecified Tank | 1897 | 390327   |
| K  | 387m SW  | Unspecified Tank | 1978 | 385410   |



| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| K  | 387m SW  | Unspecified Tank  | 1989 | 385410   |
| K  | 387m SW  | Unspecified Tank  | 1989 | 385410   |
| K  | 392m SW  | Unspecified Tank  | 1952 | 399355   |
| K  | 392m SW  | Unspecified Tank  | 1952 | 399355   |
| T  | 392m S   | Unspecified Tank  | 1907 | 404435   |
| T  | 392m S   | Unspecified Tank  | 1897 | 404435   |
| B  | 393m SE  | Tanks             | 1970 | 405153   |
| T  | 393m S   | Unspecified Tank  | 1939 | 404435   |
| T  | 393m S   | Unspecified Tank  | 1932 | 404435   |
| K  | 395m SW  | Unspecified Tank  | 1973 | 403683   |
| K  | 395m SW  | Unspecified Tank  | 1993 | 403683   |
| K  | 400m SW  | Unspecified Tank  | 1907 | 389134   |
| B  | 403m SE  | Tanks             | 1978 | 394689   |
| B  | 403m SE  | Tanks             | 1989 | 394689   |
| B  | 403m SE  | Tanks             | 1989 | 394689   |
| B  | 403m SE  | Tanks             | 1970 | 389031   |
| B  | 426m SE  | Unspecified Tank  | 1970 | 392228   |
| B  | 426m SE  | Unspecified Tank  | 1978 | 392228   |
| B  | 426m SE  | Unspecified Tank  | 1989 | 392228   |
| B  | 426m SE  | Unspecified Tank  | 1989 | 392228   |
| B  | 439m SE  | Tanks             | 1898 | 404682   |
| B  | 445m SE  | Tanks             | 1897 | 404682   |
| B  | 446m SE  | Unspecified Tanks | 1907 | 379243   |
| B  | 456m SE  | Unspecified Tank  | 1907 | 368826   |
| L  | 461m SW  | Tanks             | 1952 | 384372   |
| L  | 462m SW  | Tanks             | 1952 | 384372   |
| L  | 465m SW  | Tanks             | 1897 | 384372   |
| L  | 465m SW  | Tanks             | 1939 | 405425   |

| ID | Location | Land Use          | Date | Group ID |
|----|----------|-------------------|------|----------|
| L  | 465m SW  | Tanks             | 1932 | 405425   |
| B  | 468m SE  | Tanks             | 1898 | 391238   |
| B  | 474m SE  | Unspecified Tanks | 1907 | 379254   |
| B  | 474m SE  | Tanks             | 1897 | 391238   |
| Q  | 489m SW  | Tanks             | 1939 | 377659   |
| B  | 491m SE  | Tank or Trough    | 1898 | 379961   |
| L  | 493m SW  | Unspecified Tank  | 1907 | 368847   |
| Q  | 498m SW  | Tanks             | 1939 | 400014   |
| Q  | 498m SW  | Tanks             | 1932 | 400014   |
| M  | 499m SW  | Unspecified Tank  | 1993 | 368843   |

This data is sourced from Ordnance Survey / Groundsure.

## 2.3 Historical energy features

### Records within 500m

**31**

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 31 >](#)

| ID | Location | Land Use               | Date | Group ID |
|----|----------|------------------------|------|----------|
| B  | 148m SE  | Electricity Substation | 1995 | 258167   |
| B  | 148m SE  | Electricity Substation | 1993 | 258167   |
| B  | 148m SE  | Electricity Substation | 1995 | 258167   |
| B  | 149m SE  | Electricity Substation | 1978 | 281851   |
| B  | 149m SE  | Electricity Substation | 1989 | 281851   |
| B  | 149m SE  | Electricity Substation | 1989 | 281851   |
| B  | 167m E   | Electricity Substation | 1993 | 248058   |
| B  | 169m E   | Electricity Substation | 1978 | 282980   |
| B  | 169m E   | Electricity Substation | 1989 | 282980   |
| B  | 169m E   | Electricity Substation | 1989 | 282980   |



| ID | Location | Land Use                 | Date | Group ID |
|----|----------|--------------------------|------|----------|
| D  | 190m S   | Electricity Substation   | 1978 | 268079   |
| D  | 190m S   | Electricity Substation   | 1989 | 268079   |
| D  | 190m S   | Electricity Substation   | 1989 | 268079   |
| D  | 193m S   | Electricity Substation   | 1995 | 269764   |
| D  | 193m S   | Electricity Substation   | 1993 | 269764   |
| D  | 193m S   | Electricity Substation   | 1999 | 269764   |
| D  | 193m S   | Electricity Substation   | 1995 | 269764   |
| B  | 210m E   | Electricity Substation   | 1995 | 274521   |
| B  | 210m E   | Electricity Substation   | 1999 | 274521   |
| B  | 210m E   | Electricity Substation   | 1995 | 274521   |
| B  | 242m E   | Electricity Substation   | 1995 | 273854   |
| B  | 242m E   | Electricity Substation   | 1999 | 273854   |
| B  | 242m E   | Electricity Substation   | 1995 | 273854   |
| N  | 307m S   | Electricity Substation   | 1973 | 256837   |
| N  | 315m S   | Electricity Transformers | 1973 | 251657   |
| N  | 318m S   | Electricity Substation   | 1993 | 254340   |
| N  | 318m S   | Electricity Substation   | 1993 | 258289   |
| N  | 339m S   | Electricity Substation   | 1952 | 253918   |
| N  | 339m S   | Electricity Substation   | 1952 | 253461   |
| B  | 365m S   | Gas Works                | 1898 | 250261   |
| B  | 378m SE  | Gasometer                | 1898 | 251567   |

*This data is sourced from Ordnance Survey / Groundsure.*

## 2.4 Historical petrol stations

### Records within 500m

0

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'.

*This data is sourced from Ordnance Survey / Groundsure.*



## 2.5 Historical garages

### Records within 500m

2

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'.

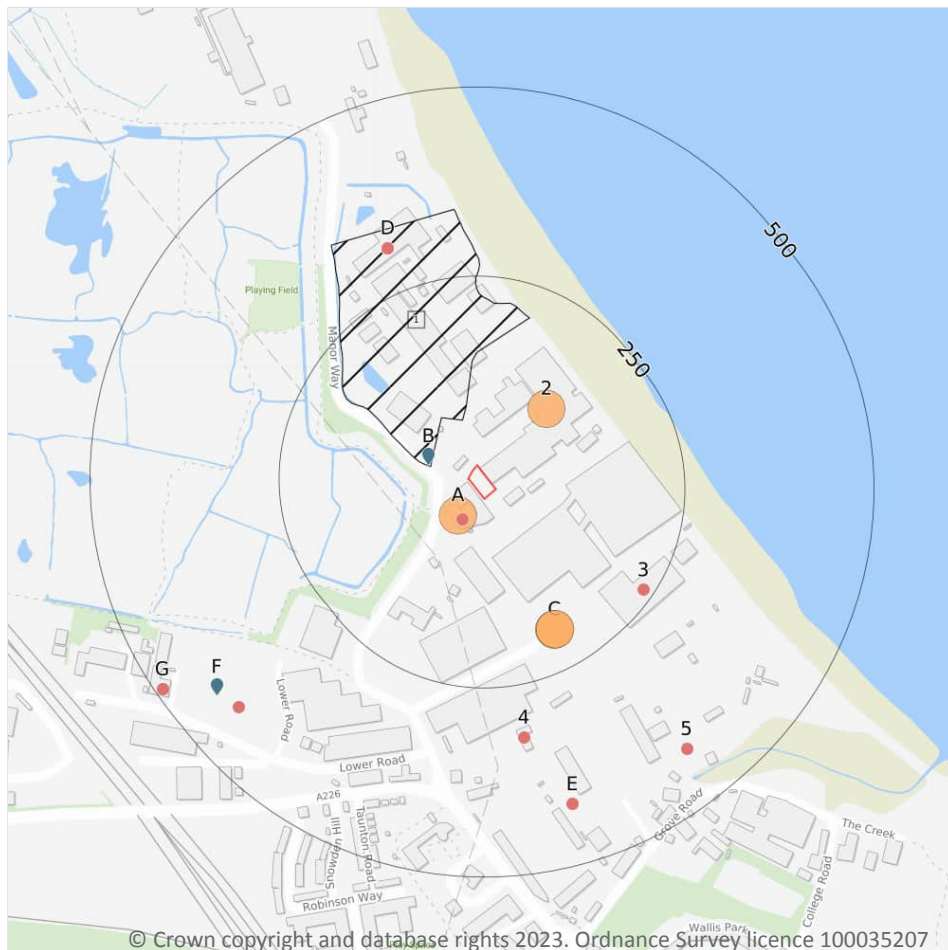
Features are displayed on the Past land use - un-grouped map on [page 31](#) >

| ID | Location | Land Use        | Date | Group ID |
|----|----------|-----------------|------|----------|
| 6  | 405m S   | Garage          | 1993 | 81061    |
| 7  | 474m S   | Service Station | 1993 | 73971    |

*This data is sourced from Ordnance Survey / Groundsure.*



## 3 Waste and landfill



- Site Outline
- Search buffers in metres (m)
- Historical landfill (EA/NRW)
- Historical waste sites
- Licensed waste sites
- Waste exemptions

### 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

1

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.

Features are displayed on the Waste and landfill map on [page 53 >](#)

| ID | Location | Details                                                                                  |                                                                                                                                                                                                                                        |                                                                                                                   |
|----|----------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1  | 52m W    | Site Address: Botany Road,<br>Botany Road, Northfleet, Kent<br>Licence Holder Address: - | Waste Licence: Yes<br>Site Reference: 21EM, P/02/01<br>Waste Type: Inert, Industrial, Special<br>Environmental Permitting Regulations<br>(Waste) Reference: SJ1/L/BRI001<br>Licence Issue: 14/06/1977<br>Licence Surrender: 19/09/2000 | Operator: Britannia Refined Metals<br>Licence Holder: Brit. Lead<br>First Recorded 31/12/1977<br>Last Recorded: - |

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

### 3.5 Historical waste sites

Records within 500m

4

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

Features are displayed on the Waste and landfill map on [page 53 >](#)

| ID | Location | Address                                                                                                     | Further Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Date           |
|----|----------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| A  | 16m SW   | Site Address: Britannia Refined Metals Ltd,<br>Botany Road, Northfleet, Gravesend, Kent,<br>DA11 9BG        | Type of Site: Recycling Centre<br>Planning application reference: 20211588<br>Description: Scheme comprises<br>kcc/scr/gr/0250/2021 - request for a screening<br>opinion in accordance with the town and country<br>planning act (environmental impact assessment)<br>regulations 2017as to whether the proposed<br>development of a facility to sample waste<br>electronic s material (also known as an e-scrap<br>facility) requires an environmental impact<br>assessment at Britannia Refined Metals (brm)<br>Site, Botany Road, Northfleet, kent DA11 9BG<br>Data source: Historic Planning Application<br>Data Type: Point                                                                                                                                                                                                                                                                                          | 23/12/202<br>1 |
| 2  | 93m NE   | Site Address: Britannia Refined Metals Ltd,<br>Lower Road, Northfleet, Gravesend, Kent,<br>DA11 9BG, S.EAST | Type of Site: Recycling Centre<br>Planning application reference: GR/22/1087<br>(KCC/GR/0168/2022)<br>Description: Scheme comprises development of<br>an enclosed electronic waste (e-scrap) transfer<br>facility, involving shredding, sampling, sorting,<br>and bulking up of electronic waste streams for<br>onward transportation to recycling/management<br>facilities, the proposed develo pment includes<br>construction of a new steel framed waste<br>transfer building, firewater storage tank and<br>associated plant, dust extraction unit, office and<br>staff welfare building, new areas of concrete<br>hard standing and footways, upgrade to site<br>drainage, c onstruction of a re-aligned access<br>point off manor way and retention of vehicular<br>access to the adjacent wharf, including<br>sustainable urban drainage system.<br>Data source: Historic Planning Application<br>Data Type: Point | 06/10/202<br>2 |
| C  | 170m SE  | Site Address: Kent Kraft Ind Estate, Plot 20,Off<br>Lower Road, Northfleet, GRAVESEND, Kent,<br>DA11 9BB    | Type of Site: Waste Transfer Station<br>Planning application reference: DA/96/00457<br>Description: Use of land as a waste transfer<br>station handling category A and B waste with<br>ancillary portable office, messroom/store and car<br>parking. An application (ref: DA/96/00457) for<br>Detailed Planning permission was submitted to<br>Dartford B.C. on 10th July 199 6.<br>Data source: Historic Planning Application<br>Data Type: Point                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -              |



| ID | Location | Address                                                                                        | Further Details                                                                                                                                                                                                                                                                                                                                                                                                                      | Date |
|----|----------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| C  | 171m SE  | Site Address: Kent Hraft Ind Estate, Plot 20, Lower Road, Northfleet, DARTFORD, Kent, DA11 9BB | Type of Site: Waste Transfer Station<br>Planning application reference: DA/97/00001<br>Description: Use of land as a waste transfer station handling category A and B waste together with portable office, messroom/store and car parking. An application (ref: DA/97/00001) for Detailed Planning permission was submitted to Dartford B.C. on 2nd January 19 97.<br>Data source: Historic Planning Application<br>Data Type: Point | -    |

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

### 3.6 Licensed waste sites

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>5</b> |
|----------------------------|----------|

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

Features are displayed on the Waste and landfill map on [page 53 >](#)

| ID | Location | Details                                                                                                                                    |                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                      |
|----|----------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| B  | 60m NW   | Site Name: Botany Road<br>Site Address: Botany Road, Northfleet, Kent, DA11<br>Correspondence Address: -                                   | Type of Site: Industrial Waste Landfill (Factory curtilage)<br>Size: >= 75000 tonnes<br>Environmental Permitting Regulations (Waste) Licence Number: BRI001<br>EPR reference: EA/EPR/TP3898HP/A001<br>Operator: Britannia Refined Metals Limited<br>Waste Management licence No: 19387<br>Annual Tonnage: 75000 | Issue Date: 14/06/1997<br>Effective Date: -<br>Modified: -<br>Surrendered Date: -<br>Expiry Date: 27/07/1998<br>Cancelled Date: -<br>Status: Expired |
| B  | 60m NW   | Site Name: Botany Road<br>Site Address: Botany Road, Northfleet, Kent, DA11<br>Correspondence Address: Botany Road, Northfleet, Kent, DA11 | Type of Site: Industrial Waste Landfill (Factory curtilage)<br>Size: Unknown<br>Environmental Permitting Regulations (Waste) Licence Number: BRI001<br>EPR reference: -<br>Operator: Britannia Refined Metals<br>Waste Management licence No: 19387<br>Annual Tonnage: 0                                        | Issue Date: 14/06/1997<br>Effective Date: -<br>Modified: -<br>Surrendered Date: -<br>Expiry Date: 27/07/1998<br>Cancelled Date: -<br>Status: Expired |



| ID | Location | Details                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                   |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B  | 60m NW   | Site Name: Botany Road<br>Site Address: Botany Road,<br>Northfleet, Kent, DA11<br>Correspondence Address: -                                                    | Type of Site: Industrial Waste<br>Landfill (Factory curtilage)<br>Size: 25000 tonnes<br>Environmental Permitting<br>Regulations (Waste) Licence<br>Number: BRI001<br>EPR reference:<br>EA/EPR/TP3898HP/A001<br>Operator: Britannia Refined Metals<br>Waste Management licence No:<br>19387<br>Annual Tonnage: 75000                 | Issue Date: 14/06/1997<br>Effective Date: -<br>Modified: -<br>Surrendered Date: -<br>Expiry Date: 27/07/1998<br>Cancelled Date: -<br>Status: Expired              |
| F  | 431m SW  | Site Name: Northfleet Lake<br>Site Address: Northfleet Lake,<br>Lower Road, Northfleet Ind Est,<br>Gravesend, Kent, DA11 9SW<br>Correspondence Address: -      | Type of Site: Deposit of waste to<br>land as a recovery operation<br>Size: 25000 tonnes<br>Environmental Permitting<br>Regulations (Waste) Licence<br>Number: WOO170<br>EPR reference:<br>EA/EPR/KB3435AK/S002<br>Operator: Woodland<br>Environmental Limited<br>Waste Management licence No:<br>102044<br>Annual Tonnage: 0        | Issue Date: 10/08/2011<br>Effective Date: 07/09/2012<br>Modified: -<br>Surrendered Date: 22/05/2018<br>Expiry Date: -<br>Cancelled Date: -<br>Status: Surrendered |
| F  | 431m SW  | Site Name: Northfleet Lake<br>Site Address: Northfleet Industrial<br>Estate, Lower Road, Northfleet,<br>Gravesend, Kent, DA11 9SW<br>Correspondence Address: - | Type of Site: Deposit of waste to<br>land as a recovery operation<br>Size: 25000 tonnes<br>Environmental Permitting<br>Regulations (Waste) Licence<br>Number: AED003<br>EPR reference:<br>EA/EPR/NP3698VM/A001<br>Operator: Greenfield Properties ( U<br>K) Ltd<br>Waste Management licence No:<br>102044<br>Annual Tonnage: 114800 | Issue Date: 10/08/2011<br>Effective Date: -<br>Modified: -<br>Surrendered Date: -<br>Expiry Date: -<br>Cancelled Date: -<br>Status: Issued                        |

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

### 3.7 Waste exemptions

#### Records within 500m

**15**

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.

Features are displayed on the Waste and landfill map on [page 53](#) >



| ID | Location | Site                                                                   | Reference         | Category                     | Sub-Category                | Description                                              |
|----|----------|------------------------------------------------------------------------|-------------------|------------------------------|-----------------------------|----------------------------------------------------------|
| A  | 40m SW   | Britannia Refined Metals Ltd Botany Road GRAVESEND Kent DA11 9BG       | EPR/SF0303KJ/A001 | Treating waste exemption     | Non-Agricultural Waste Only | Crushing waste fluorescent tubes                         |
| 3  | 236m SE  | TOWER WHARF, LOWER ROAD, NORTHFLEET, GRAVESEND, DA11 9BD               | WEX260386         | Storing waste exemption      | Not on a farm               | Storage of waste in a secure place                       |
| D  | 310m N   | -                                                                      | WEX235662         | Disposing of waste exemption | Not on a farm               | Deposit of waste from dredging of inland waters          |
| D  | 310m N   | -                                                                      | WEX235662         | Storing waste exemption      | Not on a farm               | Storage of waste in a secure place                       |
| D  | 310m N   | -                                                                      | WEX235662         | Disposing of waste exemption | Not on a farm               | Burning waste in the open                                |
| D  | 310m N   | -                                                                      | WEX089874         | Disposing of waste exemption | Not on a farm               | Burning waste in the open                                |
| D  | 310m N   | -                                                                      | WEX089874         | Disposing of waste exemption | Not on a farm               | Deposit of waste from dredging of inland waters          |
| D  | 310m N   | -                                                                      | WEX089874         | Storing waste exemption      | Not on a farm               | Storage of waste in a secure place                       |
| 4  | 320m S   | ROBINS WHARF, GROVE ROAD, NORTHFLEET, GRAVESEND, DA11 9AX              | WEX153887         | Treating waste exemption     | Not on a farm               | Screening and blending of waste                          |
| E  | 420m S   | Unit 1a Robins Wharf Grove Road Northfleet Kent DA11 9AX               | EPR/LF0602FN/A001 | Storing waste exemption      | Non-Agricultural Waste Only | Storage of waste in secure containers                    |
| E  | 420m S   | Unit 1a Robins Wharf Grove Road Northfleet Kent DA11 9AX               | EPR/LF0602FN/A001 | Storing waste exemption      | Non-Agricultural Waste Only | Storage of waste in a secure place                       |
| 5  | 425m SE  | -                                                                      | WEX303447         | Treating waste exemption     | Not on a Farm               | Screening and blending of waste                          |
| F  | 426m SW  | Unit E3 Compound Kent Kraft Industrial Estate Lower Road Kent DA11 9SN | EPR/PE5658ZH/A001 | Using waste exemption        | Non-Agricultural Waste Only | Use of depolluted end-of-life vehicles for vehicle parts |
| G  | 491m SW  | LAND AT, LOWER RD, NORTHFLEET, DA11 9SN                                | WEX298049         | Using waste exemption        | Not on a Farm               | Use of waste in construction                             |

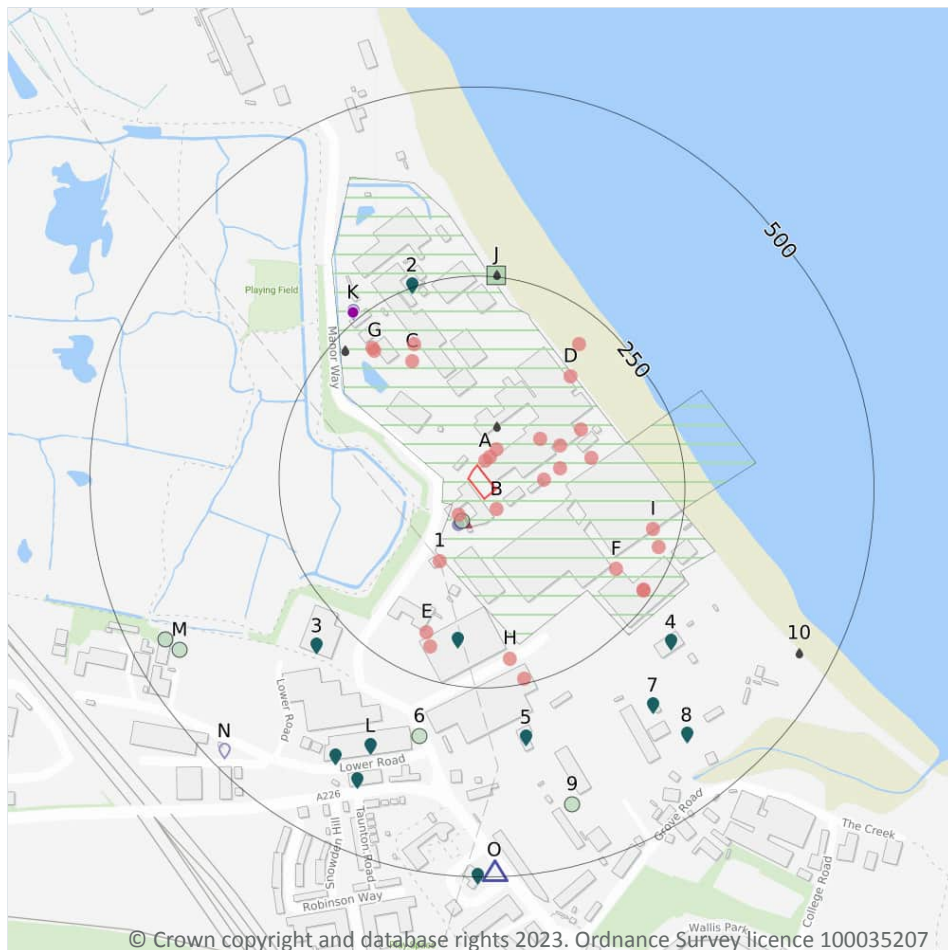


| ID | Location | Site                                       | Reference | Category                   | Sub-Category  | Description                           |
|----|----------|--------------------------------------------|-----------|----------------------------|---------------|---------------------------------------|
| G  | 491m SW  | LAND AT, LOWER RD,<br>NORTHFLEET, DA11 9SN | WEX298049 | Storing waste<br>exemption | Not on a Farm | Storage of waste in a secure<br>place |

*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
- Control of Major Accident Hazards
- ▲ Hazardous substance storage/usage
- Historical licensed industrial activities
- Part A(1) industrial activities
- Licensed pollutant release (Part A(2)/B)
- Licensed Discharges to controlled waters
- List 1 Dangerous Substances
- List 2 Dangerous Substances
- Pollution Incidents (EA/NRW)
- Pollution inventory substances
- Pollution inventory waste transfers

### 4.1 Recent industrial land uses

Records within 250m

27

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on [page 60](#) >

| ID | Location | Company                 | Address    | Activity            | Category                      |
|----|----------|-------------------------|------------|---------------------|-------------------------------|
| A  | 12m N    | Tank                    | Kent, DA11 | Tanks (Generic)     | Industrial Features           |
| A  | 21m N    | Tank                    | Kent, DA11 | Tanks (Generic)     | Industrial Features           |
| B  | 21m SE   | Electricity Sub Station | Kent, DA11 | Electrical Features | Infrastructure and Facilities |



| ID | Location | Company                  | Address                                                                         | Activity                                           | Category                      |
|----|----------|--------------------------|---------------------------------------------------------------------------------|----------------------------------------------------|-------------------------------|
| A  | 33m NE   | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| B  | 40m SW   | Britannia Refined Metals | -, Lower Road, Northfleet, Gravesend, Kent, DA11 9BG                            | Metals Manufacturers, Fabricators and Stockholders | Industrial Products           |
| A  | 65m E    | Chimney                  | Kent, DA11                                                                      | Chimneys                                           | Industrial Features           |
| A  | 87m NE   | Works                    | Kent, DA11                                                                      | Unspecified Works Or Factories                     | Industrial Features           |
| A  | 89m E    | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| 1  | 101m SW  | Pylon                    | Kent, DA11                                                                      | Electrical Features                                | Infrastructure and Facilities |
| A  | 103m NE  | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| A  | 134m E   | Electricity Sub Station  | Kent, DA11                                                                      | Electrical Features                                | Infrastructure and Facilities |
| A  | 137m NE  | Chimney                  | Kent, DA11                                                                      | Chimneys                                           | Industrial Features           |
| C  | 162m NW  | Chimney                  | Kent, DA11                                                                      | Chimneys                                           | Industrial Features           |
| D  | 170m NE  | Travelling Crane         | Kent, DA11                                                                      | Travelling Cranes and Gentries                     | Industrial Features           |
| C  | 180m NW  | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| F  | 191m SE  | Wharf                    | Kent, DA11                                                                      | Moorings and Unloading Facilities                  | Water                         |
| E  | 192m S   | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| G  | 203m NW  | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| E  | 208m S   | Lindab Kent Ltd          | Northfleet Industrial Estate, Lower Road, Northfleet, Gravesend, Kent, DA11 9BL | Cooling and Refrigeration                          | Industrial Products           |
| G  | 208m NW  | Tank                     | Kent, DA11                                                                      | Tanks (Generic)                                    | Industrial Features           |
| D  | 209m NE  | Travelling Crane         | Kent, DA11                                                                      | Travelling Cranes and Gentries                     | Industrial Features           |



| ID | Location | Company                     | Address                                                                                 | Activity                          | Category                        |
|----|----------|-----------------------------|-----------------------------------------------------------------------------------------|-----------------------------------|---------------------------------|
| H  | 214m S   | Electricity Sub Station     | Kent, DA11                                                                              | Electrical Features               | Infrastructure and Facilities   |
| I  | 214m E   | Electricity Sub Station     | Kent, DA11                                                                              | Electrical Features               | Infrastructure and Facilities   |
| I  | 228m E   | Electricity Sub Station     | Kent, DA11                                                                              | Electrical Features               | Infrastructure and Facilities   |
| F  | 236m SE  | Seacon                      | Tower Wharf, Lower Road, Northfleet, Gravesend, Kent, DA11 9BD                          | Distribution and Haulage          | Transport, Storage and Delivery |
| F  | 237m SE  | Sargent Brothers Thames Ltd | Tower Wharf, Lower Road, Northfleet, Gravesend, Kent, DA11 9BD                          | Moorings and Unloading Facilities | Water                           |
| H  | 244m S   | C P P                       | Unit K8 Northfleet Industrial Estate, Lower Road, Northfleet, Gravesend, Kent, DA11 9BL | Rubber, Silicones and Plastics    | Industrial Products             |

*This data is sourced from Ordnance Survey.*

## 4.2 Current or recent petrol stations

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>1</b> |
|----------------------------|----------|

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on [page 60 >](#)

| ID | Location | Company | Address                                                            | LPG | Status |
|----|----------|---------|--------------------------------------------------------------------|-----|--------|
| O  | 491m S   | SHELL   | Stonebridge Road, Eagle Way, Northfleet, Gravesend, Kent, DA11 9BJ | No  | Open   |

*This data is sourced from Experian.*

## 4.3 Electricity cables

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>0</b> |
|----------------------------|----------|

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

1

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.

Features are displayed on the Current industrial land use map on [page 60](#) >

| ID | Location | Company                          | Address                                                                                         | Operational status | Tier                      |
|----|----------|----------------------------------|-------------------------------------------------------------------------------------------------|--------------------|---------------------------|
| A  | On site  | Britannia Refined Metals Limited | Britannia Refined Metals Limited, Gravesend, Botany Road, Northfleet, Gravesend, Kent, DA11 9BG | Current COMAH Site | COMAH Upper Tier Operator |

*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

1

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.

Features are displayed on the Current industrial land use map on [page 60 >](#)

| ID | Location | Details                                                                                                                                                                                                           |                                                                                                                                                                             |
|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| B  | 40m SW   | Application reference number: No Details<br>Application status: Approved<br>Application date: 24/06/2015<br>Address: Britannia Refined Metals Ltd, Botany Road,<br>Northfleet, Gravesend, Kent, England, DA11 9BG | Details: Storage of various hazardous materials<br>Enforcement: No Enforcement Notified<br>Date of enforcement: No Enforcement Notified<br>Comment: No Enforcement Notified |

*This data is sourced from Local Authority records.*

## 4.9 Historical licensed industrial activities (IPC)

### Records within 500m

3

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.

Features are displayed on the Current industrial land use map on [page 60 >](#)

| ID | Location | Details                                                                                                                                                          |                                                                                                                               |
|----|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| B  | 48m SW   | Operator: Britannia Refined Metals Ltd<br>Address: Botany Road, Northfleet, Gravesend, Kent,<br>DA11 9BG<br>Process: Non-ferrous Metals<br>Permit Number: AS7850 | Original Permit Number: IPCAIRAPP<br>Date Approved: 22-3-1996<br>Effective Date: 1-4-1996<br>Status: Superseded By Variation  |
| B  | 48m SW   | Operator: Britannia Refined Metals Ltd<br>Address: Botany Road, Northfleet, Gravesend, Kent,<br>DA11 9BG<br>Process: Non-ferrous Metals<br>Permit Number: AX2413 | Original Permit Number: IPCMAJVAR<br>Date Approved: 21-4-1997<br>Effective Date: 29-4-1997<br>Status: Superseded By Variation |
| B  | 48m SW   | Operator: Britannia Refined Metals Ltd<br>Address: Botany Road, Northfleet, Gravesend, Kent,<br>DA11 9BG<br>Process: Non-ferrous Metals<br>Permit Number: BD7782 | Original Permit Number: IPCMINVAR<br>Date Approved: 24-11-1998<br>Effective Date: 30-11-1998<br>Status: Revoked - Now Ippc    |

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



## 4.10 Licensed industrial activities (Part A(1))

### Records within 500m

12

Records of Part A(1) 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 60](#) >

| ID | Location | Details                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                   |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| B  | 48m SW   | Operator: BRITANNIA REFINED METALS LTD<br>Installation Name: -<br>Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS<br>Permit Number: BM4945<br>Original Permit Number: BM4945                                                                                                               | EPR Reference: -<br>Issue Date: 30/04/2004<br>Effective Date: 30/04/2004<br>Last date noted as effective: 01/10/2004<br>Status: SUPERSEDED BY PAS |
| K  | 260m NW  | Operator: Britannia Refined Metals Limited<br>Installation Name: Britannia Refined Metals Limited<br>Process: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.<br>Permit Number: TP3535JK<br>Original Permit Number: BM4945IW | EPR Reference: -<br>Issue Date: 18/05/2018<br>Effective Date: 18/05/2018<br>Last date noted as effective: 21/03/2023<br>Status: Superseded        |
| K  | 260m NW  | Operator: Britannia Refined Metals Limited<br>Installation Name: Botany Road EPR/BM4945IW<br>Process: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.<br>Permit Number: WP3135QH<br>Original Permit Number: BM4945IW         | EPR Reference: -<br>Issue Date: 12/11/2018<br>Effective Date: 12/11/2018<br>Last date noted as effective: 21/03/2023<br>Status: Superseded        |
| K  | 260m NW  | Operator: Britannia Refined Metals Ltd<br>Installation Name: BRITANNIA REFINED METALS<br>Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS<br>Permit Number: RP3236SF<br>Original Permit Number: BM4945IW                                                                                    | EPR Reference: -<br>Issue Date: 02/12/2005<br>Effective Date: 02/12/2005<br>Last date noted as effective: 21/03/2023<br>Status: Superseded        |
| K  | 260m NW  | Operator: Britannia Refined Metals Limited<br>Installation Name: Botany Road EPR/BM4945IW<br>Process: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.<br>Permit Number: AP3302BV<br>Original Permit Number: BM4945IW         | EPR Reference: -<br>Issue Date: 30/11/2020<br>Effective Date: 30/11/2020<br>Last date noted as effective: 21/03/2023<br>Status: Superseded        |



| ID | Location | Details                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                      |
|----|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| K  | 260m NW  | Operator: Britannia Refined Metals Ltd<br>Installation Name: Northfleet Refined Metals<br>Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS<br>Permit Number: BM4945IW<br>Original Permit Number: BM4945IW                                                                           | EPR Reference: -<br>Issue Date: 30/04/2004<br>Effective Date: 30/04/2004<br>Last date noted as effective: 21/03/2023<br>Status: Superseded           |
| K  | 260m NW  | Operator: Britannia Refined Metals Ltd<br>Installation Name: BRITANNIA REFINED METALS<br>Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS<br>Permit Number: ZP3836LP<br>Original Permit Number: BM4945IW                                                                            | EPR Reference: -<br>Issue Date: 14/02/2007<br>Effective Date: 01/03/2007<br>Last date noted as effective: 21/03/2023<br>Status: Superseded           |
| K  | 260m NW  | Operator: Britannia Refined Metals Limited<br>Installation Name: Botany Road EPR/BM4945IW<br>Process: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.<br>Permit Number: HP3803LY<br>Original Permit Number: BM4945IW | EPR Reference: -<br>Issue Date: 18/12/2020<br>Effective Date: 18/12/2020<br>Last date noted as effective: 21/03/2023<br>Status: Effective            |
| K  | 260m NW  | Operator: Britannia Refined Metals Ltd<br>Installation Name: BRITANNIA REFINED METALS<br>Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS<br>Permit Number: KP3633LQ<br>Original Permit Number: BM4945IW                                                                            | EPR Reference: -<br>Issue Date: 04/10/2005<br>Effective Date: 04/10/2005<br>Last date noted as effective: 21/03/2023<br>Status: Superseded           |
| K  | 260m NW  | Operator: BRITANNIA REFINED METALS LIMITED<br>Installation Name: Botany Road EPR/BM4945IW<br>Process: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.<br>Permit Number: BM4945IW<br>Original Permit Number: BM4945IW | EPR Reference: EPR/BM4945IW<br>Issue Date: 18/12/2020<br>Effective Date: 18/12/2020<br>Last date noted as effective: 25/05/2023<br>Status: Effective |
| N  | 479m SW  | Operator: URBAN RESERVE (ASSETCO) LIMITED<br>Installation Name: Westgate Power<br>Process: NEW MEDIUM COMBUSTION PLANT<br>Permit Number: AP3800LK<br>Original Permit Number: AP3800LK                                                                                                                                    | EPR Reference: EPR/AP3800LK<br>Issue Date: 29/05/2022<br>Effective Date: 29/05/2022<br>Last date noted as effective: 25/05/2023<br>Status: Effective |
| N  | 479m SW  | Operator: URBAN RESERVE (ASSETCO) LIMITED<br>Installation Name: Westgate Power<br>Process: NEW MEDIUM COMBUSTION PLANT<br>Permit Number: AP3800LK<br>Original Permit Number: AP3800LK                                                                                                                                    | EPR Reference: EPR/AP3800LK<br>Issue Date: 29/05/2022<br>Effective Date: 29/05/2022<br>Last date noted as effective: 25/05/2023<br>Status: Effective |

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



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

### Records within 500m

11

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 60](#) >

| ID | Location | Address                                                                                                 | Details                                                                                                  |                                                                                                                                   |
|----|----------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| E  | 190m S   | N. T. C. Lumber (Southern) Ltd,<br>Area 4, Botany Road, Off Lower<br>Road, Northfleet, Kent, DA11 9SL   | Process: Timber Manufacture<br>Status: Historical Permit<br>Permit Type: Part B                          | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| 2  | 252m N   | Cemex Concrete Products Ltd,<br>Lower Road, Northfleet, Kent,<br>DA11 9AP                               | Process: Use of Bulk Cement<br>Status: Current Permit<br>Permit Type: Part B                             | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| 3  | 295m SW  | London Bus And Truck Ltd,<br>Northfleet Industrial Estate,<br>Lower Road, Northfleet, Kent,<br>DA11 9SN | Process: Respraying of Road<br>Vehicles<br>Status: Current Permit<br>Permit Type: Part B                 | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| 4  | 307m SE  | CPI Mortars Ltd, Robins Wharf,<br>Grove Road, Northfleet, Kent,<br>DA11 9AX                             | Process: Use of Bulk Cement;<br>Other Mineral Processes<br>Status: Current Permit<br>Permit Type: Part B | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| 5  | 320m S   | North Kent Roadstone Ltd, Robins<br>Wharf, Grove Road, Northfleet,<br>Kent, DA11 9AX                    | Process: Roadstone Coating<br>Processes<br>Status: Current Permit<br>Permit Type: Part B                 | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| 7  | 352m SE  | Brett Concrete, Robins Wharf,<br>Grove Road, Northfleet, Kent,<br>DA11 9AX                              | Process: Use of Bulk Cement<br>Status: Current Permit<br>Permit Type: Part B                             | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |
| L  | 360m SW  | Kent Coachworks Ltd, Northfleet<br>Industrial Estate, Kent, DA11 9SN                                    | Process: Respraying of Road<br>Vehicles<br>Status: Historical Permit<br>Permit Type: Part B              | Enforcement: No Enforcements<br>Notified<br>Date of enforcement: No<br>Enforcements Notified<br>Comment: No Enforcements Notified |



| ID | Location | Address                                                                                         | Details                                                                                                        |                                                                                                                             |
|----|----------|-------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| L  | 393m SW  | North Kent Commercials, Unit A1, Northfleet Industrial Estate, Lower Road, Northfleet, DA11 9SN | Process: Respraying of Road Vehicles<br>Status: Historical Permit<br>Permit Type: Part B                       | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements Notified |
| L  | 409m SW  | Barney Sands Ltd, Lower Rd, Gravesend, DA11 9SN                                                 | Process: Respraying of Road Vehicles<br>Status: Historical Permit<br>Permit Type: Part B                       | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements Notified |
| 8  | 411m SE  | North Kent Shotblasting, Grove Road, Northfleet, Kent, DA11 9AX                                 | Process: Metal Coating Processes<br>Status: Historical Permit<br>Permit Type: Part B                           | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements Notified |
| O  | 499m S   | Shell Northfleet Service Station, Eagle Way, Stonebridge Way, Northfleet, Kent, DA11 9BJ        | Process: Unloading of Petrol into Storage at Service Stations<br>Status: Current Permit<br>Permit Type: Part B | Enforcement: No Enforcements Notified<br>Date of enforcement: No Enforcements Notified<br>Comment: No Enforcements 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**

**9**

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 60](#) >



| ID | Location | Address                                                                                                                        | Details                                                                                                                                                         |                                                                                                                      |
|----|----------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| A  | 57m N    | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: SEWAGE<br>DISCHARGES - FINAL/TREATED<br>EFFLUENT - NOT WATER COMPANY<br>Permit Number: CPLR.0023<br>Permit Version: 1<br>Receiving Water: THAMES | Status: REVOKED - UNSPECIFIED<br>Issue date: 04/12/1969<br>Effective Date: 04/12/1969<br>Revocation Date: 17/10/1989 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| G  | 231m NW  | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>SITE DRAINAGE<br>Permit Number: CNTW.0932<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                    | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |



| ID | Location | Address                                                                                                                        | Details                                                                                                                                                                |                                                                                                                      |
|----|----------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| J  | 252m N   | BRITANNIA REFINED METALS,<br>BOTANY RO, BRITANNIA REFINED<br>METALS, BOTANY, ROAD,<br>NORTHFLEET, GRAVESEND, KE,<br>NT,DA11 9B | Effluent Type: TRADE DISCHARGES -<br>UNSPECIFIED<br>Permit Number: CNTW.0931<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES                             | Status: REVOKED - UNSPECIFIED<br>Issue date: 18/02/1991<br>Effective Date: 18/02/1991<br>Revocation Date: 31/05/1996 |
| 10 | 455m SE  | SITE AT GROVE ROAD,<br>NORTHFLEET, KEN, SITE AT GROVE<br>ROAD, NORTHFLEET, KENT                                                | Effluent Type: TRADE DISCHARGES -<br>PROCESS EFFLUENT - NOT WATER<br>COMPANY<br>Permit Number: CTWC.2723<br>Permit Version: 1<br>Receiving Water: TIDAL<br>RIVERTHAMES | Status: TRANSFERRED FROM COPA<br>1974<br>Issue date: 10/08/1988<br>Effective Date: 10/08/1988<br>Revocation Date: -  |

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

#### 4.14 Pollutant release to surface waters (Red List)

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>0</b> |
|----------------------------|----------|

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

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>0</b> |
|----------------------------|----------|

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

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>1</b> |
|----------------------------|----------|

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.

Features are displayed on the Current industrial land use map on [page 60 >](#)

| ID | Location | Name                         | Status | Receiving Water | Authorised Substances    |
|----|----------|------------------------------|--------|-----------------|--------------------------|
| J  | 253m N   | Britannia Refined Metals Ltd | Active | Thames Estuary  | Mercury (other), Cadmium |

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



## 4.17 List 2 Dangerous Substances

### Records within 500m

1

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.

Features are displayed on the Current industrial land use map on [page 60](#) >

| ID | Location | Name                     | Status | Receiving Water | Authorised Substances               |
|----|----------|--------------------------|--------|-----------------|-------------------------------------|
| J  | 253m N   | Britannia Refined Metals | Active | Thames Estuary  | Arsenic, Copper, Lead, Nickel, Zinc |

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

## 4.18 Pollution Incidents (EA/NRW)

### Records within 500m

5

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 60](#) >

| ID | Location | Details                                                                                                                                                          |                                                                                                                   |
|----|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| B  | 40m SW   | Incident Date: 18/05/2002<br>Incident Identification: 79682<br>Pollutant: Oils and Fuel<br>Pollutant Description: Gas and Fuel Oils                              | Water Impact: Category 4 (No Impact)<br>Land Impact: Category 4 (No Impact)<br>Air Impact: Category 4 (No Impact) |
| 6  | 325m S   | Incident Date: 18/08/2001<br>Incident Identification: 25197<br>Pollutant: Contaminated Water<br>Pollutant Description: Firefighting Run-Off                      | Water Impact: Category 3 (Minor)<br>Land Impact: Category 4 (No Impact)<br>Air Impact: Category 4 (No Impact)     |
| 9  | 420m S   | Incident Date: 23/08/2002<br>Incident Identification: 102638<br>Pollutant: Oils and Fuel<br>Pollutant Description: Mixed/Waste Oils                              | Water Impact: Category 4 (No Impact)<br>Land Impact: Category 3 (Minor)<br>Air Impact: Category 4 (No Impact)     |
| M  | 443m SW  | Incident Date: 01/08/2002<br>Incident Identification: 96355<br>Pollutant: Organic Chemicals/Products<br>Pollutant Description: Other Organic Chemical or Product | Water Impact: Category 4 (No Impact)<br>Land Impact: Category 1 (Major)<br>Air Impact: Category 3 (Minor)         |



| ID | Location | Details                                                                                                                                                                                       |                                                                                                               |
|----|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| M  | 453m SW  | Incident Date: 23/10/2002<br>Incident Identification: 116315<br>Pollutant: General Biodegradable Materials and Wastes<br>Pollutant Description: Other General Biodegradable Material or Waste | Water Impact: Category 4 (No Impact)<br>Land Impact: Category 3 (Minor)<br>Air Impact: Category 4 (No Impact) |

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

## 4.19 Pollution inventory substances

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>4</b> |
|----------------------------|----------|

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.

Features are displayed on the Current industrial land use map on [page 60 >](#)

ID: K, Location: 260m NW, Permit: BM4945IW  
 Operator: Britannia Refined Metals Limited  
 Activity: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.  
 Address: Botany Road NORTHFLEET KENT DA11 9BG  
 Sector: Metals, Sub-sector: Non-Ferrous  
 Releases:

| Route | Substance | Reporting threshold (kg) | Quantity (kg) |
|-------|-----------|--------------------------|---------------|
| Air   | Cadmium   | 1kg                      | 1.02kg        |

ID: K, Location: 260m NW, Permit: BM4945IW  
 Operator: Britannia Refined Metals Limited  
 Activity: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.  
 Address: Botany Road NORTHFLEET KENT DA11 9BG  
 Sector: Metals, Sub-sector: Non-Ferrous  
 Releases:

| Route | Substance | Reporting threshold (kg) | Quantity (kg) |
|-------|-----------|--------------------------|---------------|
| Air   | Lead      | 100kg                    | 123.21kg      |



ID: K, Location: 260m NW, Permit: BM4945IW  
 Operator: Britannia Refined Metals Limited  
 Activity: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.  
 Address: Botany Road NORTHFLEET KENT DA11 9BG  
 Sector: Metals, Sub-sector: Non-Ferrous  
 Releases:

| Route             | Substance                                       | Reporting threshold (kg) | Quantity (kg)             |
|-------------------|-------------------------------------------------|--------------------------|---------------------------|
| Air               | Particulate matter - total                      | 10000kg                  | Below Reporting Threshold |
| Controlled Waters | Copper                                          | 20kg                     | Below Reporting Threshold |
| Controlled Waters | Lead                                            | 20kg                     | Below Reporting Threshold |
| Controlled Waters | Nickel                                          | 20kg                     | Below Reporting Threshold |
| Controlled Waters | Zinc                                            | 100kg                    | Below Reporting Threshold |
| Air               | Dioxins and furans (PCDDs/PCDFs) - as WHO TEQ   | 1e-5kg                   | Below Reporting Threshold |
| Air               | Sulphur oxides (SO2 and SO3) as SO2             | 100000kg                 | Below Reporting Threshold |
| Air               | Carbon monoxide                                 | 100000kg                 | Below Reporting Threshold |
| Air               | Nitrogen oxides (NO and NO2) as NO2             | 100000kg                 | Below Reporting Threshold |
| Air               | Copper                                          | 10kg                     | Below Reporting Threshold |
| Air               | Zinc                                            | 100kg                    | Below Reporting Threshold |
| Air               | Non-methane volatile organic compounds (NMVOCs) | 10000kg                  | Below Reporting Threshold |
| Air               | Dioxins and furans (PCDDs/PCDFs) - as ITEQ      | 1e-5kg                   | Below Reporting Threshold |
| Controlled Waters | Arsenic                                         | 5kg                      | Below Reporting Threshold |
| Controlled Waters | Cadmium                                         | 1kg                      | Below Reporting Threshold |

ID: K, Location: 260m NW, Permit: BM4945IW  
 Operator: Britannia Refined Metals Limited  
 Activity: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.  
 Address: Botany Road NORTHFLEET KENT DA11 9BG  
 Sector: Metals, Sub-sector: Non-Ferrous  
 Releases:



| Route | Substance | Reporting threshold (kg) | Quantity (kg) |
|-------|-----------|--------------------------|---------------|
| Air   | Arsenic   | 1kg                      | 1.36kg        |

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

## 4.20 Pollution inventory waste transfers

|                            |          |
|----------------------------|----------|
| <b>Records within 500m</b> | <b>1</b> |
|----------------------------|----------|

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.

Features are displayed on the Current industrial land use map on [page 60 >](#)

ID: K, Location: 260m NW, Permit: BM4945IW  
 Operator: Britannia Refined Metals Limited  
 Activity: NON-FERROUS METALS; MELTING CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS AND FOR ALLOYS A VESSEL WITH A DESIGN HOLDING CAPACITY OF 5 TONNES OR MORE.  
 Address: Botany Road NORTHFLEET KENT DA11 9BG  
 Sector: Metals, Sub-sector: Non-Ferrous  
 Releases:

| Route | Route description                                                                                                                              | Quantity (tonnes) | Release level  | EWC code | EWC description       | Hazardous waste |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|----------|-----------------------|-----------------|
| R3    | Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes) | 31.04             | absolute value | 17 02 01 | wood                  | No              |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                            | 121.3             | absolute value | 17 04 05 | iron and steel        | No              |
| R3    | Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes) | 36.69             | absolute value | 20 03 01 | mixed municipal waste | No              |
| R3    | Recycling/Reclamation of organic substances which are not used as solvents (including composting and other biological transformatin processes) | -                 | brt            | 15 01 06 | mixed packaging       | No              |

| Route | Route description                                                                                                                                      | Quantity (tonnes) | Release level  | EWC code | EWC description                                                                                                                                       | Hazardous waste |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                    | -                 | brt            | 17 04 11 | cables other than those mentioned in 17 04 10                                                                                                         | No              |
| R5    | Recycling/reclamation of other inorganic materials                                                                                                     | 7.26              | absolute value | 15 01 01 | paper and cardboard packaging                                                                                                                         | No              |
| R5    | Recycling/reclamation of other inorganic materials                                                                                                     | 0.526             | absolute value | 20 01 35 | discarded electrical and electronic equipment other than those mentioned in 20 01 21 and 20 01 23 containing hazardous components (6)                 | Yes             |
| R5    | Recycling/reclamation of other inorganic materials                                                                                                     | 0.06              | absolute value | 20 01 21 | fluorescent tubes and other mercury-containing waste                                                                                                  | Yes             |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                    | 0.31              | absolute value | 15 01 10 | packaging containing residues of or contaminated by dangerous substances                                                                              | Yes             |
| D15   | Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)            | 8.665             | absolute value | 15 02 02 | absorbents, filter materials (including oil filters not otherwise specified), wiping cloths, protective clothing contaminated by dangerous substances | Yes             |
| R5    | Recycling/reclamation of other inorganic materials                                                                                                     | 0.035             | absolute value | 20 01 23 | discarded equipment containing chlorofluorocarbons                                                                                                    | Yes             |
| D15   | Storage pending any of the operations numbered D1 to D14 (excluding temporary storage pending collection, on the site where it is produced)            | 98.04             | absolute value | 17 09 03 | other construction and demolition wastes (including mixed wastes) containing dangerous substances                                                     | Yes             |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                    | 0.16              | absolute value | 16 01 07 | oil filters                                                                                                                                           | Yes             |
| R13   | Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) | 1.189             | absolute value | 16 06 01 | lead batteries                                                                                                                                        | Yes             |
| R13   | Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced) | 0.524             | absolute value | 16 06 02 | Ni-Cd batteries                                                                                                                                       | Yes             |



| Route | Route description                                                                                                                                                                                                                 | Quantity (tonnes) | Release level  | EWC code | EWC description                                                                                                                          | Hazardous waste |
|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|----------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| R13   | Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)                                                                            | 0.167             | absolute value | 20 01 33 | batteries and accumulators included in 16 06 01, 16 06 02 or 16 06 03 and unsorted batteries and accumulators containing these batteries | Yes             |
| R13   | Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)                                                                            | 0.4               | absolute value | 13 02 05 | mineral-based non-chlorinated engine, gear and lubricating oils                                                                          | Yes             |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                                                                                               | 1.02              | absolute value | 16 05 04 | gases in pressure containers (including halons) containing dangerous substances                                                          | Yes             |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                                                                                               | 317.52            | absolute value | 10 04 01 | slags from primary and secondary production                                                                                              | Yes             |
| D9    | Physio-chemical treatment not specified elsewhere in this Table which results in final compounds or mixtures which are discarded by means of any of the operations numbered D1 to D12 (eg evaporation, drying, calcination, etc.) | 13.28             | absolute value | 13 05 08 | mixtures of wastes from grit chambers and oil/water separators                                                                           | Yes             |
| R4    | Recycling/reclamation of metals and metal compounds                                                                                                                                                                               | 255.3             | absolute value | 10 04 02 | dross and skimmings from primary and secondary production                                                                                | Yes             |
| D12   | Permanent storage (eg emplacement of containers in a mine, etc)                                                                                                                                                                   | 216.46            | absolute value | 10 04 01 | slags from primary and secondary production                                                                                              | Yes             |
| R13   | Storage of wastes pending any of the operations numbered R1 to R12 (excluding temporary storage, pending collection, on the site where it is produced)                                                                            | 0.166             | absolute value | 20 01 21 | fluorescent tubes and other mercury-containing waste                                                                                     | Yes             |

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



## 4.21 Pollution inventory radioactive waste

Records within 500m

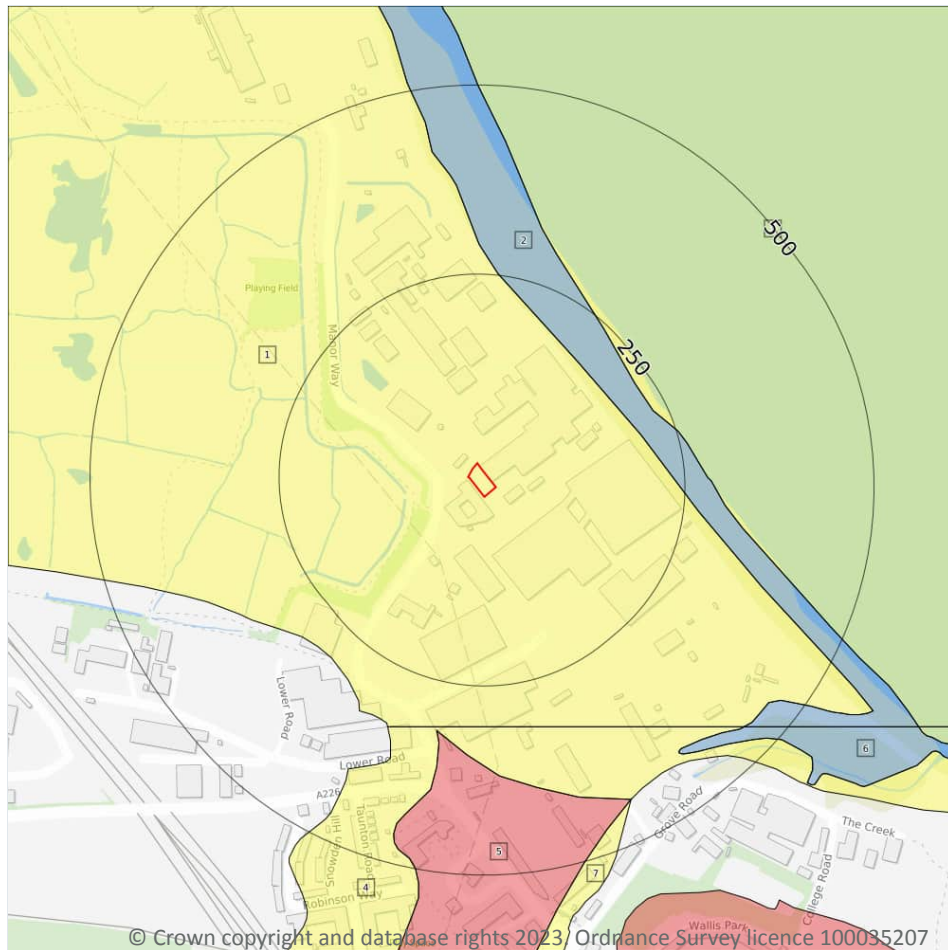
0

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

### 5.1 Superficial aquifer

Records within 500m

7

Aquifer status of groundwater held within superficial geology.

Features are displayed on the Hydrogeology map on [page 78](#) >

| ID | Location | Designation                | Description                                                                                                                                                                                                                                             |
|----|----------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | On site  | 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  | 188m NE  | Unproductive               | These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow                                                                                                                     |

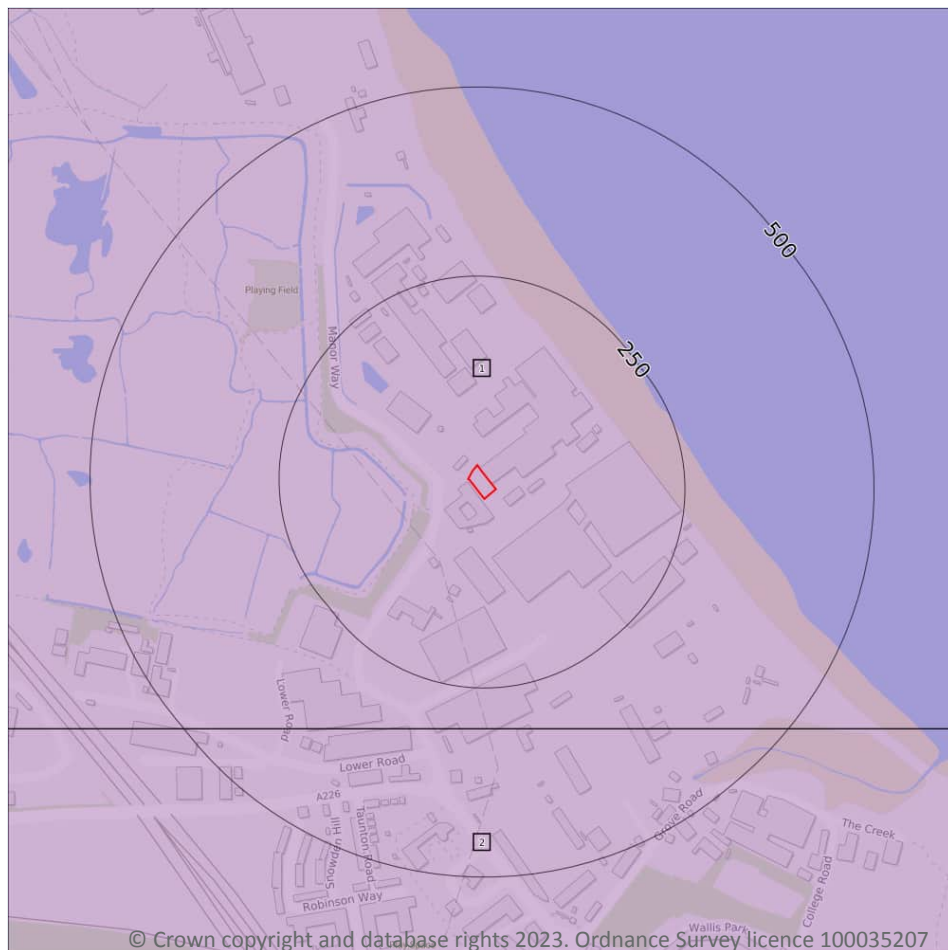


| ID | Location | Designation                | Description                                                                                                                                                                                                                                             |
|----|----------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3  | 229m 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 |
| 4  | 304m S   | 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 |
| 5  | 315m S   | Secondary A                | Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers                  |
| 6  | 422m SE  | Unproductive               | These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow                                                                                                                     |
| 7  | 445m SE  | Secondary Undifferentiated | Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type |

*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

2

Aquifer status of groundwater held within bedrock geology.

Features are displayed on the Bedrock aquifer map on [page 80](#) >

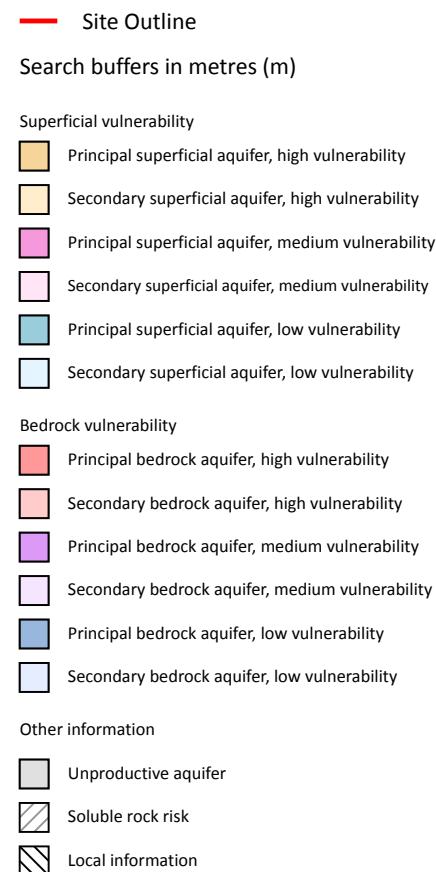
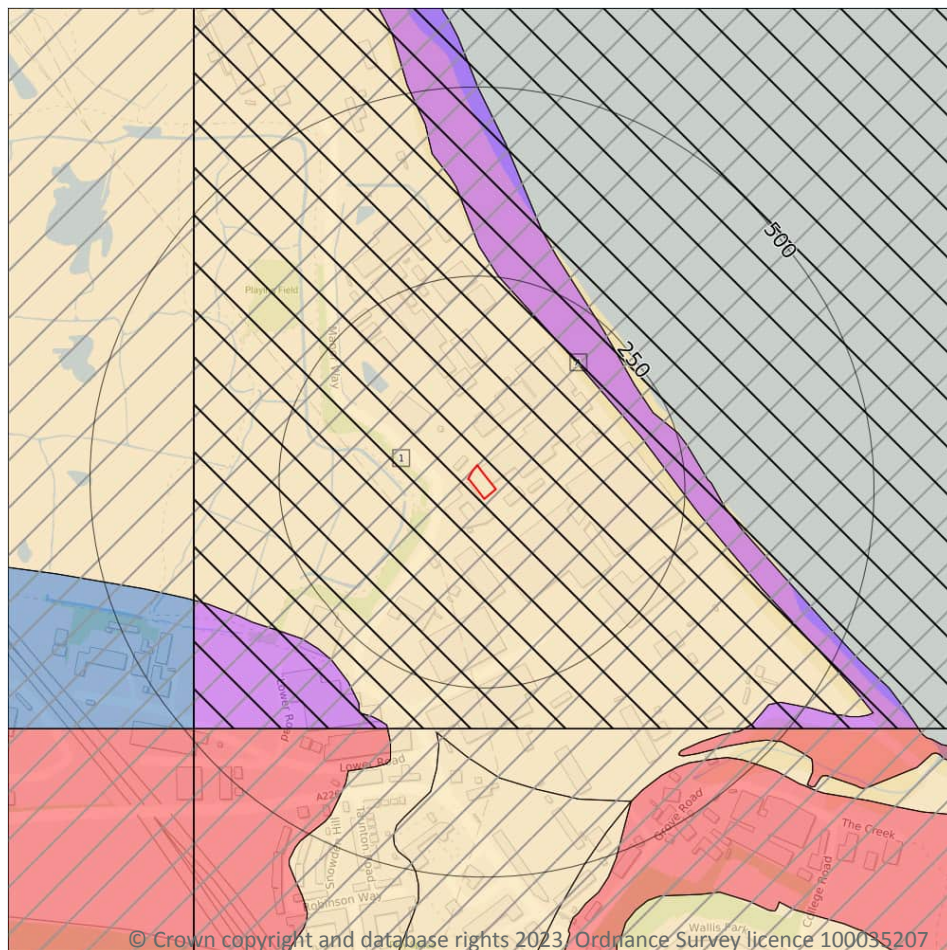
| ID | Location | Designation | Description                                                                                                                                                                                                                                |
|----|----------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | On site  | Principal   | Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers |
| 2  | 304m S   | Principal   | Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers |



*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

1

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 82](#) >



| ID | Location | Summary                                                                                                                                                                               | Soil / surface                                                                                             | Superficial geology                                                                                                                                                 | Bedrock geology                                                                                                   |
|----|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| 1  | On site  | <b>Summary Classification:</b><br>Secondary superficial aquifer - High Vulnerability<br><b>Combined classification:</b><br>Productive Bedrock Aquifer, Productive Superficial Aquifer | <b>Leaching class: High</b><br><b>Infiltration value:</b><br>>70%<br><b>Dilution value:</b><br><300mm/year | <b>Vulnerability: High</b><br><b>Aquifer type: Secondary</b><br><b>Thickness: &gt;10m</b><br><b>Patchiness value: &gt;90%</b><br><b>Recharge potential: No Data</b> | <b>Vulnerability: Medium</b><br><b>Aquifer type: Principal</b><br><b>Flow mechanism: Well connected fractures</b> |

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

## 5.4 Groundwater vulnerability- soluble rock risk

|                        |          |
|------------------------|----------|
| <b>Records on site</b> | <b>1</b> |
|------------------------|----------|

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

| ID | Maximum soluble risk category                                                                                                    | Percentage of grid square covered by maximum risk |
|----|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| A  | Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow. | 10.0%                                             |

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

## 5.5 Groundwater vulnerability- local information

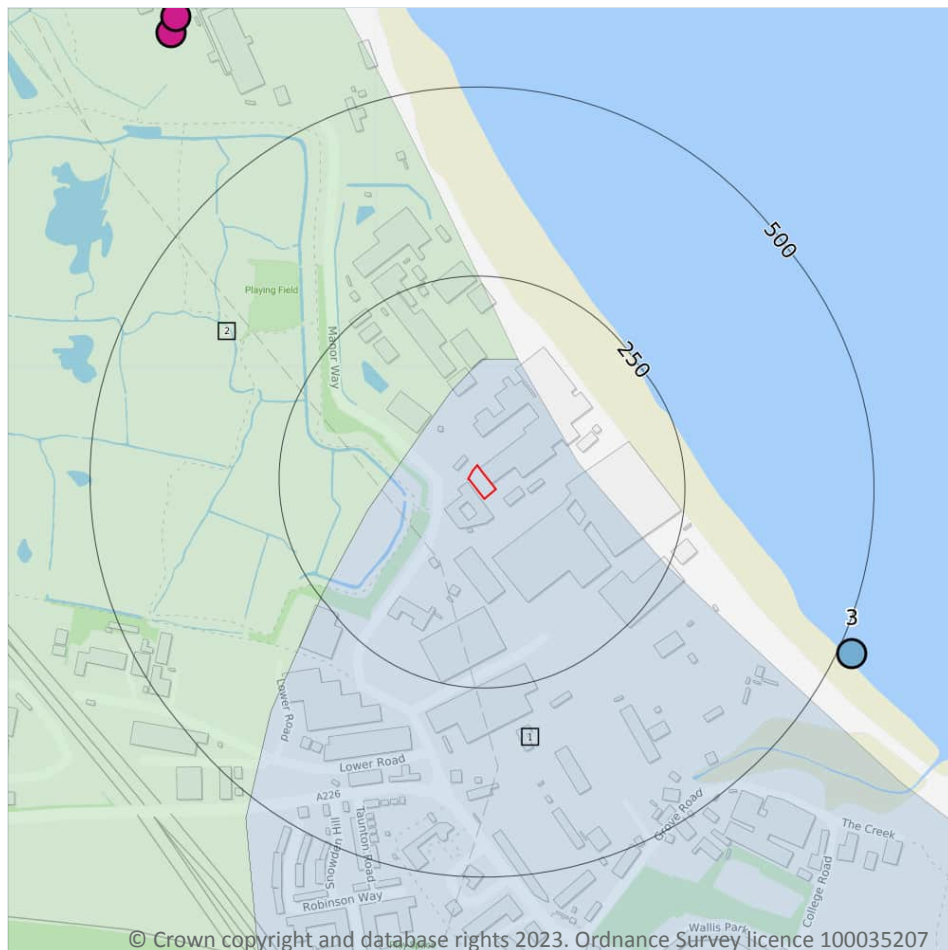
|                        |          |
|------------------------|----------|
| <b>Records on site</b> | <b>1</b> |
|------------------------|----------|

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](mailto:enquiries@environment-agency.gov.uk) ↗.

| ID | Summary                                                                                                 | Additional information                                                        |
|----|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| A  | Potentially increased vulnerability of the bedrock aquifer due to limited cover by superficial deposits | Removal of, or limited cover of, superficial deposits within the River Thames |

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

## Abstractions and Source Protection Zones



### 5.6 Groundwater abstractions

Records within 2000m

24

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 84](#) >

| ID | Location | Details                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                     |
|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A  | 700m NW  | Status: Historical<br>Licence No: 01/158<br>Details: Mineral Washing<br>Direct Source: Southern Region Groundwater<br>Point: A BOREHOLE AT SWANSCOMBE MARSHES<br>Data Type: Point<br>Name: Cemex UK Materials Ltd<br>Easting: 560970<br>Northing: 175920                      | Annual Volume (m <sup>3</sup> ): 26300<br>Max Daily Volume (m <sup>3</sup> ): 105<br>Original Application No: -<br>Original Start Date: 01/12/2005<br>Expiry Date: 31/03/2014<br>Issue No: 1<br>Version Start Date: 18/10/2006<br>Version End Date: -               |
| A  | 714m NW  | Status: Active<br>Licence No: 01/158/R01<br>Details: Mineral Washing<br>Direct Source: Southern Region Groundwater<br>Point: BOREHOLE AT SWANSCOMBE MARSHES<br>Data Type: Point<br>Name: Cemex UK Materials Ltd<br>Easting: 560976<br>Northing: 175941                        | Annual Volume (m <sup>3</sup> ): 26300<br>Max Daily Volume (m <sup>3</sup> ): 105<br>Original Application No: NPS/WR/030687<br>Original Start Date: 01/04/2014<br>Expiry Date: 31/03/2026<br>Issue No: 2<br>Version Start Date: 21/12/2018<br>Version End Date: -   |
| -  | 899m W   | Status: Historical<br>Licence No: 01/153<br>Details: Dust suppression<br>Direct Source: Southern Region Groundwater<br>Point: POINT A, BOREHOLES AT SWANSCOMBE, KENT<br>Data Type: Point<br>Name: Willetts<br>Easting: 560490<br>Northing: 175550                             | Annual Volume (m <sup>3</sup> ): -<br>Max Daily Volume (m <sup>3</sup> ): -<br>Original Application No: -<br>Original Start Date: 19/08/2002<br>Expiry Date: 01/09/2004<br>Issue No: 2<br>Version Start Date: 21/07/2003<br>Version End Date: -                     |
| -  | 899m W   | Status: Historical<br>Licence No: 01/153<br>Details: Mineral Washing<br>Direct Source: Southern Region Groundwater<br>Point: POINT A, BOREHOLES AT SWANSCOMBE, KENT<br>Data Type: Point<br>Name: Willetts<br>Easting: 560490<br>Northing: 175550                              | Annual Volume (m <sup>3</sup> ): -<br>Max Daily Volume (m <sup>3</sup> ): -<br>Original Application No: -<br>Original Start Date: 19/08/2002<br>Expiry Date: 01/09/2004<br>Issue No: 2<br>Version Start Date: 21/07/2003<br>Version End Date: -                     |
| -  | 1537m SE | Status: Active<br>Licence No: 9/40/01/0092/A/GR/R1<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT A, BOREHOLE AT KIMBERLY CLARK, NORTHFLEET<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562759<br>Northing: 174599 | Annual Volume (m <sup>3</sup> ): 320000<br>Max Daily Volume (m <sup>3</sup> ): 1309<br>Original Application No: NPS/WR/024286<br>Original Start Date: 01/04/2018<br>Expiry Date: 31/03/2030<br>Issue No: 1<br>Version Start Date: 01/04/2018<br>Version End Date: - |



| ID | Location | Details                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                               |
|----|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -  | 1542m SE | Status: Historical<br>Licence No: 9/40/01/0092/A/GR<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT A, BOREHOLE AT KIMBERLY CLARK, NORTHFLEET<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562760<br>Northing: 174590            | Annual Volume (m <sup>3</sup> ): 400000<br>Max Daily Volume (m <sup>3</sup> ): 1309<br>Original Application No: -<br>Original Start Date: 27/05/1966<br>Expiry Date: 31/03/2018<br>Issue No: 101<br>Version Start Date: 24/04/2002<br>Version End Date: -     |
| -  | 1596m S  | Status: Historical<br>Licence No: 9/40/01/0051/GR<br>Details: Evaporative Cooling<br>Direct Source: Southern Region Groundwater<br>Point: POINT B AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: LaFarge Cement UK PLC<br>Easting: 561920<br>Northing: 173800          | Annual Volume (m <sup>3</sup> ): 1235375<br>Max Daily Volume (m <sup>3</sup> ): 10060<br>Original Application No: -<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 103<br>Version Start Date: 27/11/2007<br>Version End Date: -            |
| -  | 1596m S  | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Non-Evaporative Cooling<br>Direct Source: Southern Region Groundwater<br>Point: POINT B AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 561920<br>Northing: 173800 | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1596m S  | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: POINT B AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 561920<br>Northing: 173800           | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |



| ID | Location | Details                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                               |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -  | 1596m S  | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Spray Irrigation - Direct<br>Direct Source: Southern Region Groundwater<br>Point: POINT B AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 561920<br>Northing: 173800                                | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1596m S  | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: General Use Relating To Secondary Category (Medium Loss)<br>Direct Source: Southern Region Groundwater<br>Point: POINT B AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 561920<br>Northing: 173800 | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1645m SE | Status: Historical<br>Licence No: 9/40/01/0092/A/GR<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT 1, GREENSAND BOREHOLE, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562860<br>Northing: 174560                                                    | Annual Volume (m <sup>3</sup> ): -<br>Max Daily Volume (m <sup>3</sup> ): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 27/05/1966<br>Version End Date: -                               |
| -  | 1759m SE | Status: Historical<br>Licence No: 9/40/01/0051/GR<br>Details: Evaporative Cooling<br>Direct Source: Southern Region Groundwater<br>Point: POINT A AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: LaFarge Cement UK PLC<br>Easting: 562210<br>Northing: 173750                                           | Annual Volume (m <sup>3</sup> ): 1235375<br>Max Daily Volume (m <sup>3</sup> ): 10060<br>Original Application No: -<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 103<br>Version Start Date: 27/11/2007<br>Version End Date: -            |



| ID | Location | Details                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                               |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -  | 1759m SE | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Non-Evaporative Cooling<br>Direct Source: Southern Region Groundwater<br>Point: POINT A AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 562210<br>Northing: 173750                                  | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1759m SE | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: POINT A AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 562210<br>Northing: 173750                                            | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1759m SE | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: General Use Relating To Secondary Category (Medium Loss)<br>Direct Source: Southern Region Groundwater<br>Point: POINT A AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 562210<br>Northing: 173750 | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |
| -  | 1759m SE | Status: Active<br>Licence No: 9/40/01/0051/GR<br>Details: Spray Irrigation - Direct<br>Direct Source: Southern Region Groundwater<br>Point: POINT A AT BLUE LAKE NORTHFLEET CEMENT WORKS<br>Data Type: Point<br>Name: Tarmac Cement and Lime Limited<br>Easting: 562210<br>Northing: 173750                                | Annual Volume (m <sup>3</sup> ): 1186000<br>Max Daily Volume (m <sup>3</sup> ): 3382<br>Original Application No: NPS/WR/035230<br>Original Start Date: 10/04/1967<br>Expiry Date: -<br>Issue No: 105<br>Version Start Date: 26/02/2021<br>Version End Date: - |

| ID | Location | Details                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                     |
|----|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -  | 1783m SE | Status: Active<br>Licence No: 9/40/01/0092/B/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: BOREHOLE 3, SPRINGHEAD LAKE, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562260<br>Northing: 173750          | Annual Volume (m <sup>3</sup> ): 4710000<br>Max Daily Volume (m <sup>3</sup> ): 19656<br>Original Application No: WR.1969D<br>Original Start Date: 27/05/1966<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 01/07/1996<br>Version End Date: -           |
| -  | 1819m SE | Status: Historical<br>Licence No: 9/40/01/0092/A/GR<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT B, BOREHOLE AT KIMBERLY CLARK, NORTHFLEET<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562770<br>Northing: 174120 | Annual Volume (m <sup>3</sup> ): 400000<br>Max Daily Volume (m <sup>3</sup> ): 1309<br>Original Application No: -<br>Original Start Date: 27/05/1966<br>Expiry Date: 31/03/2018<br>Issue No: 101<br>Version Start Date: 24/04/2002<br>Version End Date: -           |
| -  | 1825m SE | Status: Active<br>Licence No: 9/40/01/0092/A/GR/R1<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT B, BOREHOLE AT KIMBERLY CLARK, NORTHFLEET<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562772<br>Northing: 174114  | Annual Volume (m <sup>3</sup> ): 320000<br>Max Daily Volume (m <sup>3</sup> ): 1309<br>Original Application No: NPS/WR/024286<br>Original Start Date: 01/04/2018<br>Expiry Date: 31/03/2030<br>Issue No: 1<br>Version Start Date: 01/04/2018<br>Version End Date: - |
| -  | 1865m SE | Status: Historical<br>Licence No: 9/40/01/0092/A/GR<br>Details: Boiler Feed<br>Direct Source: Southern Region Groundwater<br>Point: POINT 2, GREENSAND BOREHOLE, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562830<br>Northing: 174120        | Annual Volume (m <sup>3</sup> ): -<br>Max Daily Volume (m <sup>3</sup> ): -<br>Original Application No: -<br>Original Start Date: -<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 27/05/1966<br>Version End Date: -                                     |
| -  | 1901m SE | Status: Active<br>Licence No: 9/40/01/0092/B/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: BOREHOLE 4, CRETE HALL ROAD, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562980<br>Northing: 174260          | Annual Volume (m <sup>3</sup> ): 4710000<br>Max Daily Volume (m <sup>3</sup> ): 19656<br>Original Application No: WR.1969D<br>Original Start Date: 27/05/1966<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 01/07/1996<br>Version End Date: -           |



| ID | Location | Details                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                           |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| -  | 1937m SE | Status: Active<br>Licence No: 9/40/01/0092/B/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: BOREHOLE 1, H5 CHALK, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562410<br>Northing: 173660 | Annual Volume (m <sup>3</sup> ): 4710000<br>Max Daily Volume (m <sup>3</sup> ): 19656<br>Original Application No: WR.1969D<br>Original Start Date: 27/05/1966<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 01/07/1996<br>Version End Date: - |
| -  | 1959m SE | Status: Active<br>Licence No: 9/40/01/0092/B/GR<br>Details: Process Water<br>Direct Source: Southern Region Groundwater<br>Point: BOREHOLE 2, H5 CHALK, NORTHFLEET.<br>Data Type: Point<br>Name: Kimberly-Clark Limited<br>Easting: 562450<br>Northing: 173660 | Annual Volume (m <sup>3</sup> ): 4710000<br>Max Daily Volume (m <sup>3</sup> ): 19656<br>Original Application No: WR.1969D<br>Original Start Date: 27/05/1966<br>Expiry Date: -<br>Issue No: 100<br>Version Start Date: 01/07/1996<br>Version End Date: - |

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

## 5.7 Surface water abstractions

### Records within 2000m

1

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.

Features are displayed on the Abstractions and Source Protection Zones map on [page 84](#) >

| ID | Location | Details                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                      |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3  | 518m SE  | Status: Active<br>Licence No: 9/40/01/0522/S<br>Details: Mineral Washing<br>Direct Source: Southern Region Surface Waters<br>Point: POINT A, TIDAL RIVER THAMES AT SWANSCOMBE.<br>Data Type: Point<br>Name: Robert Brett & Sons Ltd<br>Easting: 561870<br>Northing: 175100 | Annual Volume (m <sup>3</sup> ): 45500<br>Max Daily Volume (m <sup>3</sup> ): 375<br>Original Application No: 169/872<br>Original Start Date: 06/02/1990<br>Expiry Date: -<br>Issue No: 101<br>Version Start Date: 01/01/2002<br>Version End Date: - |

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



## 5.8 Potable abstractions

### Records within 2000m

0

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.

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

## 5.9 Source Protection Zones

### Records within 500m

2

Source Protection Zones define the sensitivity of an area around a potable abstraction site to contamination. Features are displayed on the Abstractions and Source Protection Zones map on [page 84 >](#)

| ID | Location | Type | Description     |
|----|----------|------|-----------------|
| 1  | On site  | 2    | Outer catchment |
| 2  | 84m NW   | 3    | Total catchment |

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

## 5.10 Source Protection Zones (confined aquifer)

### Records within 500m

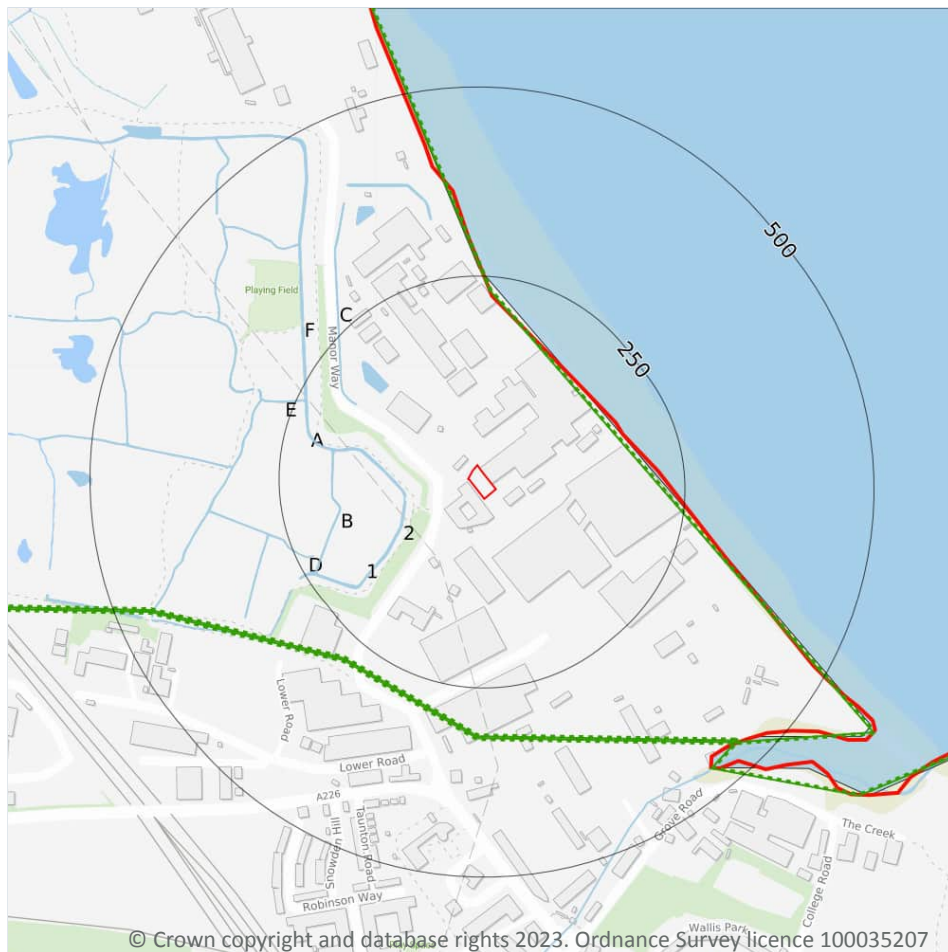
0

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.

*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

10

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 92](#) >

| ID | Location | Type of water feature                               | Ground level      | Permanence                                                      | Name |
|----|----------|-----------------------------------------------------|-------------------|-----------------------------------------------------------------|------|
| 2  | 87m W    | 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 |
|----|----------|-----------------------------------------------------|-------------------|-----------------------------------------------------------------|------|
| B  | 173m W   | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| C  | 177m NW  | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| A  | 181m W   | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| D  | 228m SW  | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| D  | 237m SW  | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| E  | 239m NW  | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| F  | 239m NW  | Inland river not influenced by normal tidal action. | On ground surface | Watercourse contains water year round (in normal circumstances) | -    |
| D  | 244m W   | Inland river not influenced by normal tidal action. | Underground       | Watercourse contains water year round (in normal circumstances) | -    |
| D  | 246m 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

**3**

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 92 >](#)

*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 92 >](#)

| ID | Location | Type              | Water body catchment             | Water body ID | Operational catchment | Management catchment |
|----|----------|-------------------|----------------------------------|---------------|-----------------------|----------------------|
| 1  | On site  | Coastal Catchment | Not part of a river WB catchment | 130           | Lower Medway          | Medway               |

*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 92 >](#)

| ID | Location | Type   | Name          | Water body ID                    | Overall rating | Chemical rating | Ecological rating | Year |
|----|----------|--------|---------------|----------------------------------|----------------|-----------------|-------------------|------|
| 4  | 171m NE  | Transi | THAMES MIDDLE | <a href="#">GB530603911402</a> ↗ | Moderate       | Fail            | Moderate          | 2019 |

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

### 6.5 WFD Groundwater bodies

#### Records on site

1

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.

Features are displayed on the Hydrology map on [page 92 >](#)

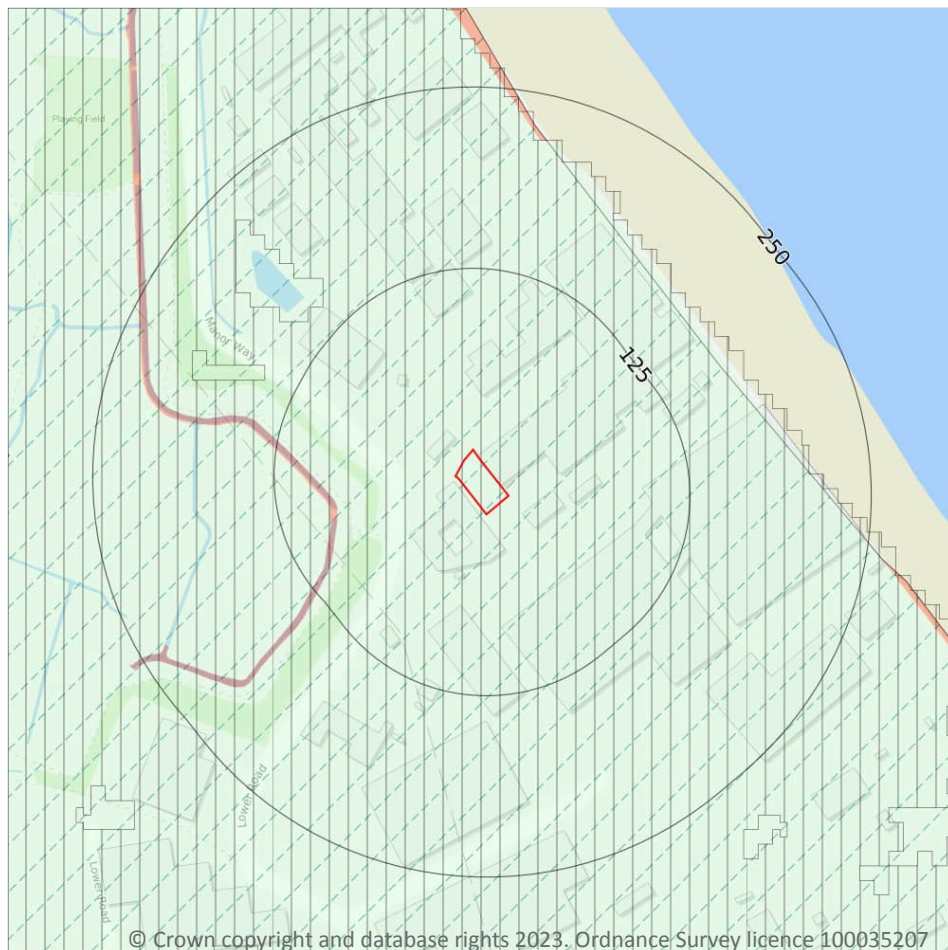


| ID | Location | Name                            | Water body ID                    | Overall rating | Chemical rating | Quantitative | Year |
|----|----------|---------------------------------|----------------------------------|----------------|-----------------|--------------|------|
| A  | On site  | West Kent Darent and Cray Chalk | <a href="#">GB40601G501800</a> ↗ | Poor           | Poor            | Poor         | 2019 |

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



## 7 River and coastal flooding



- Site Outline
- Search buffers in metres (m)
- River and coastal flooding:
- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Flood Defences

### 7.1 Risk of flooding from rivers and the sea

#### Records within 50m

1

The chance of flooding from rivers and/or the sea in any given year, based on cells of 50m within the Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) models. Each cell is allocated one of four flood risk categories, taking into account flood defences and their condition. The risk categories for RoFRaS for rivers and the sea and FRAW for rivers are; 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). The risk categories for FRAW for the sea are; Very low (less than 1 in 1000 chance in any given year), Low (less than 1 in 200 but greater than or equal to 1 in 1000 chance), Medium (less than 1 in 30 but greater than or equal to 1 in 200 chance) or High (greater than or equal to 1 in 30 chance).

Features are displayed on the River and coastal flooding map on [page 96 >](#)



| Distance | Flood risk category |
|----------|---------------------|
| On site  | Very Low            |
| 0 - 50m  | Very Low            |

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

## 7.2 Historical Flood Events

|                     |   |
|---------------------|---|
| Records within 250m | 1 |
|---------------------|---|

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.

Features are displayed on the River and coastal flooding map on [page 96 >](#)

| ID | Location | Event name                             | Date of flood            | Flood source | Flood cause             | Type of flood |
|----|----------|----------------------------------------|--------------------------|--------------|-------------------------|---------------|
| A  | On site  | 07301e900_Feb1953_Dartford/swan scombe | 1953-01-31<br>1953-02-01 | Sea          | Overtopping of defences | Tidal         |

*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 | 1 |
|---------------------|---|

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.

Features are displayed on the River and coastal flooding map on [page 96 >](#)

| ID | Location |                                     |
|----|----------|-------------------------------------|
| A  | On site  | Area benefiting from flood defences |

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

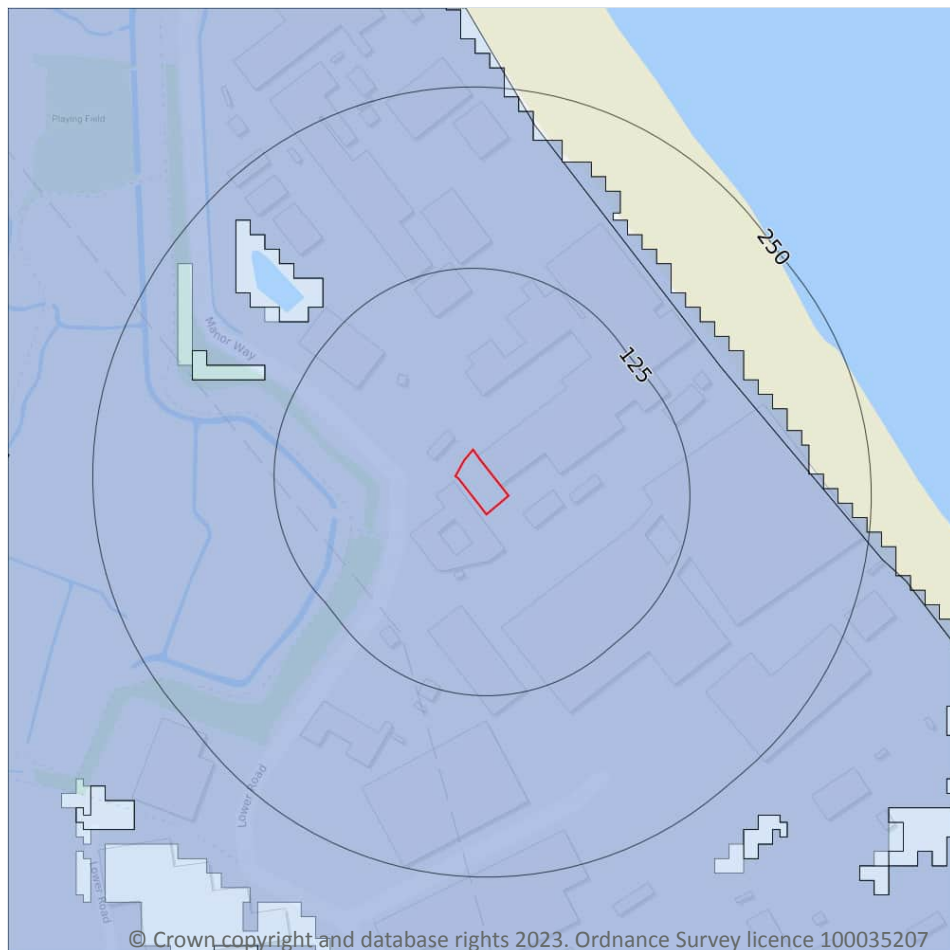
## 7.5 Flood Storage Areas

|                     |   |
|---------------------|---|
| 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



- Site Outline
- Search buffers in metres (m)
- Flood zone 2
- Flood zone 3

### 7.6 Flood Zone 2

#### Records within 50m

1

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.

Features are displayed on the River and coastal flooding map on [page 96 >](#)

| Location | Type                             |
|----------|----------------------------------|
| On site  | Zone 2 - (Fluvial /Tidal Models) |

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



## 7.7 Flood Zone 3

### Records within 50m

**1**

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.

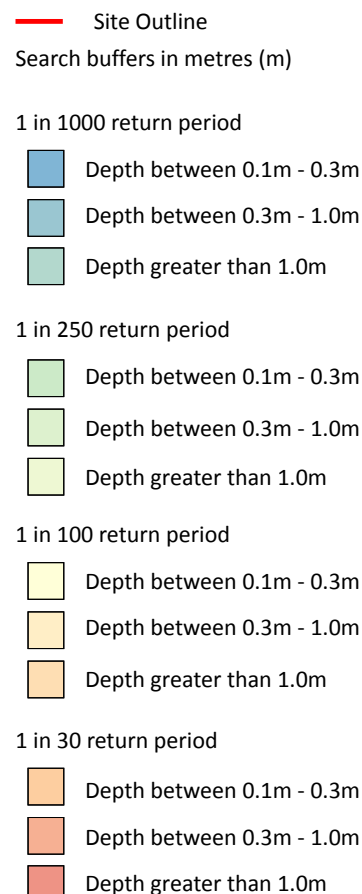
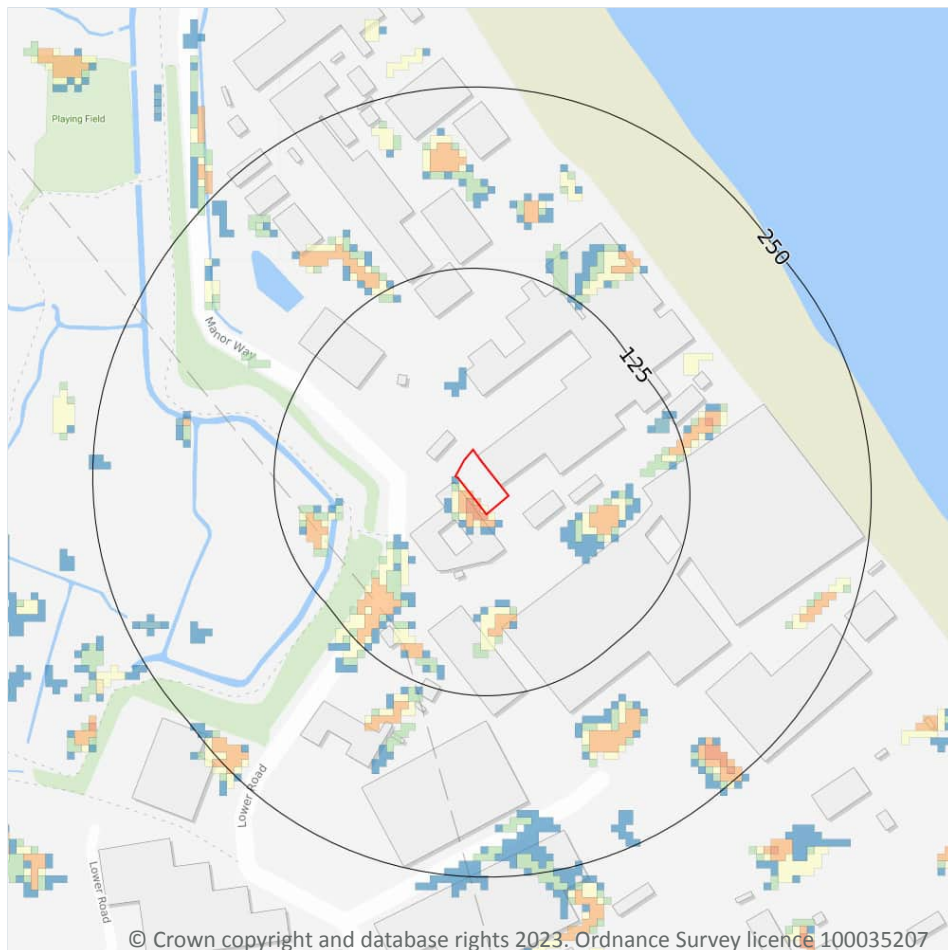
Features are displayed on the River and coastal flooding map on [page 96](#) >

| Location | Type                             |
|----------|----------------------------------|
| On site  | Zone 3 - (Fluvial /Tidal Models) |

*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**

**1 in 30 year, 0.3m - 1.0m**

**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 101](#) >

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.

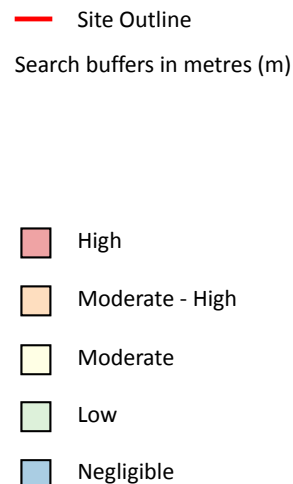
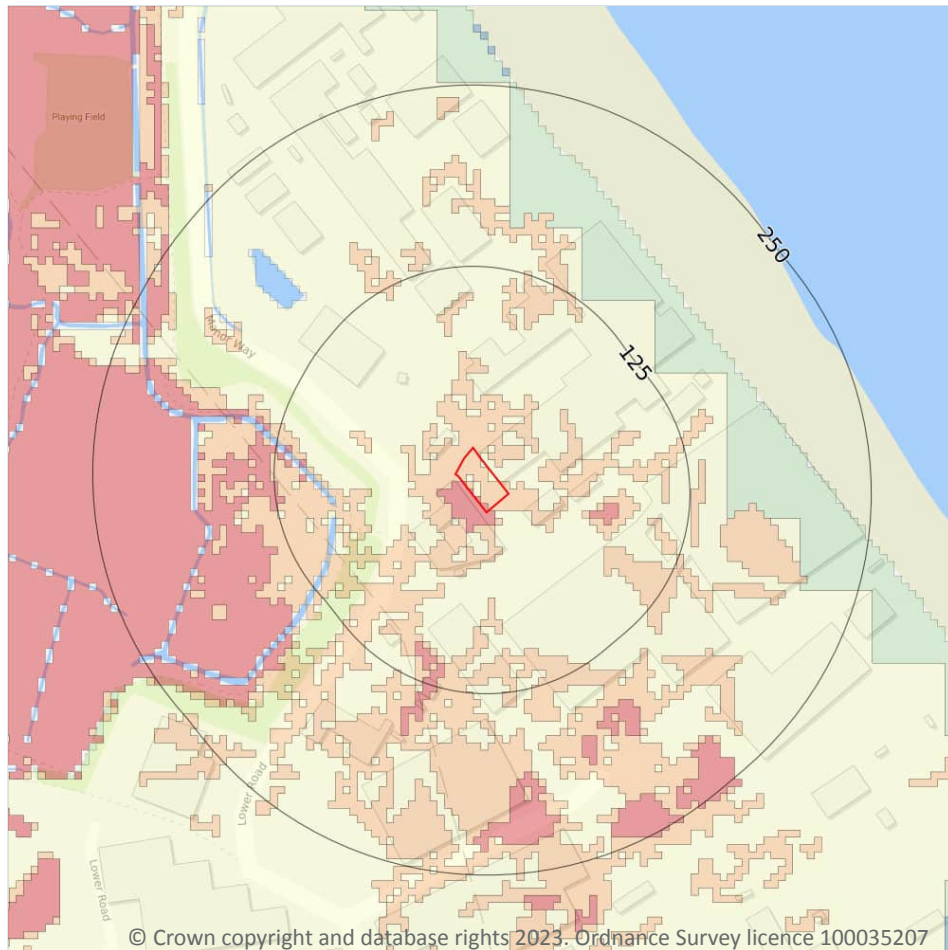
The table below shows the maximum flood depths for a range of return periods for the site.

| Return period  | Maximum modelled depth |
|----------------|------------------------|
| 1 in 1000 year | Between 0.3m and 1.0m  |
| 1 in 250 year  | Between 0.3m and 1.0m  |
| 1 in 100 year  | Between 0.3m and 1.0m  |
| 1 in 30 year   | Between 0.3m and 1.0m  |

*This data is sourced from Ambiantal Risk Analytics.*



## 9 Groundwater flooding



### 9.1 Groundwater flooding

**Highest risk on site**

**High**

**Highest risk within 50m**

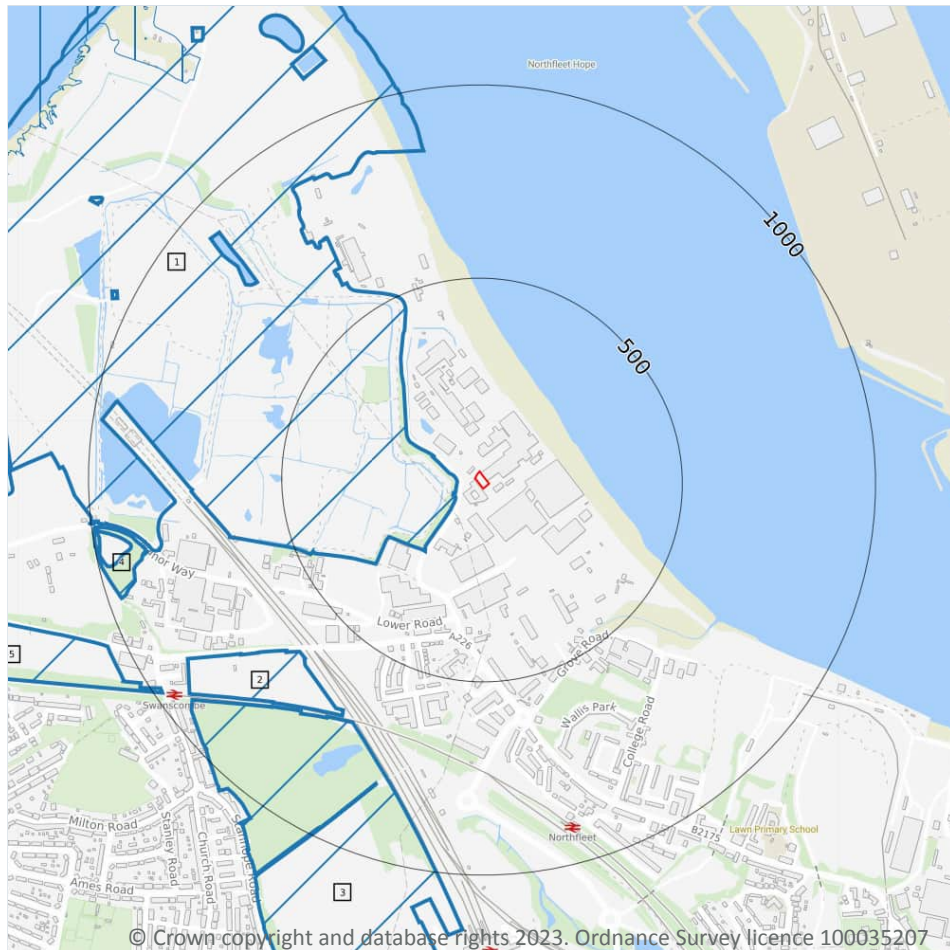
**High**

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 103](#) >

*This data is sourced from Ambiantal Risk Analytics.*

## 10 Environmental designations



- Site Outline
- Search buffers in metres (m)
- Sites of Special Scientific Interest (SSSI)
- × National Nature Reserves (NNR)
- ||| Marine Conservation Zones

### 10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m

10

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.

Features are displayed on the Environmental designations map on [page 104](#) >

| ID | Location | Name                 | Data source     |
|----|----------|----------------------|-----------------|
| 1  | 46m W    | Swanscombe Peninsula | Natural England |



| ID | Location | Name                  | Data source     |
|----|----------|-----------------------|-----------------|
| 2  | 635m SW  | Swanscombe Peninsula  | Natural England |
| 3  | 693m SW  | Swanscombe Peninsula  | Natural England |
| 4  | 869m W   | Swanscombe Peninsula  | Natural England |
| 5  | 978m SW  | Swanscombe Peninsula  | Natural England |
| 6  | 1196m W  | Swanscombe Peninsula  | Natural England |
| -  | 1478m S  | Swanscombe Peninsula  | Natural England |
| -  | 1821m SW | Swanscombe Skull Site | Natural England |
| -  | 1823m S  | Swanscombe Peninsula  | Natural England |
| -  | 1895m S  | Swanscombe Peninsula  | Natural England |

*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****1**

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.

Features are displayed on the Environmental designations map on [page 104 >](#)

| ID | Location | Name                  | Data source     |
|----|----------|-----------------------|-----------------|
| -  | 1821m SW | Swanscombe Skull Site | Natural England |

*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****0**

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.

*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****1**

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.

Features are displayed on the Environmental designations map on [page 104 >](#)

| ID | Location | Name       | Status     |
|----|----------|------------|------------|
| 7  | 1254m NW | Swanscombe | Designated |

*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**

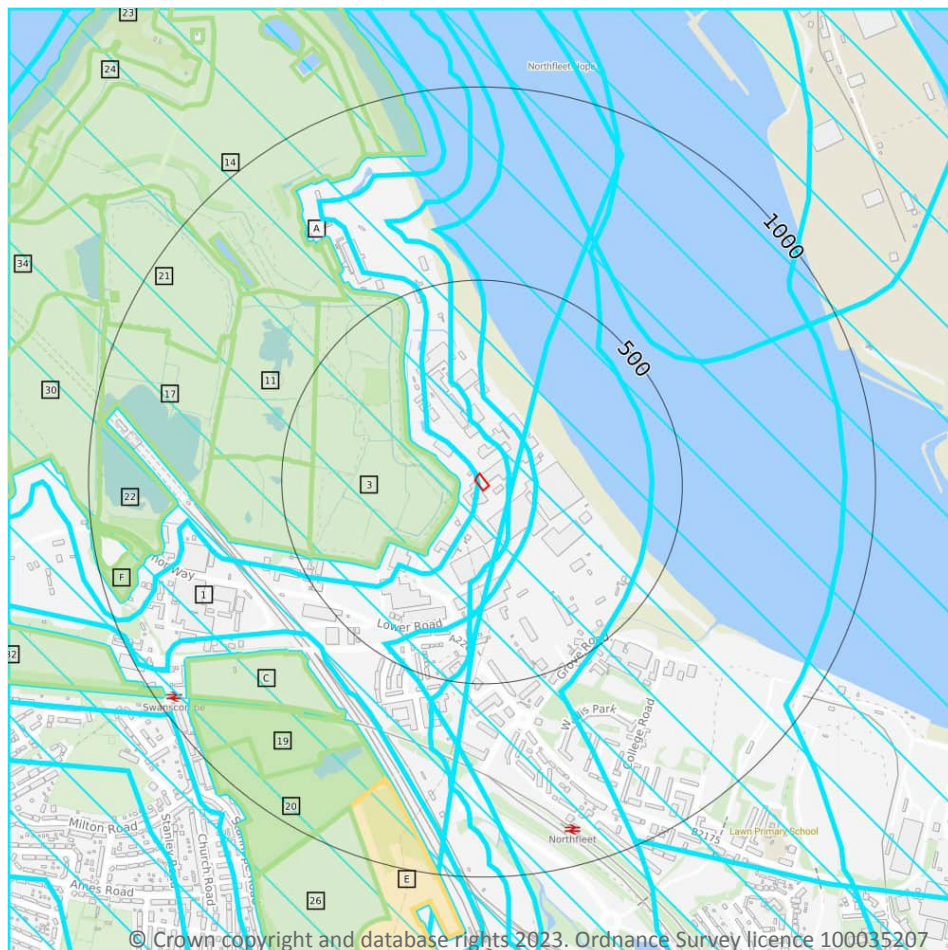
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

| Location | Name       | Type        | NVZ ID | Status   |
|----------|------------|-------------|--------|----------|
| 531m SW  | North Kent | Groundwater | 65     | Existing |

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



## SSSI Impact Zones and Units



- Site Outline
- Search buffers in metres (m)
- SSSI Impact Risk Zones
- SSSI Units
- Not recorded
- Favourable
- Unfavourable - Recovering
- Unfavourable - No change
- Unfavourable - Declining
- Partially destroyed
- Destroyed

### 10.17 SSSI Impact Risk Zones

#### Records on site

2

Developed to allow rapid initial assessment of the potential risks to SSSIs posed by development proposals. They define zones around each SSSI which reflect the particular sensitivities of the features for which it is notified and indicate the types of development proposal which could potentially have adverse impacts.

Features are displayed on the SSSI Impact Zones and Units map on [page 110](#) >



| ID | Location | Type of developments requiring consultation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | On site  | <p>All applications - All planning applications (except householder) outside or extending outside existing settlements/urban areas affecting greenspace, farmland, semi natural habitats or landscape features such as trees, hedges, streams, rural buildings/structures.</p> <p>Infrastructure - Pipelines and underground cables, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.</p> <p>Wind and Solar - Solar schemes with footprint &gt; 0.5ha, all wind turbines.</p> <p>Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil &amp; gas exploration/extraction.</p> <p>Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is &gt; 1,000m<sup>2</sup> or footprint exceeds 0.2ha.</p> <p>Residential - Residential development of 10 units or more.</p> <p>Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units.</p> <p>Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock &amp; poultry units, slurry lagoons &amp; digestate stores, manure stores).</p> <p>Combustion - All general combustion processes. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.</p> <p>Waste - Mechanical and biological waste treatment, inert landfill, non-hazardous landfill, hazardous landfill, household civic amenity recycling facilities construction, demolition and excavation waste, other waste management.</p> <p>Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.</p> <p>Discharges - Any discharge of water or liquid waste that is discharged to ground (ie to seep away) or to surface water, such as a beck or stream.</p> <p>Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is &gt; 1,000m<sup>2</sup> or any development needing its own water supply .</p> |
| A  | On site  | All applications - ALL PLANNING APPLICATIONS - EXCEPT HOUSEHOLDER APPLICATIONS.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

*This data is sourced from Natural England.*

## 10.18 SSSI Units

Records within 2000m

27

Divisions of SSSIs used to record management and condition details. Units are the smallest areas for which Natural England gives a condition assessment, however, the size of units varies greatly depending on the types of management and the conservation interest.

Features are displayed on the SSSI Impact Zones and Units map on [page 110](#) >



ID: 3  
Location: 46m W  
SSSI name: Swanscombe Peninsula  
Unit name: Botany Marsh East  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |

ID: A  
Location: 421m W  
SSSI name: Swanscombe Peninsula  
Unit name: Botany Marsh West, South  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |



ID: 11  
 Location: 422m W  
 SSSI name: Swanscombe Peninsula  
 Unit name: Botany Marsh West, North  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Bupleurum tenuissimum, Slender Hare's-ear                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |

ID: 14  
 Location: 568m NW  
 SSSI name: Swanscombe Peninsula  
 Unit name: Broadness  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Bupleurum tenuissimum, Slender Hare's-ear                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch                                                             | Favourable        | 11/03/2021         |



ID: C  
 Location: 635m SW  
 SSSI name: Swanscombe Peninsula  
 Unit name: Sports Field East Quarry  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                              | Feature condition | Date of assessment |
|-------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward  | Favourable        | 11/03/2021         |

ID: 17  
 Location: 684m W  
 SSSI name: Swanscombe Peninsula  
 Unit name: Ctrl Wetlands, North  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |

ID: 19  
 Location: 693m SW  
 SSSI name: Swanscombe Peninsula  
 Unit name: Bamber Pit, North  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:



| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |

ID: 20  
 Location: 721m SW  
 SSSI name: Swanscombe Peninsula  
 Unit name: Bamber Pit, South  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |

ID: 21  
 Location: 731m NW  
 SSSI name: Swanscombe Peninsula  
 Unit name: North East Tip  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |



| Feature name                                                      | Feature condition | Date of assessment |
|-------------------------------------------------------------------|-------------------|--------------------|
| Invert. assemblage F111 bare sand & chalk                         | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                          | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments         | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling         | Favourable        | 11/03/2021         |

ID: 22  
 Location: 778m W  
 SSSI name: Swanscombe Peninsula  
 Unit name: Ctrl Wetland South  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |

ID: E  
 Location: 789m S  
 SSSI name: Swanscombe Peninsula  
 Unit name: Baker's Hole  
 Broad habitat:  
 Condition: Unfavourable - No change  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |



| Feature name                              | Feature condition        | Date of assessment |
|-------------------------------------------|--------------------------|--------------------|
| FM - Quaternary of the Thames             | Unfavourable - No change | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk | Favourable               | 11/03/2021         |
| Invert. assemblage F112 open short sward  | Favourable               | 11/03/2021         |

ID: 23  
 Location: 843m N  
 SSSI name: Swanscombe Peninsula  
 Unit name: Swanscombe Mudflat  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |

ID: 24  
 Location: 864m N  
 SSSI name: Swanscombe Peninsula  
 Unit name: Swanscombe Sea Wall  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Bupleurum tenuissimum, Slender Hare's-ear                                                    | Favourable        | 11/03/2021         |



| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Vascular Plant Species: Carex divisa, Divided Sedge       | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch  | Favourable        | 11/03/2021         |

ID: F  
 Location: 869m W  
 SSSI name: Swanscombe Peninsula  
 Unit name: Manor Way Pit  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |

ID: 26  
 Location: 890m S  
 SSSI name: Swanscombe Peninsula  
 Unit name: Northfleet Landfill, West  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                 | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch  | Favourable        | 11/03/2021         |

ID: 30  
Location: 970m W  
SSSI name: Swanscombe Peninsula  
Unit name: South West Tip  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                 | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                  | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |

ID: 32  
Location: 978m SW  
SSSI name: Swanscombe Peninsula  
Unit name: Craylands Pit  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                      | Feature condition | Date of assessment |
|-------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                             | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                         | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                          | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh | Favourable        | 11/03/2021         |

ID: 34  
Location: 1066m NW  
SSSI name: Swanscombe Peninsula  
Unit name: Swanscombe Marsh  
Broad habitat:  
Condition: Favourable  
Reportable features:



| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch                                                             | Favourable        | 11/03/2021         |

ID: 36  
 Location: 1196m W  
 SSSI name: Swanscombe Peninsula  
 Unit name: Black Duck Marsh  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage W211 open water on disturbed sediments                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Pyrola rotundifolia ssp. maritima, Round-leaved Wintergreen                                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch                                                             | Favourable        | 11/03/2021         |

ID: -  
 Location: 1399m S  
 SSSI name: Swanscombe Peninsula  
 Unit name: Station Quarters  
 Broad habitat:  
 Condition: Favourable



## Reportable features:

| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                 | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge       | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |

ID: -  
Location: 1414m W  
SSSI name: Swanscombe Peninsula  
Unit name: Swanscombe Sea Wall  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Bupleurum tenuissimum, Slender Hare's-ear                                                    | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge                                                                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |
| Vascular Plant Species: Vicia bithynica, Bithynian Vetch                                                             | Favourable        | 11/03/2021         |

ID: -  
Location: 1459m W  
SSSI name: Swanscombe Peninsula  
Unit name: Swanscombe Mudflat  
Broad habitat:  
Condition: Favourable  
Reportable features:



| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |

ID: -  
 Location: 1478m S  
 SSSI name: Swanscombe Peninsula  
 Unit name: Station Quarters  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                 | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Carex divisa, Divided Sedge       | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |

ID: -  
 Location: 1536m NW  
 SSSI name: Swanscombe Peninsula  
 Unit name: Swanscombe Mudflat  
 Broad habitat:  
 Condition: Favourable  
 Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Invert. assemblage M311 saltmarsh and transitional brackish marsh                                                    | Favourable        | 11/03/2021         |

ID: -  
Location: 1821m SW  
SSSI name: Swanscombe Skull Site  
Unit name: Disused Pits  
Broad habitat: Earth Heritage  
Condition: Favourable  
Reportable features:

| Feature name                  | Feature condition | Date of assessment |
|-------------------------------|-------------------|--------------------|
| FM - Pleistocene Vertebrata   | Favourable        | 16/11/2012         |
| FM - Quaternary of the Thames | Favourable        | 16/11/2012         |

ID: -  
Location: 1823m S  
SSSI name: Swanscombe Peninsula  
Unit name: Ebbsfleet Valley, West  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |
| Assemblages of breeding birds - Scrub                                                                                | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                                                                            | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                                                                             | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling                                                            | Favourable        | 11/03/2021         |

ID: -  
Location: 1895m S  
SSSI name: Swanscombe Peninsula  
Unit name: Ebbsfleet Valley, West  
Broad habitat:  
Condition: Favourable  
Reportable features:

| Feature name                                                                                                         | Feature condition | Date of assessment |
|----------------------------------------------------------------------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Mixed: Lowland open waters and their margins, Lowland fen and Lowland damp grassland | Favourable        | 11/03/2021         |



| Feature name                                              | Feature condition | Date of assessment |
|-----------------------------------------------------------|-------------------|--------------------|
| Assemblages of breeding birds - Scrub                     | Favourable        | 11/03/2021         |
| Invert. assemblage F111 bare sand & chalk                 | Favourable        | 11/03/2021         |
| Invert. assemblage F112 open short sward                  | Favourable        | 11/03/2021         |
| Vascular Plant Species: Lathyrus aphaca, Yellow Vetchling | Favourable        | 11/03/2021         |

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



## 11 Visual and cultural designations

### 11.1 World Heritage Sites

Records within 250m

0

Sites designated for their globally important cultural or natural interest requiring appropriate management and protection measures. World Heritage Sites are designated to meet the UK's commitments under the World Heritage Convention.

*This data is sourced from Historic England, Cadw and Historic Environment Scotland.*

### 11.2 Area of Outstanding Natural Beauty

Records within 250m

0

Areas of Outstanding Natural Beauty (AONB) are conservation areas, chosen because they represent 18% of the finest countryside. Each AONB has been designated for special attention because of the quality of their flora, fauna, historical and cultural associations, and/or scenic views. The National Parks and Access to the Countryside Act of 1949 created AONBs and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are likely to be restrictions to some developments within these areas.

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

### 11.3 National Parks

Records within 250m

0

In England and Wales, the purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well-being of those living within them. In Scotland National Parks have the additional purpose of promoting the sustainable use of the natural resources of the area and the sustainable social and economic development of its communities. The National Parks and Access to the Countryside Act 1949 established the National Park designation in England and Wales, and The National Parks (Scotland) Act 2000 in Scotland.

*This data is sourced from Natural England, Natural Resources Wales and the Scottish Government.*

### 11.4 Listed Buildings

Records within 250m

0

Buildings listed for their special architectural or historical interest. Building control in the form of 'listed building consent' is required in order to make any changes to that building which might affect its special interest. Listed buildings are graded to indicate their relative importance, however building controls apply to all buildings equally, irrespective of their grade, and apply to the interior and exterior of the building in its entirety, together with any curtilage structures.



*This data is sourced from Historic England, Cadw and Historic Environment Scotland.*

## 11.5 Conservation Areas

Records within 250m

0

Local planning authorities are obliged to designate as conservation areas any parts of their own area that are of special architectural or historic interest, the character and appearance of which it is desirable to preserve or enhance. Designation of a conservation area gives broader protection than the listing of individual buildings. All the features within the area, listed or otherwise, are recognised as part of its character. Conservation area designation is the means of recognising the importance of all factors and of ensuring that planning decisions address the quality of the landscape in its broadest sense.

*This data is sourced from Historic England, Cadw and Historic Environment Scotland.*

## 11.6 Scheduled Ancient Monuments

Records within 250m

0

A scheduled monument is an historic building or site that is included in the Schedule of Monuments kept by the Secretary of State for Digital, Culture, Media and Sport. The regime is set out in the Ancient Monuments and Archaeological Areas Act 1979. The Schedule of Monuments has c.20,000 entries and includes sites such as Roman remains, burial mounds, castles, bridges, earthworks, the remains of deserted villages and industrial sites. Monuments are not graded, but all are, by definition, considered to be of national importance.

*This data is sourced from Historic England, Cadw and Historic Environment Scotland.*

## 11.7 Registered Parks and Gardens

Records within 250m

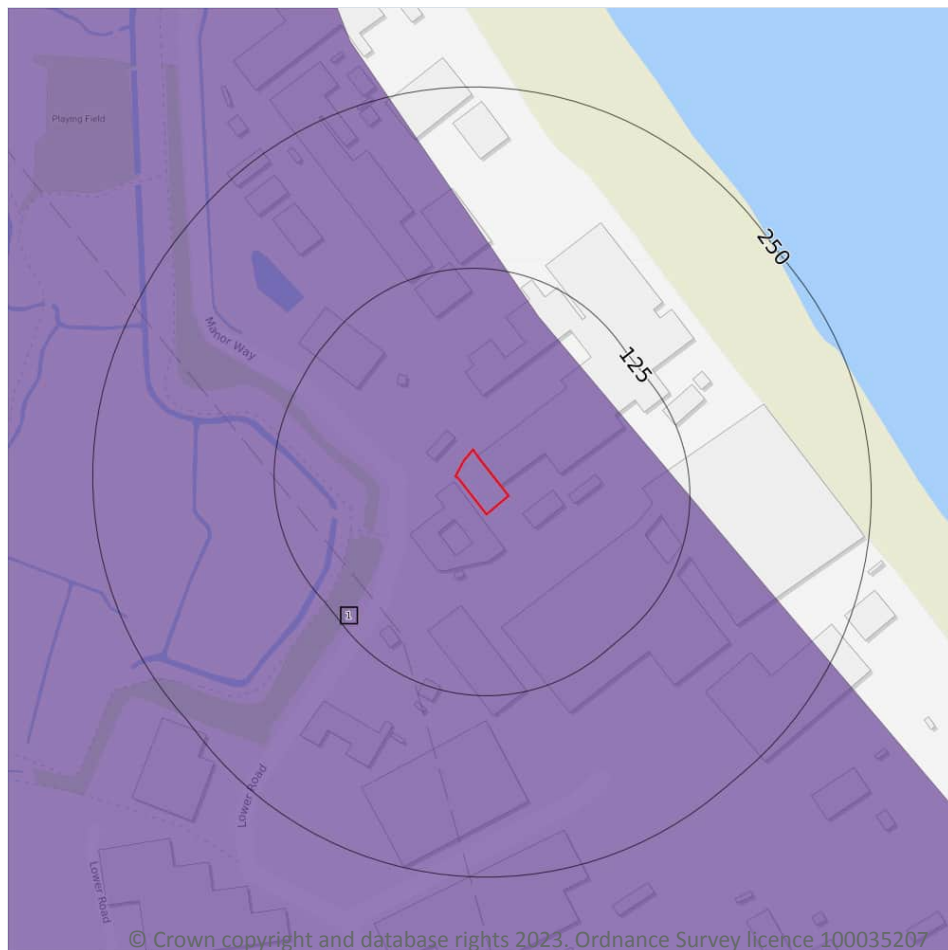
0

Parks and gardens assessed to be of particular interest and of special historic interest. The emphasis being on 'designed' landscapes, rather than on planting or botanical importance. Registration is a 'material consideration' in the planning process, meaning that planning authorities must consider the impact of any proposed development on the special character of the landscape.

*This data is sourced from Historic England, Cadw and Historic Environment Scotland.*



## 12 Agricultural designations



- Site Outline
- Search buffers in metres (m)
- Grade 1 - excellent quality
- Grade 2 - very good quality
- Grade 3 - good to moderate quality
- Grade 3a - good quality
- Grade 3b - moderate quality
- Grade 4 - poor quality
- Grade 5 - very poor quality
- Non-agricultural land
- Urban land
- Exclusion land
- Tree felling licences
- Open Access land

### 12.1 Agricultural Land Classification

Records within 250m

1

Classification of the quality of agricultural land taking into consideration multiple factors including climate, physical geography and soil properties. It should be noted that the categories for the grading of agricultural land are not consistent across England, Wales and Scotland.

Features are displayed on the Agricultural designations map on [page 127](#) >

| ID | Location | Classification | Description |
|----|----------|----------------|-------------|
| 1  | On site  | Urban          | -           |

*This data is sourced from Natural England.*



## 12.2 Open Access Land

**Records within 250m****0**

The Countryside and Rights of Way Act 2000 (CROW Act) gives a public right of access to land without having to use paths. Access land includes mountains, moors, heaths and downs that are privately owned. It also includes common land registered with the local council and some land around the England Coast Path. Generally permitted activities on access land are walking, running, watching wildlife and climbing.

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

## 12.3 Tree Felling Licences

**Records within 250m****0**

Felling Licence Application (FLA) areas approved by Forestry Commission England. Anyone wishing to fell trees must ensure that a licence or permission under a grant scheme has been issued by the Forestry Commission before any felling is carried out or that one of the exceptions apply.

*This data is sourced from the Forestry Commission.*

## 12.4 Environmental Stewardship Schemes

**Records within 250m****0**

Environmental Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. The schemes identified may be historical schemes that have now expired, or may still be active.

*This data is sourced from Natural England.*

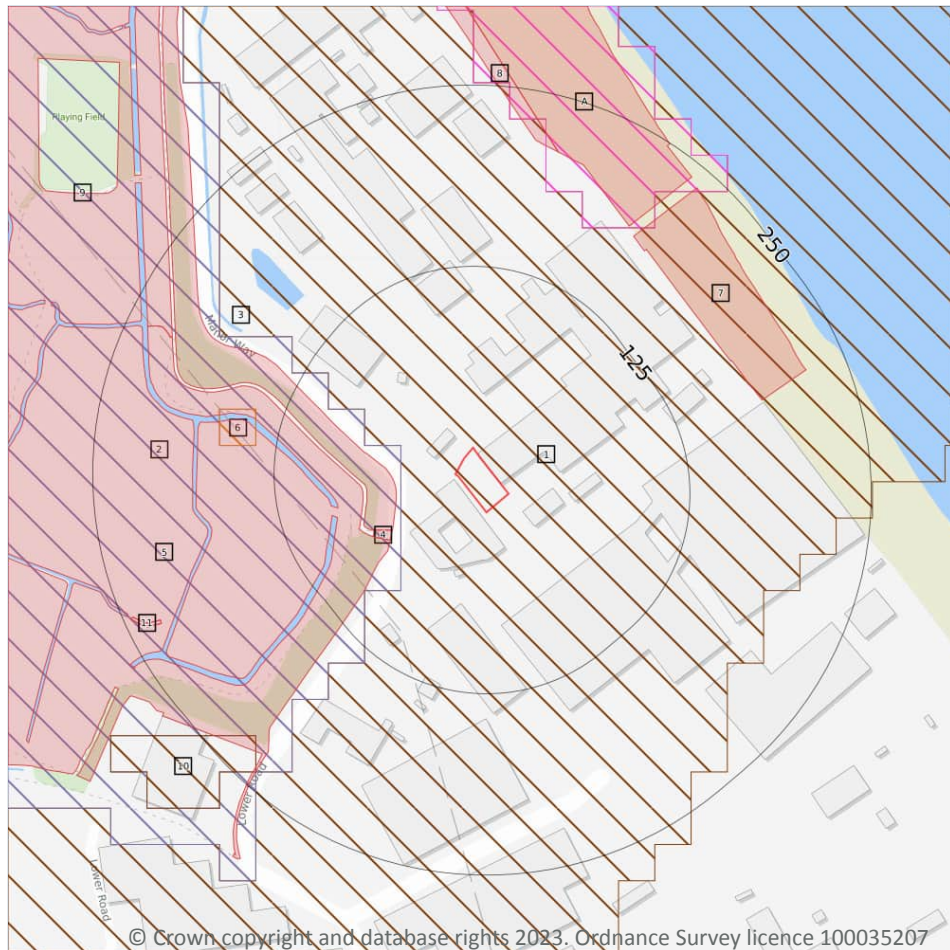
## 12.5 Countryside Stewardship Schemes

**Records within 250m****0**

Countryside Stewardship covers a range of schemes that provide financial incentives to farmers, foresters and land managers to look after and improve the environment. Main objectives are to improve the farmed environment for wildlife and to reduce diffuse water pollution.

*This data is sourced from Natural England.*

## 13 Habitat designations



- Site Outline
- Search buffers in metres (m)
- Priority Habitat Inventory
- Open Mosaic Habitat
- Limestone Pavement Orders
- Habitat Networks
- Primary Habitat
- Restorable Habitat
- Associated Habitats
- Habitat Restoration-Creation
- Network Enhancement Zone 1
- Network Enhancement Zone 2

### 13.1 Priority Habitat Inventory

Records within 250m

8

Habitats of principal importance as named under Natural Environment and Rural Communities Act (2006) Section 41.

Features are displayed on the Habitat designations map on [page 129 >](#)

| ID | Location | Main Habitat                         | Other habitats                  |
|----|----------|--------------------------------------|---------------------------------|
| 3  | 42m W    | Coastal and floodplain grazing marsh | Main habitat: CFPGM (INV > 50%) |
| 4  | 58m SW   | Coastal and floodplain grazing marsh | Main habitat: CFPGM (INV > 50%) |
| 5  | 64m SW   | Coastal and floodplain grazing marsh | Main habitat: CFPGM (INV > 50%) |
| 7  | 177m NE  | Mudflats                             | Main habitat: MUDFL (INV > 50%) |



| ID | Location | Main Habitat                                    | Other habitats                  |
|----|----------|-------------------------------------------------|---------------------------------|
| A  | 187m NE  | Mudflats                                        | Main habitat: MUDFL (INV > 50%) |
| 8  | 212m N   | No main habitat but additional habitats present | Additional: SALT (INV 50%)      |
| 9  | 217m NW  | Coastal and floodplain grazing marsh            | Main habitat: CFP (INV > 50%)   |
| 11 | 227m SW  | Coastal and floodplain grazing marsh            | Main habitat: CFP (INV > 50%)   |

This data is sourced from Natural England.

## 13.2 Habitat Networks

|                            |          |
|----------------------------|----------|
| <b>Records within 250m</b> | <b>5</b> |
|----------------------------|----------|

Habitat networks for 18 priority habitat networks (based primarily, but not exclusively, on the priority habitat inventory) and areas suitable for the expansion of networks through restoration and habitat creation.

Features are displayed on the Habitat designations map on [page 129 >](#)

| ID       | Location       | Type                              | Habitat                   |
|----------|----------------|-----------------------------------|---------------------------|
| <b>1</b> | <b>On site</b> | <b>Network Enhancement Zone 2</b> | <b>Not specified</b>      |
| 2        | 38m W          | Restorable Habitat                | Not specified             |
| 6        | 139m W         | Network Enhancement Zone 1        | Not specified             |
| A        | 169m N         | Associated Habitats               | Other associated habitats |
| 10       | 221m SW        | Network Enhancement Zone 2        | Not specified             |

This data is sourced from Natural England.

## 13.3 Open Mosaic Habitat

|                            |          |
|----------------------------|----------|
| <b>Records within 250m</b> | <b>0</b> |
|----------------------------|----------|

Sites verified as Open Mosaic Habitat. Mosaic habitats are brownfield sites that are identified under the UK Biodiversity Action Plan as a priority habitat due to the habitat variation within a single site, supporting an array of invertebrates.

This data is sourced from Natural England.

## 13.4 Limestone Pavement Orders

**Records within 250m****0**

Limestone pavements are outcrops of limestone where the surface has been worn away by natural means over millennia. These rocks have the appearance of paving blocks, hence their name. Not only do they have geological interest, they also provide valuable habitats for wildlife. These habitats are threatened due to their removal for use in gardens and water features. Many limestone pavements have been designated as SSSIs which affords them some protection. In addition, Section 34 of the Wildlife and Countryside Act 1981 gave them additional protection via the creation of Limestone Pavement Orders, which made it a criminal offence to remove any part of the outcrop. The associated Limestone Pavement Priority Habitat is part of the UK Biodiversity Action Plan priority habitat in England.

*This data is sourced from Natural England.*



## 14 Geology 1:10,000 scale - Availability



- Site Outline
- Search buffers in metres (m)
- Full coverage
  - Partial coverage
  - No coverage

### 14.1 10k Availability

#### Records within 500m

2

An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

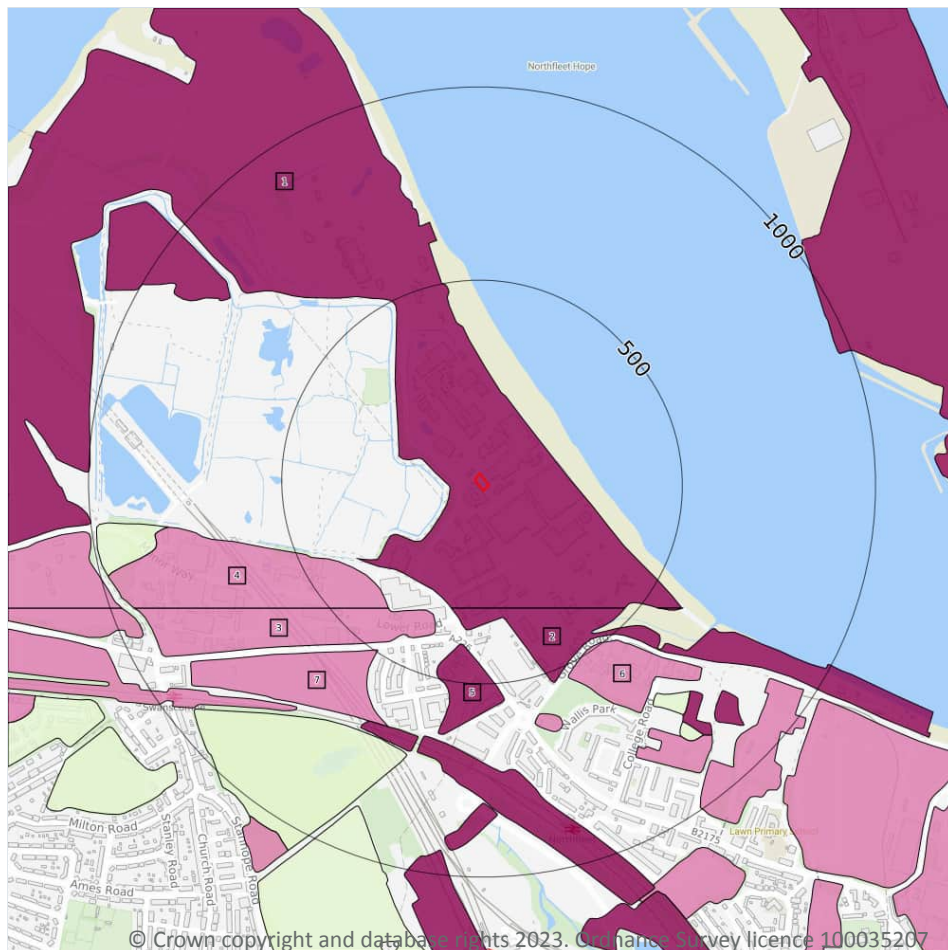
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 132](#) >

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No. |
|----|----------|------------|-------------|---------|---------------|-----------|
| 1  | On site  | Full       | Full        | Full    | No coverage   | TQ67NW    |
| 2  | 304m S   | Full       | Full        | Full    | Full          | TQ67SW    |

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Artificial and made ground



- Site Outline**
- Search buffers in metres (m)**
- Reclaimed ground
  - Made ground
  - Worked ground
  - Infilled ground
  - Disturbed ground
  - Landscaped ground

### 14.2 Artificial and made ground (10k)

Records within 500m

7

Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on [page 133 >](#)

| ID | Location | LEX Code    | Description               | Rock description           |
|----|----------|-------------|---------------------------|----------------------------|
| 1  | On site  | MGR-UNKNOWN | Made Ground (Undivided)   | Unknown/unclassified Entry |
| 2  | 304m S   | MGR-ARTDP   | Made Ground (Undivided)   | Artificial Deposit         |
| 3  | 343m SW  | WGR-VOID    | Worked Ground (Undivided) | Void                       |
| 4  | 368m SW  | WGR-UNKNOWN | Worked Ground (Undivided) | Unknown/unclassified Entry |

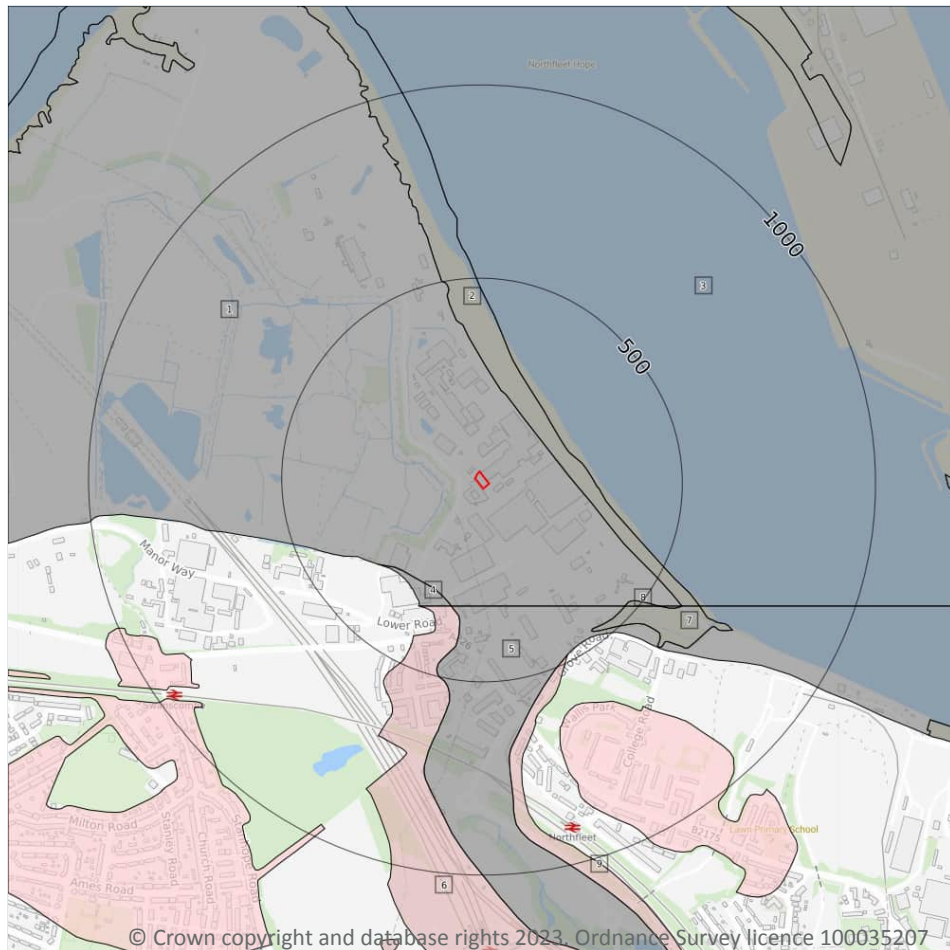


| ID | Location | LEX Code  | Description               | Rock description   |
|----|----------|-----------|---------------------------|--------------------|
| 5  | 400m S   | MGR-ARTDP | Made Ground (Undivided)   | Artificial Deposit |
| 6  | 492m SE  | WGR-VOID  | Worked Ground (Undivided) | Void               |
| 7  | 495m SW  | WGR-VOID  | Worked Ground (Undivided) | Void               |

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Superficial



**Site Outline**

Search buffers in metres (m)

**Landslip (10k)**

**Superficial geology (10k)**  
Please see table for more details.

### 14.3 Superficial geology (10k)

#### Records within 500m

9

Superficial geological deposits at 1:10,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:10,000 scale - Superficial map on [page 135](#) >

| ID | Location | LEX Code | Description                                          | Rock description |
|----|----------|----------|------------------------------------------------------|------------------|
| 1  | On site  | ALV-Z    | Alluvium - Silt (unlithified Deposits Coding Scheme) | Silt             |
| 2  | 175m NE  | TRD-Z    | Tidal River Or Creek Deposits - Silt                 | Silt             |
| 3  | 217m NE  | ALV-Z    | Alluvium - Silt (unlithified Deposits Coding Scheme) | Silt             |
| 4  | 287m SW  | HEAD-C   | Head - Clay (unlithified Deposits Coding Scheme)     | Clay             |



| ID | Location | LEX Code | Description                                          | Rock description |
|----|----------|----------|------------------------------------------------------|------------------|
| 5  | 304m S   | ALV-Z    | Alluvium - Silt (unlithified Deposits Coding Scheme) | Silt             |
| 6  | 315m S   | HEAD-XSC | Head - Sand And Clay                                 | Sand And Clay    |
| 7  | 460m SE  | TRD-Z    | Tidal River Or Creek Deposits - Silt                 | Silt             |
| 8  | 473m SE  | TRD-Z    | Tidal River Or Creek Deposits - Silt                 | Silt             |
| 9  | 482m SE  | HEAD-XSC | Head - Sand And Clay                                 | Sand And Clay    |

*This data is sourced from the British Geological Survey.*

## 14.4 Landslip (10k)

Records within 500m

0

Mass movement deposits on BGS geological maps at 1:10,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*



## Geology 1:10,000 scale - Bedrock



**— Site Outline**

Search buffers in metres (m)

**.... Bedrock faults and other linear features (10k)**

**Bedrock geology (10k)**  
Please see table for more details.

### 14.5 Bedrock geology (10k)

Records within 500m

2

Bedrock geology at 1:10,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on [page 137](#) >

| ID | Location | LEX Code  | Description                     | Rock age                           |
|----|----------|-----------|---------------------------------|------------------------------------|
| 1  | On site  | CK-CHLK   | Chalk Group - Chalk             | Maastrichtian Age - Cenomanian Age |
| 2  | 304m S   | SECK-CHLK | Seaford Chalk Formation - Chalk | Santonian Age - Coniacian Age      |

*This data is sourced from the British Geological Survey.*



## 14.6 Bedrock faults and other linear features (10k)

Records within 500m

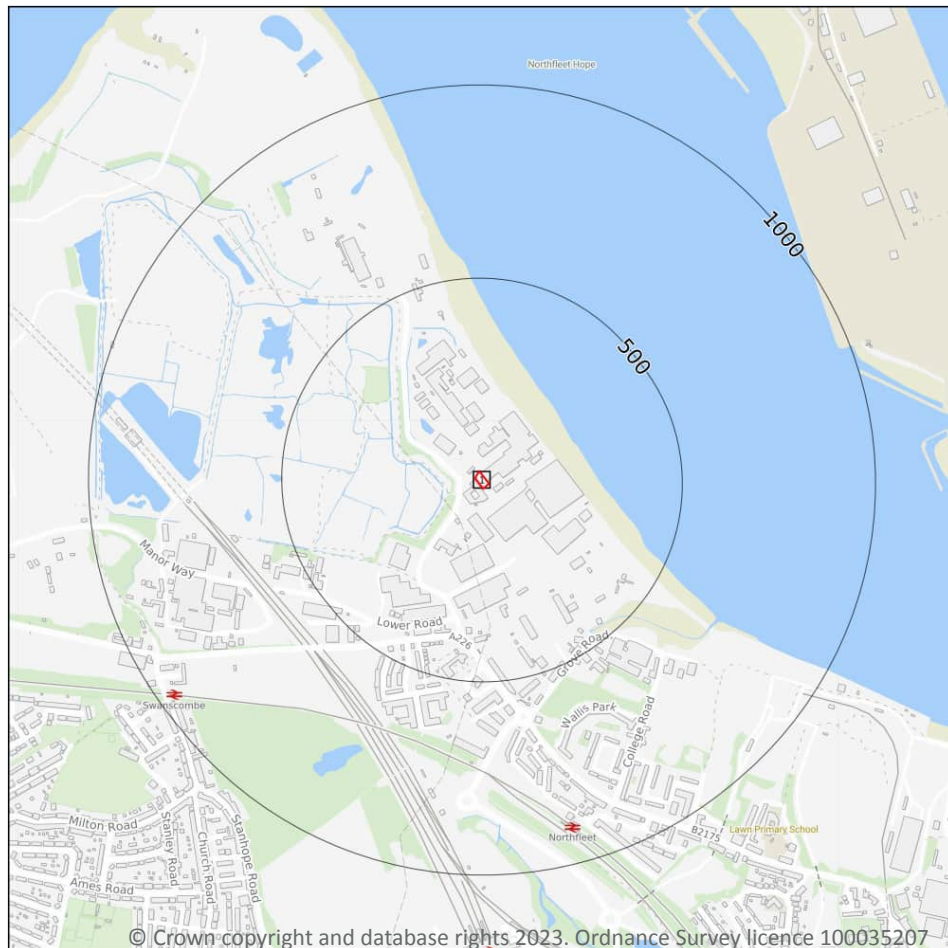
0

Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

*This data is sourced from the British Geological Survey.*



## 15 Geology 1:50,000 scale - Availability



— Site Outline

Search buffers in metres (m)

□ Geological map tile

### 15.1 50k Availability

#### Records within 500m

1

An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

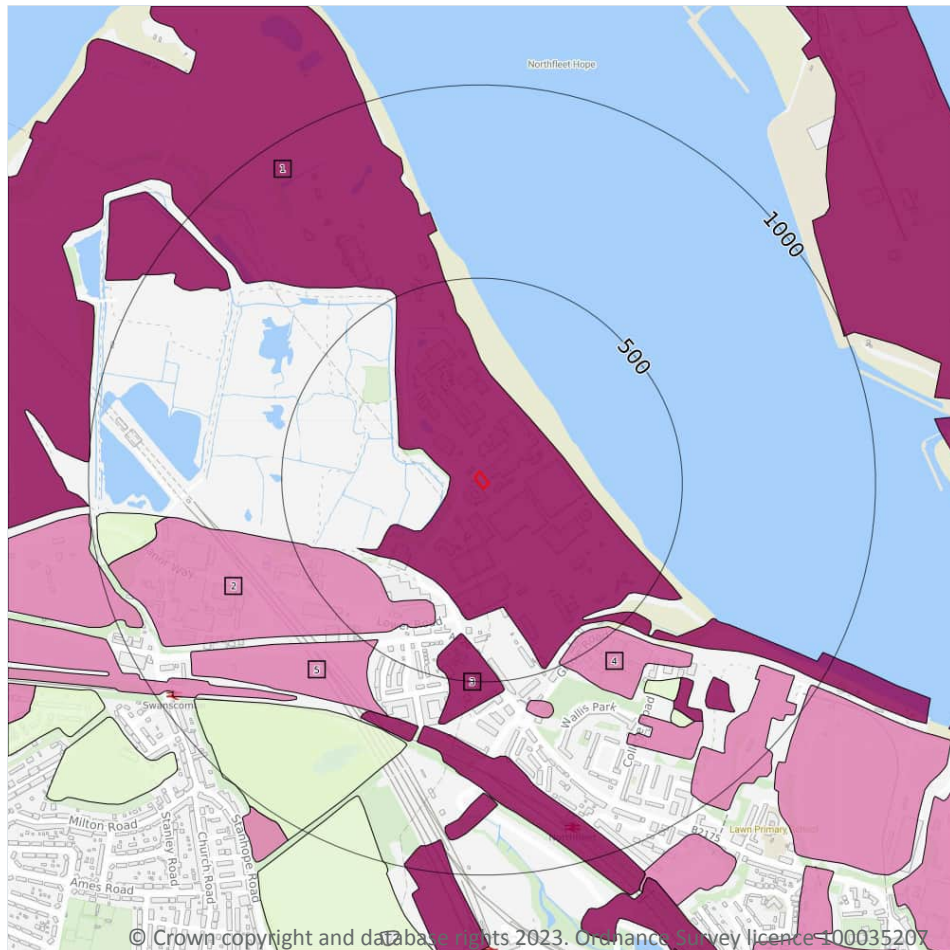
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 139](#) >

| ID | Location | Artificial | Superficial | Bedrock | Mass movement | Sheet No.         |
|----|----------|------------|-------------|---------|---------------|-------------------|
| 1  | On site  | Full       | Full        | Full    | Full          | EW271_dartford_v4 |

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Artificial and made ground



- Site Outline**
- Search buffers in metres (m)**
- Made ground
  - Worked ground
  - Infilled ground
  - Disturbed ground
  - Landscaped ground

### 15.2 Artificial and made ground (50k)

#### Records within 500m

5

Details of made, worked, infilled, disturbed and landscaped ground at 1:50,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on [page 140 >](#)

| ID | Location | LEX Code  | Description               | Rock description   |
|----|----------|-----------|---------------------------|--------------------|
| 1  | On site  | MGR-ARTDP | MADE GROUND (UNDIVIDED)   | ARTIFICIAL DEPOSIT |
| 2  | 324m SW  | WGR-VOID  | WORKED GROUND (UNDIVIDED) | VOID               |
| 3  | 379m S   | MGR-ARTDP | MADE GROUND (UNDIVIDED)   | ARTIFICIAL DEPOSIT |
| 4  | 454m SE  | WGR-VOID  | WORKED GROUND (UNDIVIDED) | VOID               |



| ID | Location | LEX Code | Description               | Rock description |
|----|----------|----------|---------------------------|------------------|
| 5  | 478m SW  | WGR-VOID | WORKED GROUND (UNDIVIDED) | VOID             |

*This data is sourced from the British Geological Survey.*

### 15.3 Artificial ground permeability (50k)

Records within 50m

1

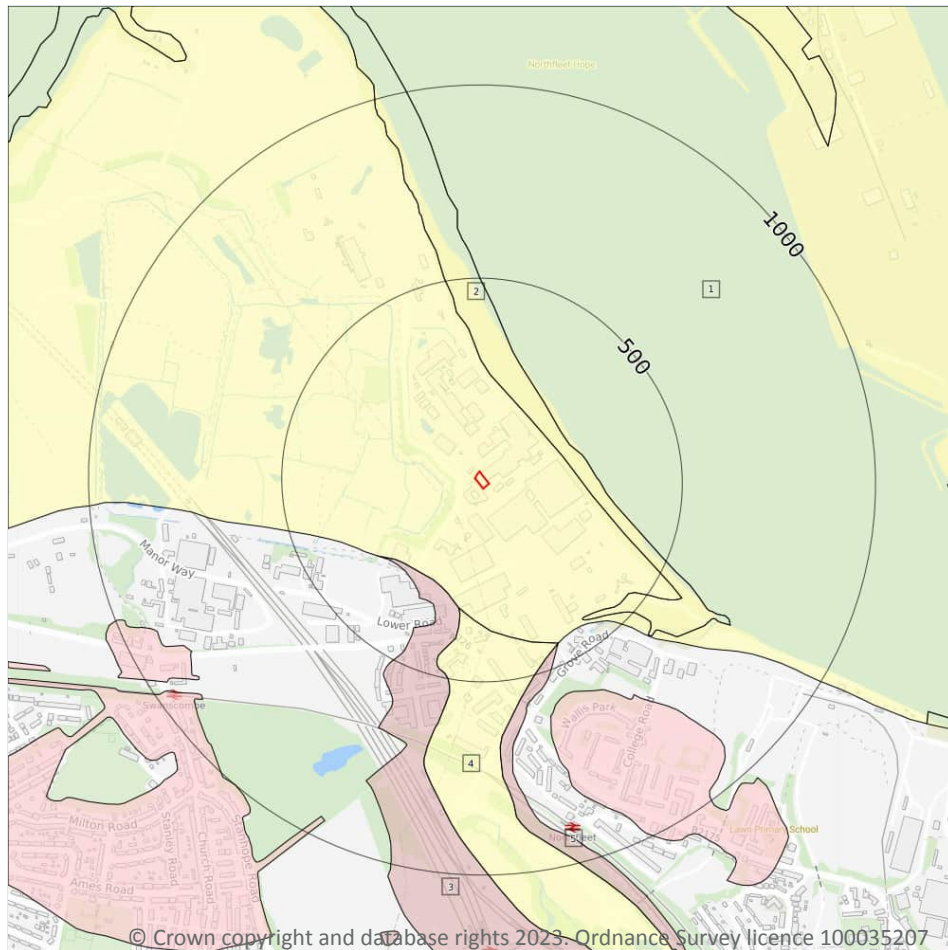
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

| Location | Flow type | Maximum permeability | Minimum permeability |
|----------|-----------|----------------------|----------------------|
| On site  | Mixed     | Very High            | Low                  |

*This data is sourced from the British Geological Survey.*



## Geology 1:50,000 scale - Superficial



**Site Outline**

Search buffers in metres (m)

**Landslip (50k)**

Superficial geology (50k)  
Please see table for more details.

### 15.4 Superficial geology (50k)

#### Records within 500m

5

Superficial geological deposits at 1:50,000 scale. Also known as 'drift', these are the youngest geological deposits, formed during the Quaternary. They rest on older deposits or rocks referred to as bedrock.

Features are displayed on the Geology 1:50,000 scale - Superficial map on [page 142](#) >

| ID | Location | LEX Code   | Description                   | Rock description            |
|----|----------|------------|-------------------------------|-----------------------------|
| 1  | On site  | ALV-XCZSP  | ALLUVIUM                      | CLAY, SILT, SAND AND PEAT   |
| 2  | 188m NE  | TRD-XCZ    | TIDAL RIVER OR CREEK DEPOSITS | CLAY AND SILT               |
| 3  | 269m SW  | HEAD-XCZSV | HEAD                          | CLAY, SILT, SAND AND GRAVEL |



| ID | Location | LEX Code   | Description | Rock description            |
|----|----------|------------|-------------|-----------------------------|
| 4  | 315m S   | ALV-XCZSV  | ALLUVIUM    | CLAY, SILT, SAND AND GRAVEL |
| 5  | 445m SE  | HEAD-XCZSV | HEAD        | CLAY, SILT, SAND AND GRAVEL |

*This data is sourced from the British Geological Survey.*

## 15.5 Superficial permeability (50k)

**Records within 50m** **1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any superficial deposits (the zone between the land surface and the water table).

| Location | Flow type     | Maximum permeability | Minimum permeability |
|----------|---------------|----------------------|----------------------|
| On site  | Intergranular | Moderate             | Very Low             |

*This data is sourced from the British Geological Survey.*

## 15.6 Landslip (50k)

**Records within 500m** **0**

Mass movement deposits on BGS geological maps at 1:50,000 scale. Primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground.

*This data is sourced from the British Geological Survey.*

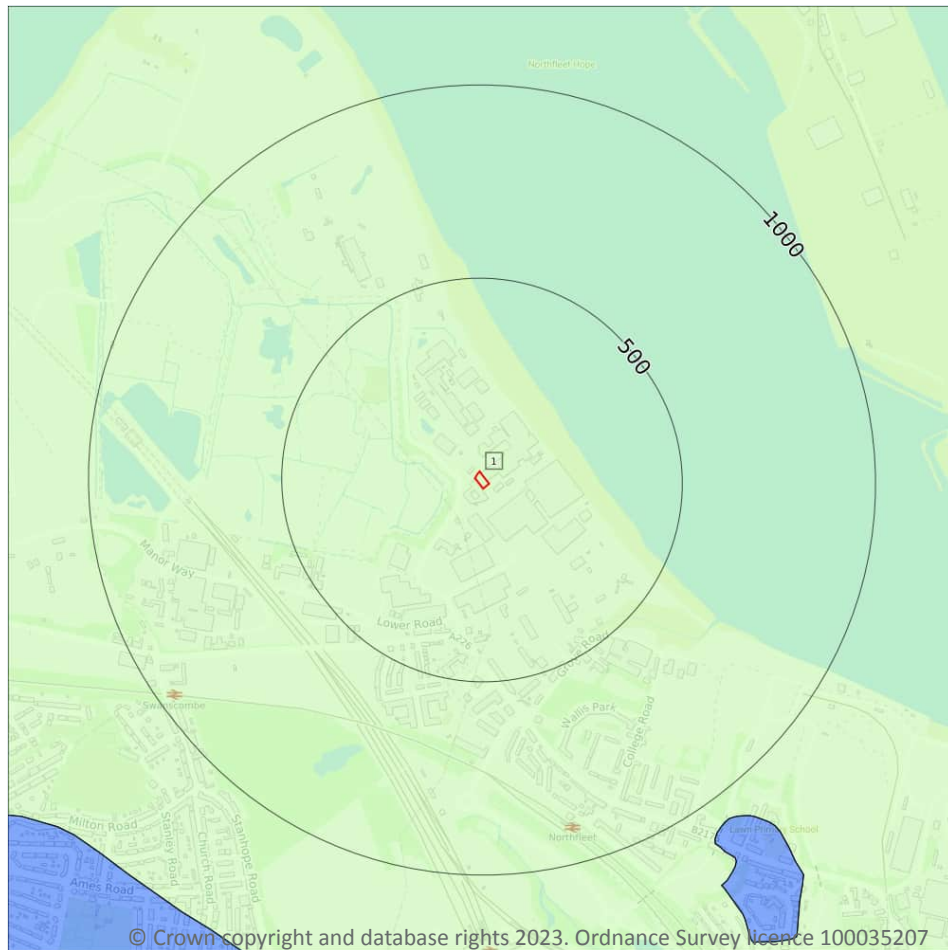
## 15.7 Landslip permeability (50k)

**Records within 50m** **0**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any landslip deposits (the zone between the land surface and the water table).

*This data is sourced from the British Geological Survey.*

## Geology 1:50,000 scale - Bedrock



— Site Outline

Search buffers in metres (m)

.... Bedrock faults and other linear features (50k)

Bedrock geology (50k)  
Please see table for more details.

### 15.8 Bedrock geology (50k)

#### Records within 500m

1

Bedrock geology at 1:50,000 scale. The main mass of rocks forming the Earth and present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on [page 144](#) >

| ID | Location | LEX Code   | Description                                                                                                    | Rock age |
|----|----------|------------|----------------------------------------------------------------------------------------------------------------|----------|
| 1  | On site  | LSNCK-CHLK | LEWES NODULAR CHALK FORMATION, SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK | TURONIAN |

*This data is sourced from the British Geological Survey.*



## 15.9 Bedrock permeability (50k)

**Records within 50m****1**

A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of bedrock (the zone between the land surface and the water table).

| Location | Flow type | Maximum permeability | Minimum permeability |
|----------|-----------|----------------------|----------------------|
| On site  | Fracture  | Very High            | Very High            |

*This data is sourced from the British Geological Survey.*

## 15.10 Bedrock faults and other linear features (50k)

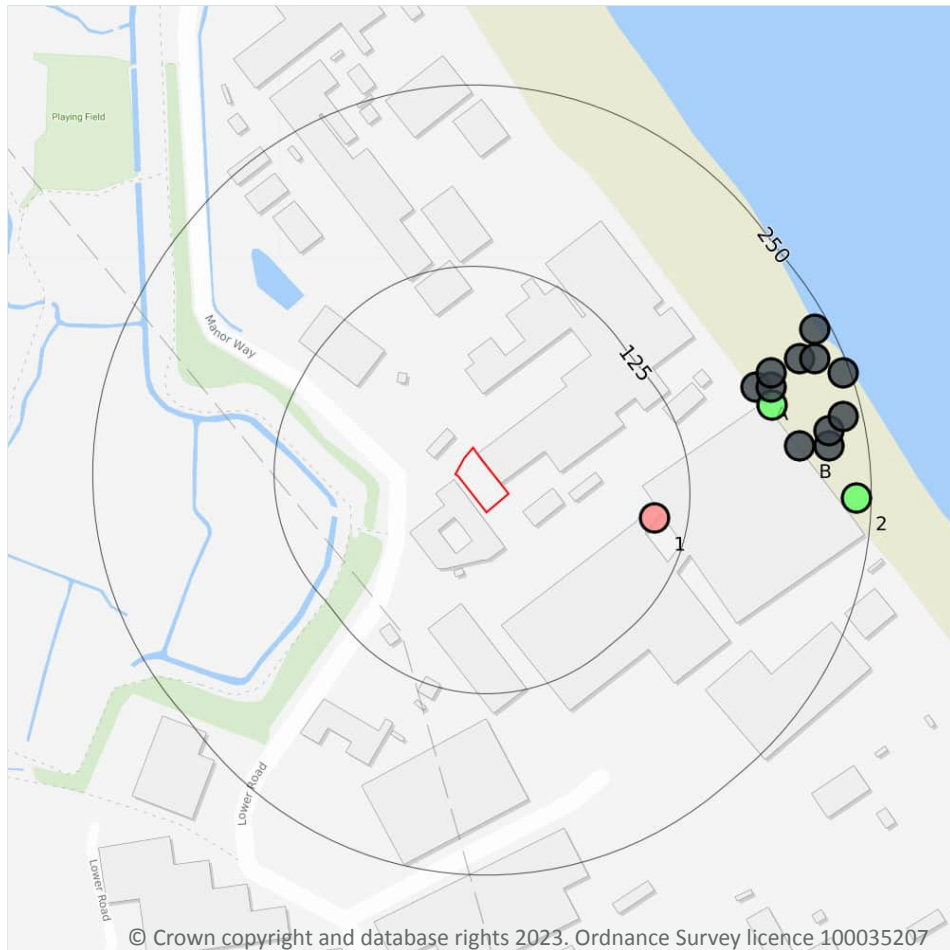
**Records within 500m****0**

Linear features at the ground or bedrock surface at 1:50,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

*This data is sourced from the British Geological Survey.*



## 16 Boreholes



— Site Outline  
Search buffers in metres (m)

- Confidential
- 0 - 10m
- 10 - 30m
- 30m+
- Unknown

### 16.1 BGS Boreholes

Records within 250m

14

The Single Onshore Boreholes Index (SOBI); an index of over one million records of boreholes, shafts and wells from all forms of drilling and site investigation work held by the British Geological Survey. Covering onshore and nearshore boreholes dating back to at least 1790 and ranging from one to several thousand metres deep.

Features are displayed on the Boreholes map on [page 146](#) >

| ID | Location | Grid reference | Name                            | Length | Confidential | Web link                 |
|----|----------|----------------|---------------------------------|--------|--------------|--------------------------|
| 1  | 102m E   | 561500 175300  | THAMES METAL CO LTD TOWER WORKS | 106.37 | N            | <a href="#">815036</a> ↗ |
| A  | 186m E   | 561570 175390  | TOWER WHARF NORTHFLEET E-18     | -      | Y            | N/A                      |
| A  | 192m E   | 561581 175378  | THAMES BARRIER PLA1966          | 25.5   | N            | <a href="#">815331</a> ↗ |

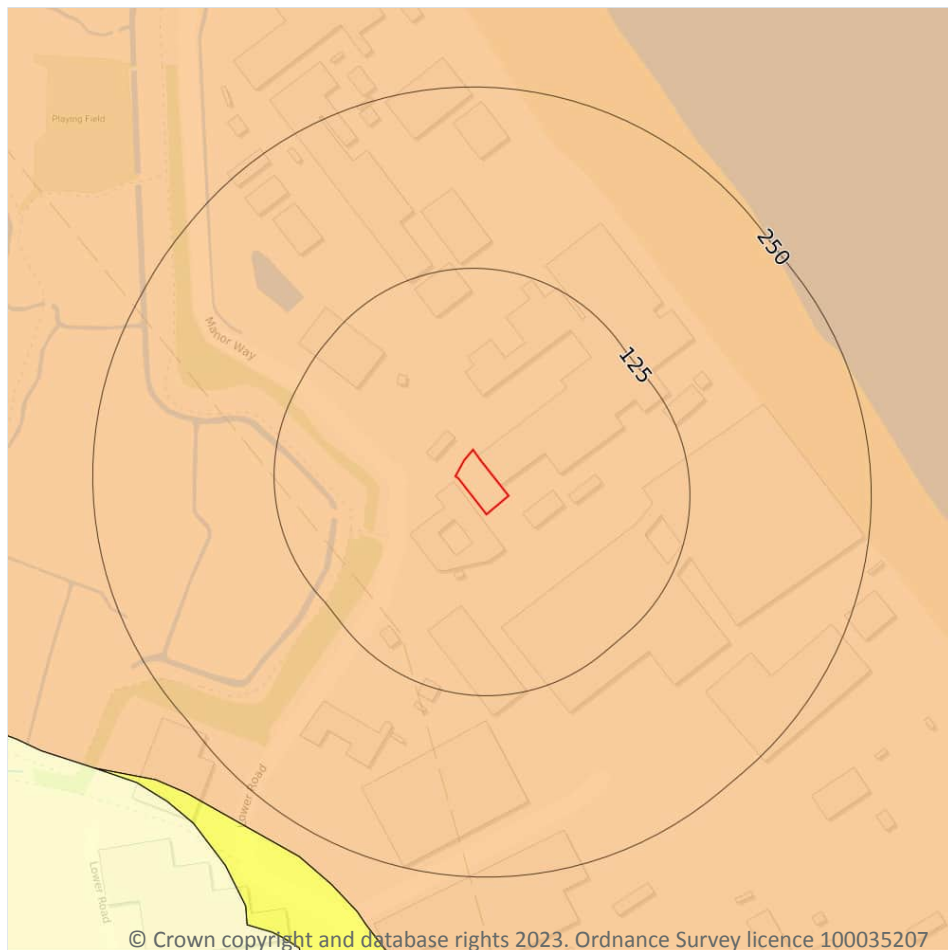


| ID | Location | Grid reference | Name                                   | Length | Confidential | Web link                 |
|----|----------|----------------|----------------------------------------|--------|--------------|--------------------------|
| A  | 195m E   | 561580 175390  | TOWER WHARF NORTHFLEET E-19            | -      | Y            | N/A                      |
| A  | 199m E   | 561580 175400  | TOWER WHARF NORTHFLEET E-20            | -      | Y            | N/A                      |
| B  | 204m E   | 561600 175350  | TOWER WHARF NORTHFLEET F-18            | -      | Y            | N/A                      |
| A  | 221m E   | 561600 175410  | TOWER WHARF NORTHFLEET E-22            | -      | Y            | N/A                      |
| B  | 223m E   | 561620 175350  | TOWER WHARF NORTHFLEET C-F-20          | -      | Y            | N/A                      |
| B  | 225m E   | 561620 175360  | TOWER WHARF NORTHFLEET F-21            | -      | Y            | N/A                      |
| A  | 231m E   | 561610 175410  | TOWER WHARF NORTHFLEET PHASE 2 E-23-24 | -      | Y            | N/A                      |
| B  | 237m E   | 561630 175370  | TOWER WHARF NORTHFLEET PHASE 2 F-23    | -      | Y            | N/A                      |
| A  | 239m NE  | 561610 175430  | TOWER WHARF NORTHFLEET PHASE 2 A-25    | -      | Y            | N/A                      |
| 2  | 240m E   | 561639 175314  | THAMES BARRIER PLA1967                 | 24.5   | N            | <a href="#">815332 ↗</a> |
| A  | 245m E   | 561630 175400  | TOWER WHARF NORTHFLEET E-F-25          | -      | Y            | N/A                      |

*This data is sourced from the British Geological Survey.*



## 17 Natural ground subsidence - Shrink swell clays



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.1 Shrink swell clays

#### Records within 50m

1

The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and local drainage).

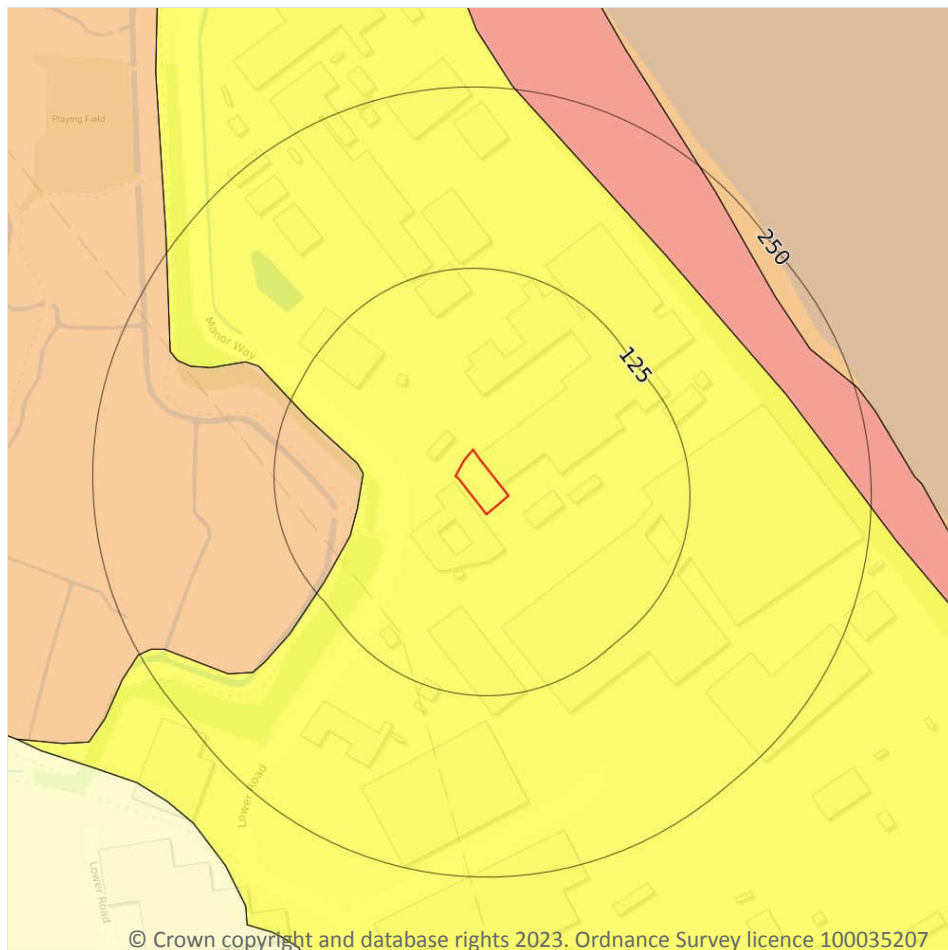
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 148 >](#)

| Location | Hazard rating | Details                                            |
|----------|---------------|----------------------------------------------------|
| On site  | Low           | Ground conditions predominantly medium plasticity. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Running sands



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☒ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.2 Running sands

#### Records within 50m

1

The potential hazard presented by rocks that can contain loosely-packed sandy layers that can become fluidised by water flowing through them. Such sands can 'run', removing support from overlying buildings and causing potential damage.

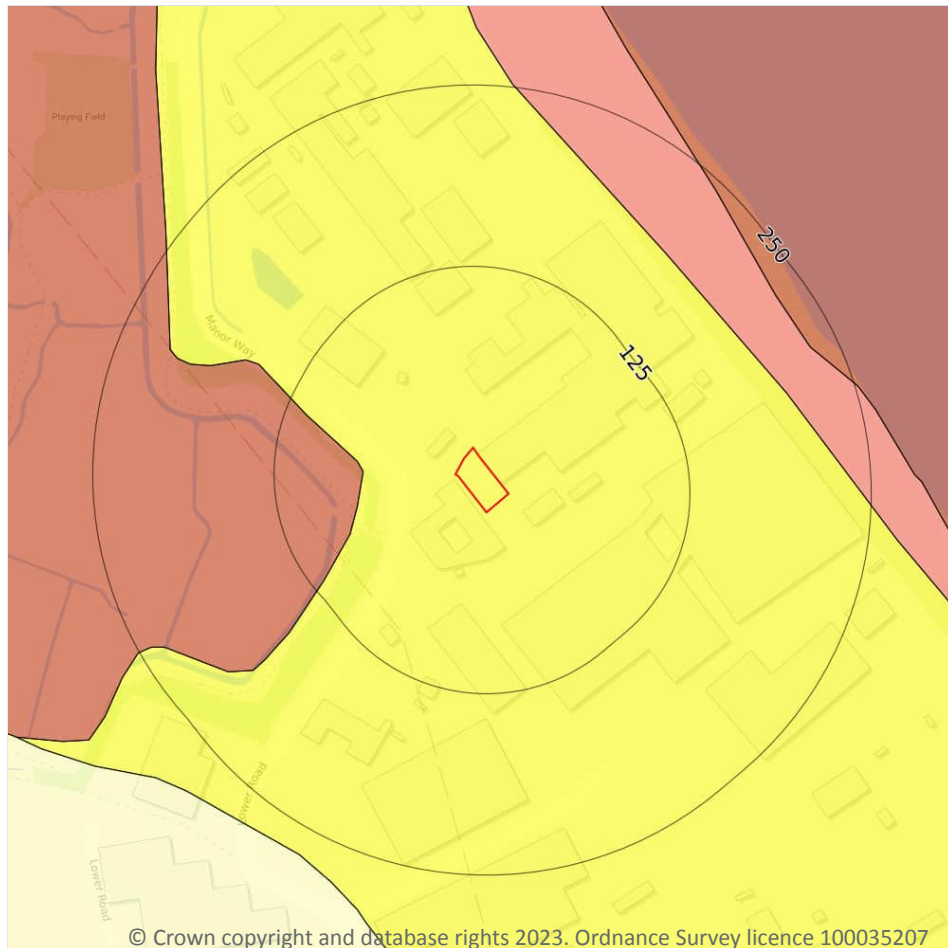
Features are displayed on the Natural ground subsidence - Running sands map on [page 149 >](#)

| Location | Hazard rating | Details                                                                                                                                 |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Very low      | Running sand conditions are unlikely. No identified constraints on land use due to running conditions unless water table rises rapidly. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Compressible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☒ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.3 Compressible deposits

#### Records within 50m

1

The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 150](#) >

| Location | Hazard rating | Details                                                                                                         |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------|
| On site  | Very low      | Compressibility and uneven settlement problems are not likely to be significant on the site for most land uses. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Collapsible deposits



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.4 Collapsible deposits

#### Records within 50m

1

The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

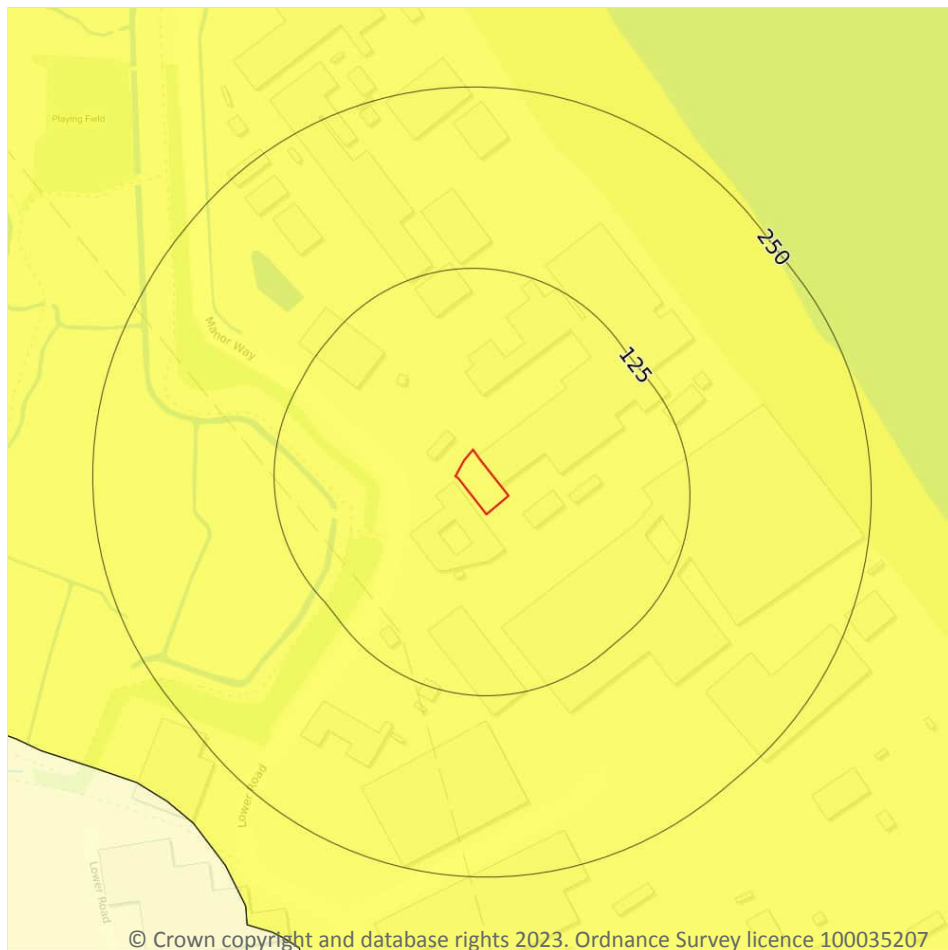
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 151 >](#)

| Location | Hazard rating | Details                                                                                       |
|----------|---------------|-----------------------------------------------------------------------------------------------|
| On site  | Negligible    | Deposits with potential to collapse when loaded and saturated are believed not to be present. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Landslides



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.5 Landslides

#### Records within 50m

1

The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

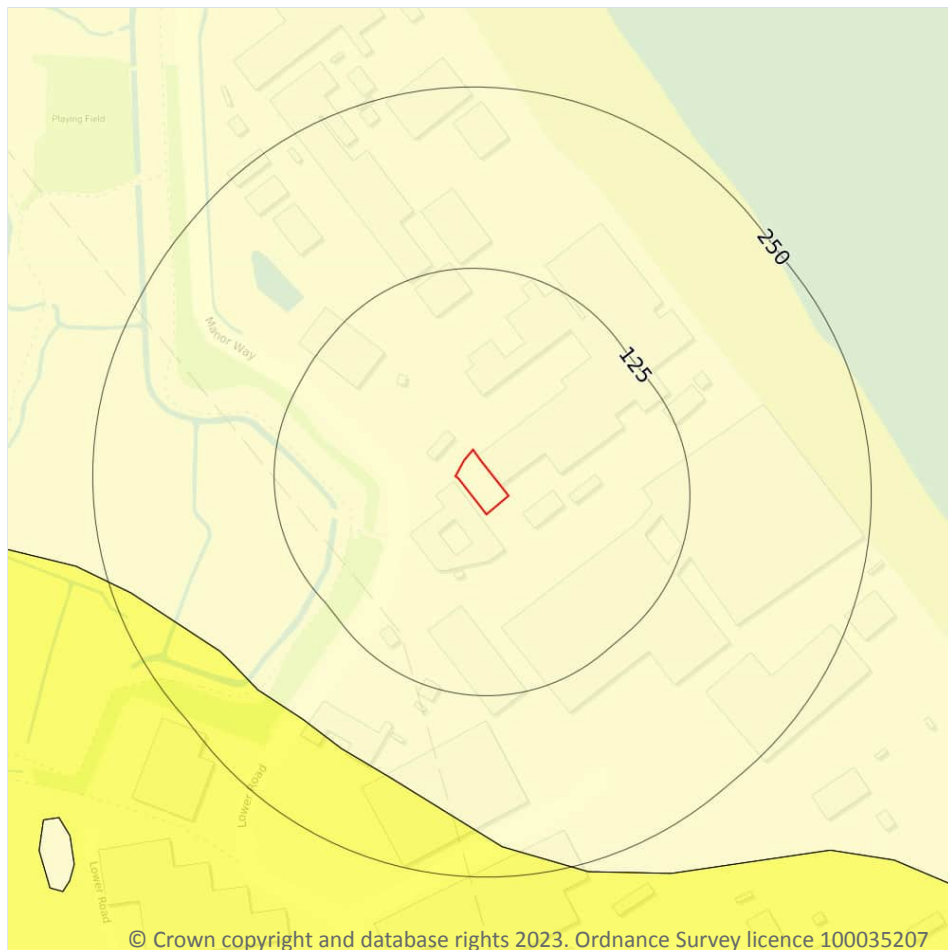
Features are displayed on the Natural ground subsidence - Landslides map on [page 152 >](#)

| Location | Hazard rating | Details                                                                                                                                                         |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Very low      | Slope instability problems are not likely to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered. |

*This data is sourced from the British Geological Survey.*



## Natural ground subsidence - Ground dissolution of soluble rocks



- Site Outline
- Search buffers in metres (m)
- ☐ No data
  - ☐ Negligible
  - ☐ Very low
  - ☐ Low
  - ☐ Moderate
  - ☐ High

### 17.6 Ground dissolution of soluble rocks

#### Records within 50m

1

The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on [page 153 >](#)

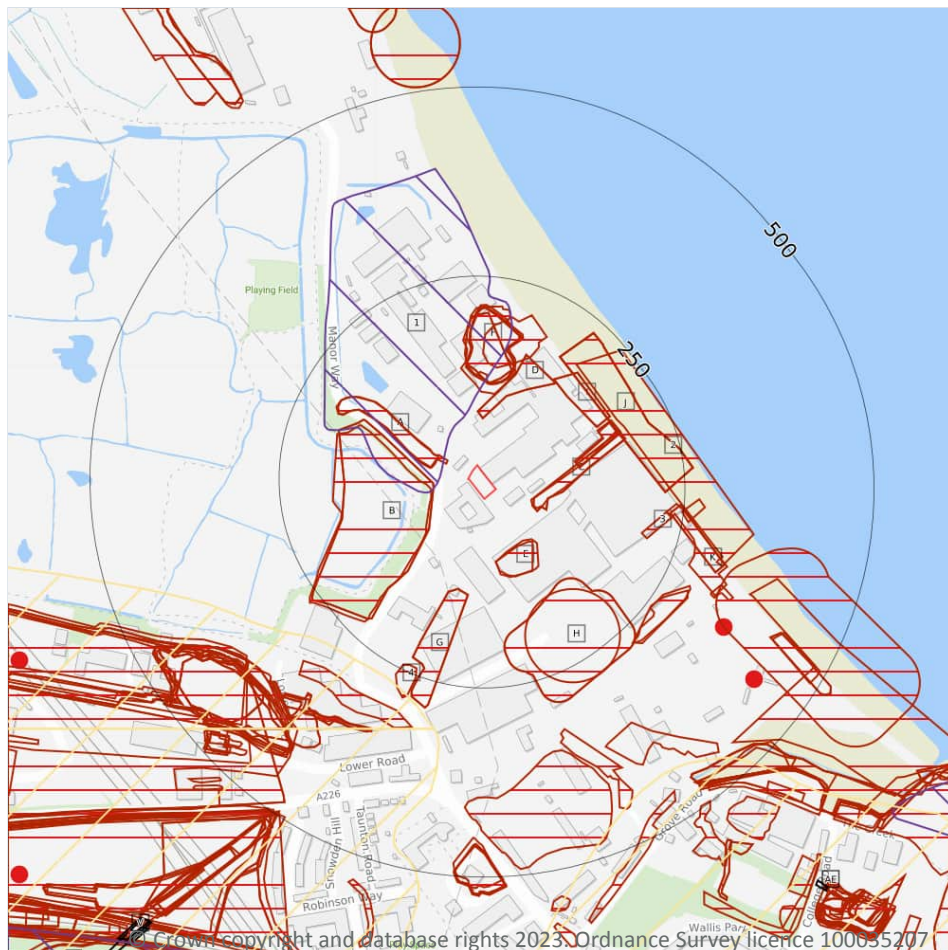
| Location | Hazard rating | Details                                                                                                                                             |
|----------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| On site  | Negligible    | Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present. |



*This data is sourced from the British Geological Survey.*



## 18 Mining and ground workings



- Site Outline
- Search buffers in metres (m)
- BritPits
- ▨ Surface ground workings
- ▨ Underground workings
- ▨ Underground mining extents
- ▨ Historical mineral planning areas
- ▨ TCA non-coal mining
- Non Coal Mining
- ▨ Sporadic underground mining of restricted extent possible
- ▨ Localised small scale underground mining possible
- ▨ Small scale mining possible
- ▨ Underground mining known or likely within or in close proximity
- ▨ Underground mining known within or in very close proximity

### 18.1 BritPits

#### Records within 500m

2

BritPits (an abbreviation of British Pits) is a database maintained by the British Geological Survey of currently active and closed surface and underground mineral workings. Details of major mineral handling sites, such as wharfs and rail depots are also held in the database.

Features are displayed on the Mining and ground workings map on [page 155](#) >

| ID | Location | Details                                                                                       | Description                                                                                                                                                                                                                         |
|----|----------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M  | 351m SE  | Name: Robin's Wharf<br>Address: NORTHFLEET, Kent<br>Commodity: Crushed Rock<br>Status: Active | Type: Sea, river or canal wharf where mineral commodities are unloaded and stored<br>Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals |



| ID | Location | Details                                                                                                            | Description                                                                                                                                                                                                                         |
|----|----------|--------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 423m SE  | Name: Northfleet Aggregate Wharf<br>Address: NORTHFLEET, Kent<br>Commodity: Marine Sand & Gravel<br>Status: Active | Type: Sea, river or canal wharf where mineral commodities are unloaded and stored<br>Status description: Site which is actively extracting mineral products, or in the case of wharfs and rail depots, is actively handing minerals |

*This data is sourced from the British Geological Survey.*

## 18.2 Surface ground workings

### Records within 250m

**39**

Historical land uses identified from Ordnance Survey mapping that involved ground excavation at the surface. These features may or may not have been subsequently backfilled.

Features are displayed on the Mining and ground workings map on [page 155](#) >

| ID | Location | Land Use                    | Year of mapping | Mapping scale |
|----|----------|-----------------------------|-----------------|---------------|
| A  | 35m NW   | Pond                        | 1938            | 1:10560       |
| B  | 47m W    | Unspecified Pit             | 1907            | 1:10560       |
| B  | 47m W    | Unspecified Pit             | 1895            | 1:10560       |
| A  | 48m W    | Pond                        | 1946            | 1:10560       |
| C  | 49m E    | Unspecified Wharf           | 1955            | 1:10560       |
| C  | 49m E    | Unspecified Wharf           | 1966            | 1:10560       |
| B  | 52m W    | Unspecified Pit             | 1923            | 1:10560       |
| C  | 52m E    | Unspecified Wharf           | 1973            | 1:10000       |
| D  | 63m N    | Unspecified Wharf           | 1955            | 1:10560       |
| D  | 63m N    | Unspecified Wharf           | 1966            | 1:10560       |
| E  | 74m SE   | Refuse Heap                 | 1966            | 1:10560       |
| E  | 76m SE   | Refuse Heap                 | 1955            | 1:10560       |
| F  | 97m N    | Refuse Heap                 | 1923            | 1:10560       |
| F  | 108m N   | Unspecified Heaps           | 1938            | 1:10560       |
| F  | 108m N   | Unspecified Heaps           | 1938            | 1:10560       |
| F  | 109m N   | Unspecified Heaps           | 1946            | 1:10560       |
| F  | 109m N   | Unspecified Ground Workings | 1955            | 1:10560       |



| ID | Location | Land Use                    | Year of mapping | Mapping scale |
|----|----------|-----------------------------|-----------------|---------------|
| F  | 109m N   | Unspecified Ground Workings | 1966            | 1:10560       |
| F  | 110m N   | Unspecified Ground Workings | 1932            | 1:10560       |
| C  | 111m E   | Unspecified Wharf           | 1888            | 1:10560       |
| C  | 112m E   | Unspecified Wharf           | 1895            | 1:10560       |
| G  | 124m S   | Unspecified Heap            | 1955            | 1:10560       |
| G  | 124m S   | Unspecified Heap            | 1966            | 1:10560       |
| F  | 131m N   | Refuse Heap                 | 1895            | 1:10560       |
| H  | 148m SE  | Unspecified Wharf           | 1982            | 1:10000       |
| H  | 148m SE  | Unspecified Wharf           | 1992            | 1:10000       |
| I  | 150m NE  | Unspecified Wharf           | 1898            | 1:10560       |
| I  | 150m NE  | Unspecified Wharf           | 1898            | 1:10560       |
| H  | 153m SE  | Unspecified Wharf           | 1993            | 1:10000       |
| J  | 174m NE  | Unspecified Wharf           | 1982            | 1:10000       |
| J  | 174m NE  | Unspecified Wharf           | 1992            | 1:10000       |
| J  | 174m NE  | Unspecified Wharf           | 1993            | 1:10000       |
| 2  | 183m NE  | Unspecified Wharf           | 1895            | 1:10560       |
| 3  | 201m E   | Unspecified Wharf           | 1895            | 1:10560       |
| K  | 227m E   | Unspecified Wharf           | 1888            | 1:10560       |
| K  | 233m E   | Unspecified Wharf           | 1898            | 1:10560       |
| K  | 233m E   | Unspecified Wharf           | 1898            | 1:10560       |
| 4  | 241m S   | Refuse Heap                 | 1955            | 1:10560       |
| K  | 248m E   | Unspecified Wharf           | 1973            | 1:10000       |

*This is data is sourced from Ordnance Survey/Groundsure.*

## 18.3 Underground workings

### Records within 1000m

9

Historical land uses identified from Ordnance Survey mapping that indicate the presence of underground workings e.g. mine shafts.

Features are displayed on the Mining and ground workings map on [page 155 >](#)



| ID | Location | Land Use | Year of mapping | Mapping scale |
|----|----------|----------|-----------------|---------------|
| AE | 670m SE  | Tunnel   | 1923            | 1:10560       |
| AF | 712m SW  | Tunnel   | 1977            | 1:10000       |
| V  | 713m SW  | Tunnel   | 1990            | 1:10000       |
| V  | 721m SW  | Tunnel   | 1923            | 1:10560       |
| -  | 992m SE  | Tunnel   | 1938            | 1:10560       |
| -  | 996m SE  | Tunnel   | 1932            | 1:10560       |
| -  | 996m SE  | Tunnel   | 1907            | 1:10560       |
| -  | 1000m SE | Tunnel   | 1946            | 1:10560       |
| -  | 1000m SE | Tunnel   | 1923            | 1:10560       |

*This data is sourced from Ordnance Survey/Groundsure.*

## 18.4 Underground mining extents

**Records within 500m**

**0**

This data identifies underground mine workings that could present a potential risk, including adits and seam workings. These features have been identified from BGS Geological mapping and mine plans sourced from the BGS and various collections and sources.

*This data is sourced from Groundsure.*

## 18.5 Historical Mineral Planning Areas

**Records within 500m**

**1**

Boundaries of mineral planning permissions for England and Wales. This data was collated between the 1940s (and retrospectively to the 1930s) and the mid 1980s. The data includes permitted, withdrawn and refused permissions.

Features are displayed on the Mining and ground workings map on [page 155 >](#)

| ID | Location | Site Name  | Mineral | Type                    | Planning Status | Planning Status Date |
|----|----------|------------|---------|-------------------------|-----------------|----------------------|
| 1  | 37m W    | Southfleet | Chalk   | Surface mineral working | Valid           | Not available        |

*This data is sourced from the British Geological Survey.*



## 18.6 Non-coal mining

### Records within 1000m

**3**

The potential for historical non-coal mining to have affected an area. The assessment is drawn from expert knowledge and literature in addition to the digital geological map of Britain. Mineral commodities may be divided into seven general categories - vein minerals, chalk, oil shale, building stone, bedded ores, evaporites and 'other' commodities (including ball clay, jet, black marble, graphite and chert).

Features are displayed on the Mining and ground workings map on [page 155 >](#)

| ID | Location | Name          | Commodity | Class | Likelihood                                                                                                                                                                                                     |
|----|----------|---------------|-----------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5  | 269m SW  | Not available | Chalk     | A     | Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 7  | 311m S   | Not available | Chalk     | A     | Underground mine workings are uncommon, although the geology is similar to that worked elsewhere. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered. |
| 17 | 745m SE  | Not available | Chalk     | C     | Underground mine workings may have occurred in the past, or current mines may be operating to modern engineering standards. Potential for difficult ground conditions should be considered.                    |

*This data is sourced from the British Geological Survey.*

## 18.7 JPB mining areas

### Records on site

**0**

Areas which could be affected by former coal and other mining. This data includes some mine plans unavailable to the Coal Authority.

*This data is sourced from Johnson Poole and Bloomer.*

## 18.8 The Coal Authority non-coal mining

### Records within 500m

**0**

This data provides an indication of the potential zone of influence of recorded underground non-coal mining workings. Any and all analysis and interpretation of Coal Authority Data in this report is made by Groundsure, and is in no way supported, endorsed or authorised by the Coal Authority. The use of the data is restricted to the terms and provisions contained in this report. Data reproduced in this report may be the copyright of the Coal Authority and permission should be sought from Groundsure prior to any re-use.

*This data is sourced from The Coal Authority.*



## 18.9 Researched mining

**Records within 500m****0**

This data indicates areas of potential mining identified from alternative or archival sources, including; BGS Geological paper maps, Lidar data, aerial photographs (from World War II onwards), archaeological data services, websites, Tithe maps, and various text/plans from collected books and reports. Some of this data is approximate and Groundsure have interpreted the resultant risk area and, where possible, specific areas of risk have been captured.

*This data is sourced from Groundsure.*

## 18.10 Mining record office plans

**Records within 500m****0**

This dataset is representative of Mining Record Office and/or plan extents held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

*This data is sourced from Groundsure.*

## 18.11 BGS mine plans

**Records within 500m****0**

This dataset is representative of BGS mine plans held by Groundsure and should be considered approximate. Where possible, plans have been located and any specific areas of risk they depict have been captured.

*This data is sourced from Groundsure.*

## 18.12 Coal mining

**Records on site****0**

Areas which could be affected by past, current or future coal mining.

*This data is sourced from the Coal Authority.*

## 18.13 Brine areas

**Records on site****0**

The Cheshire Brine Compensation District indicates areas that may be affected by salt and brine extraction in Cheshire and where compensation would be available where damage from this mining has occurred. Damage from salt and brine mining can still occur outside this district, but no compensation will be available.

*This data is sourced from the Cheshire Brine Subsidence Compensation Board.*



## 18.14 Gypsum areas

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by gypsum extraction.

*This data is sourced from British Gypsum.*

## 18.15 Tin mining

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by historical tin mining.

*This data is sourced from Groundsure.*

## 18.16 Clay mining

|                 |   |
|-----------------|---|
| Records on site | 0 |
|-----------------|---|

Generalised areas that may be affected by kaolin and ball clay extraction.

*This data is sourced from the Kaolin and Ball Clay Association (UK).*



## 19 Ground cavities and sinkholes

### 19.1 Natural cavities

Records within 500m

0

Industry recognised national database of natural cavities. Sinkholes and caves are formed by the dissolution of soluble rock, such as chalk and limestone, gulls and fissures by cambering. Ground instability can result from movement of loose material contained within these cavities, often triggered by water.

*This data is sourced from Stantec UK Ltd.*

### 19.2 Mining cavities

Records within 1000m

0

Industry recognised national database of mining cavities. Degraded mines may result in hazardous subsidence (crown holes). Climatic conditions and water escape can also trigger subsidence over mine entrances and workings.

*This data is sourced from Stantec UK Ltd.*

### 19.3 Reported recent incidents

Records within 500m

0

This data identifies sinkhole information gathered from media reports and Groundsure's own records. This data goes back to 2014 and includes relative accuracy ratings for each event and links to the original data sources. The data is updated on a regular basis and should not be considered a comprehensive catalogue of all sinkhole events. The absence of data in this database does not mean a sinkhole definitely has not occurred during this time.

*This data is sourced from Groundsure.*

### 19.4 Historical incidents

Records within 500m

0

This dataset comprises an extract of 1:10,560, 1:10,000, 1:2,500 and 1:1,250 scale historical Ordnance Survey maps held by Groundsure, dating back to the 1840s. It shows shakeholes, deneholes and other 'holes' as noted on these maps. Dene holes are medieval chalk extraction pits, usually comprising a narrow shaft with a number of chambers at the base of the shaft. Shakeholes are an alternative name for suffusion sinkholes, most commonly found in the limestone landscapes of North Yorkshire but also extensively noted around the Brecon Beacons National Park.

Not all 'holes' noted on Ordnance Survey mapping will necessarily be present within this dataset.



*This data is sourced from Groundsure.*

## 19.5 National karst database

Records within 500m

0

This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

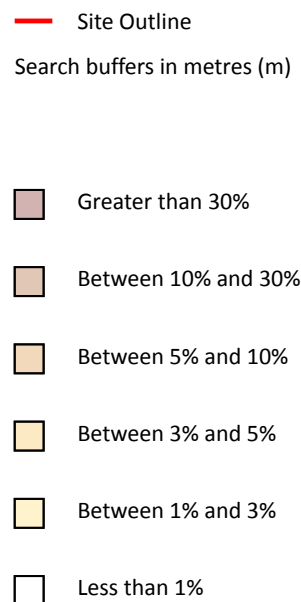
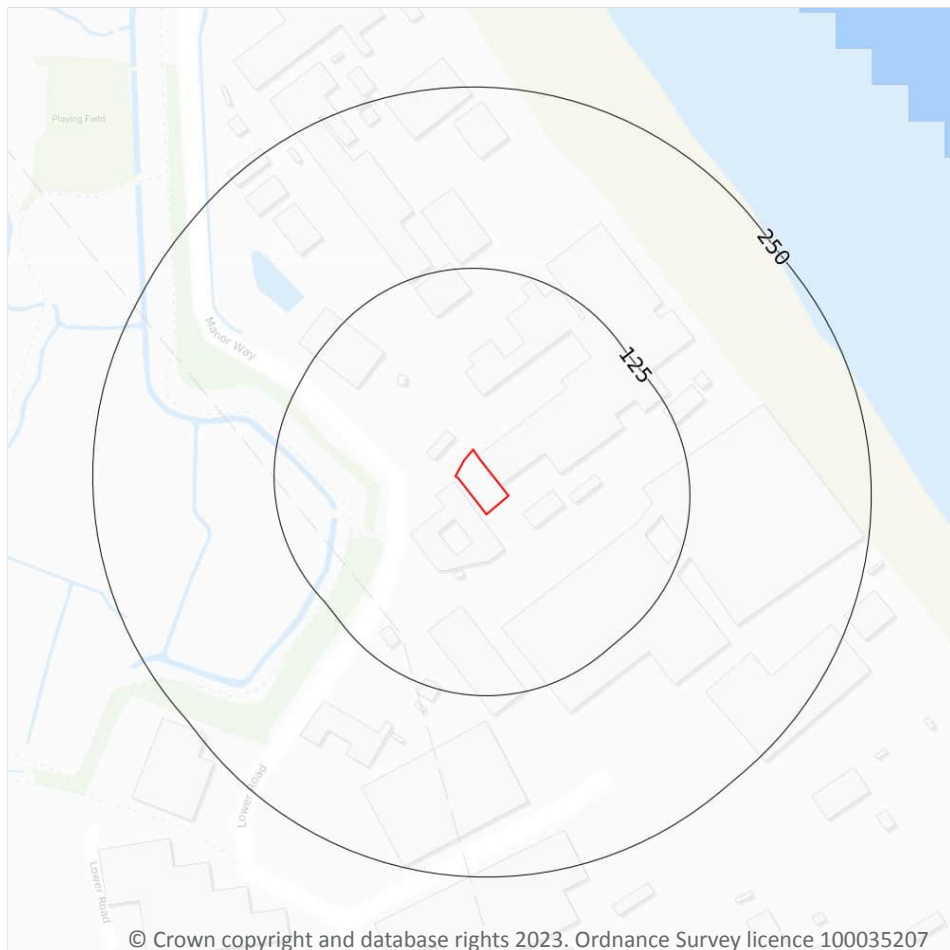
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 800 caves, 1300 stream sinks, 5600 springs, 10,000 sinkholes.

The database is not yet complete, and not all records have been verified. The absence of data does not mean that karst features are not present at a site. A reliability rating is included with each record.

*This data is sourced from the British Geological Survey.*



## 20 Radon



### 20.1 Radon

#### Records on site

1

The Radon Potential data classifies areas based on their likelihood of a property having a radon level at or above the Action Level in Great Britain. The dataset is intended for use at 1:50,000 scale and was derived from both geological assessments and indoor radon measurements (more than 560,000 records). A minimum 50m buffer should be considered when searching the maps, as the smallest detectable feature at this scale is 50m. The findings of this section should supersede any estimations derived from the Indicative Atlas of Radon in Great Britain (1:100,000 scale).

Features are displayed on the Radon map on [page 164](#) >

| Location | Estimated properties affected | Radon Protection Measures required |
|----------|-------------------------------|------------------------------------|
| On site  | Less than 1%                  | None                               |



*This data is sourced from the British Geological Survey and UK Health Security Agency.*



## 21 Soil chemistry

### 21.1 BGS Estimated Background Soil Chemistry

Records within 50m

1

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km<sup>2</sup>. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km<sup>2</sup>; this is the case for most of Scotland, Wales and southern England. The stream sediment data are converted to soil-equivalent concentrations prior to the estimation.

| Location | Arsenic  | Bioaccessible Arsenic | Lead            | Bioaccessible Lead | Cadmium   | Chromium      | Nickel        |
|----------|----------|-----------------------|-----------------|--------------------|-----------|---------------|---------------|
| On site  | 15 mg/kg | No data               | 100 - 200 mg/kg | 60 - 120 mg/kg     | 1.8 mg/kg | 60 - 90 mg/kg | 15 - 30 mg/kg |

*This data is sourced from the British Geological Survey.*

### 21.2 BGS Estimated Urban Soil Chemistry

Records within 50m

0

Estimated topsoil chemistry of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc and bioaccessible Arsenic and Lead in 23 urban centres across Great Britain. These estimates are derived from interpolation of the measured urban topsoil data referred to above and provide information across each city between the measured sample locations (4 per km<sup>2</sup>).

*This data is sourced from the British Geological Survey.*

### 21.3 BGS Measured Urban Soil Chemistry

Records within 50m

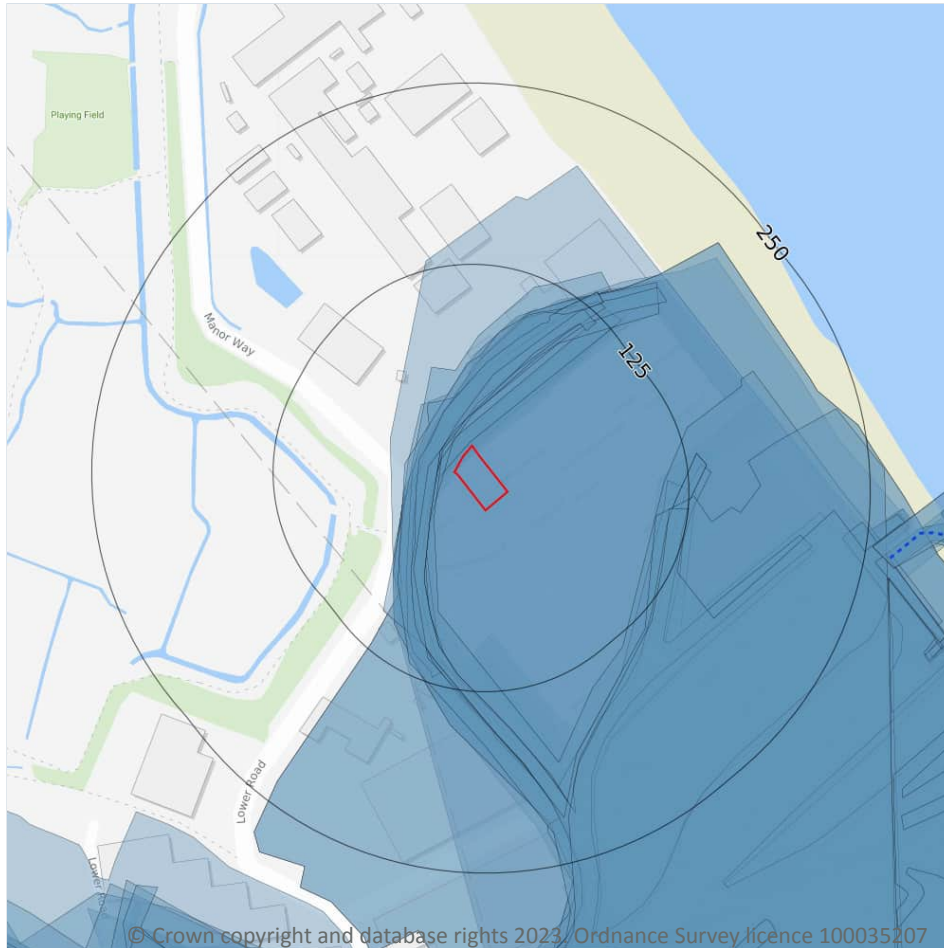
0

The locations and measured total concentrations (mg/kg) of Arsenic, Cadmium, Chromium, Copper, Nickel, Lead, Tin and Zinc in urban topsoil samples from 23 urban centres across Great Britain. These are collected at a sample density of 4 per km<sup>2</sup>.

*This data is sourced from the British Geological Survey.*



## 22 Railway infrastructure and projects



- Site Outline
- Search buffers in metres (m)
- C1 Crossrail 1 Stations
- Crossrail 1 Route
- C2 Crossrail 2 Stations
- Crossrail 2 Route
- Crossrail 2 Worksites
- Crossrail 2 Safeguarding
- Crossrail 2 Headhouses
- Railway stations
- Active railways
- Active tunnels
- Abandoned railways
- Historic railways
- Historic tunnels
- Underground stations
- Underground Lines
- Royal Mail tunnels
- HS2 optimised route
- HS2 Stations
- HS2 Depots
- HS2 Surface Safeguarding
- HS2 Subsurface Safeguarding

### 22.1 Underground railways (London)

Records within 250m

0

Details of all active London Underground lines, including approximate tunnel roof depth and operational hours.

*This data is sourced from publicly available information by Groundsure.*

### 22.2 Underground railways (Non-London)

Records within 250m

0

Details of the Merseyrail system, the Tyne and Wear Metro and the Glasgow Subway. Not all parts of all systems are located underground. The data contains location information only and does not include a depth assessment.



*This data is sourced from publicly available information by Groundsure.*

## 22.3 Railway tunnels

Records within 250m

0

Railway tunnels taken from contemporary Ordnance Survey mapping.

*This data is sourced from the Ordnance Survey.*

## 22.4 Historical railway and tunnel features

Records within 250m

29

Railways and tunnels digitised from historical Ordnance Survey mapping as scales of 1:1,250, 1:2,500, 1:10,000 and 1:10,560.

Features are displayed on the Railway infrastructure and projects map on [page 167](#) >

| Location | Land Use                | Year of mapping | Mapping scale |
|----------|-------------------------|-----------------|---------------|
| On site  | Railway Sidings         | 1978            | 2500          |
| On site  | Tramway Sidings         | 1946            | 10560         |
| On site  | Tramway Sidings         | 1938            | 10560         |
| On site  | Tramway Sidings         | 1932            | 10560         |
| On site  | Tramway Sidings         | 1895            | 10560         |
| On site  | Railway Sidings         | 1982            | 10000         |
| On site  | Railway Sidings         | 1973            | 10000         |
| On site  | Railway Sidings         | 1955            | 10560         |
| On site  | Railway Sidings         | 1966            | 10560         |
| 1m N     | Tramway Sidings         | 1939            | 2500          |
| 1m N     | Tramway Sidings         | 1932            | 2500          |
| 1m N     | Mineral Railway Sidings | 1970            | 2500          |
| 1m N     | Railway Sidings         | 1995            | 2500          |
| 1m N     | Railway Sidings         | 1993            | 2500          |
| 2m N     | Mineral Railway Sidings | 1952            | 2500          |
| 3m N     | Railway Sidings         | 1992            | 10000         |
| 4m N     | Railway Sidings         | 1989            | 2500          |



| Location | Land Use                | Year of mapping | Mapping scale |
|----------|-------------------------|-----------------|---------------|
| 7m W     | Tramway Sidings         | 1907            | 10560         |
| 10m W    | Railway Sidings         | 1895            | 10560         |
| 11m NW   | Tramway Sidings         | 1923            | 10560         |
| 11m W    | Railway Sidings         | 1888            | 10560         |
| 12m W    | Railway Sidings         | 1898            | 10560         |
| 15m NW   | Tramway Sidings         | 1923            | 10560         |
| 19m W    | Tramway Sidings         | 1897            | 2500          |
| 21m W    | Tramway Sidings         | 1907            | 2500          |
| 112m E   | Tramway Sidings         | 1923            | 10560         |
| 168m SE  | Mineral Railway Sidings | 1952            | 2500          |
| 175m E   | Railway Sidings         | 1897            | 2500          |
| 250m SE  | Mineral Railway Sidings | 1970            | 2500          |

*This data is sourced from Ordnance Survey/Groundsure.*

## 22.5 Royal Mail tunnels

**Records within 250m**

**0**

The Post Office Railway, otherwise known as the Mail Rail, is an underground railway running through Central London from Paddington Head District Sorting Office to Whitechapel Eastern Head Sorting Office. The line is 10.5km long. The data includes details of the full extent of the tunnels, the depth of the tunnel, and the depth to track level.

*This data is sourced from Groundsure/the Postal Museum.*

## 22.6 Historical railways

**Records within 250m**

**0**

Former railway lines, including dismantled lines, abandoned lines, disused lines, historic railways and razed lines.

*This data is sourced from OpenStreetMap.*



## 22.7 Railways

**Records within 250m****0**

Currently existing railway lines, including standard railways, narrow gauge, funicular, trams and light railways.

*This data is sourced from Ordnance Survey and OpenStreetMap.*

## 22.8 Crossrail 1

**Records within 500m****0**

The Crossrail railway project links 41 stations over 100 kilometres from Reading and Heathrow in the west, through underground sections in central London, to Shenfield and Abbey Wood in the east.

*This data is sourced from publicly available information by Groundsure.*

## 22.9 Crossrail 2

**Records within 500m****0**

Crossrail 2 is a proposed railway linking the national rail networks in Surrey and Hertfordshire via an underground tunnel through London.

*This data is sourced from publicly available information by Groundsure.*

## 22.10 HS2

**Records within 500m****0**

HS2 is a proposed high speed rail network running from London to Manchester and Leeds via Birmingham. Main civils construction on Phase 1 (London to Birmingham) of the project began in 2019, and it is currently anticipated that this phase will be fully operational by 2026. Construction on Phase 2a (Birmingham to Crewe) is anticipated to commence in 2021, with the service fully operational by 2027. Construction on Phase 2b (Crewe to Manchester and Birmingham to Leeds) is scheduled to begin in 2023 and be operational by 2033.

*This data is sourced from HS2 Ltd.*

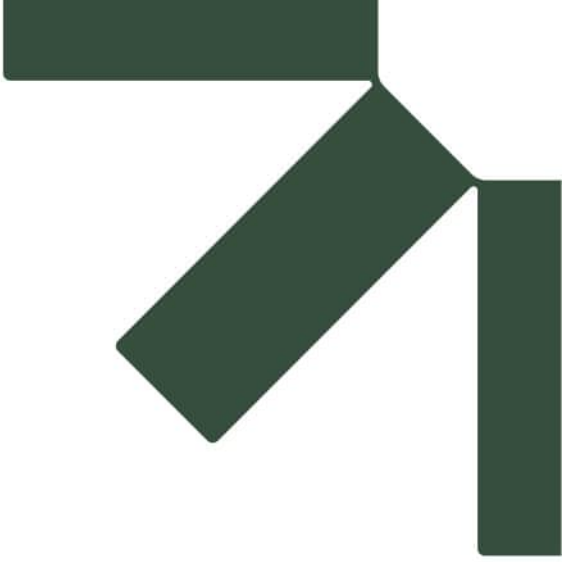
## Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information. To find out who they are and their areas of expertise see <https://www.groundsure.com/sources-reference> ↗.

## Terms and conditions

Groundsure's Terms and Conditions can be accessed at this link: <https://www.groundsure.com/terms-and-conditions-april-2023/> ↗.





# **Appendix C    Groundsure Historic Maps**

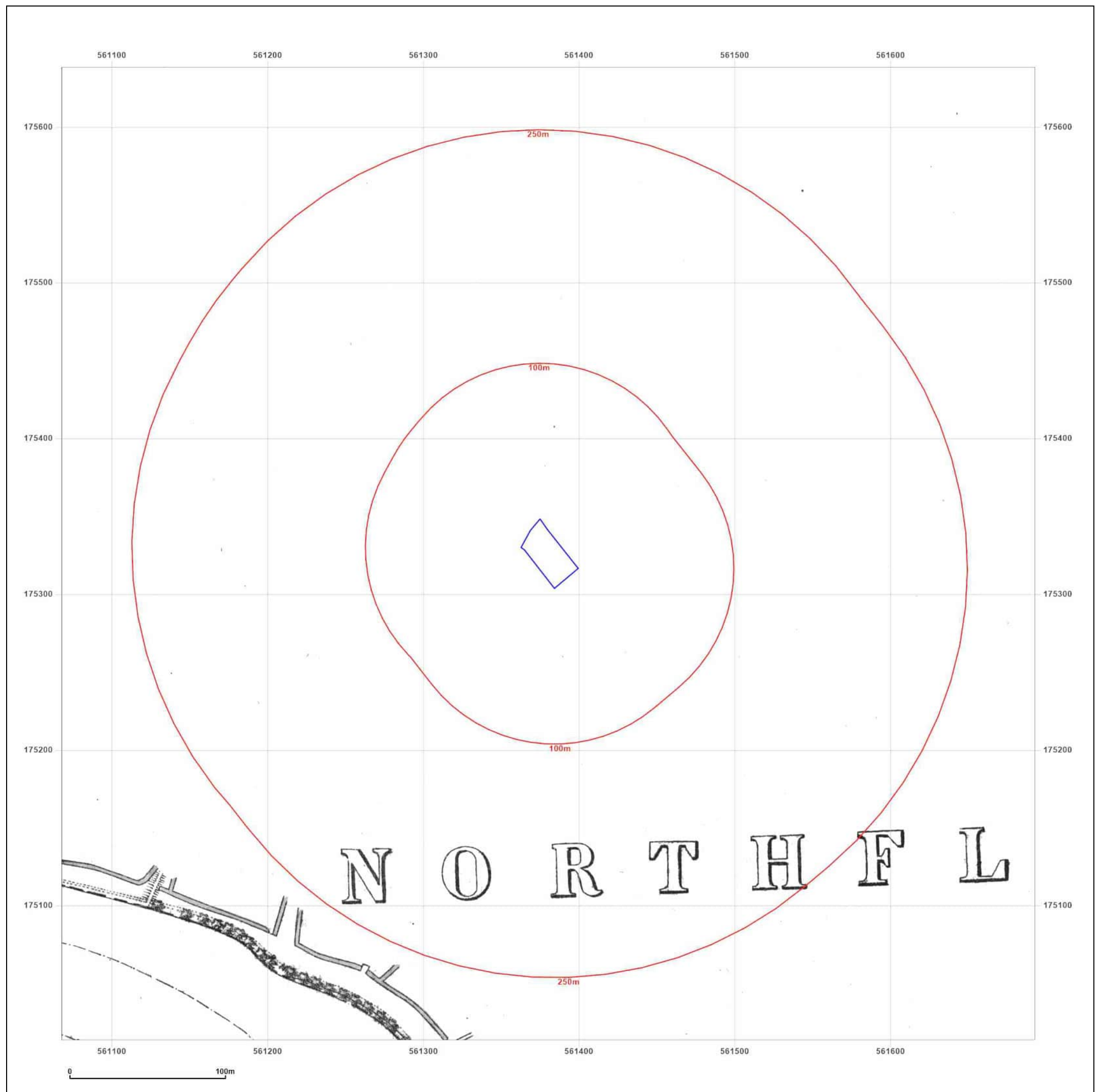
## **Phase One Geotechnical and Environmental Desk Study**

**E-Scrap Sample Preparation Plant**

**Britannia Refined Metals Ltd**

SLR Project No.: 402.064683.00001

11 August 2023



**Site Details:**

unspecified

**Client Ref:** EMS\_882585\_1092154  
**Report Ref:** EMS-882585\_1128444  
**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1865

**Scale:** 1:2,500

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



Surveyed 1865  
Revised 1865  
Edition N/A  
Copyright N/A  
Levelled N/A



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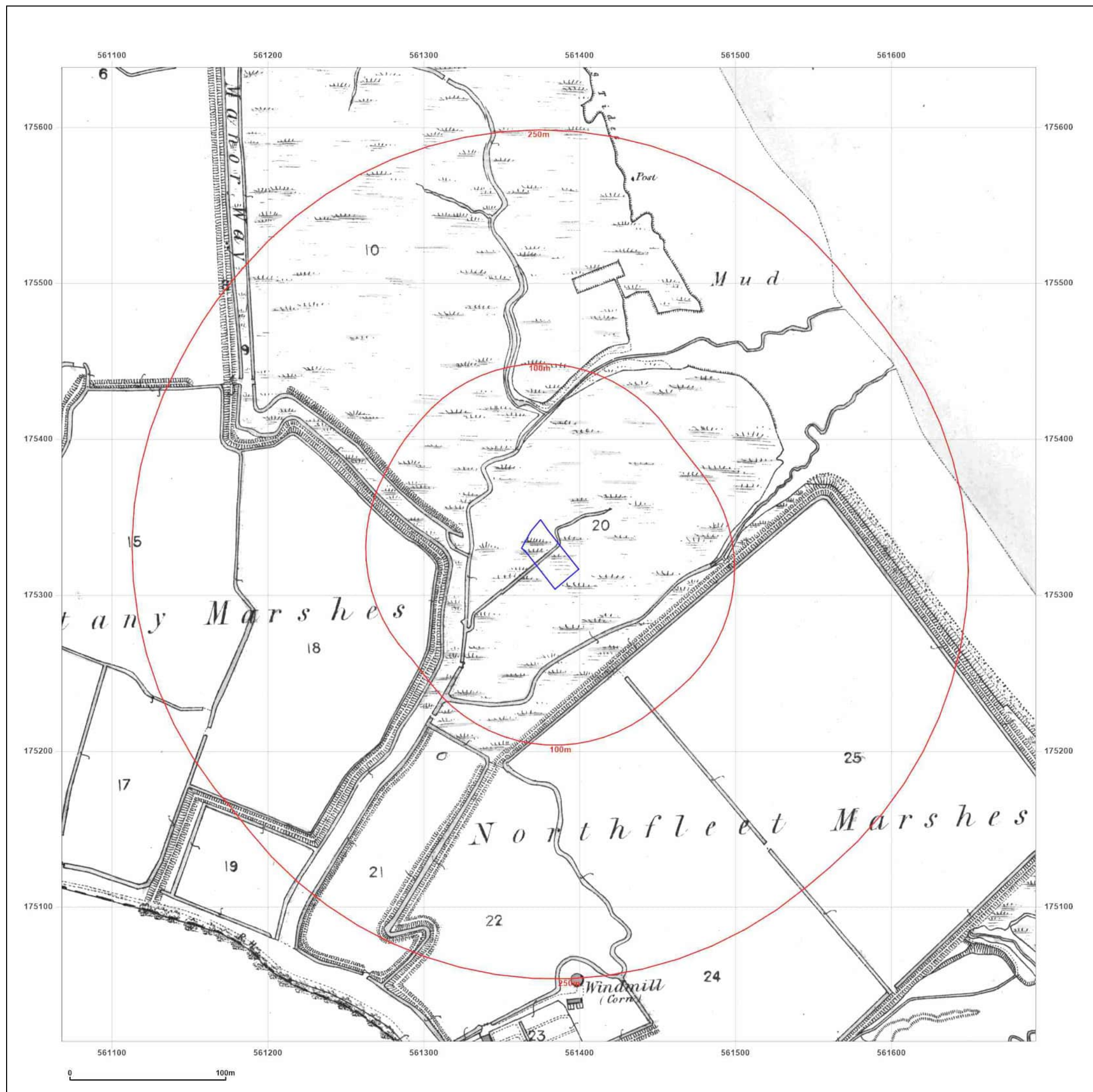


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Map legend available at:  
[www.groundsure.com/sites/default/files/groundsure\\_legend.pdf](http://www.groundsure.com/sites/default/files/groundsure_legend.pdf)



# EMAPSITE™

## Site Details:

unspecified

**Client Ref:** EMS\_882585\_1092154  
**Report Ref:** EMS-882585\_1128444  
**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1865

**Scale:** 1:2,500

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



Surveyed 1865  
Revised 1865  
Edition N/A  
Copyright N/A  
Levelled N/A



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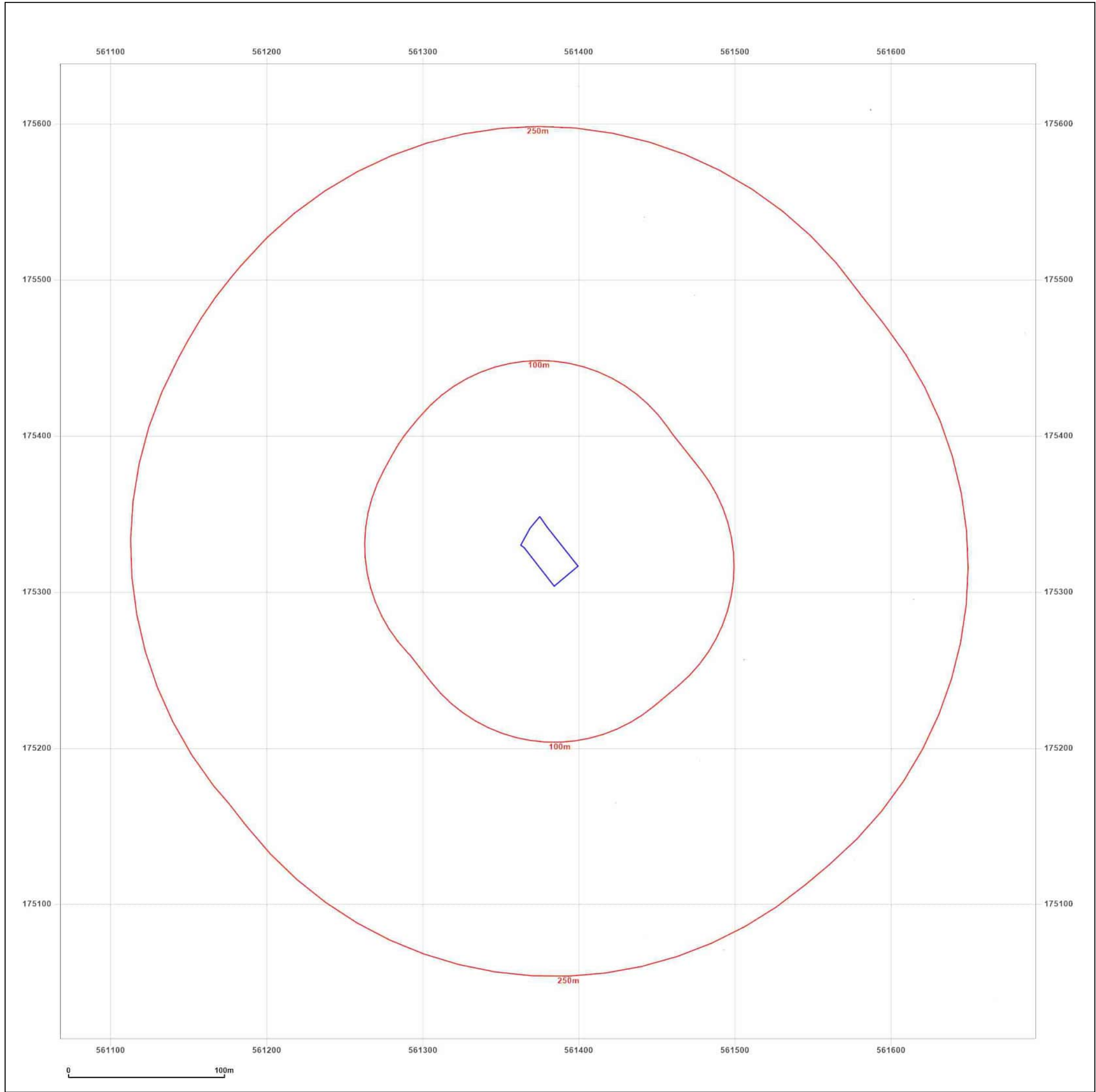


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Site Details:

unspecified

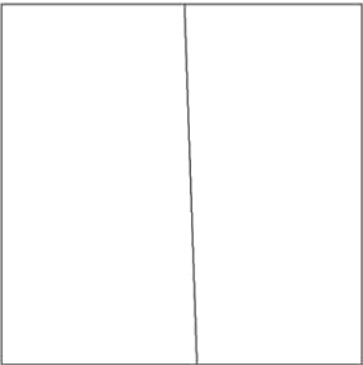
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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1870

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1870  
Revised N/A  
Edition N/A  
Copyright N/A  
Levelled N/A



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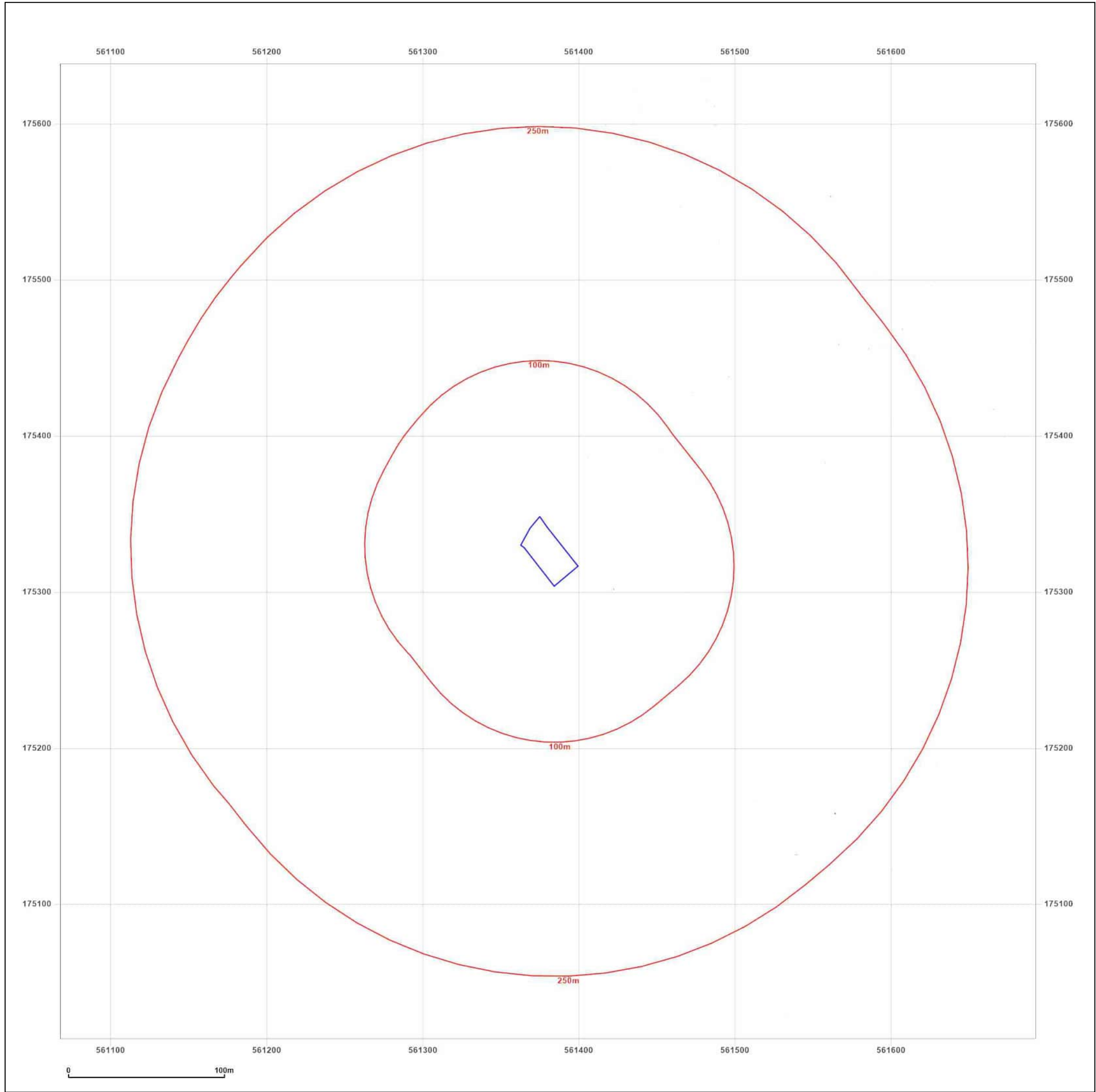


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Site Details:

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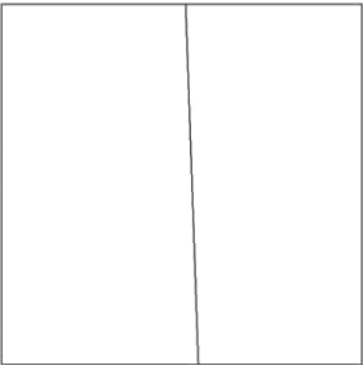
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Map Name: County Series

Map date: 1870

Scale: 1:2,500

Printed at: 1:2,500



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Revised N/A  
Edition N/A  
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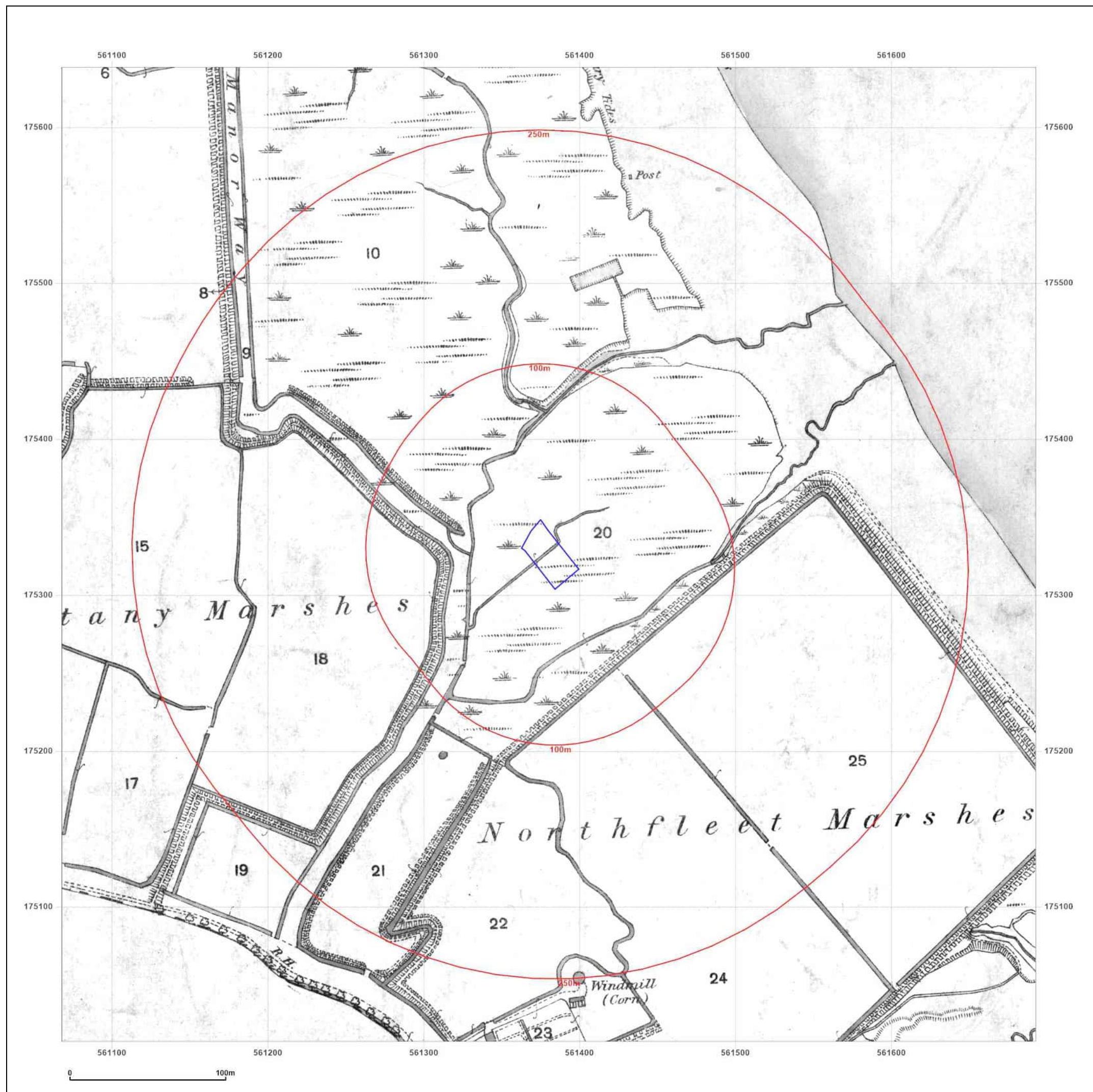


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**Site Details:**

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**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1872

**Scale:** 1:2,500

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



Surveyed 1872  
Revised 1872  
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**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1897

**Scale:** 1:2,500

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



Surveyed 1897  
Revised 1897  
Edition N/A  
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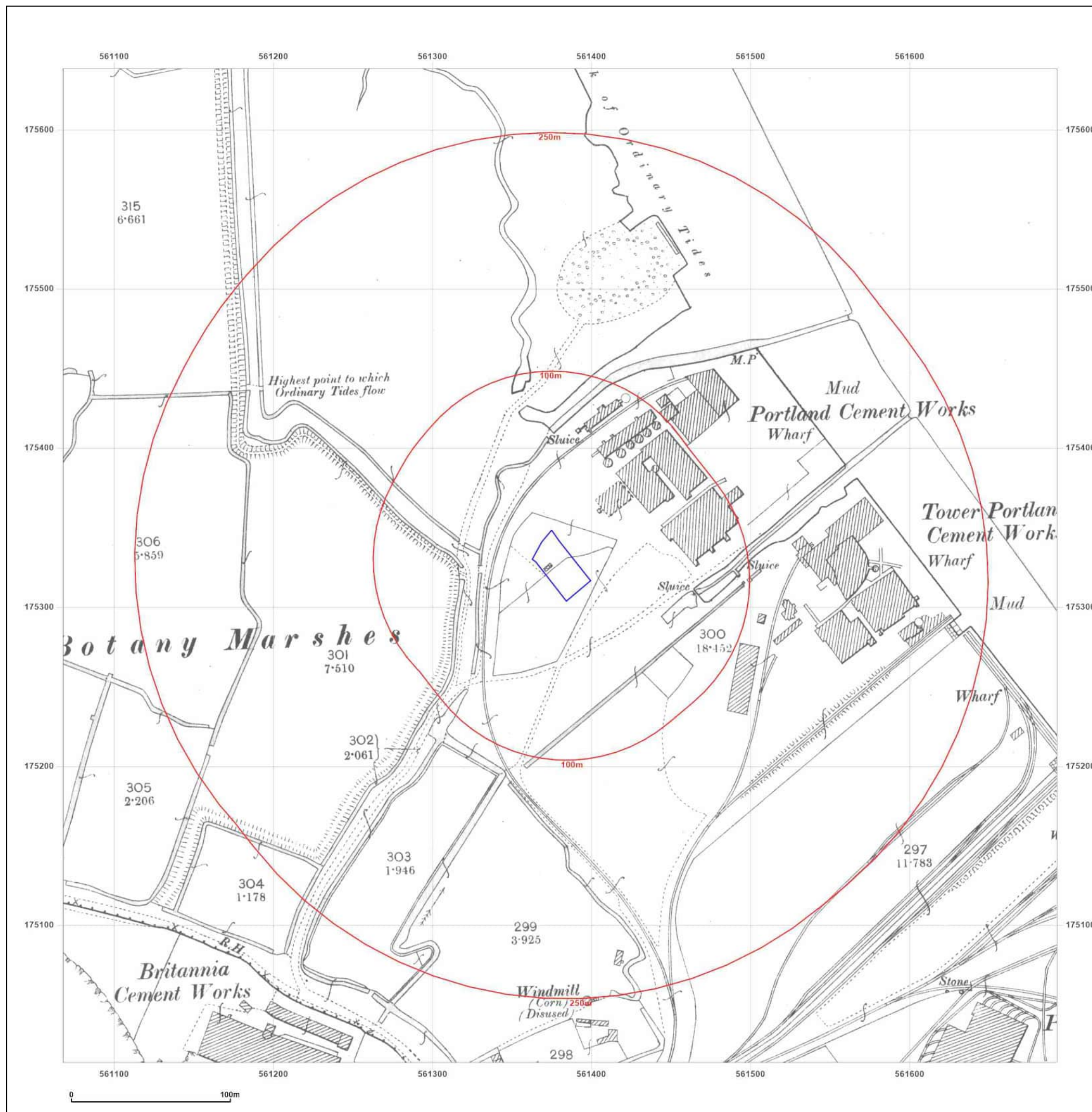


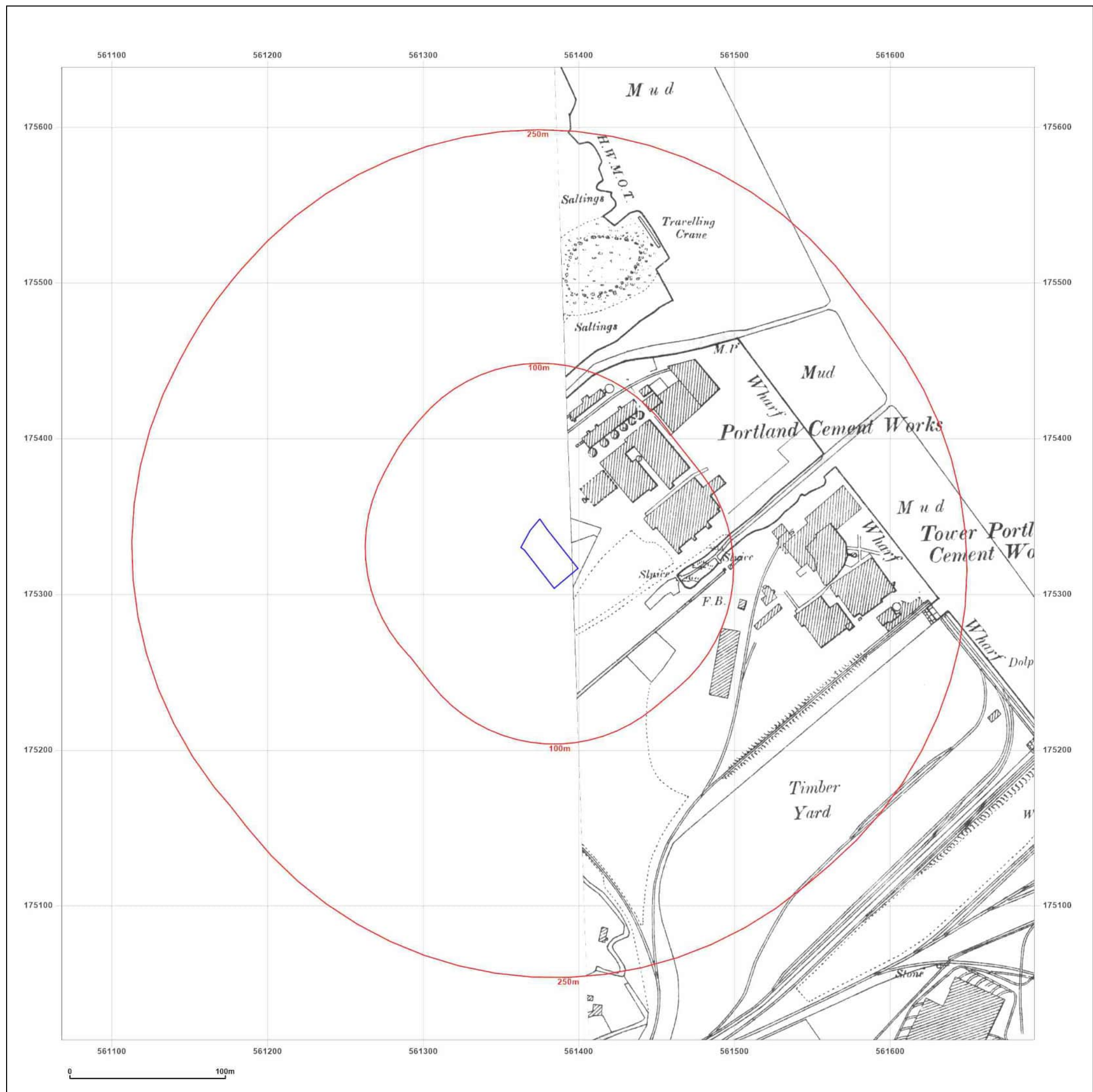
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**Site Details:**

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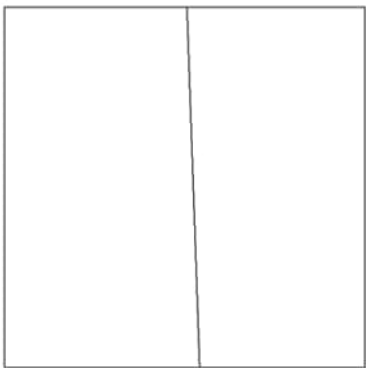
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**Map Name:** County Series

**Map date:** 1898

**Scale:** 1:2,500

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



Surveyed 1898  
Revised 1898  
Edition N/A  
Copyright N/A  
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## Site Details:

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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1932

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1932  
Revised 1932  
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Copyright N/A  
Levelled N/A



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## Site Details:

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**Map Name:** County Series

**Map date:** 1939

**Scale:** 1:2,500

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



Surveyed 1939  
Revised 1939  
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## Site Details:

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**Grid Ref:** 561380, 175326

**Map Name:** National Grid

**Map date:** 1952

**Scale:** 1:2,500

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



Surveyed 1952  
Revised 1952  
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## Site Details:

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**Grid Ref:** 561380, 175326

**Map Name:** National Grid

**Map date:** 1971

**Scale:** 1:2,500

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



Surveyed 1952  
 Revised 1970  
 Edition N/A  
 Copyright 1971  
 Levelled 1952



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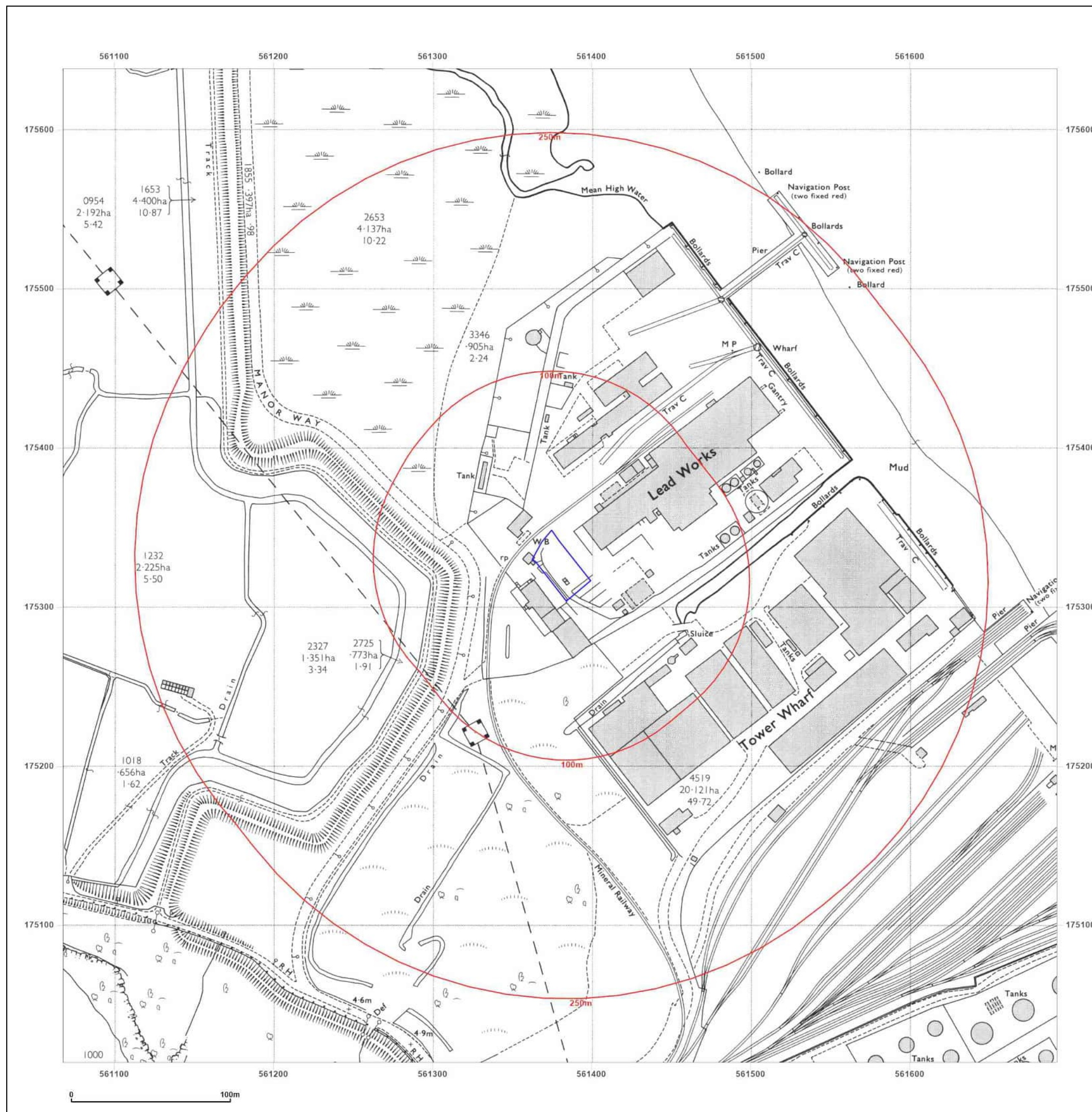


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## Site Details:

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**Grid Ref:** 561380, 175326

**Map Name:** National Grid

**Map date:** 1978

**Scale:** 1:2,500

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



Surveyed 1978  
 Revised 1978  
 Edition N/A  
 Copyright 1978  
 Levelled N/A



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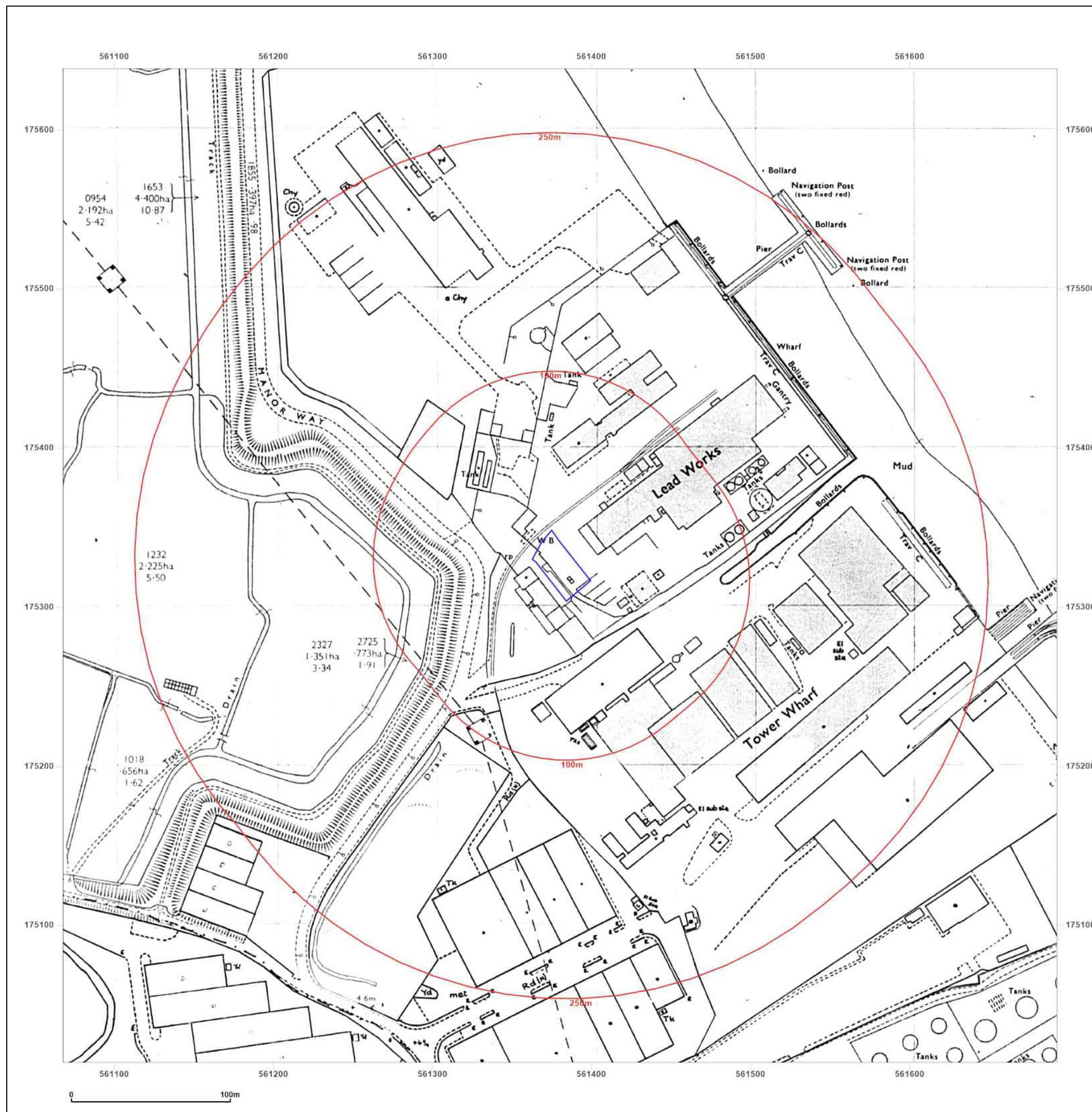


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## Site Details:

unspecified

Client Ref: EMS\_882585\_1092154  
Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1993

Scale: 1:2,500

Printed at: 1:2,500



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



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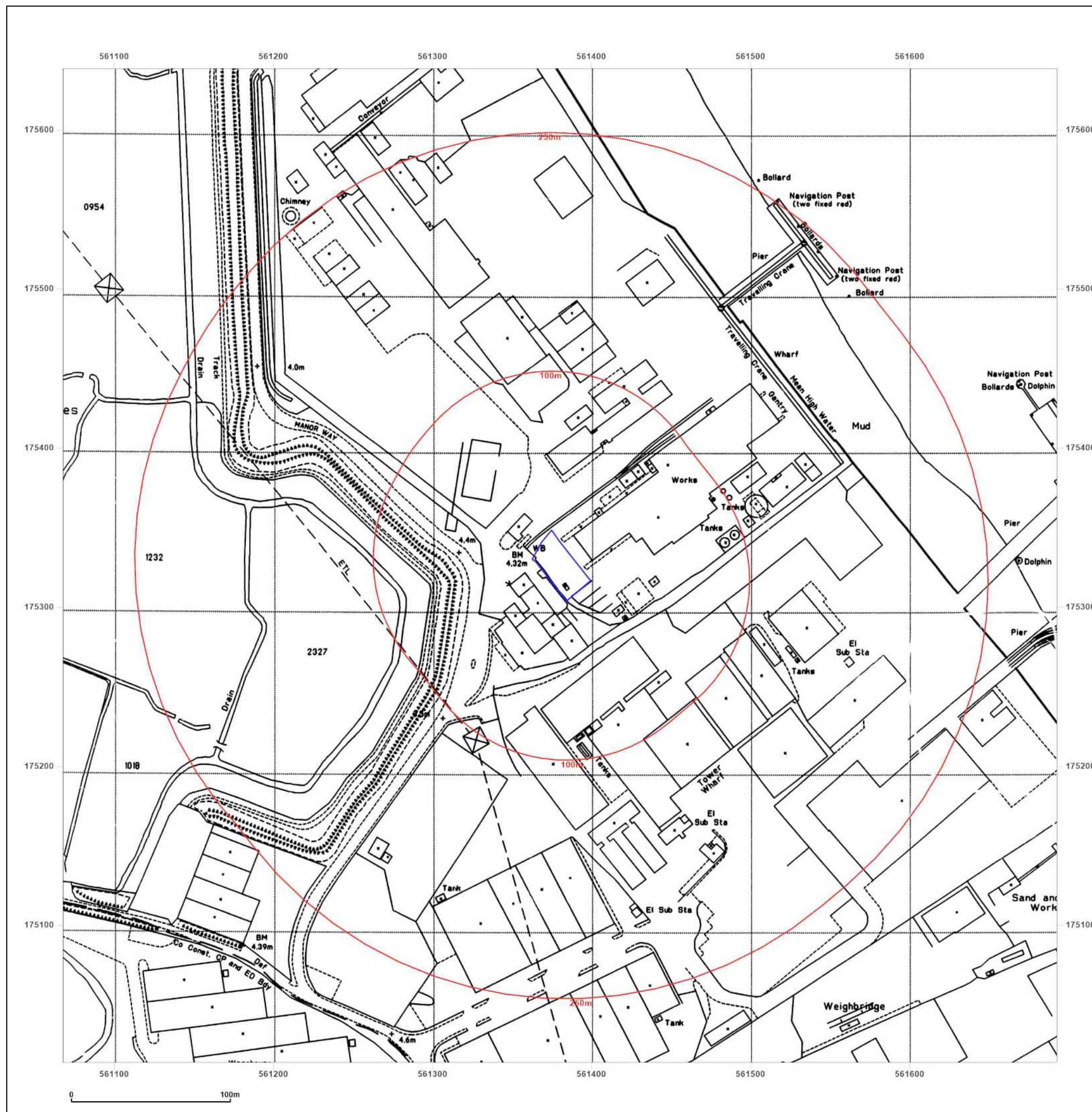


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Site Details:

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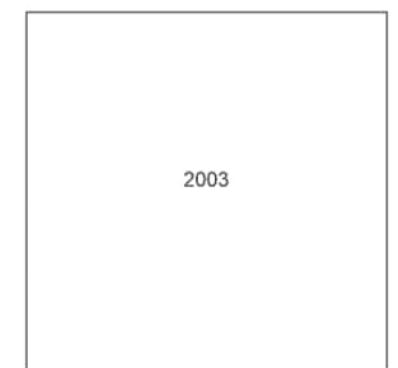
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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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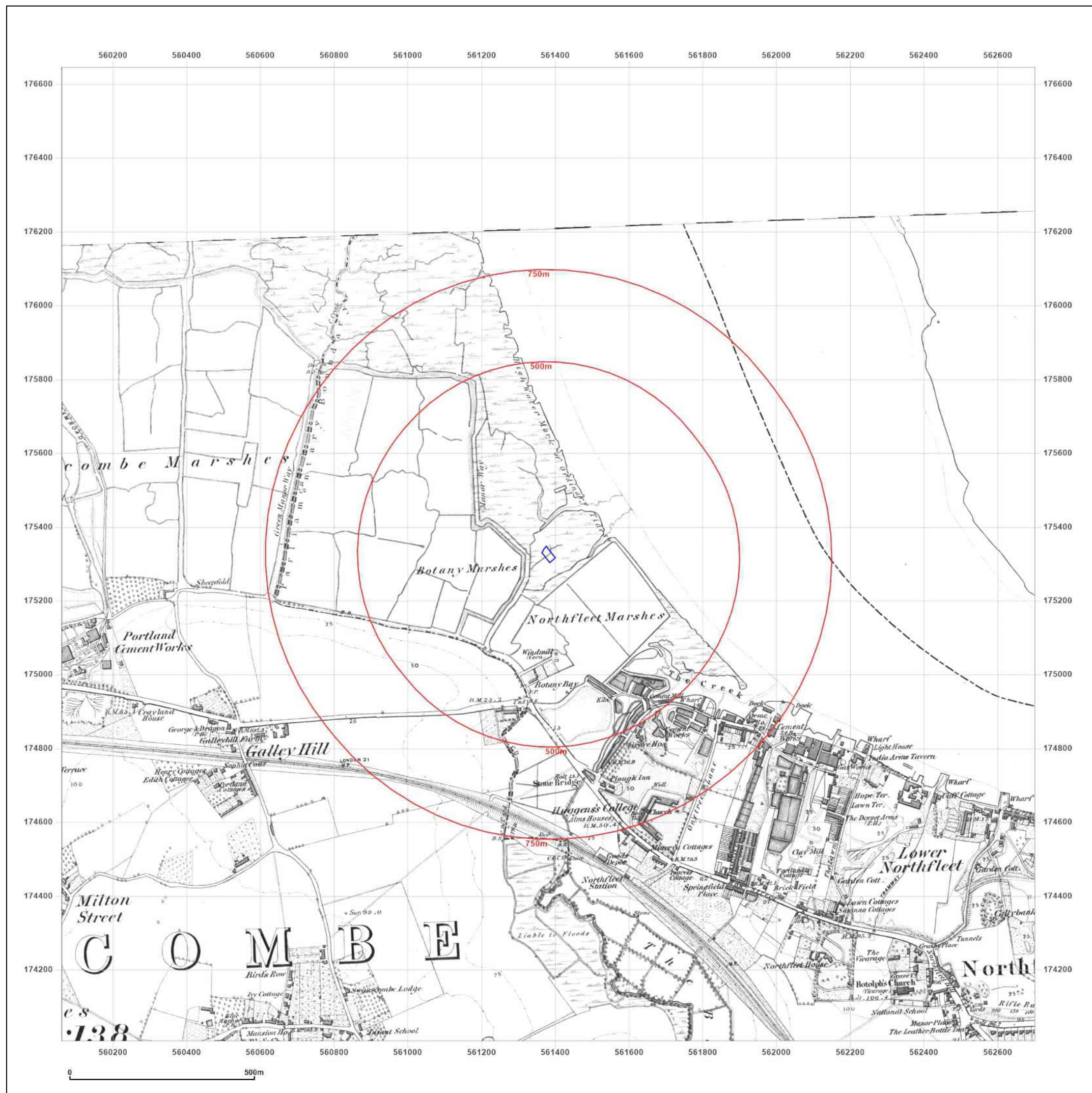
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## Site Details:

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**Report Ref:** EMS-882585\_1128444  
**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1863-1865

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1863  
Revised 1863  
Edition N/A  
Copyright N/A  
Levelled N/A

Surveyed 1865  
Revised 1865  
Edition N/A  
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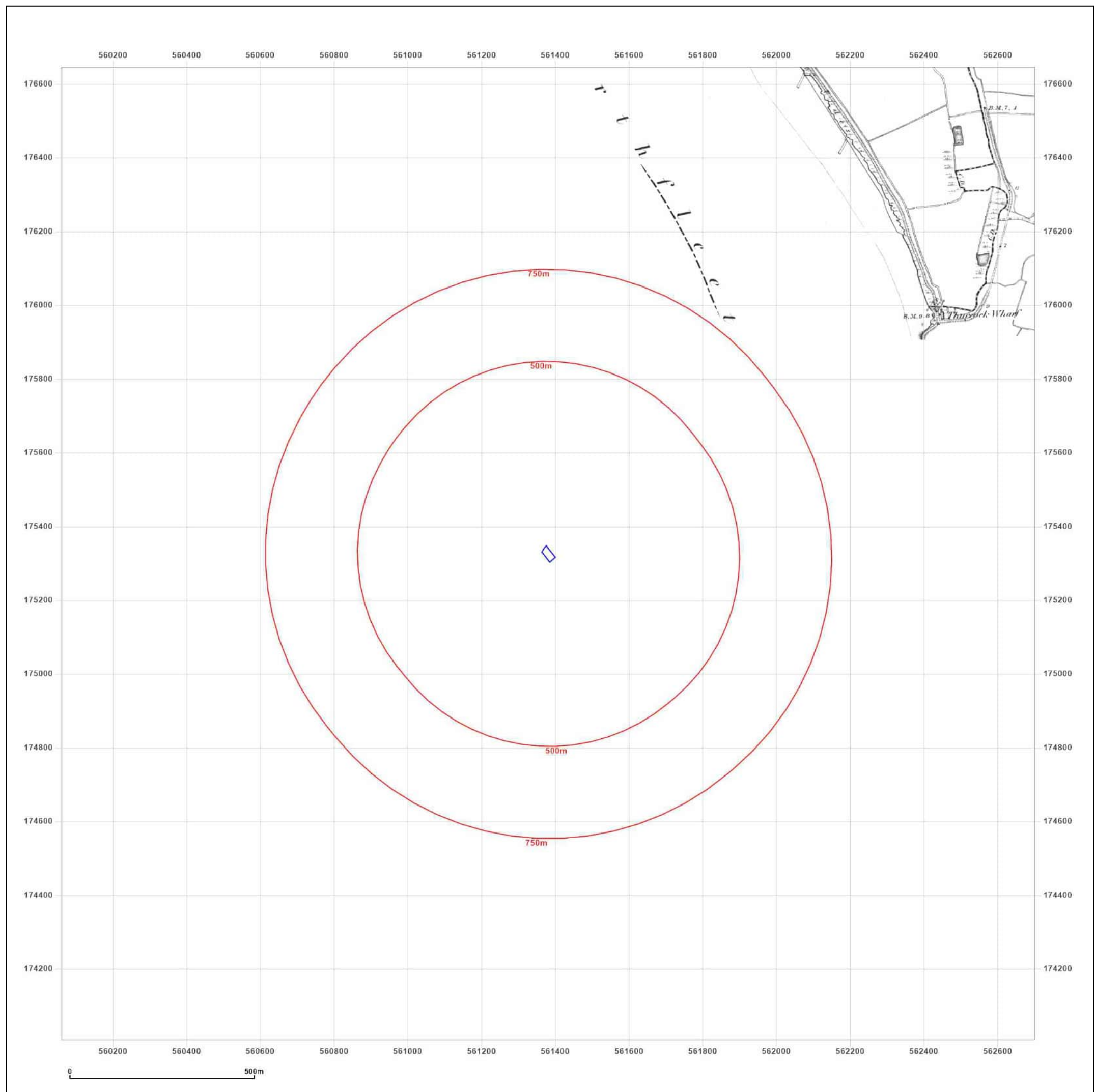


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**Site Details:**

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**Map Name:** County Series

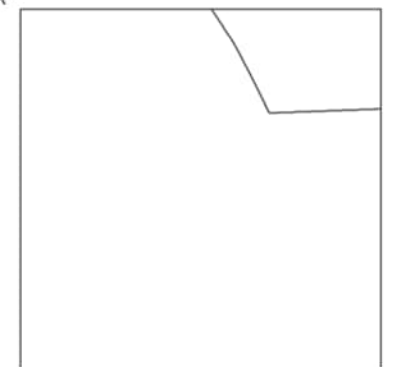
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**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1865  
Revised 1865  
Edition N/A  
Copyright N/A  
Levelled N/A



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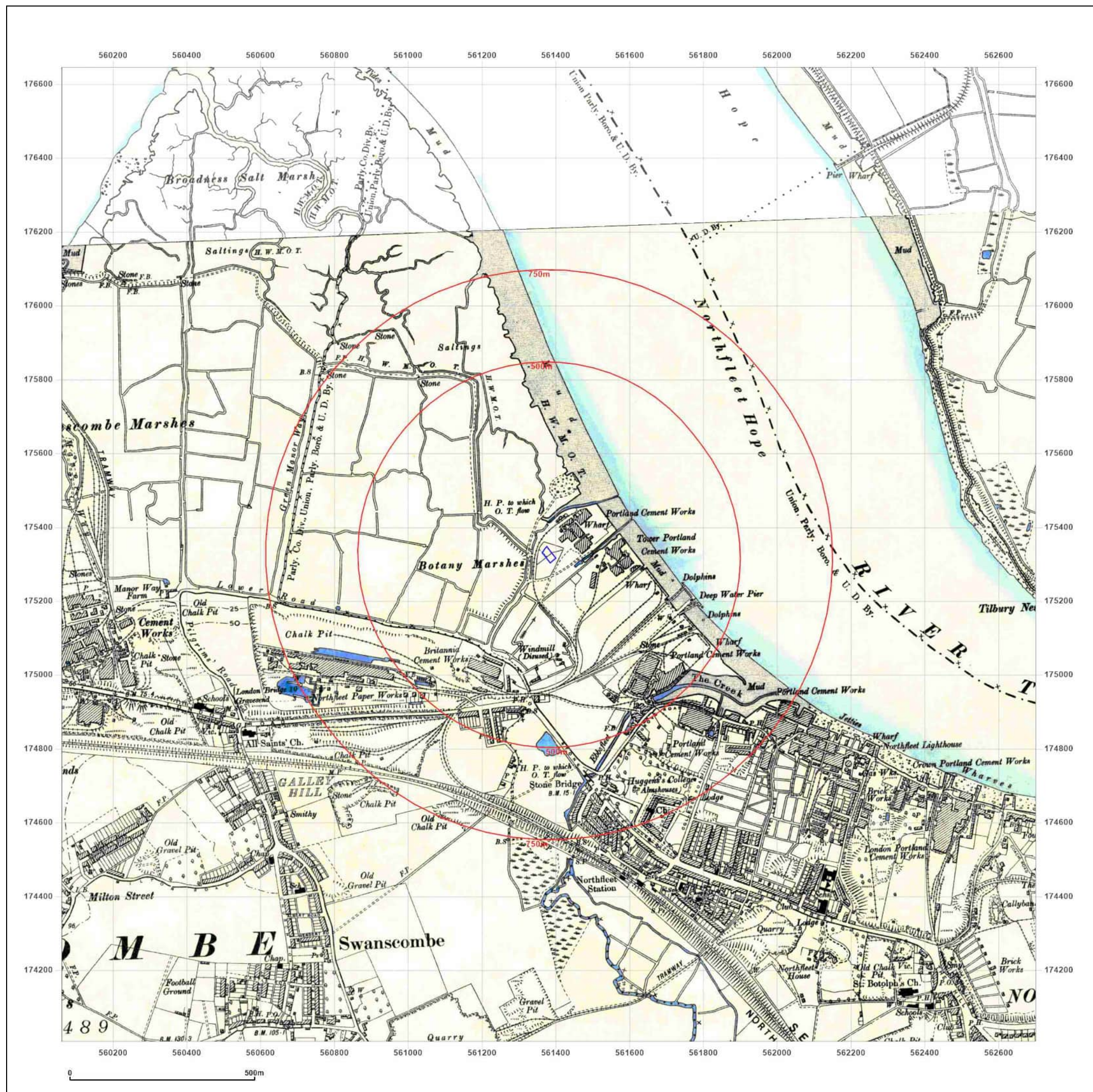


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## Site Details:

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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1895  
Edition 1899  
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Surveyed 1864  
Revised 1895  
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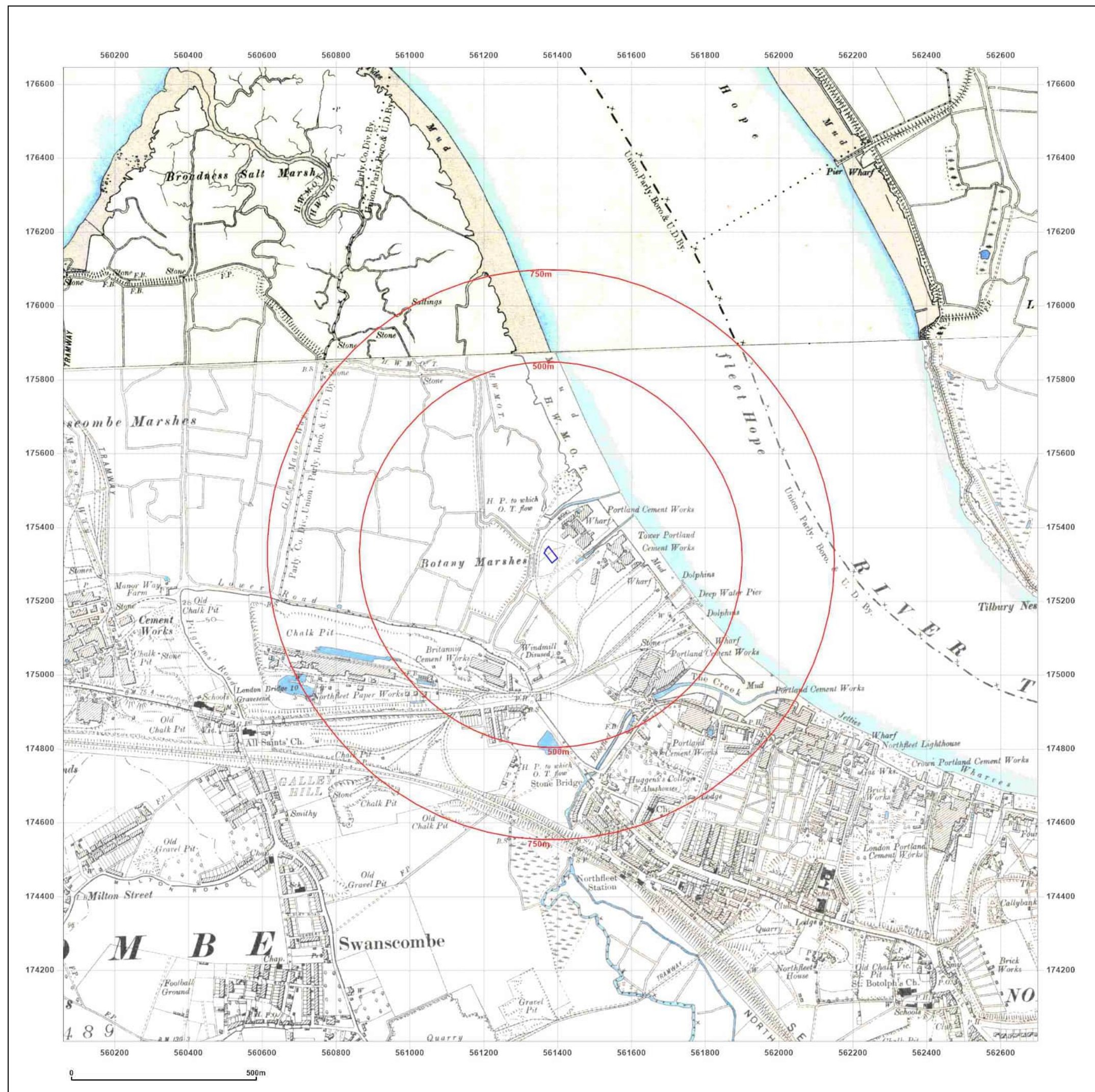


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**Map Name:** County Series

**Map date:** 1895-1898

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1866  
Revised 1895  
Edition N/A  
Copyright N/A  
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Surveyed 1864  
Revised 1895  
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**Map date:** 1895-1898

**Scale:** 1:10,560

**Printed at:** 1:10,560



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 Edition N/A  
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Surveyed 1866  
 Revised 1895  
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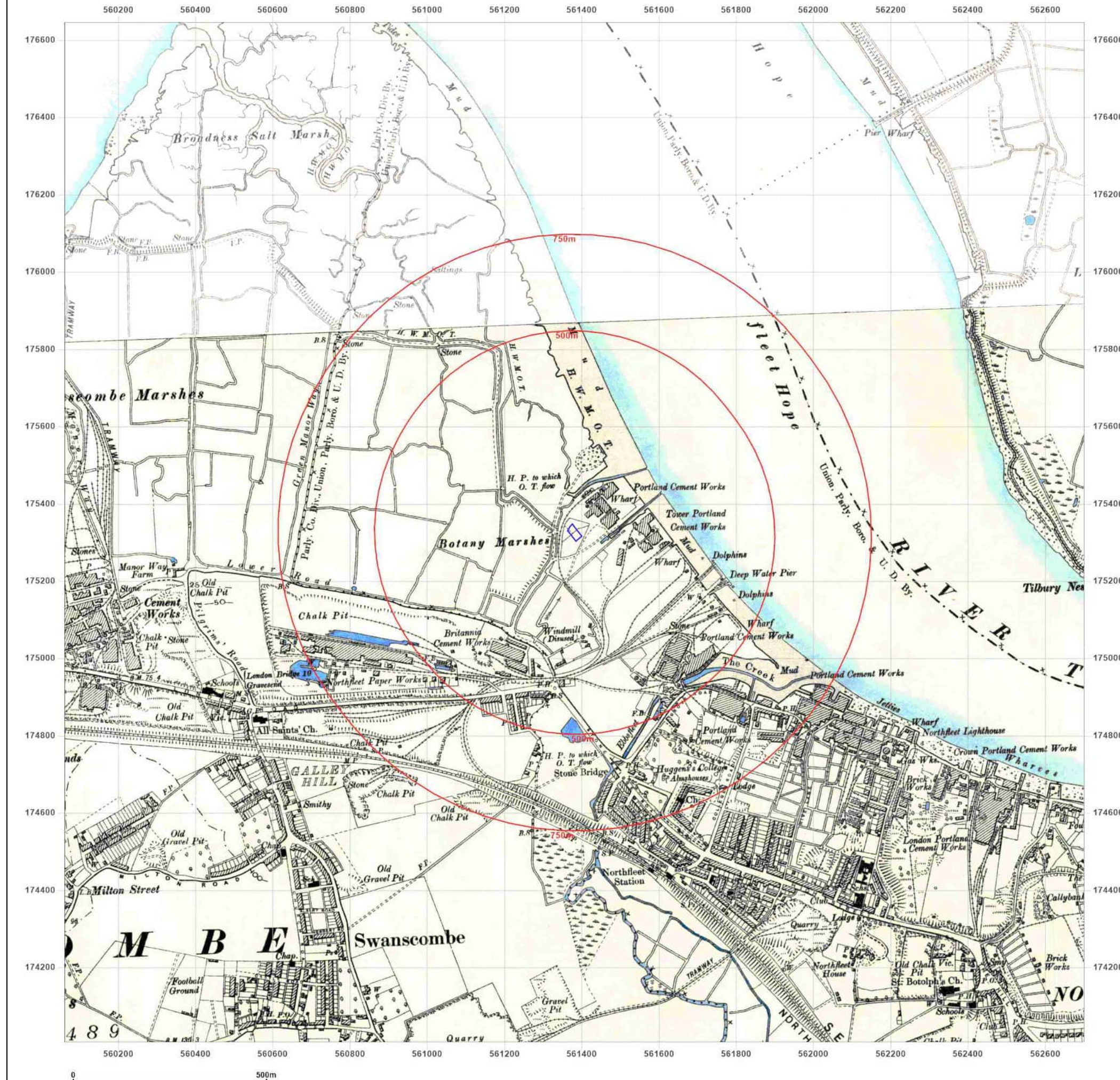


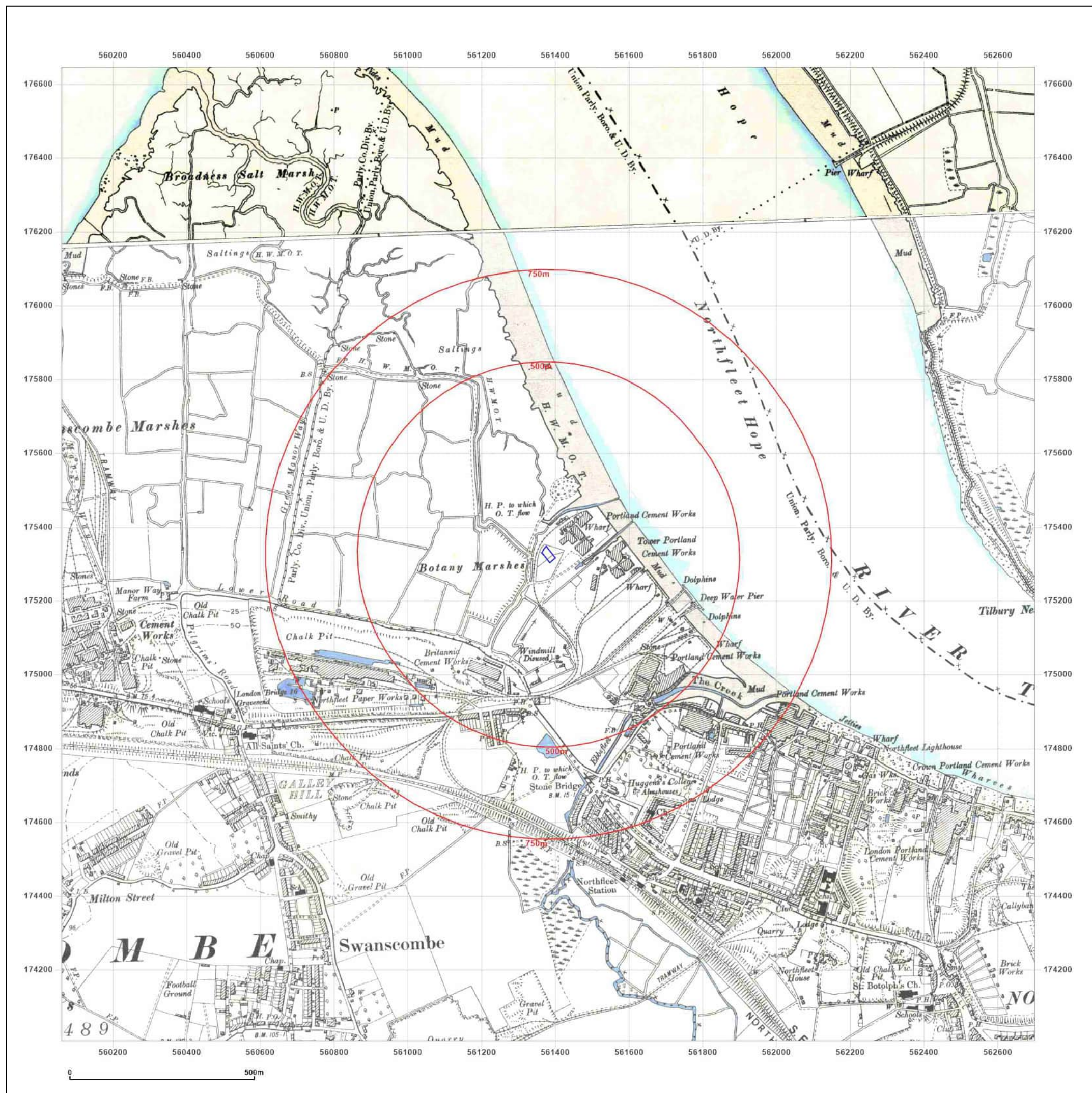
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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1895-1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866  
Revised 1895  
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Revised 1895  
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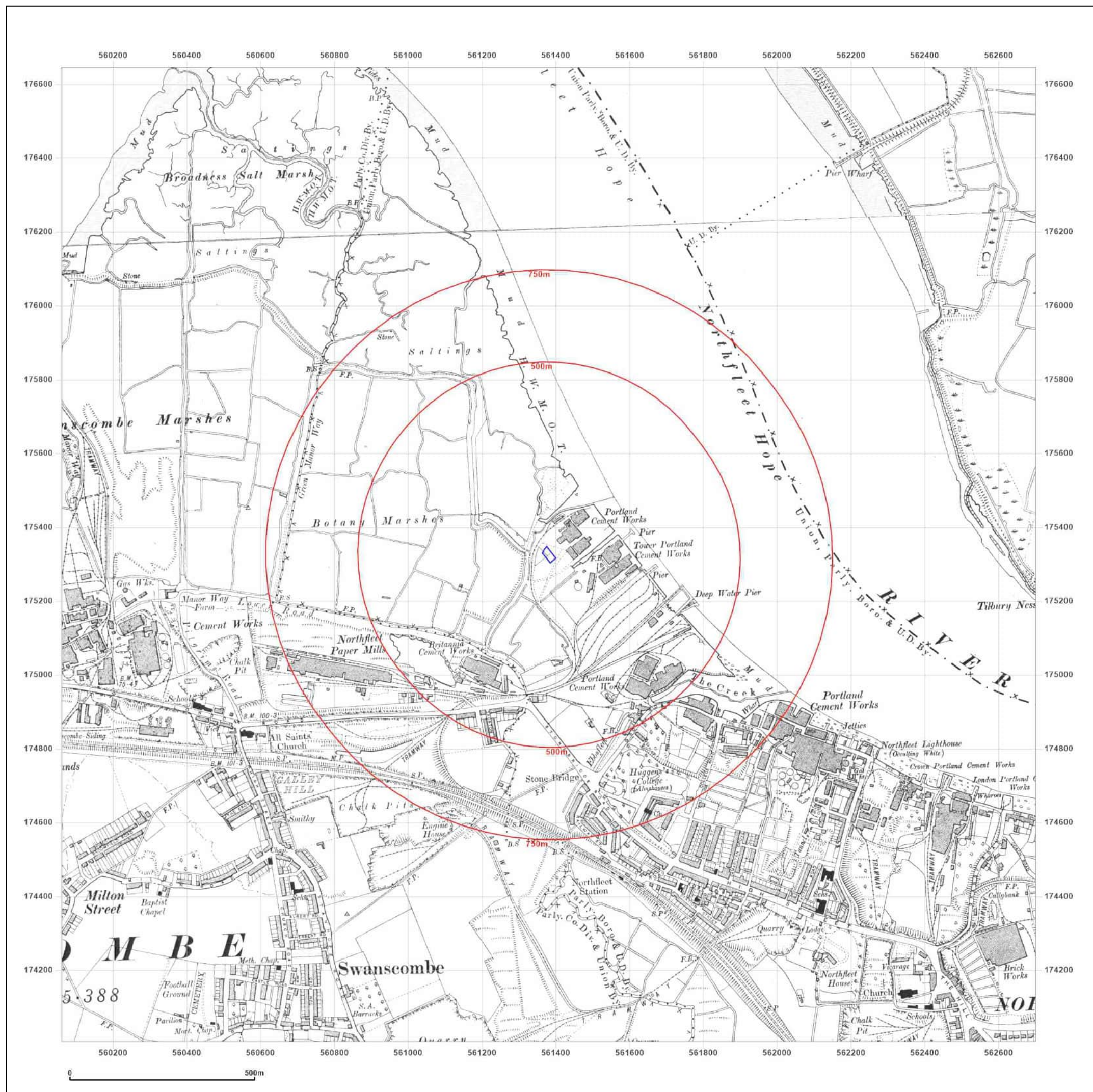


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## Site Details:

unspecified

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**Report Ref:** EMS-882585\_1128444  
**Grid Ref:** 561380, 175326

**Map Name:** County Series

**Map date:** 1907-1910

**Scale:** 1:10,560

**Printed at:** 1:10,560



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Edition 1910  
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Surveyed 1864  
Revised 1907  
Edition N/A  
Copyright N/A  
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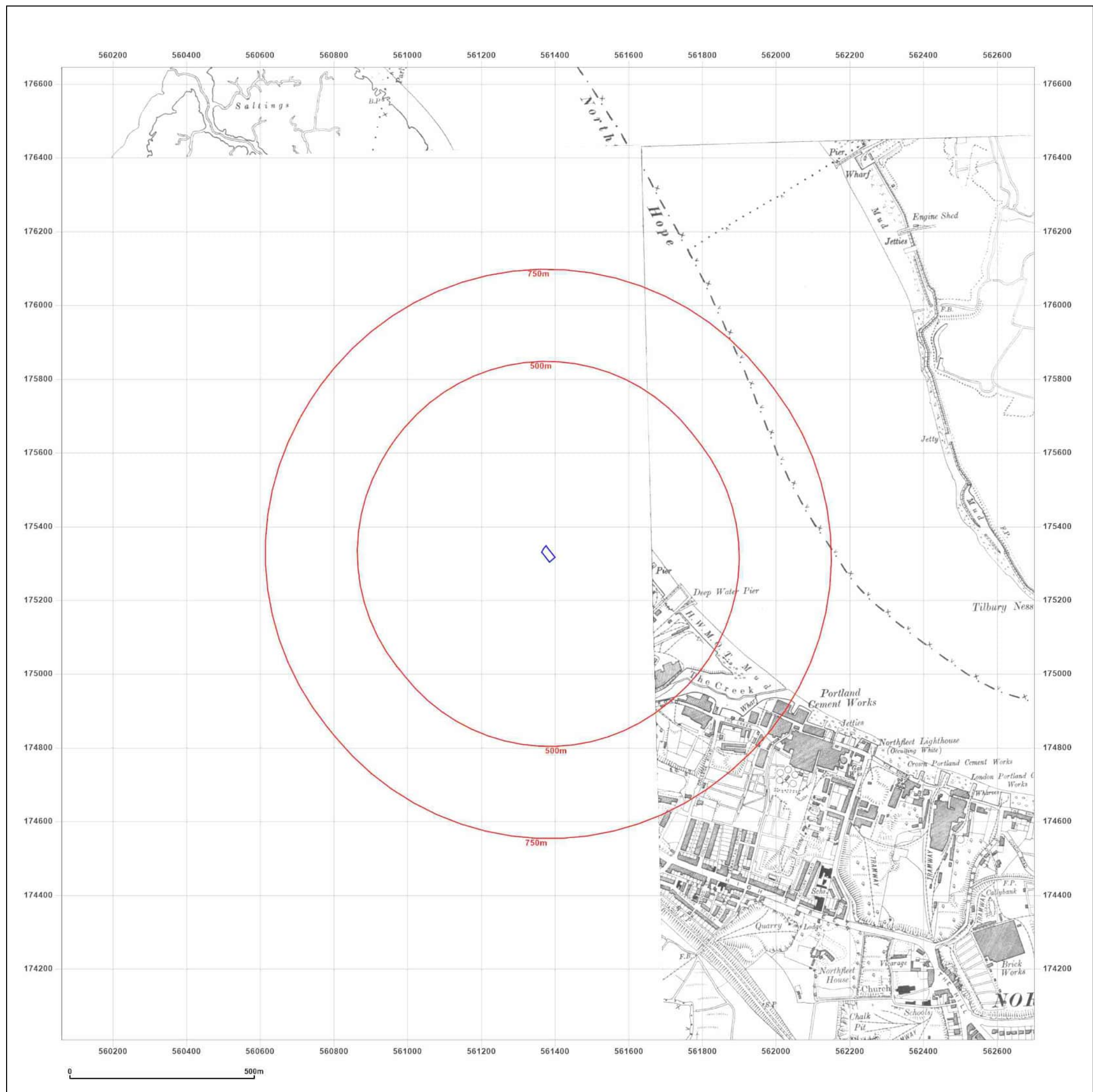


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#### Site Details:

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**Map Name:** County Series

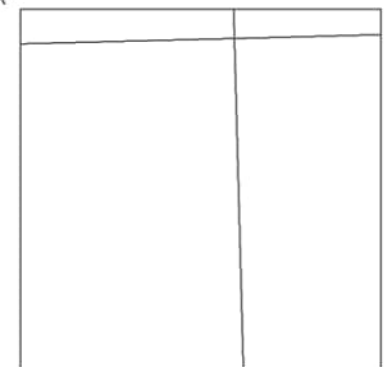
**Map date:** 1916

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**Printed at:** 1:10,560



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Revised 1916  
Edition N/A  
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Surveyed 1864  
Revised 1916  
Edition N/A  
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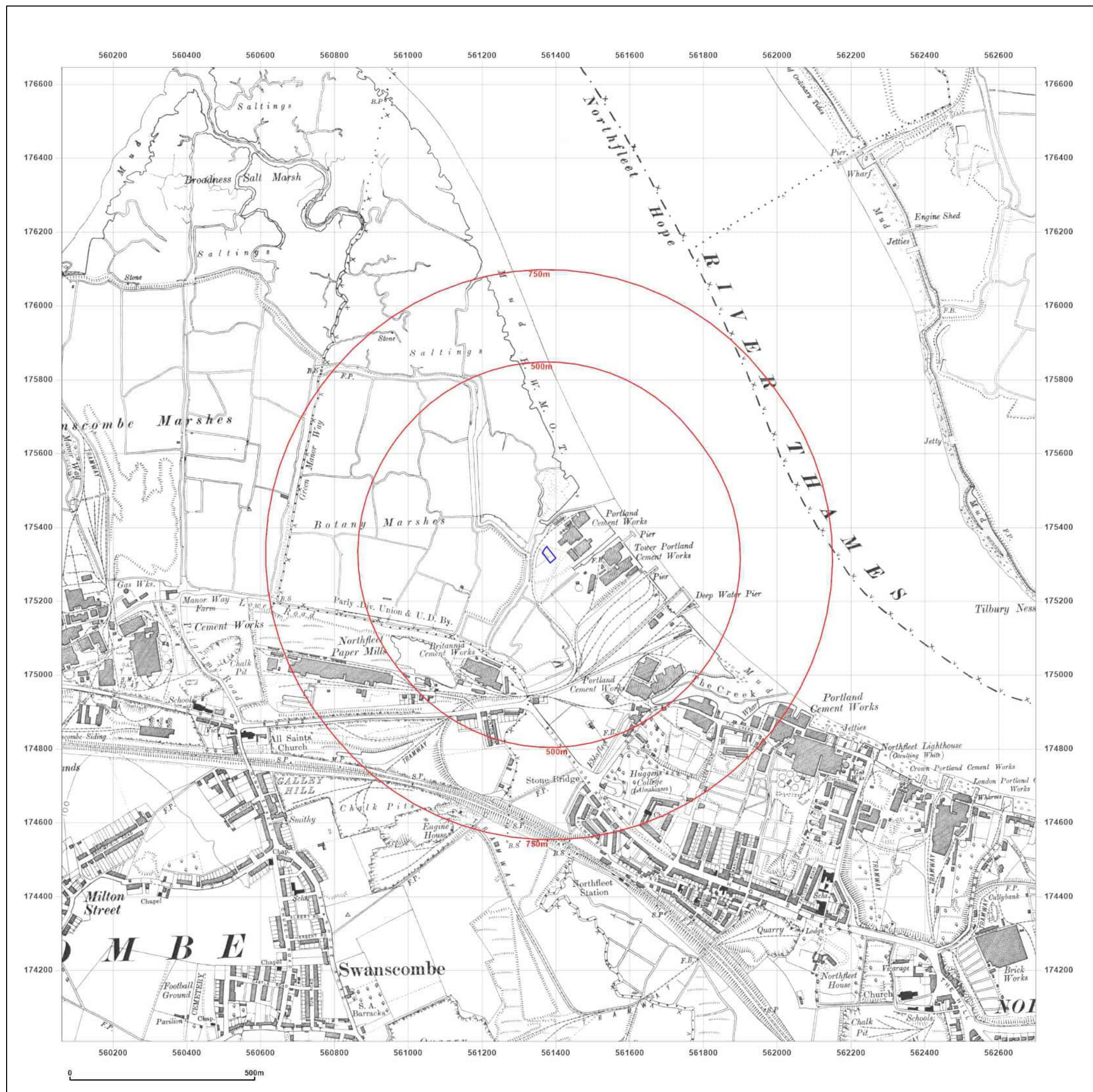


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#### Site Details:

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**Map Name:** County Series

**Map date:** 1923

**Scale:** 1:10,560

**Printed at:** 1:10,560



Surveyed 1864  
Revised 1923  
Edition N/A  
Copyright N/A  
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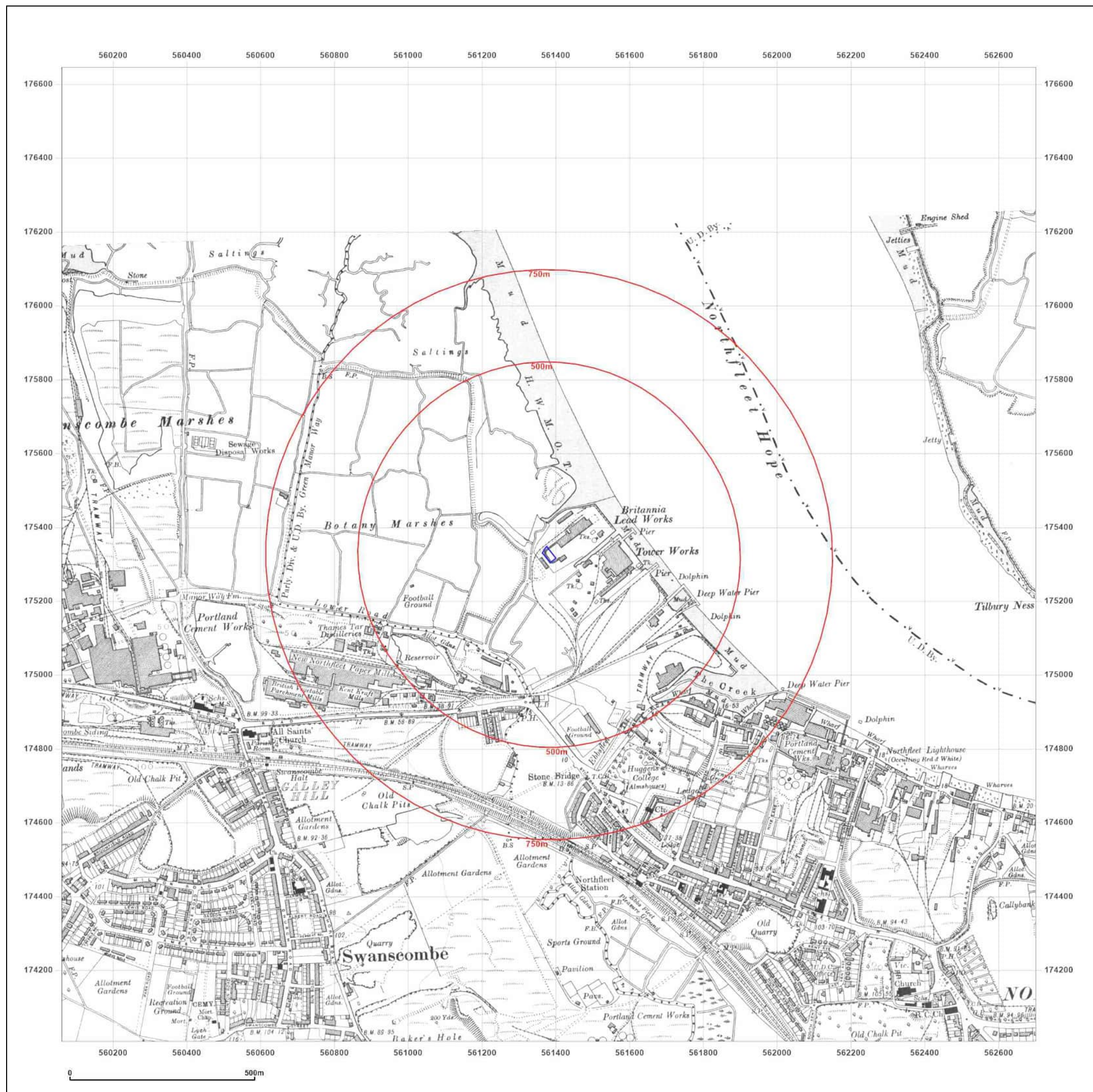
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Report Ref: EMS-882585\_1128444  
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1932

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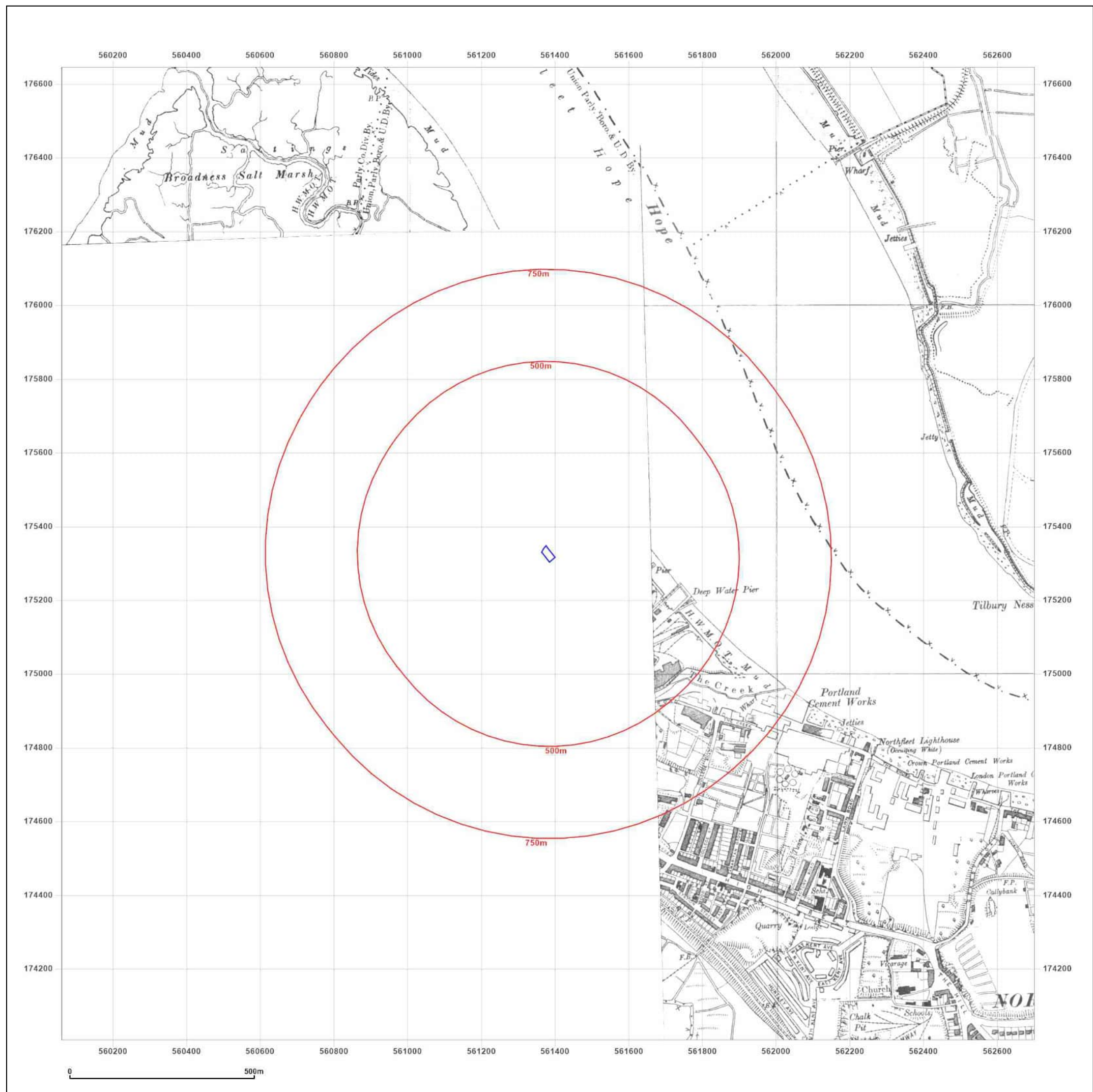


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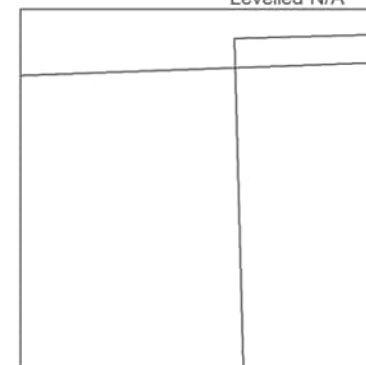
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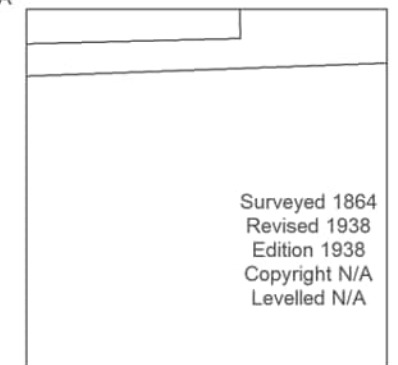
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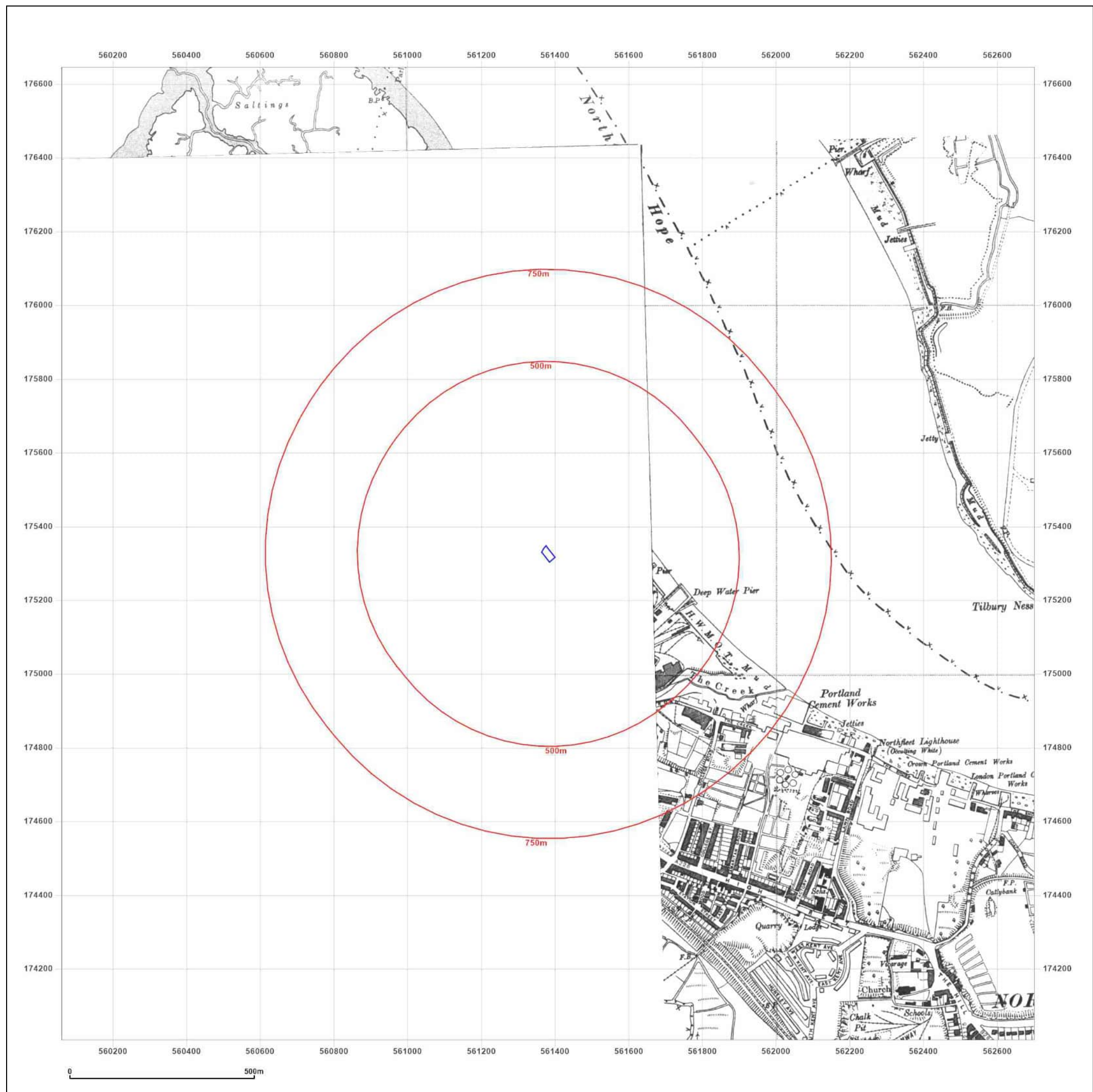


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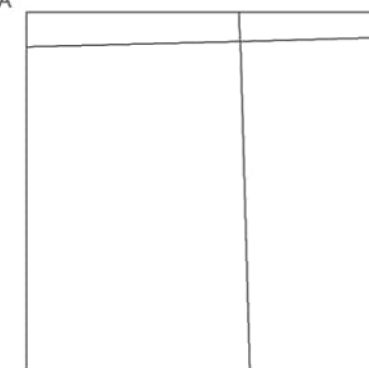
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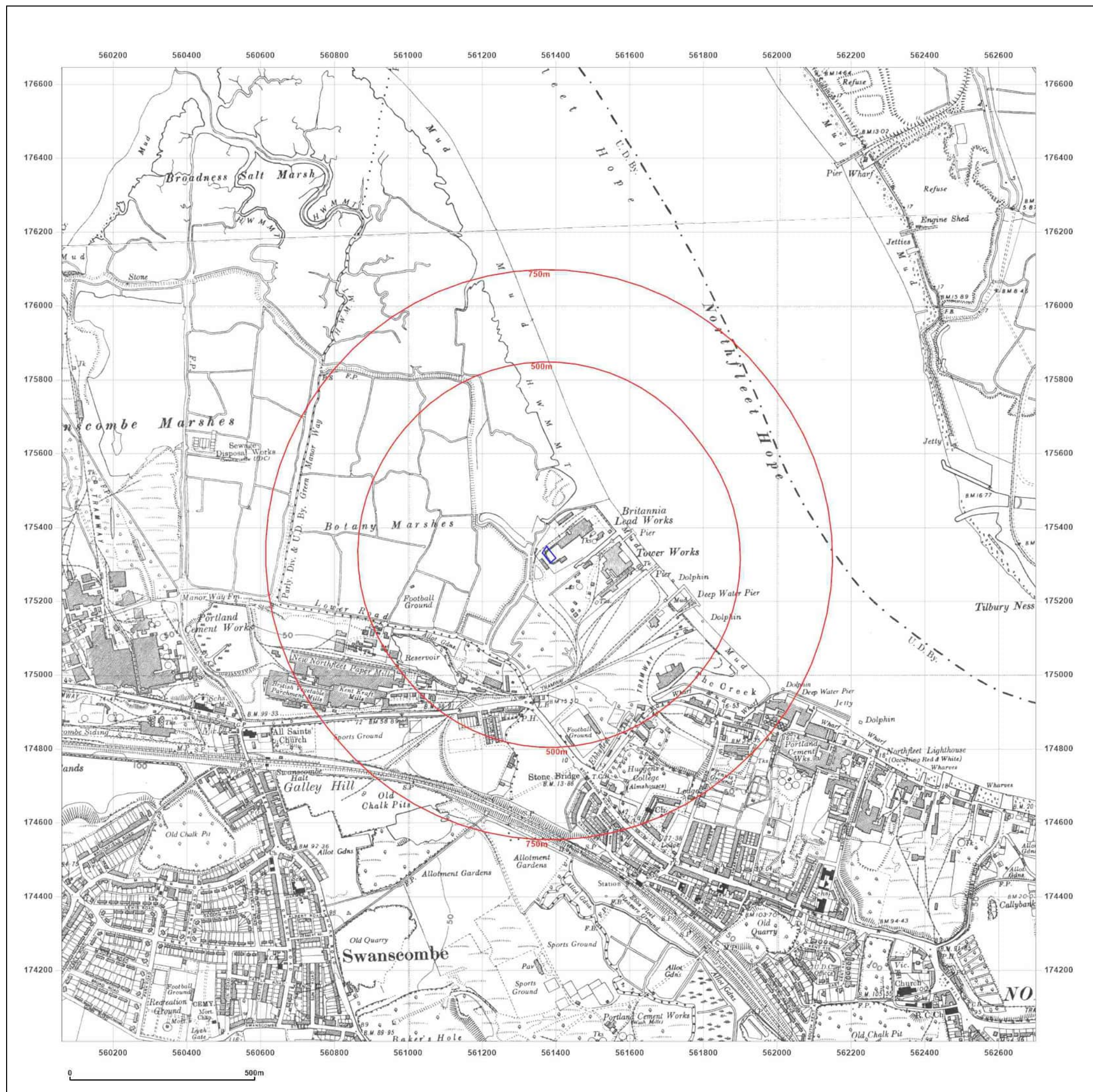


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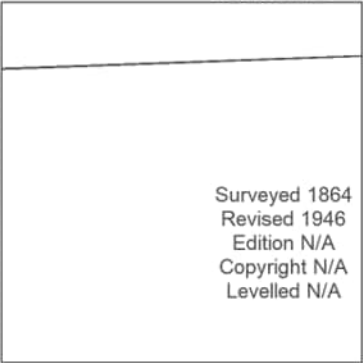
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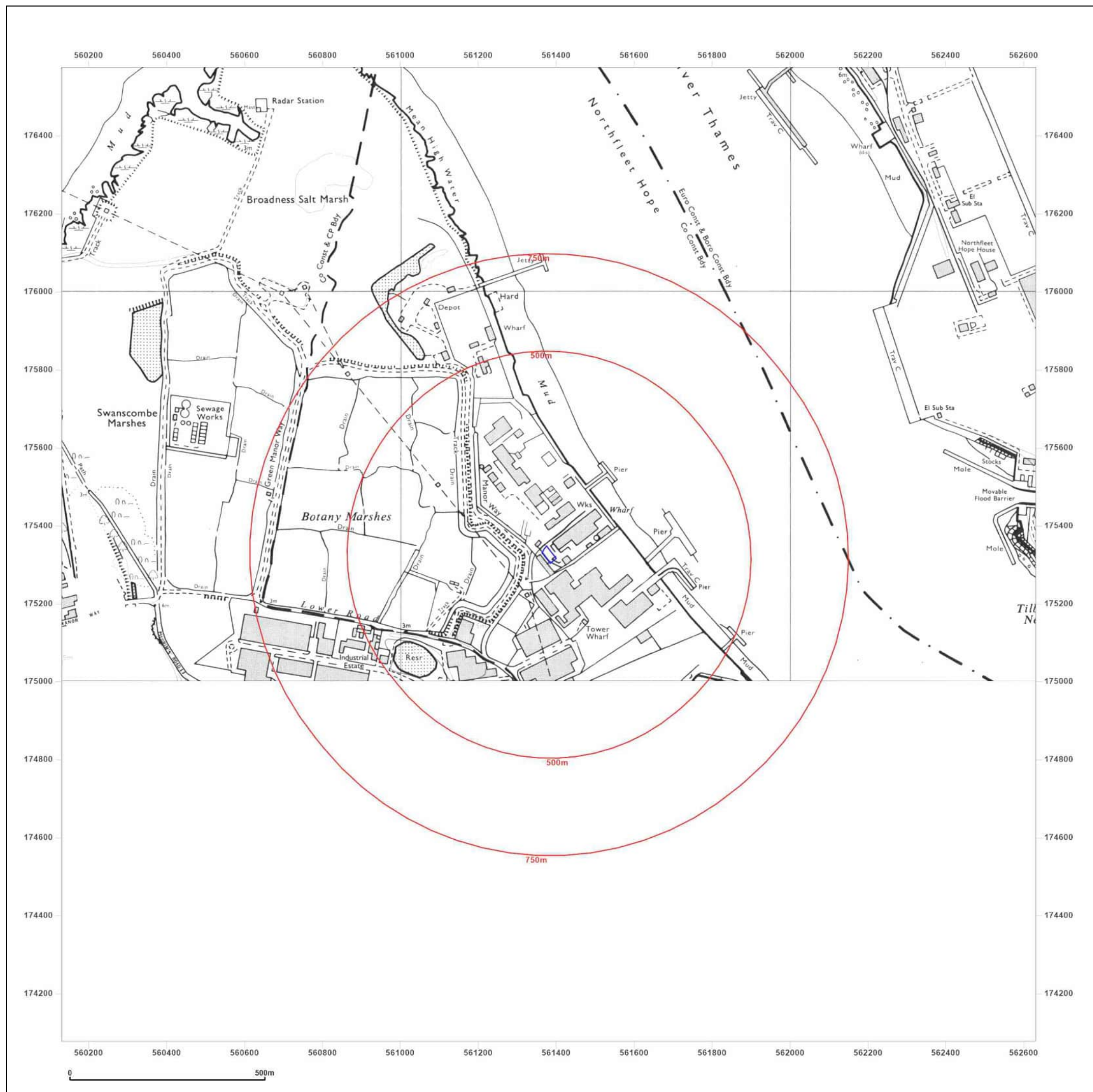


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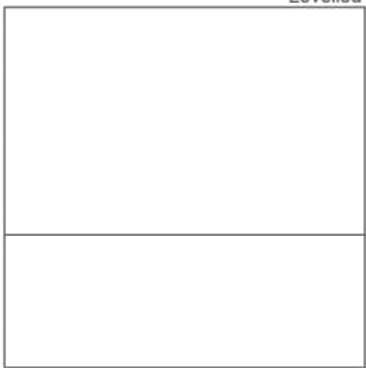
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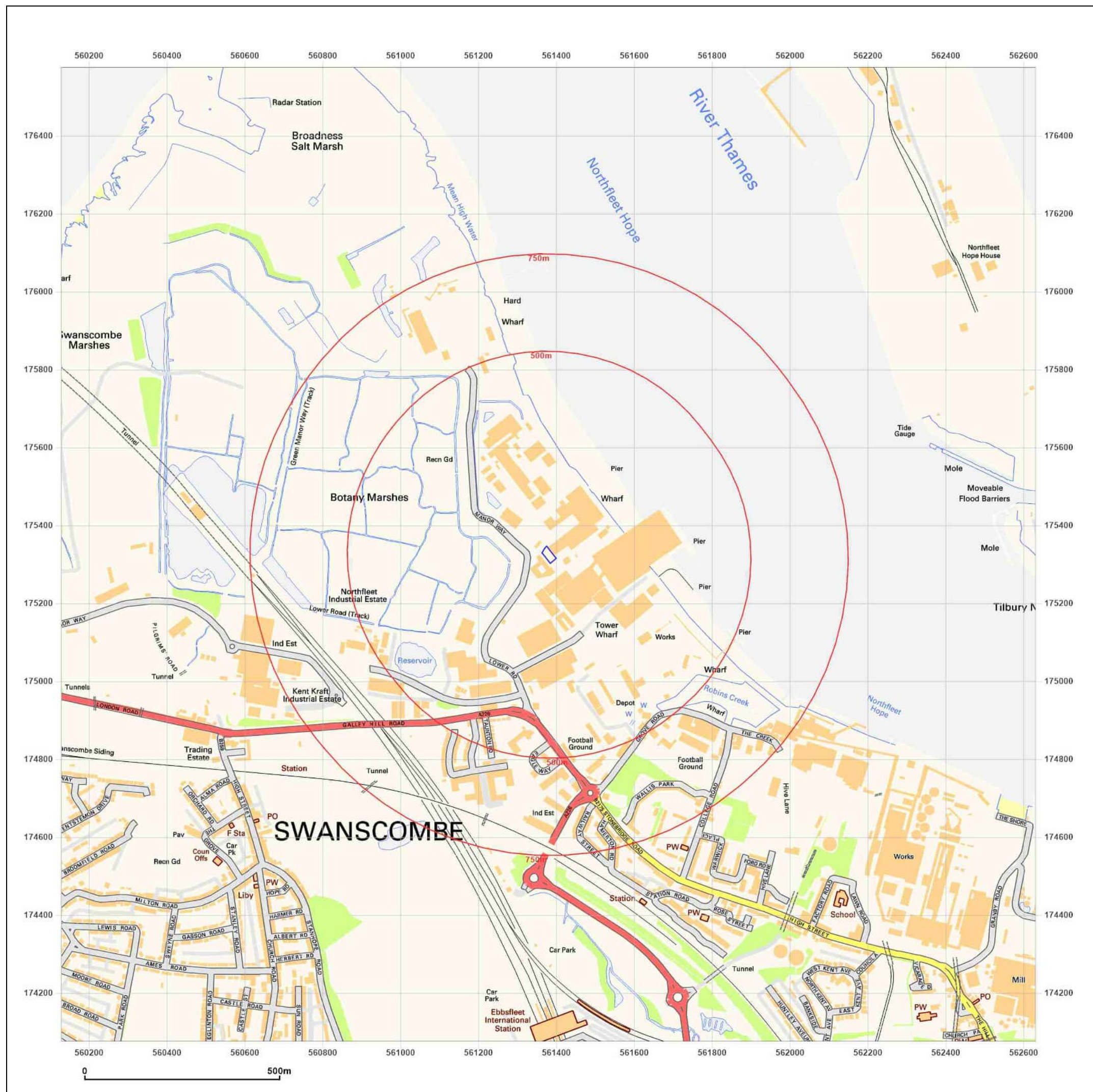


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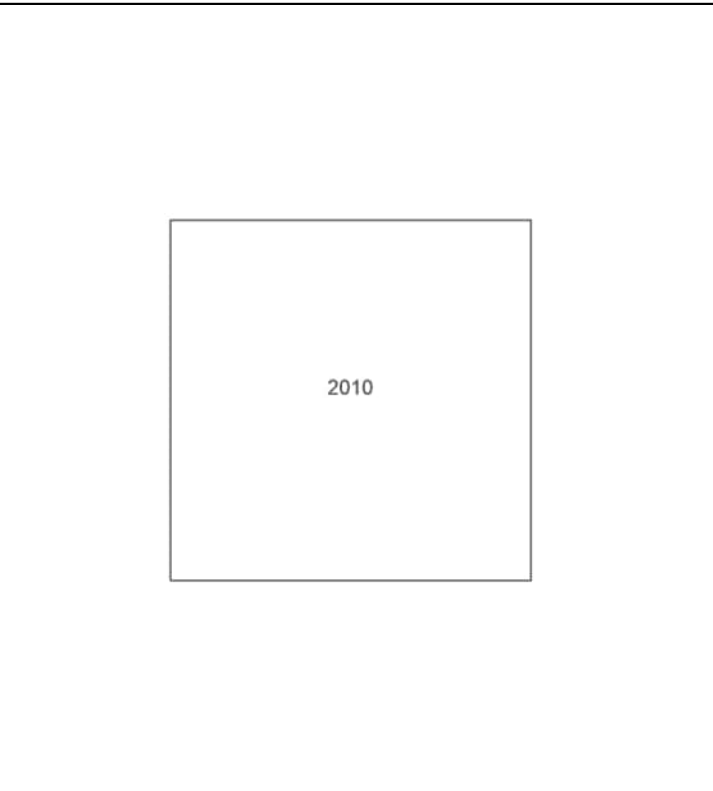


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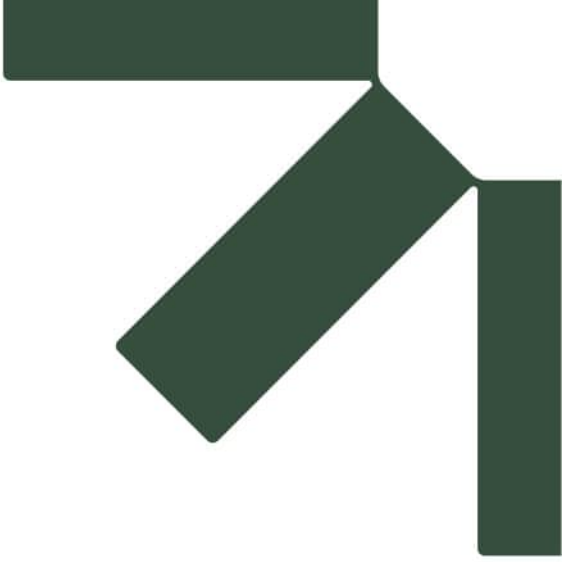
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# Appendix D Detailed UXO Report

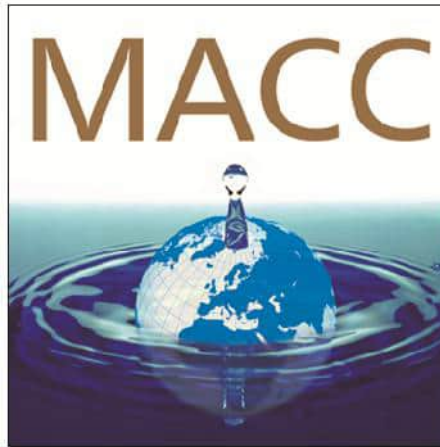
## Phase One Geotechnical and Environmental Desk Study

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

SLR Project No.: 402.064683.00001

11 August 2023



## **UNEXPLODED ORDNANCE DESK STUDY**

**Britannia Refined Metals Ltd, Botany Road  
Northfleet, Kent DA11 9BG**

**Prepared for: Amec Foster Wheeler**

**Project Number: 4652**

**Version: 1.0**

**Dated: 08/02/2017**

## DISTRIBUTION

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**Version:** Issue version 1.0  
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## Authors

**Project Director:** K Burrows  
**Project Manager:** J Morrison

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## REFERENCES

### Publications

Sources of information used in the compilation of this study included:

German Air Raids on Britain 1914-18. Morris 1925  
Unexploded Ordnance (UXO) – A guide for the Construction Industry. CIRIA C681  
Dangerous Energy. Cocroft 2000  
The Blitz Then and Now Volumes 1 to 3. Ramsey 1987  
Advanced German Weapons WW2. Ford 2000  
Dealing with Munitions in Marine Aggregates. UMA 2008  
United Nations International Mine Action Standards (IMAS). UN 2010  
Military Engineering Volume XII. War Office 1956  
German Bomb Fuzes. USN 1945  
Fields of Deception & Anti Aircraft Command. Dobinson 1988  
Target Reconnaissance Photography. Luftwaffe 1939-44  
Battle Stations Volume 3 DJ Smith 1980  
Local Bomb Damage Maps

### Internet Information

Additional information was provided through the following credible internet sites, their assistance is credited where appropriate:

Army EOD Incidents  
RAF EOD Incidents & Air Situation Reports 1939-45  
Luftwaffe Strategy & Tactics  
Luftwaffe Bomber Specifications  
WO Defence Arrangements 1939-45  
News Reports Witness Accounts 1939-45  
Latest News Reports

### Project Information

Site and project information was provided by Amec Foster Wheeler.

## **TERMS AND DEFINITIONS**

### **Anti Aircraft Ammunition (AAA)**

High Explosive shells ranging from 30mm to 155mm used by air defence batteries to attack or deter enemy air attack.

### **Air Dropped Munition**

A bomb or container dropped from an aircraft which is designed to detonate at a pre-determined altitude, on impact or using a delay mechanism; after impact.

### **Air Dropped Sub-Munitions (Bomblet)**

Small sub-munitions dispensed from a larger carrier which may be fixed to the aircraft or dropped as a single container munition which was designed to open above the target spreading its contents over a large area. Some designs are extremely dangerous and fitted with anti-handling devices.

### **Area Clearance**

This is the term used for the systematic clearance of explosive ordnance from land, including military property, firing and bombing ranges, airfields and training areas. When the land is a former wartime battle ground, the term used is Battle Area Clearance (BAC)

### **Blast Zone**

This term refers to the area around an explosive detonation where the explosive overpressure (Blast) can cause damage, injury or death.

### **Explosive Ordnance (EO)**

All manufactured or improvised items designed to contain explosive, propellant, pyrotechnic and fissionable material or biological or chemical agents or pre-cursors which when coupled with an initiation or dispersal system are designed to cause damage, injury or death.

### **Explosive Ordnance Disposal (EOD)**

A series of recognised procedures and protocols which are used by specialists in the detection, identification, evaluation, risk assessment, render safe, recovery and disposal of any item of explosive ordnance or improvised explosive device.

### **Fragmentation Zone**

This is the term which refers to the danger area in which a piece of an item of explosive ordnance will travel on detonation. This zone is normally greater than the blast zone.

### **Geophysical Survey**

The use of magnetometers, ground penetrating radar or other geophysical data gathering systems, which is then used for evaluation, risk assessment and to quantify further mitigation requirements.

### **High Explosive (HE)**

High explosives react/detonate at a rate of around 9,000 metres per second, to all intents and purposes, instantaneously.

### **Imperial War Museum (IWM)**

Wartime records source based in Lambeth Road London.

### **Incendiary Bomb (IB)**

Incendiary bombs ranged from 1kg in size to 500kg the larger sizes were designated as Oil Bombs. Fills range from Thermite mixtures, Phosphorus, Kerosene or other pyrotechnic mixtures.

### **Intrusive Search**

This term refers to the process of introducing a specialist magnetometer by pushing or drilling the sensor in to the ground to a pre determined depth, thus allowing construction activities such as: piling, soil testing and deep intrusive ground works to be conducted safely.

### **Land Service Ammunition (LSA)**

LSA is a term that refers to all items containing explosives, pyrotechnic or noxious compounds which are placed, thrown or projected during land battles.

### **Local Records Office (LRO)**

Wartime records source charged with maintaining the records for the Region, County, Borough or City.

### **National Archive (NA)**

Wartime records source housed in Kew Gardens London.

### **Oil Bomb (OB)**

Large airdropped bomb or modified ordnance container containing flammable material and accelerant, these weapons normally range in weight from 250 – 500kg.

### **Parachute Mine (PM)**

Air-dropped mine designed to detonate at a pre set altitude above the ground. Essentially a large blast bomb with an explosive content of 1600 kg commonly fitted with anti-handling or anti-removal fuzes.

### **Unexploded Bomb (UXB)**

Any air dropped bomb that has failed to function as designed.

### **Unexploded Ordnance (UXO)**

Explosive ordnance that has been primed, fused, armed or otherwise prepared for use or used. It may have been fired, dropped, launched or projected yet remains unexploded either through malfunction or design or for any other cause.

### **War Office (WO)**

This was the United Kingdom Government department responsible for defence of the realm, forerunner of the Ministry of Defence (MoD).

### **White Phosphorus (WP)**

Munitions filled with WP<sub>4</sub> are designed for signalling, screening and incendiary purposes. They achieve their effect by dispersing WP, which burns on contact with the air.

### **World War One or Two (WWI or WW2)**

Period of multi-national conflict, specifically: WW1; 1914-1918 or WWII; 1939-1945.

## **1 INTRODUCTION**

### **1.1 Instruction & Scope**

MACC International Ltd was commissioned by Amec Foster Wheeler to conduct an Unexploded Ordnance (UXO) Risk Assessment for Britannia Refined Metals Ltd, Botany Road, Northfleet, Kent DA11 9BG. The scope of the assessment is to determine the likelihood of an encounter with UXO within the context of the execution of ground investigations and any subsequent building works.

### **1.2 Methodology & Purpose**

The methodology used in the study complies with the United Nations (IMAS) standards for UXO/Mine Level 1 Survey (Desk Top Study), the CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry" and the recognised best practice advocated by the Health and Safety Executive (HSE). The quality and environmental aspects of the study comply with UKAS Accredited ISO 9001:2008 and ISO 14001:2004 standards. The purpose of the study is that of evaluation and to provide an aid in decision making by our client.

## **2 DETERMINING THE LIKELIHOOD OF ENCOUNTER**

### **2.1 Aim, Research Restrictions & Indemnity**

This study has drawn upon archive records which are within the public domain; however, these are acknowledged to be incomplete. Consequently, some incidents may have occurred where the records no longer exist or could not be located. The Secretary of State of the United Kingdom and MACC International Ltd does not accept responsibility for the accuracy or completeness of the information contained within the records. Some records regarding the UXO situation on some sites may not yet be within the public domain. Consequently, such information was not available for evaluation by MACC International Ltd. Research of the site history, with regard to military usage, bombing raids and bomb impacts has been undertaken to establish the following:

- Frequency and location of enemy bombing raids and damage sustained to the site.
- The potential for UXO to remain on the site.
- Records of UXO removal activities and encounters.

### **2.2 Relevant Publications & Credible Internet Information**

Published sources of information used in the compilation of this study are listed within the reference section of this study including those provided by the client. Additional information was provided through credible internet sites; their assistance is credited where appropriate and details are listed within the reference section of this study.

### 3 THE SITE

The site is located at approximate grid reference 561369, 175486 and has undergone some re-development since the end of WWII.

### 4 FUTURE INTENTIONS

Future intentions for the site were not disclosed; however, it has been assumed that geo-environmental investigation will be undertaken prior to any subsequent building works.

### 5 HISTORICAL INFORMATION

#### 5.1 British Archives

Prior to 1942 the United Kingdom did not operate a national recording system for EO/UXO incidents or military use of land. The records compiled during 1939-1942 were conducted under local arrangements and were only as detailed and accurate as the availability of time, personnel and the ease of access to information would allow. In April 1942 the Ministry of Home Security instigated a training programme for all personnel maintaining bomb census records, these standardised national records and greatly improved the accuracy of the information. RAF Station records were generally well kept during this period, however on occasion these have been found not to record the exact positions of bomb strikes. Lack of exact bomb strike positions were most common where bombs fell on open ground well away from structures or buildings.

#### 5.2 Manned Air Raids & Unmanned Rocket Attack Reports

Although Northfleet and Swanscombe both suffered significant bombing raids during WWII, records could not confirm a bomb strike within the site footprint. The nearest recorded bomb fell c.a.500m south of the site at Taunton Road causing considerable damage. Consequently, this source of UXO contamination is considered credible, albeit unlikely.

#### 5.3 Airdropped Sub-Munitions' Reports

Records indicate that Northfleet suffered damage from enemy cluster/incendiary bombs. However, given the low ground penetration potential for such weapons, this source of UXO contamination is considered unlikely, but cannot be ruled out entirely.

#### 5.4 Anti-Aircraft Ammunition (AAA) Reports

Local fixed and mobile Anti-aircraft batteries are known to have been positioned within the district to defend against air attacks. These are considered to have the potential to have provided a potential source of UXO contamination.

**5.5 Abandoned Bomb Reports**

No records were found to confirm or otherwise indicate that an unexploded bomb was abandoned within the site footprint. Consequently, such finds are not considered credible.

**5.6 Migration of UXO**

It is considered possible; albeit unlikely, that a bomb was imported onto the site from other bomb sites. Additionally, where land ground levels have been increased or in-filled using Marine Dredged Aggregates there is a high potential for the aggregate to contain items of UXO. Consequently, these sources of contamination must be considered to have the potential to represent an additional source of UXO contamination.

**5.7 Bombing Decoys**

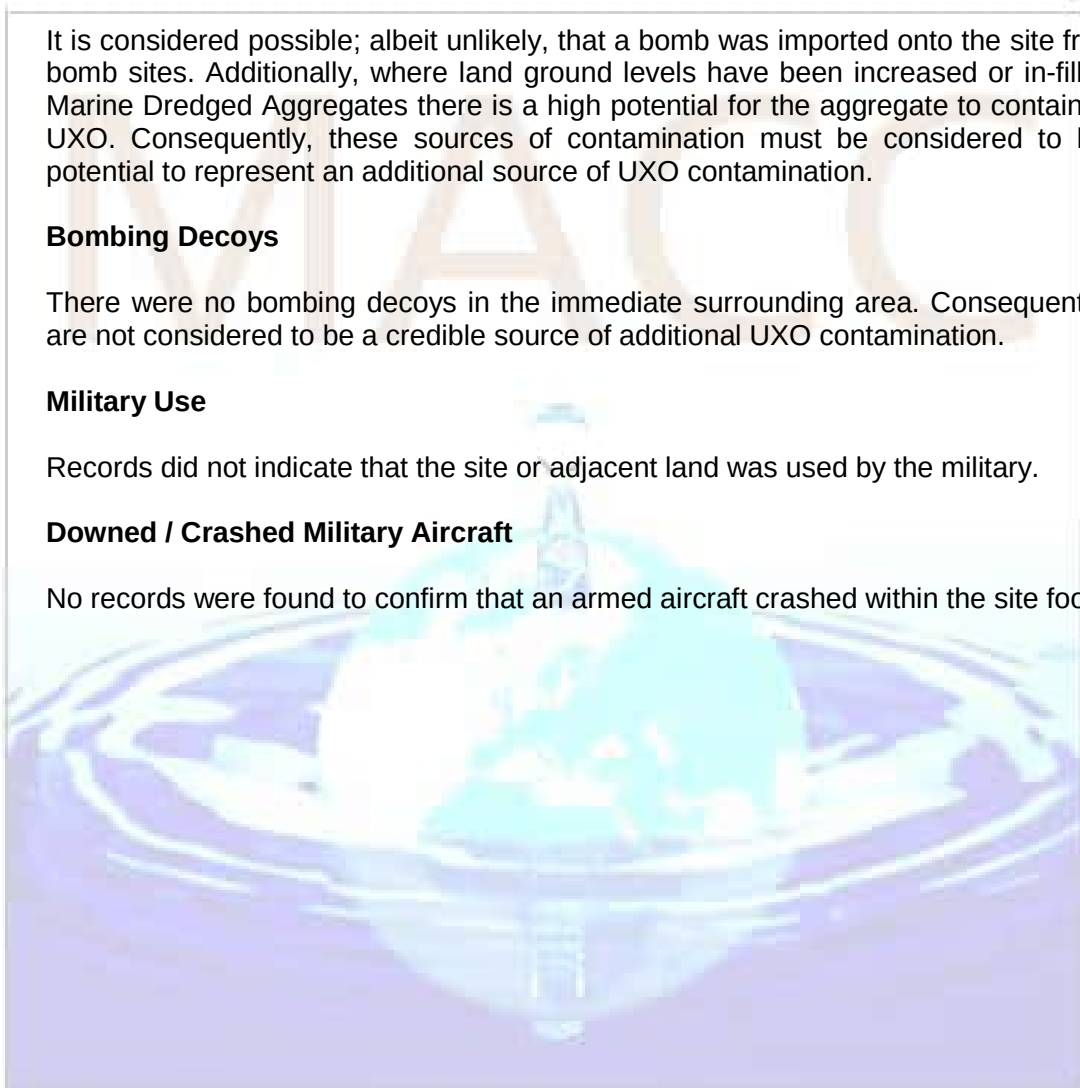
There were no bombing decoys in the immediate surrounding area. Consequently, these are not considered to be a credible source of additional UXO contamination.

**5.8 Military Use**

Records did not indicate that the site or adjacent land was used by the military.

**5.9 Downed / Crashed Military Aircraft**

No records were found to confirm that an armed aircraft crashed within the site footprint.



## 5 DETERMINING THE NATURE OF RISK

### 5.6 General

While HE warheads are very unlikely to detonate if left undisturbed they remain inherently dangerous and may function if subjected to suitable stimuli. The most common of these stimuli is shock, friction or heat which may cause the fuze to function or unstable explosive materials such as Picric Acid (2-4-6 Trinitrophenol (TNP)) to explode. However, in the case of incendiary bombs containing White Phosphorus (WP<sub>4</sub>) exposure of the WP to the oxygen in the air will result in its violent ignition and combustion which may cause any HE content within the munition to detonate.

### 5.7 German Bombing Tactics

The tactics employed by the German Air Force during WWII show that they had a wide variety of bombs at their disposal. The most common ranged in weight from 50 kg through to 500 kg. Some models in this range of bombs were designed to be “carrier” bombs. These containers could hold potentially hundreds of smaller sub-munitions (anti personnel or incendiary bomblets). Although dropped in lesser quantities, the German arsenal also included larger bombs and parachute mines up to 1,400 kg in weight. Unmanned attacks were also mounted by the Germans using V1 Rockets and V2 Missiles, each with a warhead around 1,000 kg in weight.

### 5.8 Bomb Trajectory & Ground Penetration

During WWII the Ministry of Home Security undertook a major study on bomb penetration depths using 1,328 actual bomb impact events to provide statistical analysis of penetration potential. As a result they determined the expected behaviour of a range of bomb weights through different geological strata around the Capital. Their findings remain the only empirical gained figures to have been gathered to date for England. A summary of their findings can be found in Table 1 of this study. A number of factors will influence the behaviour of a bomb on impact with the target and its trajectory through the ground. Relevant factors include: Height and speed of release of the bomb, aerodynamic qualities of the bomb, the angle of flight and impact and the nature of impact surface and sub soil.

5.8.1 In determining the potential bomb penetration depths into the ground, using the historic geotechnical information, other factors considered were: Release height 4,545 metres (15,000 ft). Most common GP Bomb used of 500 kg in weight and an impact Angle Range of 90° (tail vertical) to 0° (tail horizontal)

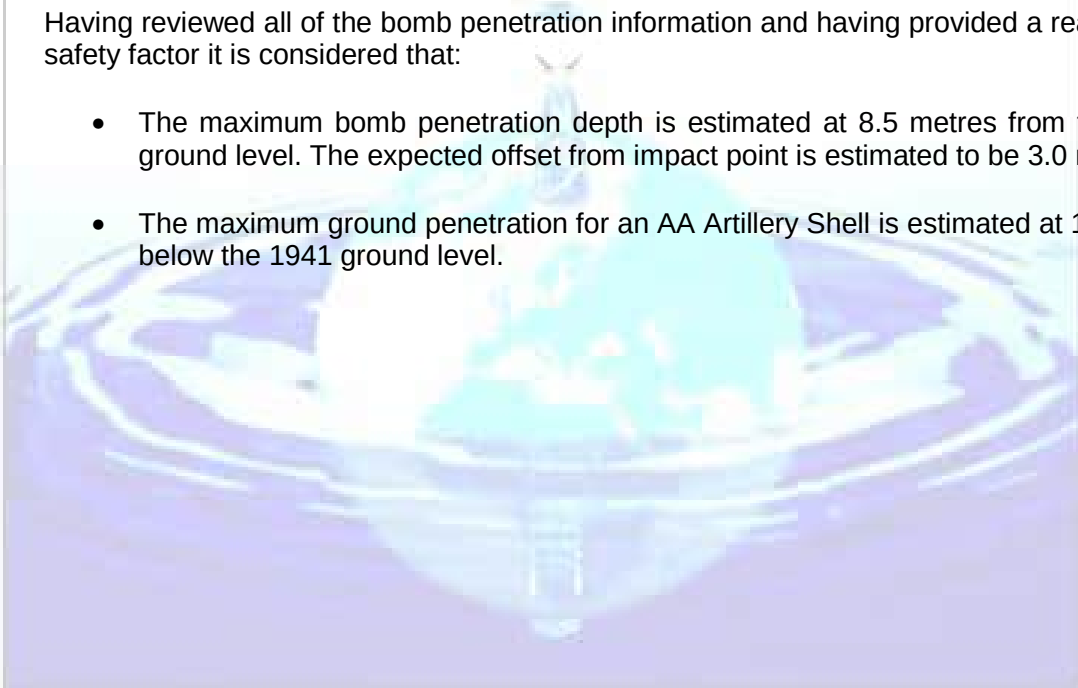
5.8.2 Table 1. Extract of Ministry of Home Security Bomb Penetration Study

| Sub Soil Type            | Bomb Weights |         |       |         |
|--------------------------|--------------|---------|-------|---------|
|                          | 50kg         | 250kg   | 500kg | 1000kg  |
| Soft Rock or Made Ground | 2.442        | 5.016   | 6.006 | 7.062   |
| Gravel                   | 2.442        | 5.016   | 6.006 | 7.062   |
| Dry Clay                 | 3.7          | 7.6     | 9.1   | 10.7    |
| Average Offset (m)       | 0.8-1.6      | 1.6-3.7 | 3-4.5 | 3.4-5.3 |

5.8.3 Bombs on penetration of the surface do not tend to follow a straight line trajectory, due to a number of factors, shape, angle of entry, weight and speed; they tend to arc or curve; known as a “J” curve. With the horizontal distance from the entry point to the resting point known as the offset. The typical offset is generally taken to be  $\frac{1}{3}$ <sup>rd</sup> of the penetration depth. However this distance can vary greatly if the bomb strikes an obstacle just below the surface. With this mechanism of offset, it is therefore a possibility that a bomb could enter the ground outside a building and come to rest within its footprint.

5.8.4 Having reviewed all of the bomb penetration information and having provided a reasonable safety factor it is considered that:

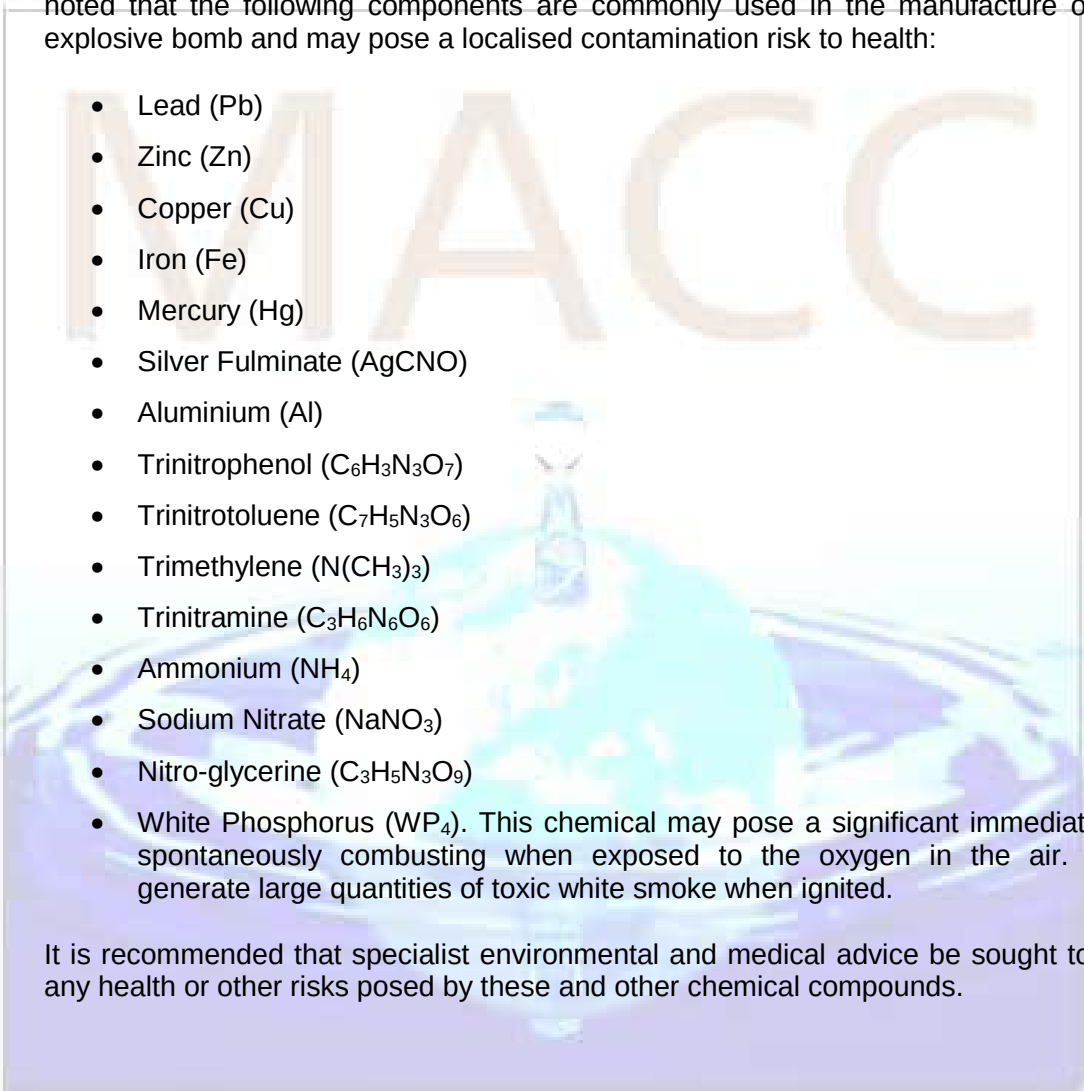
- The maximum bomb penetration depth is estimated at 8.5 metres from the 1941 ground level. The expected offset from impact point is estimated to be 3.0 metres.
- The maximum ground penetration for an AA Artillery Shell is estimated at 1.0 metre below the 1941 ground level.



## 6 ENVIRONMENTAL IMPACT FROM UXO

### 6.6 Ground Contamination & Health Risk vectors

The amount of explosive material within the most common bombs is not considered sufficient to pose a significant widespread environmental risk. Nevertheless it should be noted that the following components are commonly used in the manufacture of a high explosive bomb and may pose a localised contamination risk to health:

- 
- Lead (Pb)
  - Zinc (Zn)
  - Copper (Cu)
  - Iron (Fe)
  - Mercury (Hg)
  - Silver Fulminate ( $\text{AgCNO}$ )
  - Aluminium (Al)
  - Trinitrophenol ( $\text{C}_6\text{H}_3\text{N}_3\text{O}_7$ )
  - Trinitrotoluene ( $\text{C}_7\text{H}_5\text{N}_3\text{O}_6$ )
  - Trimethylene ( $\text{N}(\text{CH}_3)_3$ )
  - Trinitramine ( $\text{C}_3\text{H}_6\text{N}_6\text{O}_6$ )
  - Ammonium ( $\text{NH}_4$ )
  - Sodium Nitrate ( $\text{NaNO}_3$ )
  - Nitro-glycerine ( $\text{C}_3\text{H}_5\text{N}_3\text{O}_9$ )
  - White Phosphorus ( $\text{WP}_4$ ). This chemical may pose a significant immediate risk of spontaneously combusting when exposed to the oxygen in the air. WP will generate large quantities of toxic white smoke when ignited.

7.3 It is recommended that specialist environmental and medical advice be sought to identify any health or other risks posed by these and other chemical compounds.

## **7 RISK ASSESSMENT**

### **7.6 Risk Source**

Records did not confirm that the site was struck by airdropped munitions. Records are acknowledged to be incomplete and include errors; the possibility that items of UXO may have found their way onto the site and remain there to the present day is considered credible.

### **7.7 Risk Pathway**

The risk pathway is considered to be ground intrusive investigations and earth works.

### **7.8 Consequence**

The consequences of a UXB detonation on site during construction works are considered to be a factor of the size of the blast and the proximity of assets and individuals to the point of detonation. These will include potential to kill or seriously injure personnel destroy or damage high value site assets, nearby public and private property and infrastructure.

### **7.9 Risk Rating**

**H** = A figure derived from assessing the history of the site weighing up factors such as recorded bomb damage, threat weapon type, military use and the scope of any post conflict development.

**W** = A figure derived from assessing the type of the process to be undertaken without putting in place any UXO mitigation measures. A low figure is assigned where the process is relatively non aggressive (minimal ground or point shock). A high figure is used where the work is considered aggressive (significant ground or point shock).

**L** = A figure derived by multiplying figures H and W to provide an overall likelihood of an encounter with UXO.

**S** = A figure derived by assessing the scope or extent of the works; a low figure is assigned where the volume of risk material is limited. A high figure is used where for example the volume of risk material is considerable such as "bulk digs" or shafting.

**P** = A Figure derived from assessing the result of an explosion, including primary and secondary risk pathways and receptors. A high figure is attributed for example in a gas works while a low figure is applied to a remote, rural open space.

**C** = A figure derived by multiplying figures S and P to provide an overall consequence of an encounter with UXO.

7.10 Table 2 Risk Level – From all potential UXO contamination sources

| UXO RISK RATING (Post War Worked Ground)                                                                                              |                           |                            |                            |
|---------------------------------------------------------------------------------------------------------------------------------------|---------------------------|----------------------------|----------------------------|
| Activity                                                                                                                              | Likelihood<br>(H x W = L) | Consequence<br>(S x P = C) | Risk Rating<br>(L x C = R) |
| Hand dug excavations                                                                                                                  | 2 x 1 = 2                 | 1 x 5 = 5                  | 2 x 5 = 10                 |
| Limited mechanical excavations or trenching                                                                                           | 2 x 2 = 4                 | 2 x 5 = 10                 | 4 x 10 = 40                |
| Drilling, sampling, bulk excavations or piling                                                                                        | 2 x 3 = 6                 | 3 x 5 = 15                 | 6 x 15 = 90                |
| UXO RISK RATING (Post War Un-Worked Ground)                                                                                           |                           |                            |                            |
| Activity                                                                                                                              | Likelihood<br>(H x W = L) | Consequence<br>(S x P = C) | Risk Rating<br>(L x C = R) |
| Hand dug excavations                                                                                                                  | 3 x 1 = 3                 | 1 x 5 = 5                  | 3 x 5 = 15                 |
| Limited mechanical excavations or trenching                                                                                           | 3 x 2 = 6                 | 2 x 5 = 10                 | 6 x 10 = 60                |
| Drilling, sampling, bulk excavations or piling                                                                                        | 3 x 3 = 9                 | 3 x 5 = 15                 | 9 x 15 = 135               |
| <div><div>1= Minimal</div><div>5=significant</div><div>LOW<br/>0-100</div><div>MEDIUM<br/>100-200</div><div>HIGH<br/>200+</div></div> |                           |                            |                            |

## 8 STUDY FINDINGS

### 9.1 Risk Levels

The desk study has determined the UXO risk within the Plot. The UXO risk is considered to be lowest in post war worked ground increasing within the un-worked post war ground for some processes. When viewed from likelihood versus consequence standpoint; it is considered prudent to recommend a suitable degree of UXO mitigation to permit the work to proceed in the safest “acceptable” manner in compliance with current legislation and best practices.

### 9.2 Determining Acceptable Level of Risk

The meaning of the term “acceptable” in the context of this study is considered to be in keeping with the Health & Safety Executive directive which identifies the acceptable level as that which is; “As Low as Reasonably Practicable” (ALARP) to achieve.

## 10 RECOMMENDATIONS FOR RISK MITIGATION

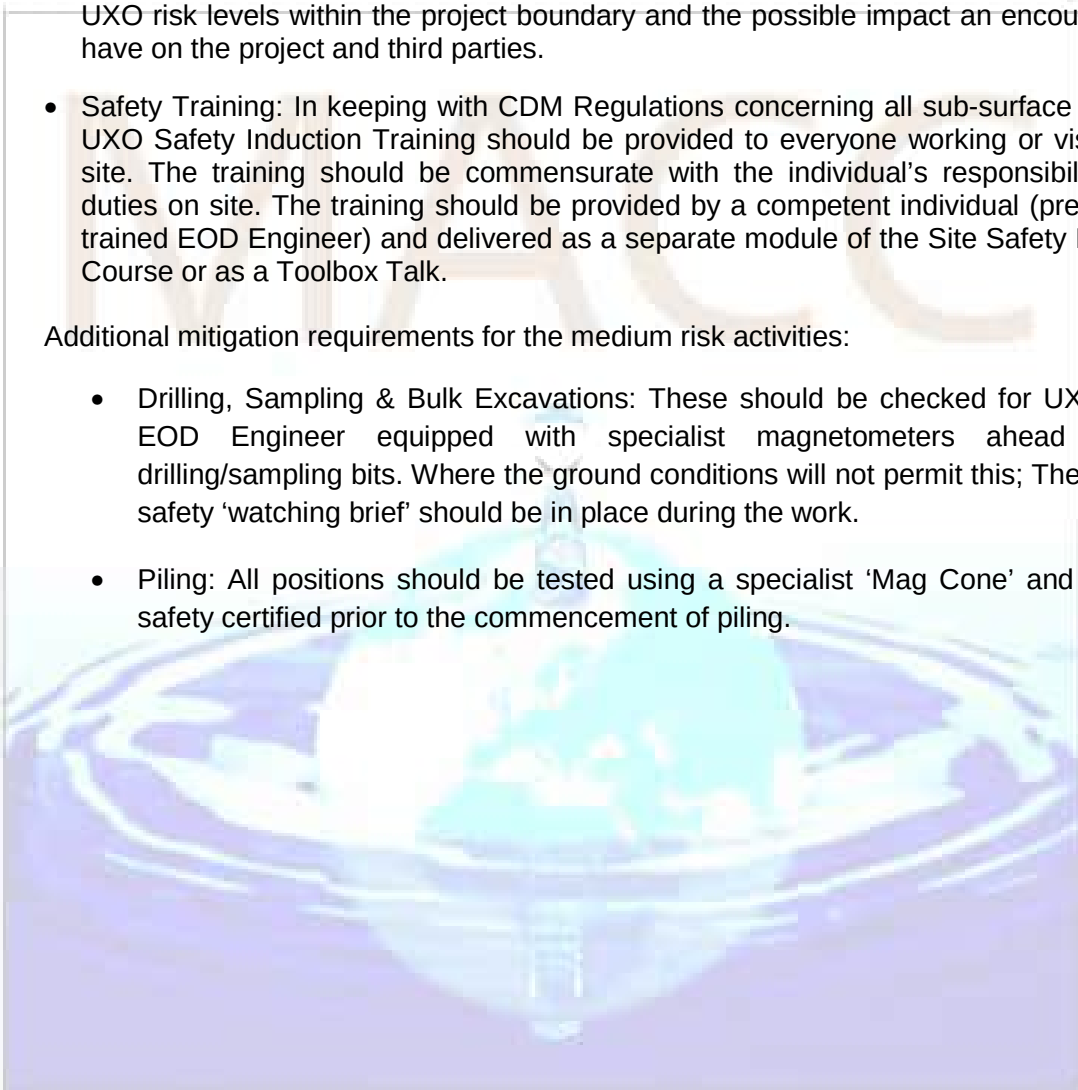
### 10.1 All Risk Level Activities

Execution of the following Risk Mitigation Strategy is recommended:

- Risk Communication & Safety Planning: Stakeholders should be made aware of the UXO risk levels within the project boundary and the possible impact an encounter may have on the project and third parties.
- Safety Training: In keeping with CDM Regulations concerning all sub-surface hazards, UXO Safety Induction Training should be provided to everyone working or visiting the site. The training should be commensurate with the individual's responsibilities and duties on site. The training should be provided by a competent individual (preferably a trained EOD Engineer) and delivered as a separate module of the Site Safety Induction Course or as a Toolbox Talk.

Additional mitigation requirements for the medium risk activities:

- Drilling, Sampling & Bulk Excavations: These should be checked for UXO by an EOD Engineer equipped with specialist magnetometers ahead of the drilling/sampling bits. Where the ground conditions will not permit this; Then a UXO safety 'watching brief' should be in place during the work.
- Piling: All positions should be tested using a specialist 'Mag Cone' and be UXO safety certified prior to the commencement of piling.



## **11 POST MITIGATION RISK**

### **11.1 Overview**

Prudent execution of the recommended risk mitigation strategy will reduce the risk, however it is emphasised that zero risk is not achievable given the possible variables. The study has confirmed the UXO risk level based on the nature of the work to be undertaken and has recommended suitable mitigation. An effective risk mitigation strategy will require detailed scoping to achieve its desired results in providing an acceptable level of risk. For further information concerning any part of this study please contact MACC International Ltd.

### **11.2 Intent & Use**

This document has been produced in the United Kingdom by MACC International Limited and meets the requirements of CIRIA C681 "Unexploded Ordnance (UXO) – A guide for the Construction Industry" It has been provided solely for the purpose of assessment and evaluation. It is not intended to be used by any person for any purpose other than that specified. Any liability arising out of use by a third party of this document for purposes not wholly connected with the above shall be the responsibility of that party, who shall indemnify MACC International Limited against all claims, costs, damages and losses arising out of such use.

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SITE MAPPING

Site Boundary



## EXPLOSIVE ORDNANCE SAFETY INFORMATION

### 1 UNEXPLODED ORDNANCE

Since WWII the number of incidents in the UK where EO has detonated has been minimal, though a significant number of bombs have been discovered and safely disposed of without serious consequences. More commonly on mainland Europe (France, Germany and Belgium) incidents have occurred where ground workers have been killed or injured as a result of striking buried UXO or mishandling items of UXO found during excavation and piling work.

The threat to any proposed investigation or development on the site may arise from the effects of a partial or full detonation of a bomb or item of ordnance. The major effects are typically; ground shock, blast, heat and fragmentation. For example the detonation of a 50kg buried bomb could damage brick/concrete structures up to 16m away and unprotected personnel on the surface up to 70m away from the blast. Larger ordnance is obviously more destructive. Table B-1 shows the MOD's recommended safe distance for UXO. However it should be noted that the danger posed by primary and secondary fragmentation may be significantly greater. Almost 60% of civilian casualties sustained in London during the blitz were the result of flying glass.

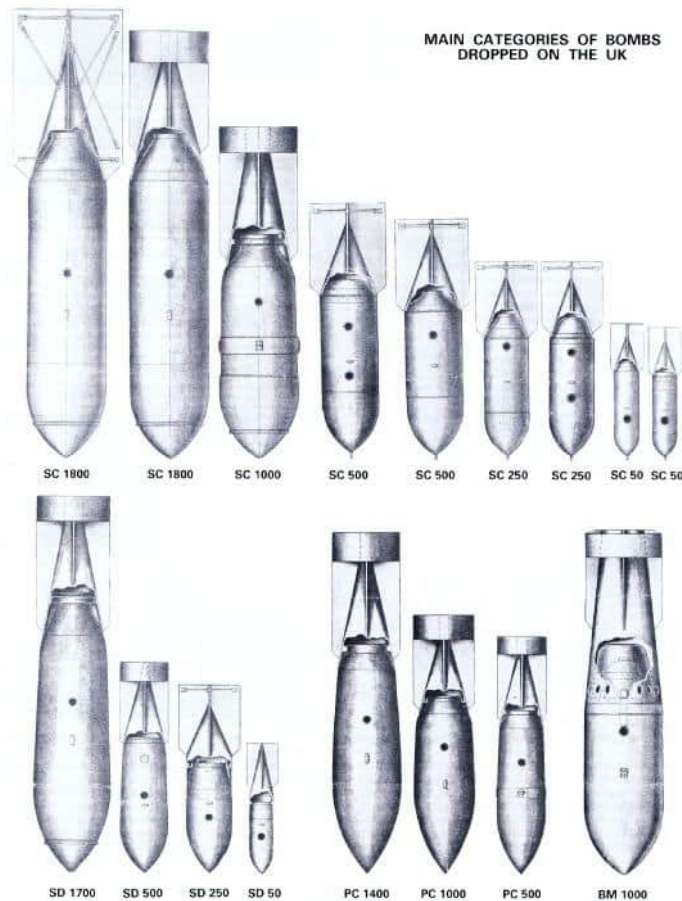
**TABLE B-1 SAFETY DISTANCES FOR PERSONNEL**

| UXO (Kg) | Safety Distances (m) |             |            |             |
|----------|----------------------|-------------|------------|-------------|
|          | Surface UXO          |             | Buried UXO |             |
|          | Protected            | Unprotected | Protected  | Unprotected |
| 2        | 20                   | 200         | 10         | 20          |
| 10       | 50                   | 400         | 20         | 50          |
| 50       | 70                   | 900         | 40         | 70          |
| 250      | 185                  | 1100        | 120        | 185         |
| 500      | 200                  | 1250        | 140        | 200         |
| 1000     | 275                  | 1375        | 185        | 275         |
| 3000     | 450                  | 1750        | 300        | 450         |
| 5000     | 575                  | 1850        | 400        | 575         |

Explosives rarely become inert or lose effectiveness with age. Over time some explosive materials can become more sensitive and therefore more prone to detonation. This applies equally to items that have been submersed in water or embedded in silt, clay, peat or similar materials.

## 2 TYPES OF GERMAN AIRDROPPED BOMBS & MINES

### 2.1 HE Bombs



German 250kg Bomb found by MACC below a pre-war cellar floor in Bethnal Green London  
10 August 2015



## 2.2 Incendiary, Anti-Personnel Bombs & Parachute Landmines



1kg incendiary Bomblet (Top as found today)



Flam c500, c250 & c50 Oil Bombs



SD1 Anti-Personnel Bomblets



SD1 Container Bomb



Parachute Mines



### 3 Methods of Bomb Release

All German bombers could release their bomb load singly, in salvos or in sticks. The spread of a stick of bombs would vary in length and shape according to the altitude and speed type of the aircraft. A straight stick at regular intervals could only be achieved by straight and level flying during the bombing run.

#### 3.1 German Bombers

The following example from the German attack plan for London was issued by the General Officer Commanding 1 Air Corps. It demonstrates the makeup of a typical air raid. The principle German aircraft used to drop bombs on the UK can be seen below

"Flying altitudes for the bomber formations are to be: KG30; 5,000 - 5,500m, KG1; 6,000 - 6,500m and KG76; 5,000 - 5,500m. To stagger heights as above will provide maximum concentration of attacking force. On return flight some loss of altitude is permissible, in order to cross the English coast at approximately 4,000m.

The intention is to complete the operation in a single attack. In the event of units failing to arrive directly over target, other suitable objectives listed in target log may be bombed from altitude of approach.

Bomb loads for the He111 and Ju88 are to be 50kg bombs, 20% incendiaries, 30% delayed-action 2-4 hour and 10-14 hour (the latter without concussion fuses). The Do17 are to carry 25% disintegrating containers of B1, EL and SD 50. Load only to be limited by security of aircraft against enemy flak."



Heinkel He111 (left) capable of carrying 1,500kg of bombs and the Dornier Do17 (right) capable of carrying 1,000kg of bombs

#### 4 **British Anti-Aircraft Guns & Rockets**

Examples of British Anti-Aircraft Guns and rockets used to defend the UK against German bombing raids can be seen below.



British H93 Gun in Hyde Park 1941. The 3.7" anti-aircraft gun could propel High Explosive and Incendiary shells up to 59,000 feet, higher than the German bomber aircraft could fly.



The 40mm Bofors Gun anti-aircraft gun could propel High Explosive and Incendiary shells up to 41,000 feet.



3.6" anti-aircraft rocket 'Z' Battery London 1942



Making Sustainability Happen