



Phase One Geotechnical and Environmental Desk Study

E-Scrap Sample Preparation Plant

Britannia Refined Metals Ltd

Prepared by:

SLR Consulting Limited

Treenwood House, Rowden Lane, Bradford on Avon,
BA15 2AU

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Appendices

Appendix A	Site Drawings
Appendix B	Groundsure Enviro+Geo Insight Report
Appendix C	Groundsure Historic Maps
Appendix D	Detailed UXO Report



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 GroundSure Enviro + Geo Insight Report EMS-882585_1128445, purchased 21st July 2023 (Appendix B). British Geological Survey (BGS) website. MAGIC website (www.magic.defra.gov.uk).
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 ²	
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. When ignoring the presence of flood defences, the Site is classified as a Flood Zone 3.



Site Setting		
		The highest risk of surface water flooding onsite is along the western boundary with a 1 in 30 year event (0.3 – 1.0m). Groundwater flooding risk onsite is classified as moderate to high, with a high risk on the southwestern boundary.
Geology and Hydrogeology	Geology	A review of the British Geological Survey (BGS) indicates the following ground conditions: Made Ground is mapped onsite and across the wider BRM site. Superficial Deposits of Alluvium is mapped onsite and across the wider BRM site comprising clay, silt, sand and gravel. The underlying Bedrock Geology is recorded as the Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (Undifferentiated). Historic reports discussed in Section 3.0 identify superficial deposits of the Boyn Hill Gravel comprising gravel, occasionally gravelly sand beneath the Alluvium.
	BGS Borehole	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.
	Natural Ground Risks	The Site has been classified with hazard ratings for the following natural ground risks: - Shrink swell clays – Low. Ground conditions predominately medium plasticity. - Running sands – very low with running sand conditions unlikely. - Compressible ground – very low with compressible and uneven settlement hazards unlikely to be significant. - Collapsible deposits – negligible with presence of deposits with potential to collapse not present. - Landslides – very low with slope instability unlikely to occur. - Ground dissolution – negligible with dissolution features unlikely to be present. 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.



Site Setting		
	Radon	Less than 1%, no radon protection measures required.
	Mining, ground workings and natural cavities	There are no records of natural cavities, BritPits, and mining cavities on-site. 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. 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. 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.
	Groundwater	Groundwater strikes of 3.7m and 5.8m bgl were recorded in BGS boreholes in the vicinity of the Site (TQ67NW366 & TQ67NW79/B). Groundwater is anticipated to be relatively shallow considering the above, and the proximity to the River Thames and surrounding surface water bodies.
	Aquifer status	The underlying superficial deposits are designated as a Secondary Undifferentiated Aquifer. The underlying bedrock is designated a Principal Aquifer.
	Abstractions	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. There is one record of a surface water abstraction 518m southeast for mineral washing.
Sensitivity	Groundwater	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. The Site is situated within a Source Protection Zone (SPZ) 2. An SPZ 3 is located 84m northwest of the Site. The groundwater within superficial deposit are classified as high vulnerability and the bedrock classified as medium vulnerability. 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



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)	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. A detailed desk study was recommended by the UXO consultants, Zetica. 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. 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 & 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.

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 report¹ and the Mchallams General Soil Conditions Report². 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

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

² 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 ³)	Angle of Shearing Resistance (°)	Drained Stiffness Modulus (MN/m ²)	Undrained Stiffness Modulus (MN/m ²)	Modulus of Volume Compressibility (m ² /MN)	Undrained Shear Strength (kN/m ²)	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 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	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. 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. 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.	Low
Ground gases generated by Made Ground and/or alluvial soils	Future site users	Gas/vapour ingress and accumulation	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. 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.	Low to Moderate
Shallow/perched groundwater impacted by off-site sources of mobile organic contaminants	Occupants of neighbouring commercial premises	Dust inhalation	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.	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. 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. 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. 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	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. The Site is approximately 560m² 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. The proposed development comprises the construction of a singular building to house the Sample Preparation Facility.
History	The Site was undeveloped until 1932 where the construction of a flue was built around the perimeter of the Site.
Geology	The Site is underlain by Made Ground, Alluvium, Boyn Hill Gravel and Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Undifferentiated).
Hydrogeology	The underlying superficial deposits are classified as a Secondary Undifferentiated Aquifer whilst the underlying bedrock is a Principal Aquifer. Groundwater is recorded at varying depths, with perched groundwater within the Made Ground, and with strikes recorded in the Alluvium, Gravel and Chalk. The site is within an SPZ 2.
Hydrology	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.
Contamination Issue and Risk Assessment	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. 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. 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.
Contaminated Land Recommendations	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



	establish the nature and survey of the potential risks identified by the Conceptual Model. These works should include the following: • Assessment of shallow soils to establish if they are significantly impacted by contaminants that could impact on and off site human receptors; • Ground gas and vapour monitoring to identify whether the proposed structure may need to incorporate protection measures; and • An assessment of groundwater to inform the selection of an appropriate piling technique that will afford protection to the sensitive chalk aquifer at depth.
Geotechnical Hazards	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. 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. The underlying chalk may be susceptible to dissolution, and the strength and density of the chalk needs to be investigated.
Geotechnical Recommendations	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. Therefore, an intrusive ground investigation is recommended prior to the commencement of the redevelopment to determine the geotechnical properties of the underlying ground conditions. 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. 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. Coring of the underlying chalk should be undertaken to determine the strength and density and weathering grade of the material. Groundwater wells should be installed to monitor fluctuating groundwater levels.





Appendix A Site Drawings

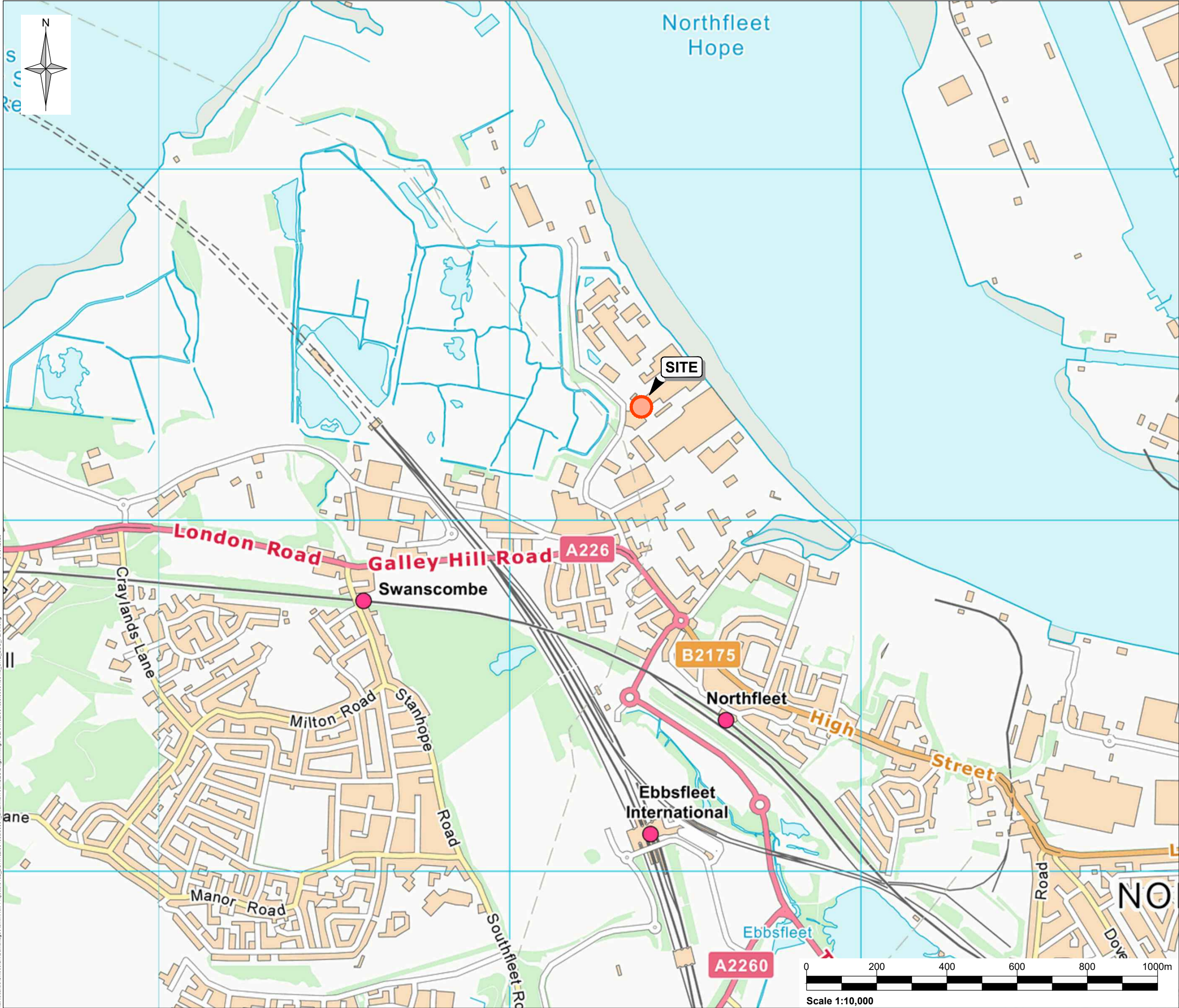
Phase One Geotechnical and Environmental Desk Study

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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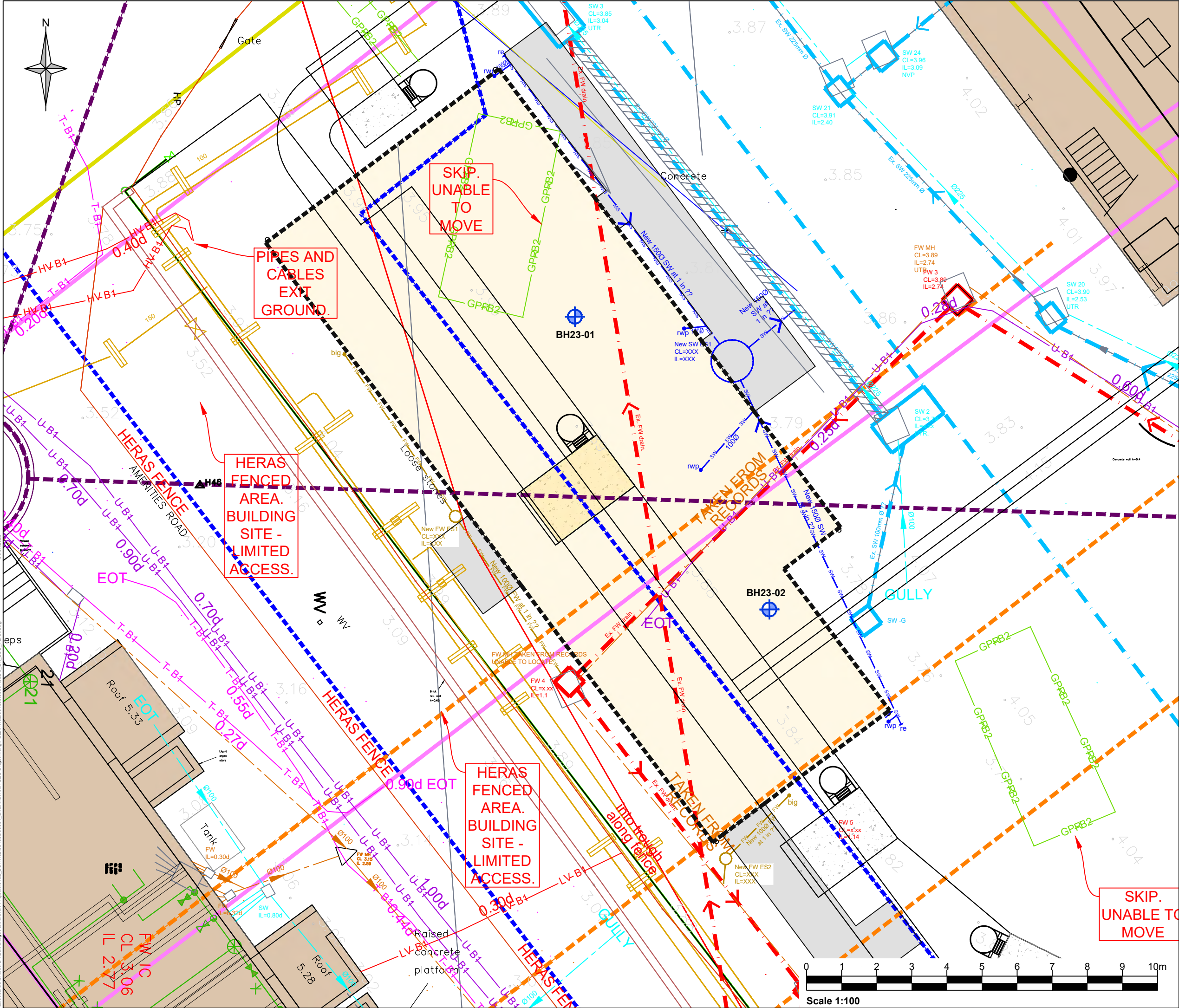
www.slrconsulting.com

Client
BRITANNIA REFINED METALS LTD

Project
SAMPLE PREPARATION BUILDING PHASE 1
GEOTECHNICAL AND ENVIRONMENTAL
ASSESSMENT

Figure Title
SITE LOCATION PLAN

Scale 1:10,000	@ A3	SLR Project No. 402.064683.00001	
Designed AK	Drawn TKS	Checked SK	Authorised
Date JULY 2023	Date JULY 2023	Date JULY 2023	Date
Figure Number 01	Rev. 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
 www.slrconsulting.com					
Client BRITANNIA REFINED METALS LTD					
Project SAMPLE PREPARATION BUILDING PHASE 1 GEOTECHNICAL AND ENVIRONMENTAL ASSESSMENT					
Figure Title BOREHOLE LOCATION PLAN					
Scale 1:100 @ A3		SLR Project No. 402.064683.00001			
Designed AK	Drawn TKS	Checked SK	Authorised		
Date JULY 2023	Date JULY 2023	Date JULY 2023	Date		
Figure Number 02					Rev. 0



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 >](#)

groundsure.com/insightuserguide ↗

Contact us with any questions at:

info@groundsure.com ↗

01273 257 755

Summary of findings

Page	Section	Past land use >	On site	0-50m	50-250m	250-500m	500-2000m
15 >	1.1 >	Historical industrial land uses >	16	20	61	145	-
24 >	1.2 >	Historical tanks >	0	4	51	42	-
28 >	1.3 >	Historical energy features >	0	0	8	8	-
29	1.4	Historical petrol stations	0	0	0	0	-
29 >	1.5 >	Historical garages >	0	0	0	2	-
30	1.6	Historical military land	0	0	0	0	-
Page	Section	Past land use - un-grouped >	On site	0-50m	50-250m	250-500m	500-2000m
31 >	2.1 >	Historical industrial land uses >	21	23	92	195	-
43 >	2.2 >	Historical tanks >	0	4	99	75	-
50 >	2.3 >	Historical energy features >	0	0	23	8	-
51	2.4	Historical petrol stations	0	0	0	0	-
52 >	2.5 >	Historical garages >	0	0	0	2	-
Page	Section	Waste and landfill >	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	-
54 >	3.4 >	Historical landfill (EA/NRW records) >	0	0	1	0	-
54 >	3.5 >	Historical waste sites >	0	1	3	0	-
56 >	3.6 >	Licensed waste sites >	0	0	3	2	-
57 >	3.7 >	Waste exemptions >	0	1	1	13	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
60 >	4.1 >	Recent industrial land uses >	0	5	22	-	-
62 >	4.2 >	Current or recent petrol stations >	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	-



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



93 >	6.2 >	Surface water features >	0	0	3	-	-
94 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
94 >	6.4 >	WFD Surface water bodies >	0	0	1	-	-
94 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
96 >	7.1 >	Risk of flooding from rivers and the sea >	Very Low (within 50m)				
97 >	7.2 >	Historical Flood Events >	1	0	0	-	-
97	7.3	Flood Defences	0	0	0	-	-
97 >	7.4 >	Areas Benefiting from Flood Defences >	1	0	0	-	-
98	7.5	Flood Storage Areas	0	0	0	-	-
99 >	7.6 >	Flood Zone 2 >	Identified (within 50m)				
100 >	7.7 >	Flood Zone 3 >	Identified (within 50m)				
Page	Section	Surface water flooding >					
101 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
103 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
104 >	10.1 >	Sites of Special Scientific Interest (SSSI) >	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
106 >	10.5 >	National Nature Reserves (NNR) >	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
107 >	10.10 >	Marine Conservation Zones >	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
109 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	1
110 >	10.17 >	SSSI Impact Risk Zones >	2	-	-	-	-
111 >	10.18 >	SSSI Units >	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	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
127 >	12.1 >	Agricultural Land Classification >	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	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
129 >	13.1 >	Priority Habitat Inventory >	0	1	7	-	-
130 >	13.2 >	Habitat Networks >	1	1	3	-	-
130	13.3	Open Mosaic Habitat	0	0	0	-	-
131	13.4	Limestone Pavement Orders	0	0	0	-	-
Page	Section	Geology 1:10,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
132 >	14.1 >	10k Availability >	Identified (within 500m)				
133 >	14.2 >	Artificial and made ground (10k) >	1	0	0	6	-
135 >	14.3 >	Superficial geology (10k) >	1	0	2	6	-

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

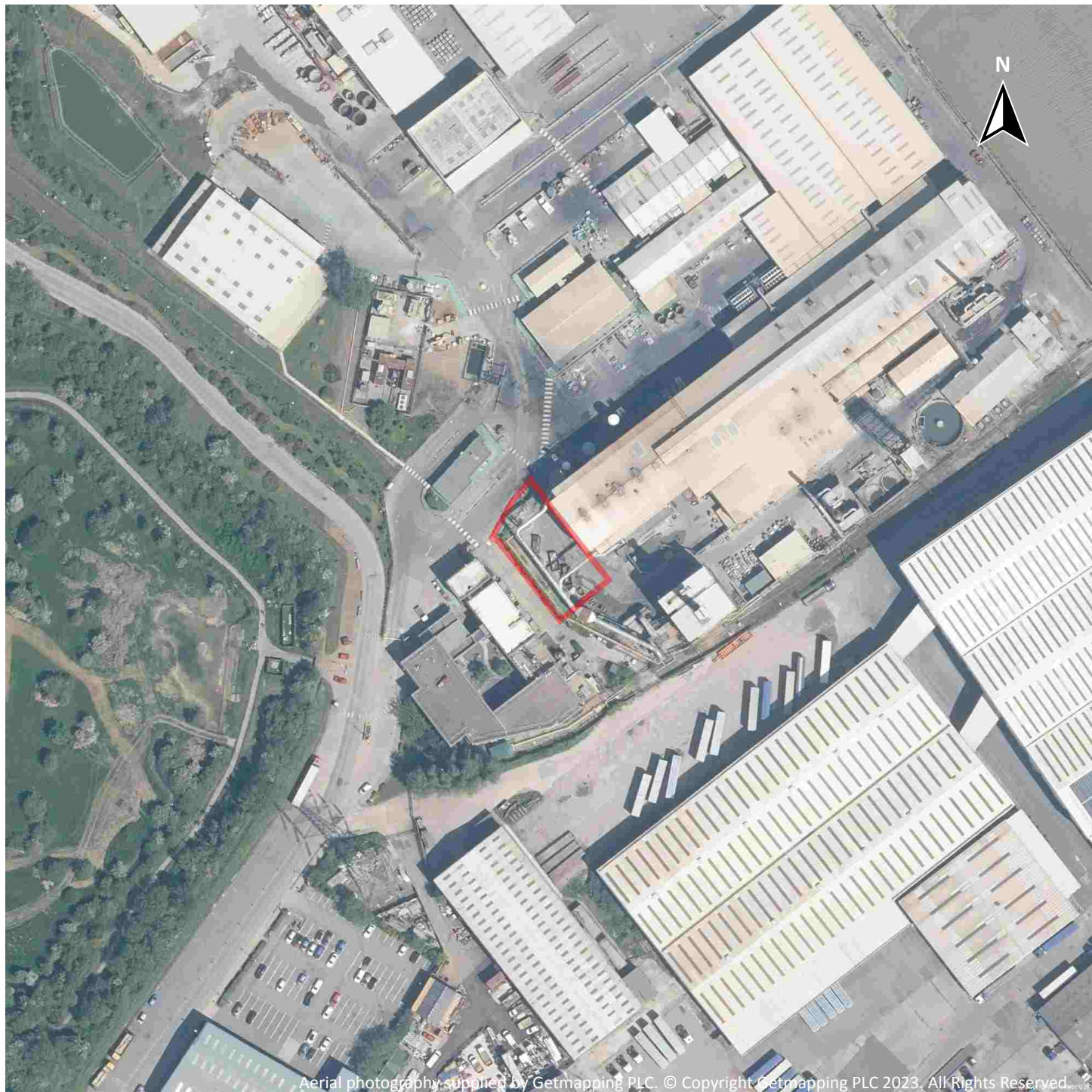


159 >	18.6 >	Non-coal mining >	0	0	0	2	1
159	18.7	JPB mining areas	None (within 0m)				
159	18.8	The Coal Authority non-coal mining	0	0	0	0	-
160	18.9	Researched mining	0	0	0	0	-
160	18.10	Mining record office plans	0	0	0	0	-
160	18.11	BGS mine plans	0	0	0	0	-
160	18.12	Coal mining	None (within 0m)				
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	Radon >					
164 >	20.1 >	Radon >	Less than 1% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
166 >	21.1 >	BGS Estimated Background Soil Chemistry >	1	0	-	-	-
166	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
166	21.3	BGS Measured Urban Soil Chemistry	0	0	-	-	-
Page	Section	Railway infrastructure and projects >	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	-	-
168 >	22.4 >	Historical railway and tunnel features >	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

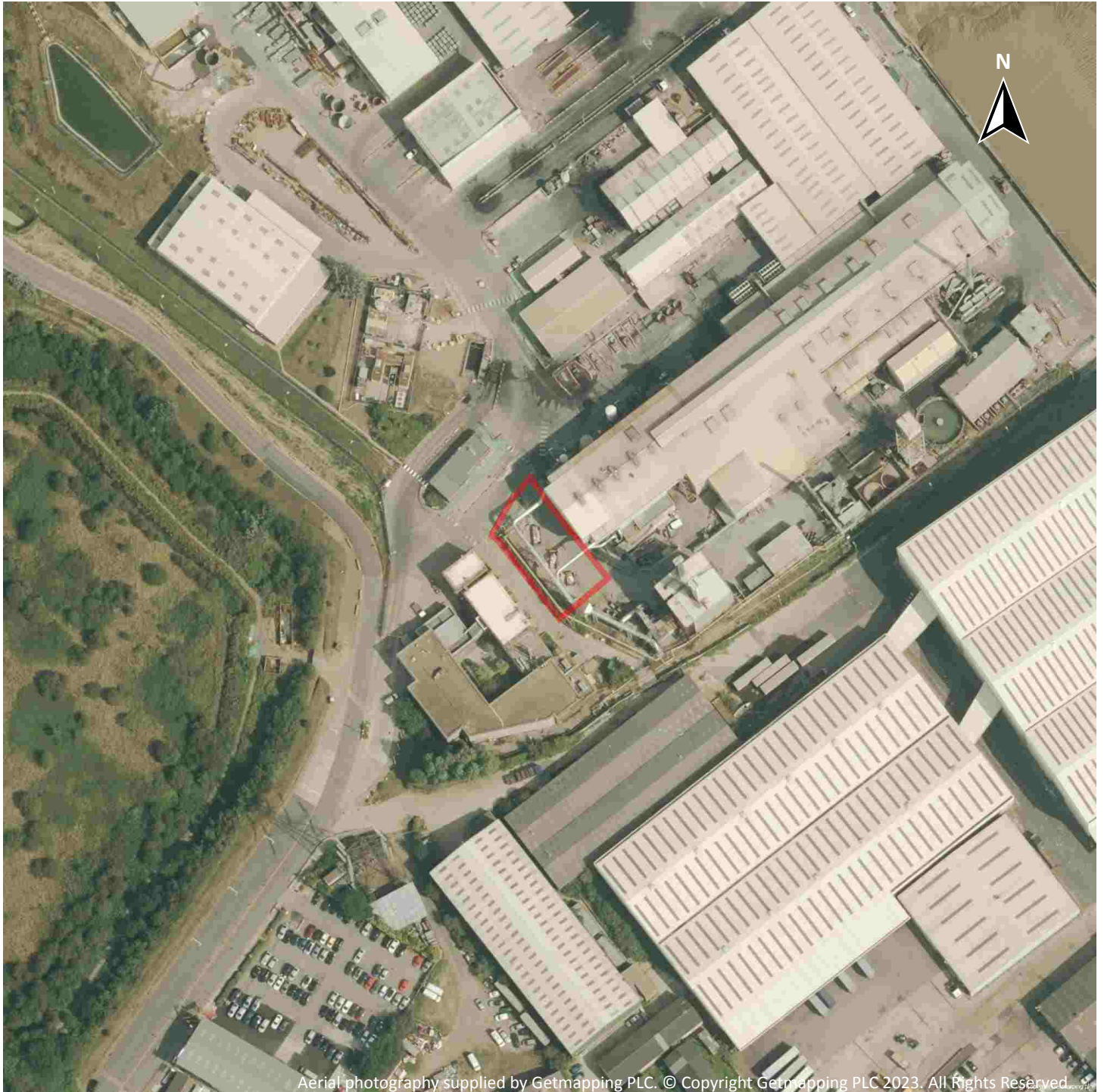


Capture Date: 01/09/2018

Site Area: 0.07ha



Recent site history - 2014 aerial photograph

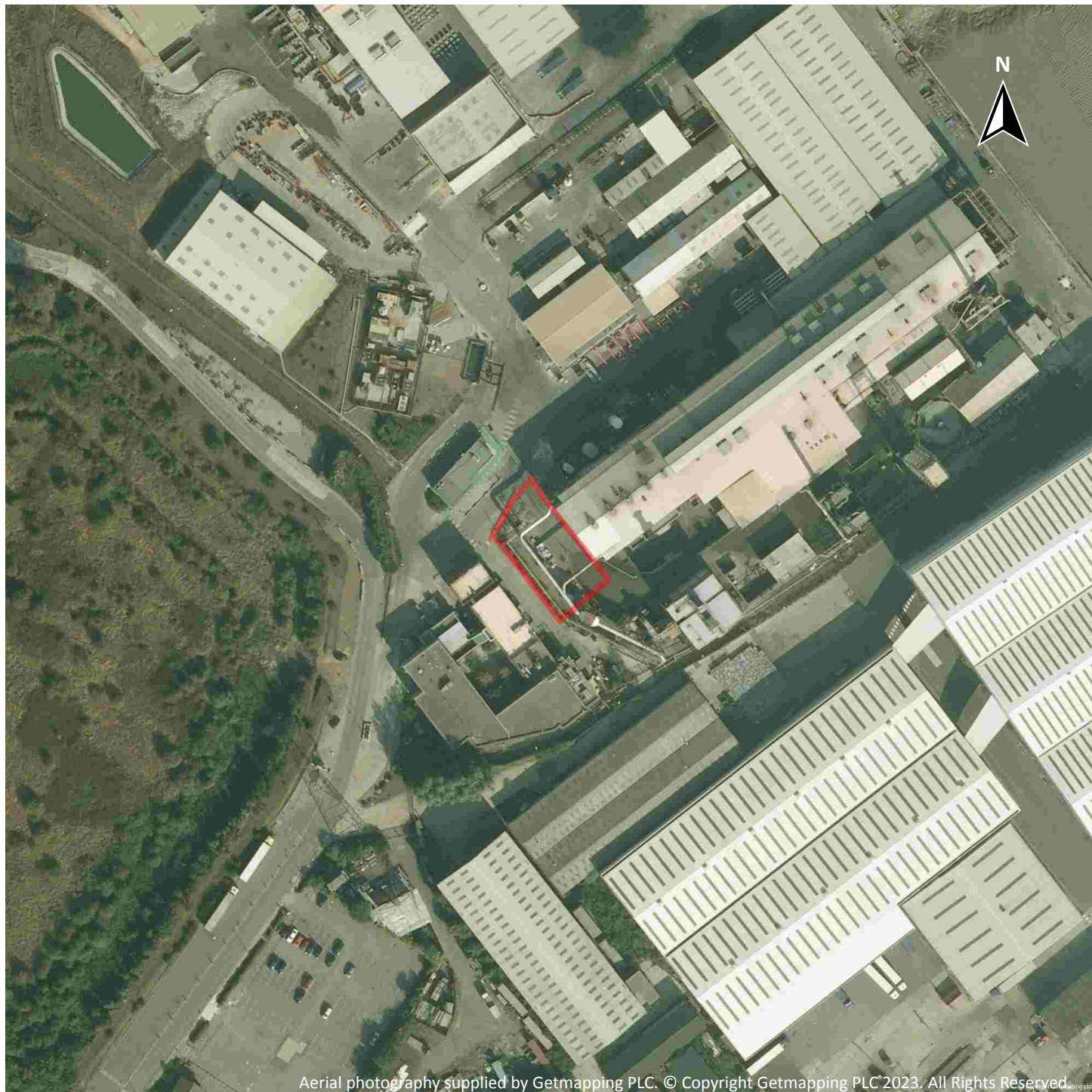


Capture Date: 31/07/2014

Site Area: 0.07ha



Recent site history - 2010 aerial photograph

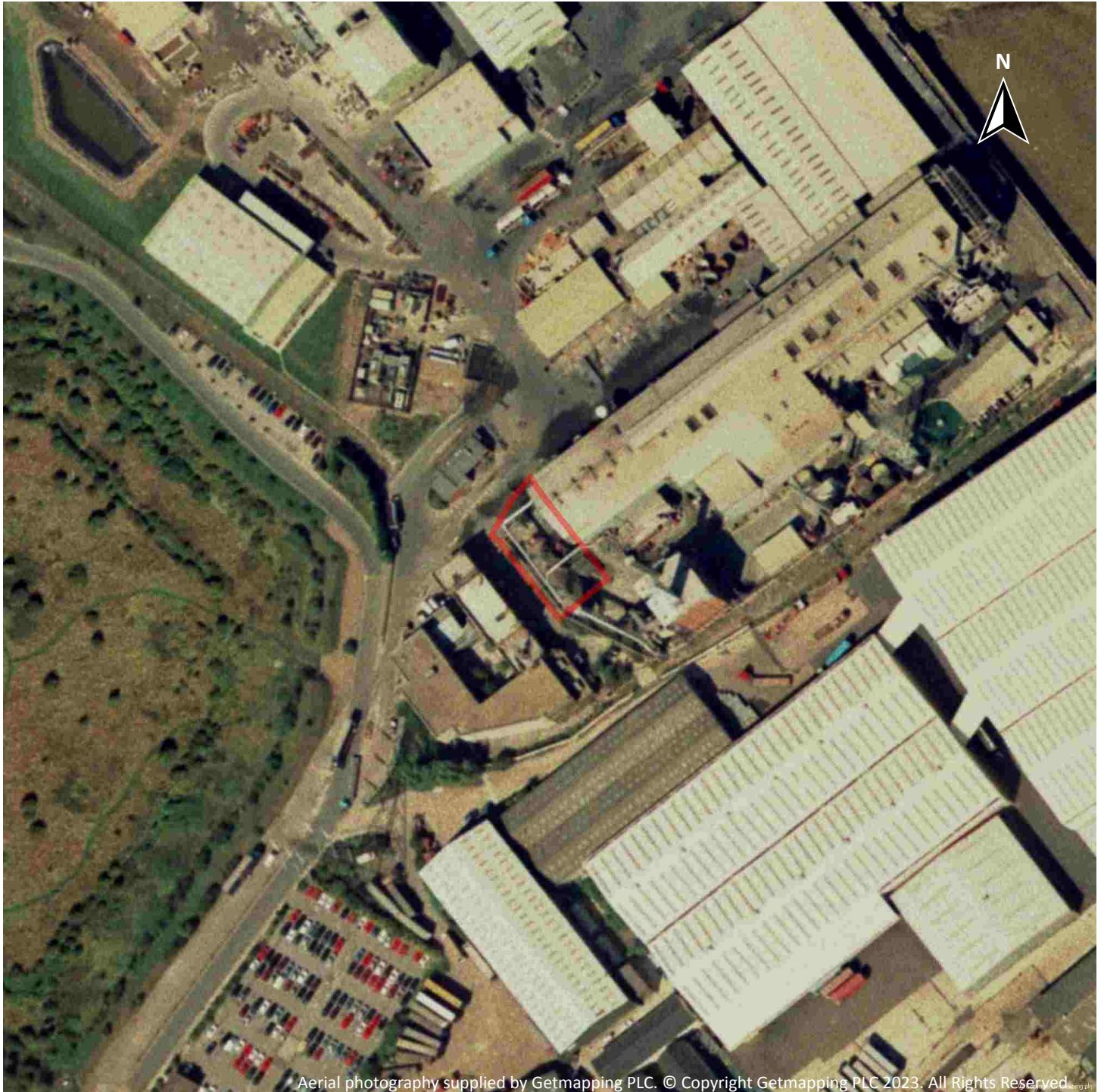


Capture Date: 24/04/2010

Site Area: 0.07ha



Recent site history - 1999 aerial photograph

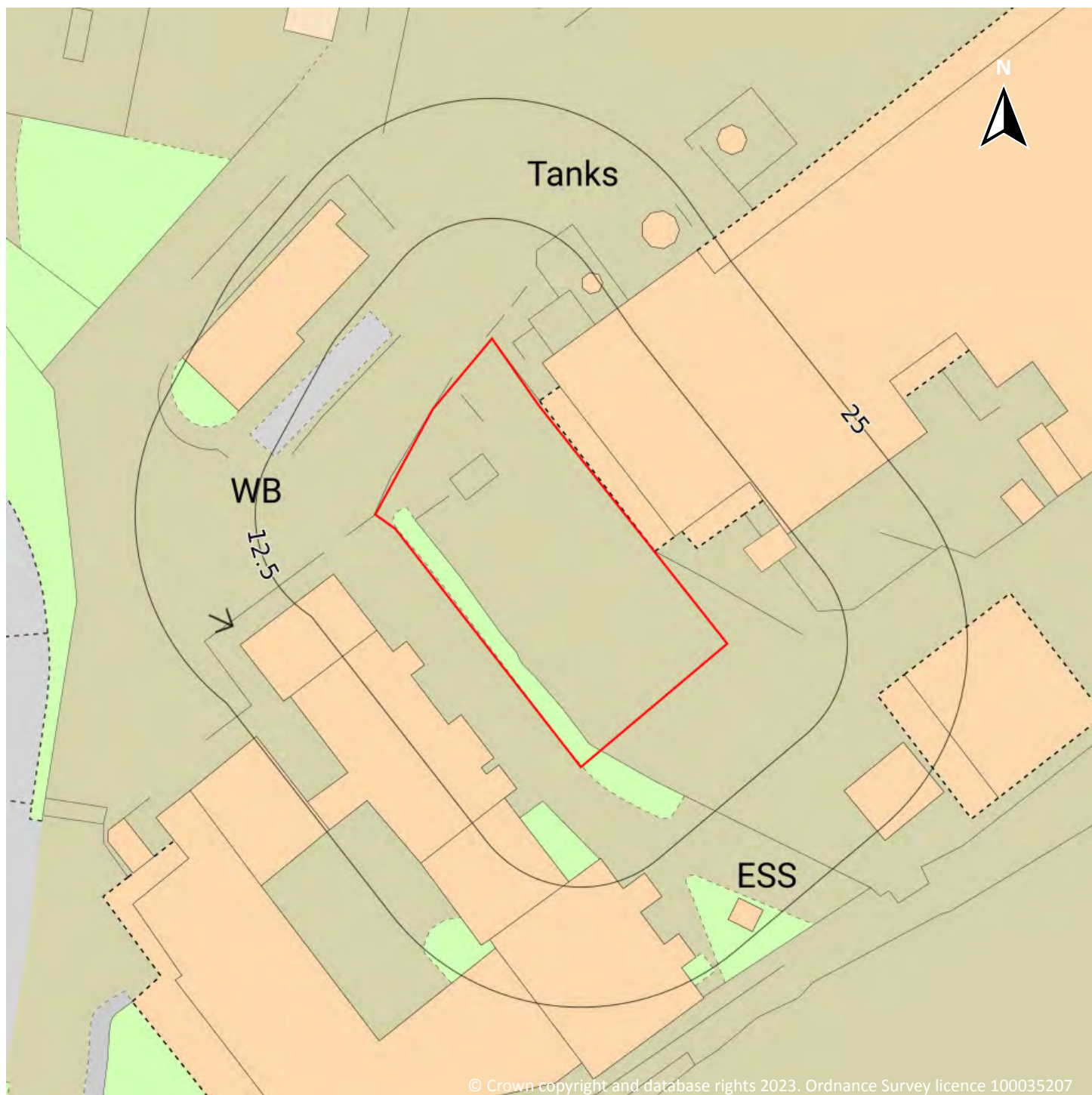


Capture Date: 03/09/1999

Site Area: 0.07ha



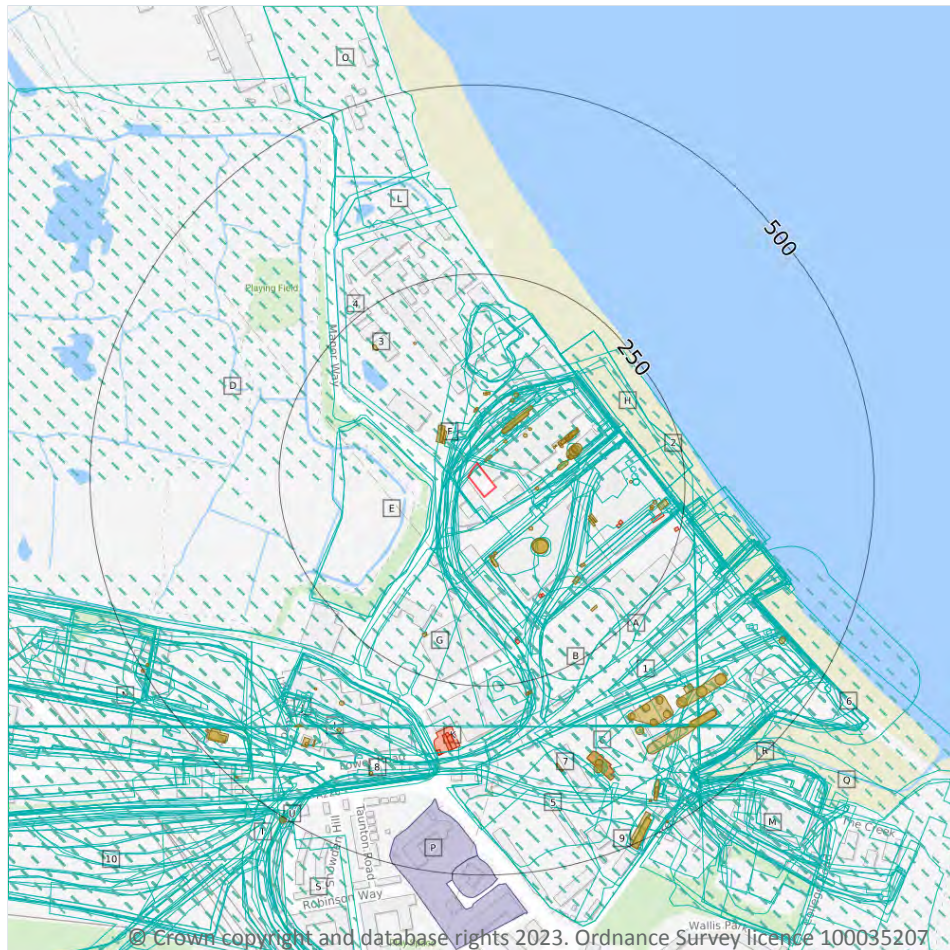
OS MasterMap site plan



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

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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

This data is sourced from Ordnance Survey / Groundsure.

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

Records within 500m	0
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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

Records within 500m	2
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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

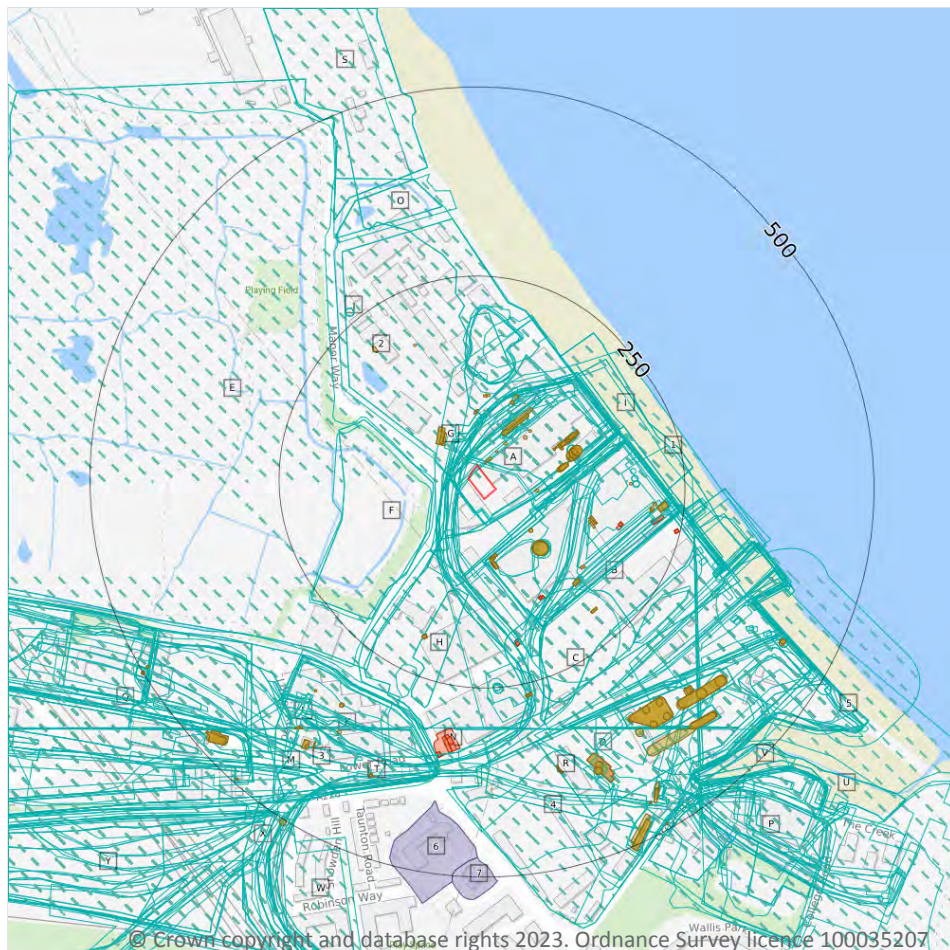
0

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

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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

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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
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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'.

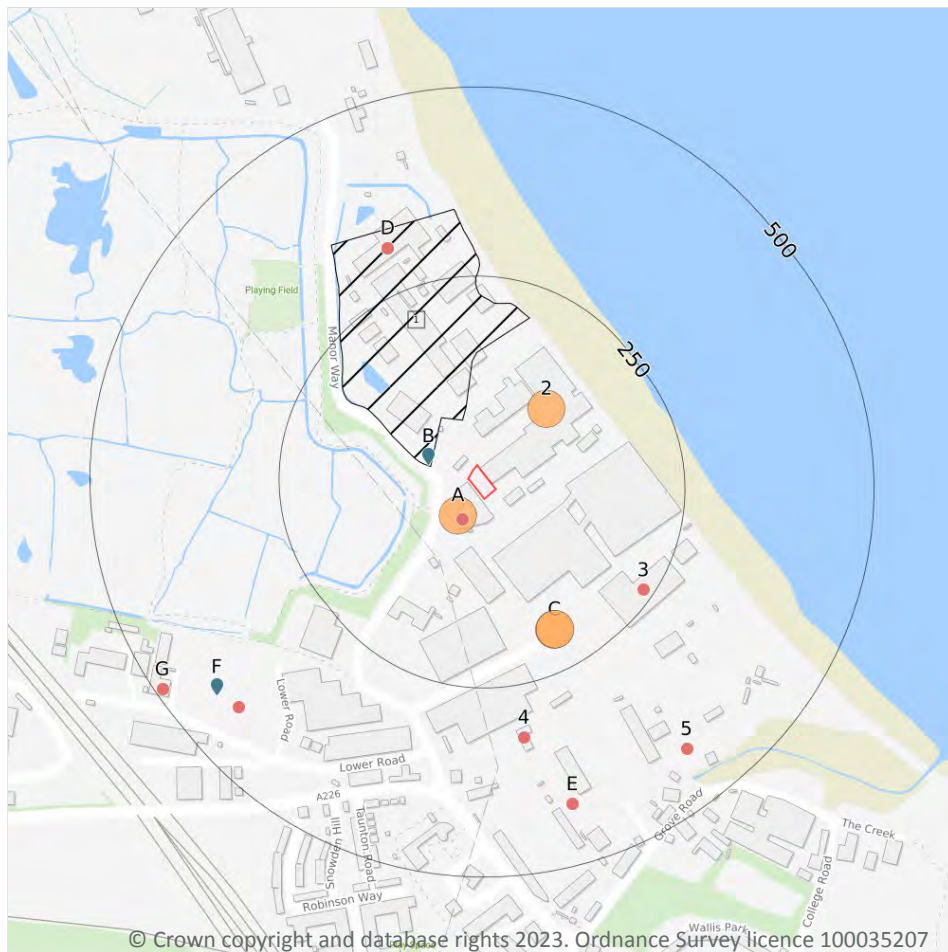
Features are displayed on the Past land use - un-grouped map on [page 31](#) >

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, Botany Road, Northfleet, Kent Licence Holder Address: -	Waste Licence: Yes Site Reference: 21EM, P/02/01 Waste Type: Inert, Industrial, Special Environmental Permitting Regulations (Waste) Reference: SJ1/L/BRI001 Licence Issue: 14/06/1977 Licence Surrender: 19/09/2000	Operator: Britannia Refined Metals Licence Holder: Brit. Lead First Recorded 31/12/1977 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, Botany Road, Northfleet, Gravesend, Kent, DA11 9BG	Type of Site: Recycling Centre Planning application reference: 20211588 Description: Scheme comprises kcc/scr/gr/0250/2021 - request for a screening opinion in accordance with the town and country planning act (environmental impact assessment) regulations 2017as to whether the proposed development of a facility to sample waste electronic s material (also known as an e-scrap facility) requires an environmental impact assessment at Britannia Refined Metals (brm) Site, Botany Road, Northfleet, kent DA11 9BG Data source: Historic Planning Application Data Type: Point	23/12/202 1
2	93m NE	Site Address: Britannia Refined Metals Ltd, Lower Road, Northfleet, Gravesend, Kent, DA11 9BG, S.EAST	Type of Site: Recycling Centre Planning application reference: GR/22/1087 (KCC/GR/0168/2022) Description: Scheme comprises development of an enclosed electronic waste (e-scrap) transfer facility, involving shredding, sampling, sorting, and bulking up of electronic waste streams for onward transportation to recycling/management facilities, the proposed develo pment includes construction of a new steel framed waste transfer building, firewater storage tank and associated plant, dust extraction unit, office and staff welfare building, new areas of concrete hard standing and footways, upgrade to site drainage, c onstruction of a re-aligned access point off manor way and retention of vehicular access to the adjacent wharf, including sustainable urban drainage system. Data source: Historic Planning Application Data Type: Point	06/10/202 2
C	170m SE	Site Address: Kent Kraft Ind Estate, Plot 20,Off Lower Road, Northfleet, GRAVESEND, Kent, DA11 9BB	Type of Site: Waste Transfer Station Planning application reference: DA/96/00457 Description: Use of land as a waste transfer station handling category A and B waste with ancillary portable office, messroom/store and car parking. An application (ref: DA/96/00457) for Detailed Planning permission was submitted to Dartford B.C. on 10th July 199 6. Data source: Historic Planning Application 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 Planning application reference: DA/97/00001 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. Data source: Historic Planning Application Data Type: Point	-

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

3.6 Licensed waste sites

Records within 500m	5
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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 Site Address: Botany Road, Northfleet, Kent, DA11 Correspondence Address: -	Type of Site: Industrial Waste Landfill (Factory curtilage) Size: >= 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: BRI001 EPR reference: EA/EPR/TP3898HP/A001 Operator: Britannia Refined Metals Limited Waste Management licence No: 19387 Annual Tonnage: 75000	Issue Date: 14/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: 27/07/1998 Cancelled Date: - Status: Expired
B	60m NW	Site Name: Botany Road Site Address: Botany Road, Northfleet, Kent, DA11 Correspondence Address: Botany Road, Northfleet, Kent, DA11	Type of Site: Industrial Waste Landfill (Factory curtilage) Size: Unknown Environmental Permitting Regulations (Waste) Licence Number: BRI001 EPR reference: - Operator: Britannia Refined Metals Waste Management licence No: 19387 Annual Tonnage: 0	Issue Date: 14/06/1997 Effective Date: - Modified: - Surrendered Date: - Expiry Date: 27/07/1998 Cancelled Date: - Status: Expired



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

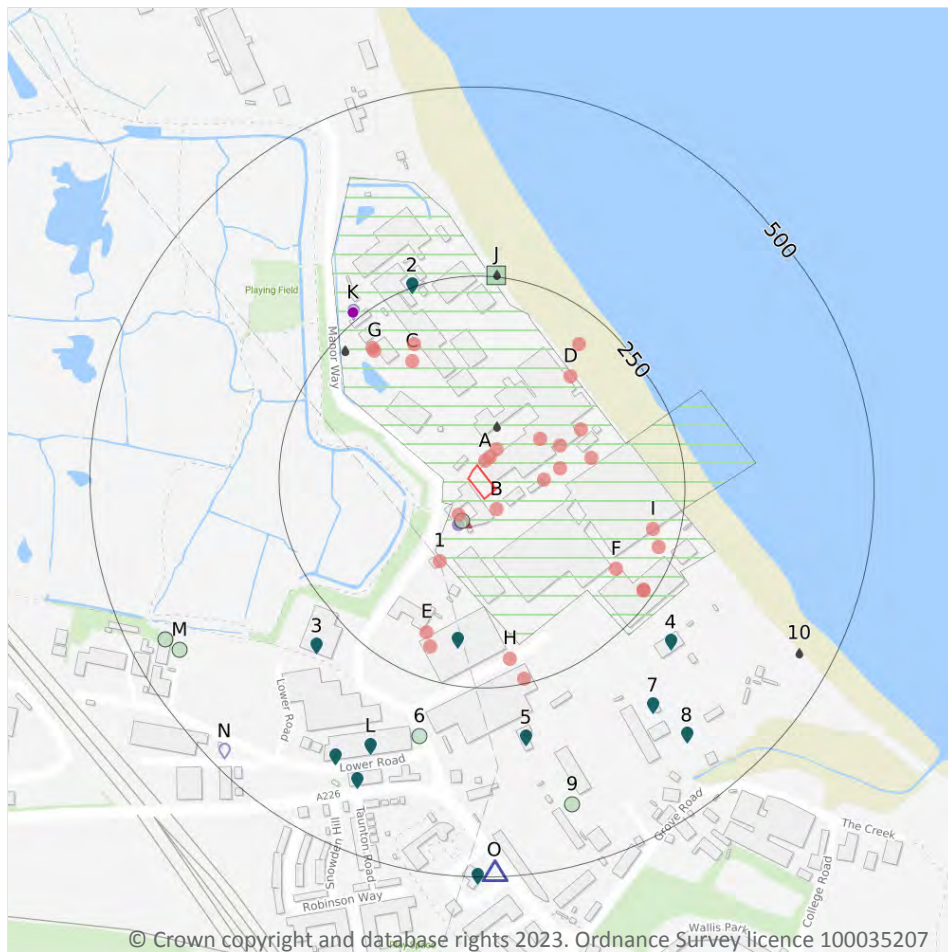


ID	Location	Site	Reference	Category	Sub-Category	Description
G	491m SW	LAND AT, LOWER RD, NORTHFLEET, DA11 9SN	WEX298049	Storing waste exemption	Not on a Farm	Storage of waste in a secure place

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 Gantries	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 Gantries	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

Records within 500m	1
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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

Records within 500m	0
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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 Application status: Approved Application date: 24/06/2015 Address: Britannia Refined Metals Ltd, Botany Road, Northfleet, Gravesend, Kent, England, DA11 9BG	Details: Storage of various hazardous materials Enforcement: No Enforcement Notified Date of enforcement: No Enforcement Notified 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 Address: Botany Road, Northfleet, Gravesend, Kent, DA11 9BG Process: Non-ferrous Metals Permit Number: AS7850	Original Permit Number: IPCAIRAPP Date Approved: 22-3-1996 Effective Date: 1-4-1996 Status: Superseded By Variation
B	48m SW	Operator: Britannia Refined Metals Ltd Address: Botany Road, Northfleet, Gravesend, Kent, DA11 9BG Process: Non-ferrous Metals Permit Number: AX2413	Original Permit Number: IPCMAJVAR Date Approved: 21-4-1997 Effective Date: 29-4-1997 Status: Superseded By Variation
B	48m SW	Operator: Britannia Refined Metals Ltd Address: Botany Road, Northfleet, Gravesend, Kent, DA11 9BG Process: Non-ferrous Metals Permit Number: BD7782	Original Permit Number: IPCMINVAR Date Approved: 24-11-1998 Effective Date: 30-11-1998 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 Installation Name: - Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: BM4945 Original Permit Number: BM4945	EPR Reference: - Issue Date: 30/04/2004 Effective Date: 30/04/2004 Last date noted as effective: 01/10/2004 Status: SUPERSEDED BY PAS
K	260m NW	Operator: Britannia Refined Metals Limited Installation Name: Britannia Refined Metals Limited 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. Permit Number: TP3535JK Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 18/05/2018 Effective Date: 18/05/2018 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: Britannia Refined Metals Limited Installation Name: Botany Road EPR/BM4945IW 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. Permit Number: WP3135QH Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 12/11/2018 Effective Date: 12/11/2018 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: Britannia Refined Metals Ltd Installation Name: BRITANNIA REFINED METALS Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: RP3236SF Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 02/12/2005 Effective Date: 02/12/2005 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: Britannia Refined Metals Limited Installation Name: Botany Road EPR/BM4945IW 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. Permit Number: AP3302BV Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 30/11/2020 Effective Date: 30/11/2020 Last date noted as effective: 21/03/2023 Status: Superseded



ID	Location	Details	
K	260m NW	Operator: Britannia Refined Metals Ltd Installation Name: Northfleet Refined Metals Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: BM4945IW Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 30/04/2004 Effective Date: 30/04/2004 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: Britannia Refined Metals Ltd Installation Name: BRITANNIA REFINED METALS Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: ZP3836LP Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 14/02/2007 Effective Date: 01/03/2007 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: Britannia Refined Metals Limited Installation Name: Botany Road EPR/BM4945IW 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. Permit Number: HP3803LY Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 18/12/2020 Effective Date: 18/12/2020 Last date noted as effective: 21/03/2023 Status: Effective
K	260m NW	Operator: Britannia Refined Metals Ltd Installation Name: BRITANNIA REFINED METALS Process: NON-FERROUS METALS; MELTING WITH CAPACITY >4T/D LEAD/CADMIUM OR 20T/D OTHERS Permit Number: KP3633LQ Original Permit Number: BM4945IW	EPR Reference: - Issue Date: 04/10/2005 Effective Date: 04/10/2005 Last date noted as effective: 21/03/2023 Status: Superseded
K	260m NW	Operator: BRITANNIA REFINED METALS LIMITED Installation Name: Botany Road EPR/BM4945IW 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. Permit Number: BM4945IW Original Permit Number: BM4945IW	EPR Reference: EPR/BM4945IW Issue Date: 18/12/2020 Effective Date: 18/12/2020 Last date noted as effective: 25/05/2023 Status: Effective
N	479m SW	Operator: URBAN RESERVE (ASSETCO) LIMITED Installation Name: Westgate Power Process: NEW MEDIUM COMBUSTION PLANT Permit Number: AP3800LK Original Permit Number: AP3800LK	EPR Reference: EPR/AP3800LK Issue Date: 29/05/2022 Effective Date: 29/05/2022 Last date noted as effective: 25/05/2023 Status: Effective
N	479m SW	Operator: URBAN RESERVE (ASSETCO) LIMITED Installation Name: Westgate Power Process: NEW MEDIUM COMBUSTION PLANT Permit Number: AP3800LK Original Permit Number: AP3800LK	EPR Reference: EPR/AP3800LK Issue Date: 29/05/2022 Effective Date: 29/05/2022 Last date noted as effective: 25/05/2023 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, Area 4, Botany Road, Off Lower Road, Northfleet, Kent, DA11 9SL	Process: Timber Manufacture Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
2	252m N	Cemex Concrete Products Ltd, Lower Road, Northfleet, Kent, DA11 9AP	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
3	295m SW	London Bus And Truck Ltd, Northfleet Industrial Estate, Lower Road, Northfleet, Kent, DA11 9SN	Process: Respraying of Road Vehicles Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
4	307m SE	CPI Mortars Ltd, Robins Wharf, Grove Road, Northfleet, Kent, DA11 9AX	Process: Use of Bulk Cement; Other Mineral Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
5	320m S	North Kent Roadstone Ltd, Robins Wharf, Grove Road, Northfleet, Kent, DA11 9AX	Process: Roadstone Coating Processes Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
7	352m SE	Brett Concrete, Robins Wharf, Grove Road, Northfleet, Kent, DA11 9AX	Process: Use of Bulk Cement Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
L	360m SW	Kent Coachworks Ltd, Northfleet Industrial Estate, Kent, DA11 9SN	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified 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 Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
L	409m SW	Barney Sands Ltd, Lower Rd, Gravesend, DA11 9SN	Process: Respraying of Road Vehicles Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
8	411m SE	North Kent Shotblasting, Grove Road, Northfleet, Kent, DA11 9AX	Process: Metal Coating Processes Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified 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 Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified 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, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: SEWAGE DISCHARGES - FINAL/TREATED EFFLUENT - NOT WATER COMPANY Permit Number: CPLR.0023 Permit Version: 1 Receiving Water: THAMES	Status: REVOKED - UNSPECIFIED Issue date: 04/12/1969 Effective Date: 04/12/1969 Revocation Date: 17/10/1989
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996
G	231m NW	BRITANNIA REFINED METALS, BOTANY RO, BRITANNIA REFINED METALS, BOTANY, ROAD, NORTHFLEET, GRAVESEND, KE, NT,DA11 9B	Effluent Type: TRADE DISCHARGES - SITE DRAINAGE Permit Number: CNTW.0932 Permit Version: 1 Receiving Water: TIDAL RIVERTHAMES	Status: REVOKED - UNSPECIFIED Issue date: 18/02/1991 Effective Date: 18/02/1991 Revocation Date: 31/05/1996



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

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0
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Discharges of specified substances under the Environmental Protection (Prescribed Processes and Substances) Regulations 1991.

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

4.15 Pollutant release to public sewer

Records within 500m	0
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Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	1
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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 Incident Identification: 79682 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	325m S	Incident Date: 18/08/2001 Incident Identification: 25197 Pollutant: Contaminated Water Pollutant Description: Firefighting Run-Off	Water Impact: Category 3 (Minor) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9	420m S	Incident Date: 23/08/2002 Incident Identification: 102638 Pollutant: Oils and Fuel Pollutant Description: Mixed/Waste Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
M	443m SW	Incident Date: 01/08/2002 Incident Identification: 96355 Pollutant: Organic Chemicals/Products Pollutant Description: Other Organic Chemical or Product	Water Impact: Category 4 (No Impact) Land Impact: Category 1 (Major) Air Impact: Category 3 (Minor)



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

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

4.19 Pollution inventory substances

Records within 500m	4
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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

Records within 500m	1
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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

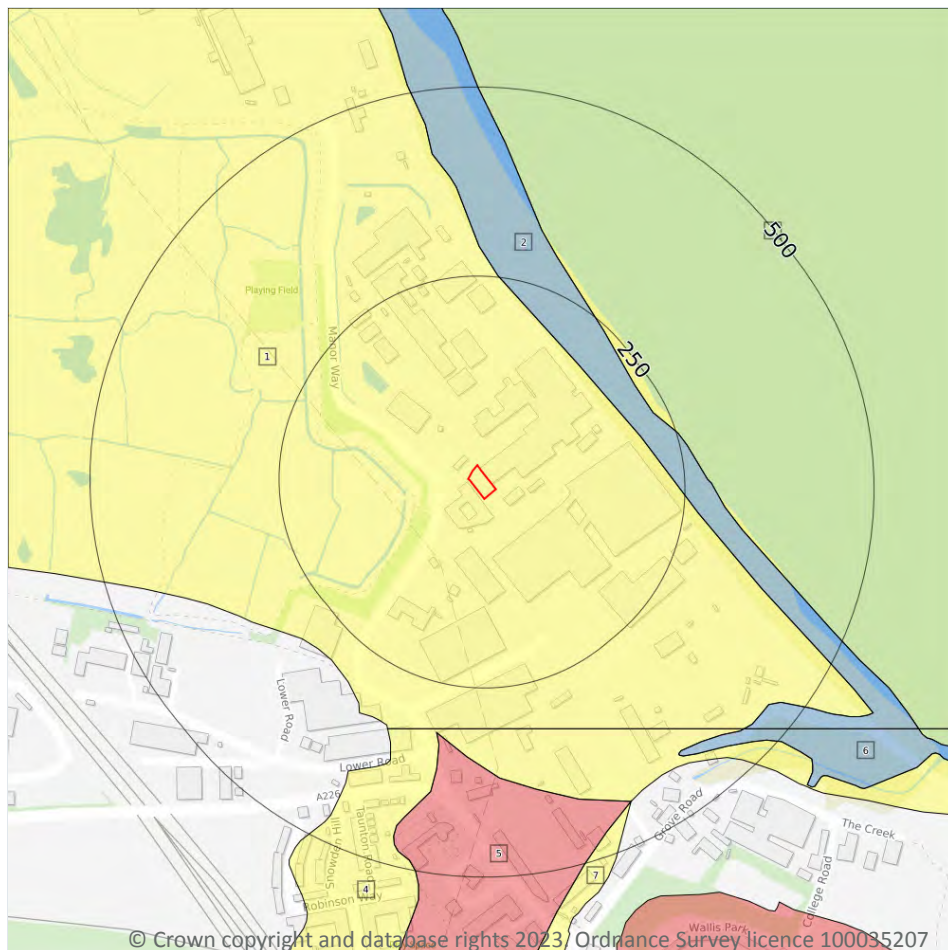
Records within 500m	0
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The pollution inventory (radioactive wastes) includes reporting on annual releases of radioactive substances from a site, including the means of release. Where releases fall below the reporting threshold, no value will be given. 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

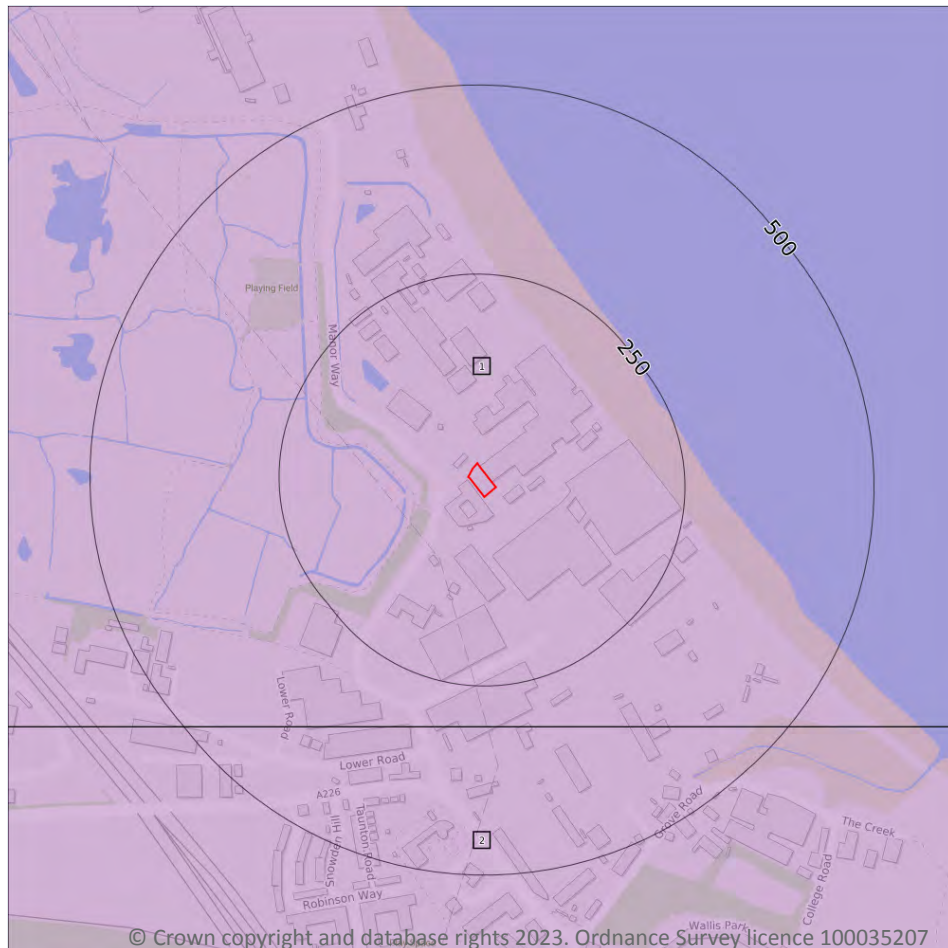


ID	Location	Designation	Description
3	229m NE	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics 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](#) >

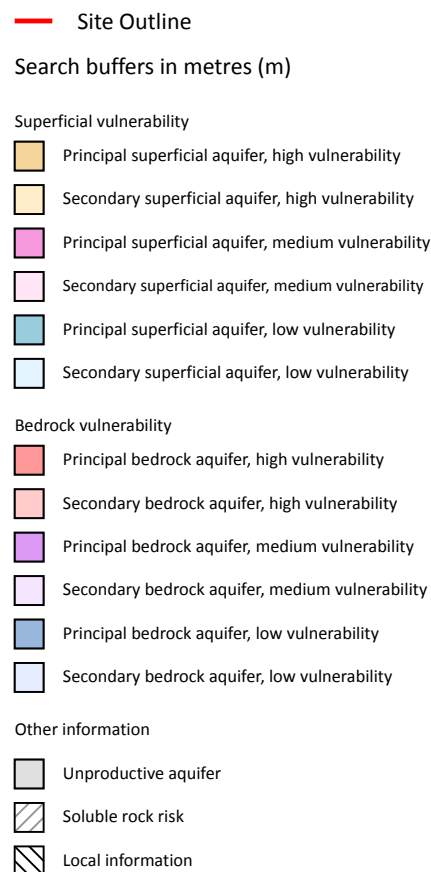
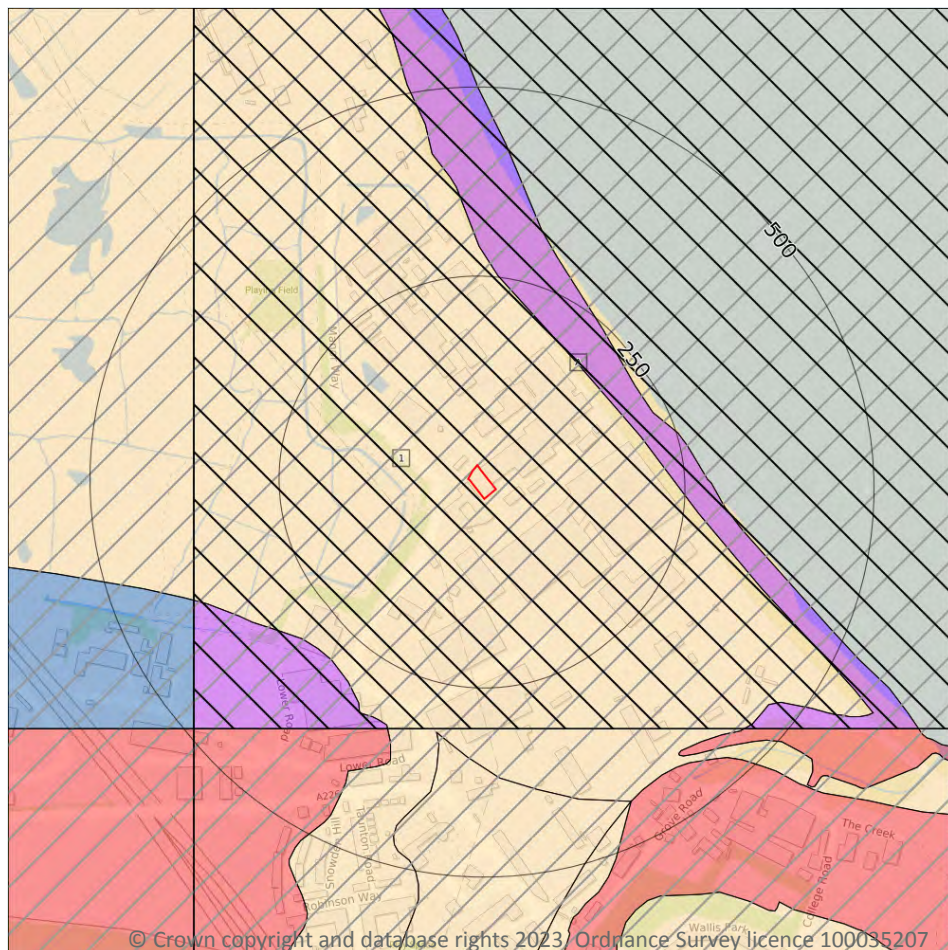
ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	304m S	Principal	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	Summary Classification: Secondary superficial aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: High Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: High Aquifer type: Secondary Thickness: >10m Patchiness value: >90% Recharge potential: No Data	Vulnerability: Medium Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	1
------------------------	----------

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

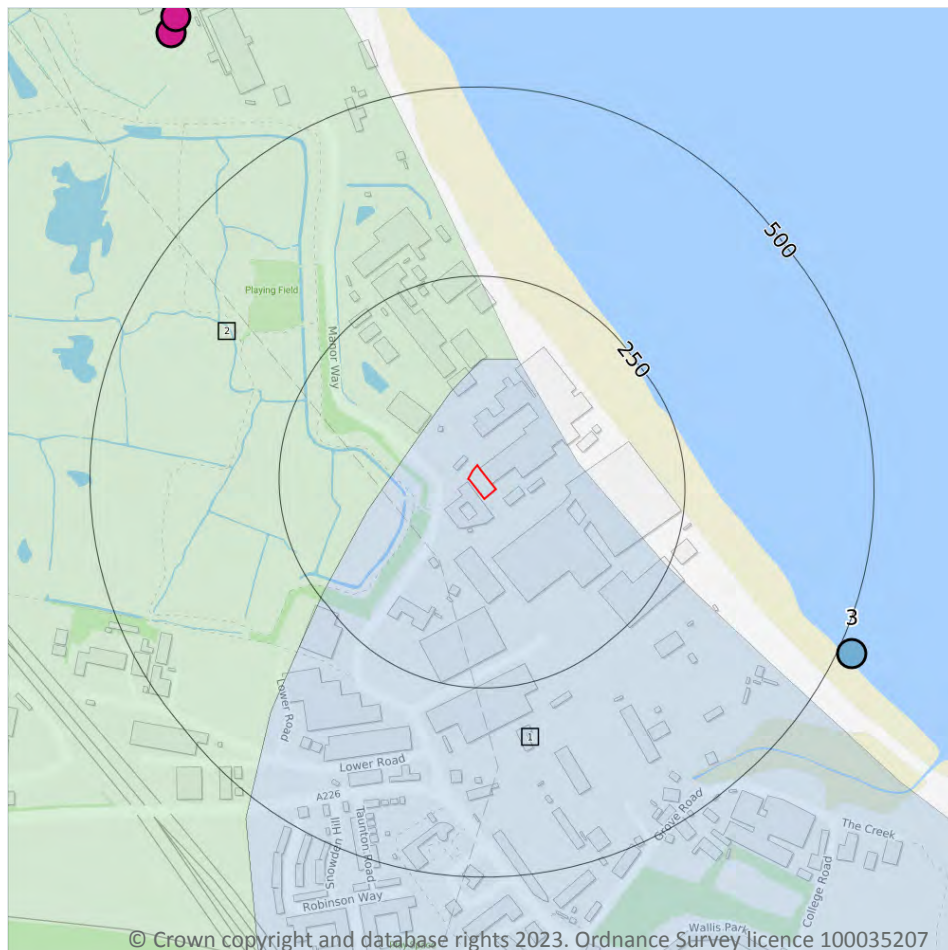
Records on site	1
------------------------	----------

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 ↗.

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



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

5.6 Groundwater abstractions

Records within 2000m

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



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

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



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

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



ID	Location	Details	
-	1937m SE	Status: Active Licence No: 9/40/01/0092/B/GR Details: Process Water Direct Source: Southern Region Groundwater Point: BOREHOLE 1, H5 CHALK, NORTHFLEET. Data Type: Point Name: Kimberly-Clark Limited Easting: 562410 Northing: 173660	Annual Volume (m ³): 4710000 Max Daily Volume (m ³): 19656 Original Application No: WR.1969D Original Start Date: 27/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1996 Version End Date: -
-	1959m SE	Status: Active Licence No: 9/40/01/0092/B/GR Details: Process Water Direct Source: Southern Region Groundwater Point: BOREHOLE 2, H5 CHALK, NORTHFLEET. Data Type: Point Name: Kimberly-Clark Limited Easting: 562450 Northing: 173660	Annual Volume (m ³): 4710000 Max Daily Volume (m ³): 19656 Original Application No: WR.1969D Original Start Date: 27/05/1966 Expiry Date: - Issue No: 100 Version Start Date: 01/07/1996 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 Licence No: 9/40/01/0522/S Details: Mineral Washing Direct Source: Southern Region Surface Waters Point: POINT A, TIDAL RIVER THAMES AT SWANSCOMBE. Data Type: Point Name: Robert Brett & Sons Ltd Easting: 561870 Northing: 175100	Annual Volume (m ³): 45500 Max Daily Volume (m ³): 375 Original Application No: 169/872 Original Start Date: 06/02/1990 Expiry Date: - Issue No: 101 Version Start Date: 01/01/2002 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

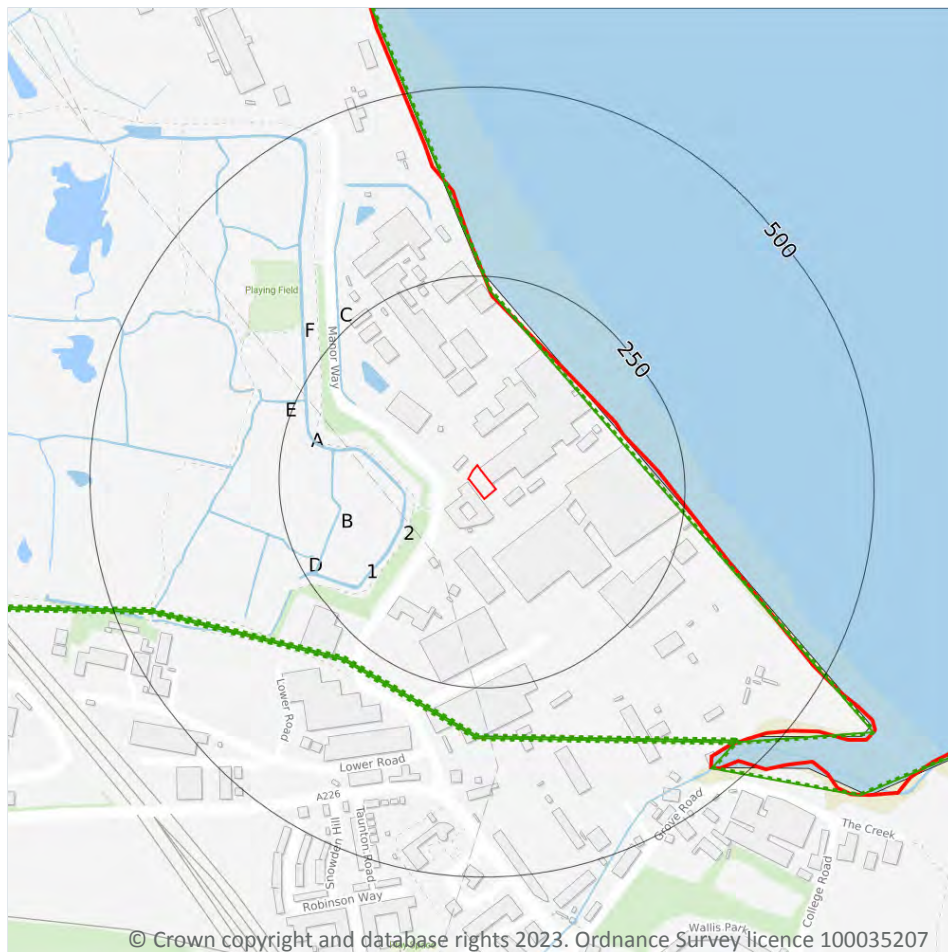
0

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	GB530603911402 ↗	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 >](#)

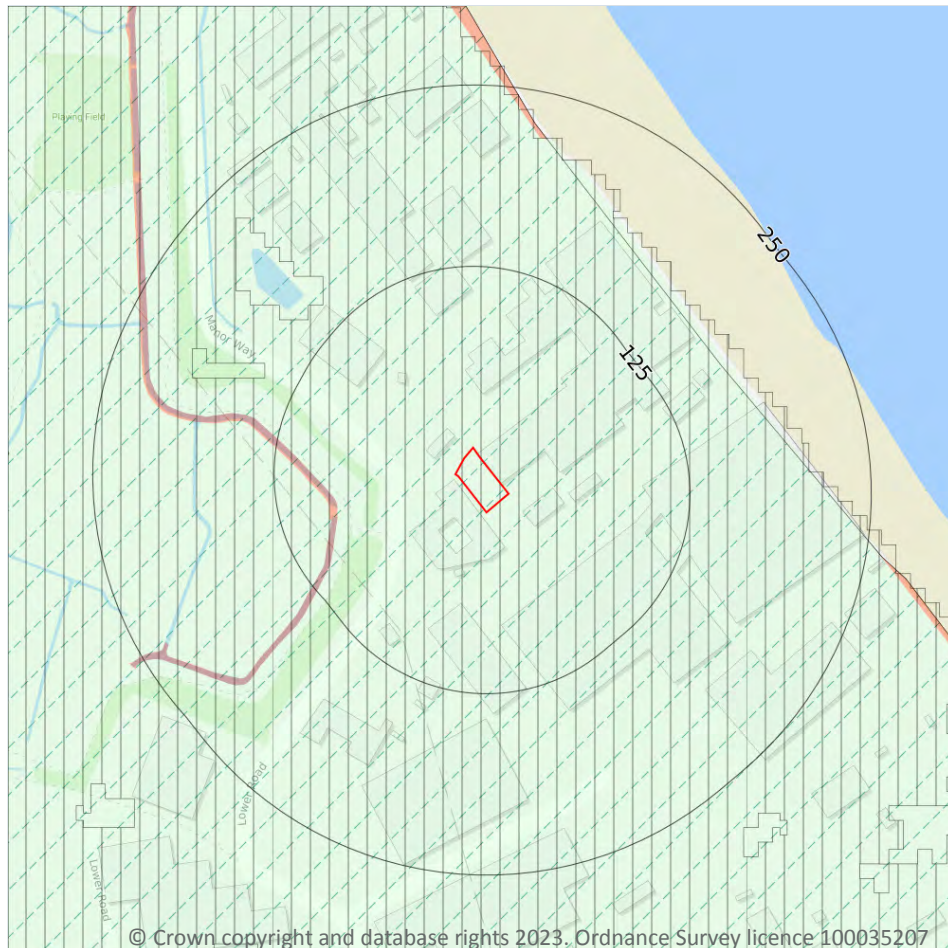


ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	On site	West Kent Darent and Cray Chalk	GB40601G501800 ↗	Poor	Poor	Poor	2019

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 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.

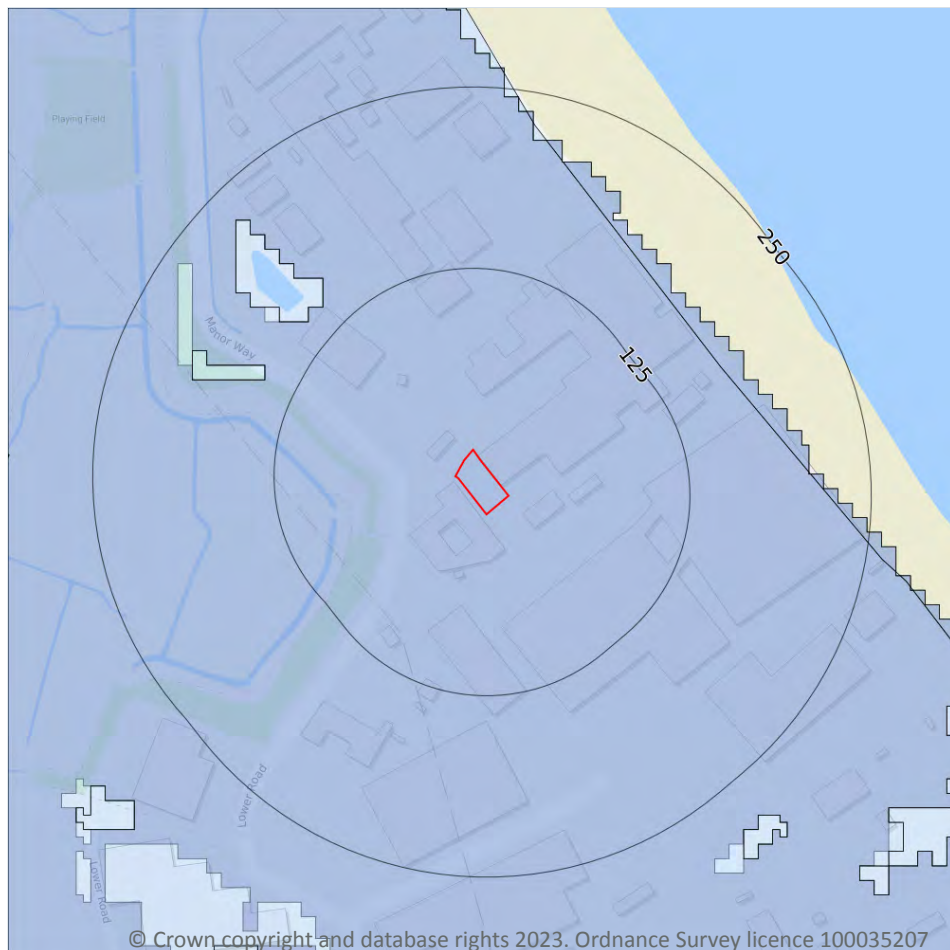
7.5 Flood Storage Areas

Records within 250m	0
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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.

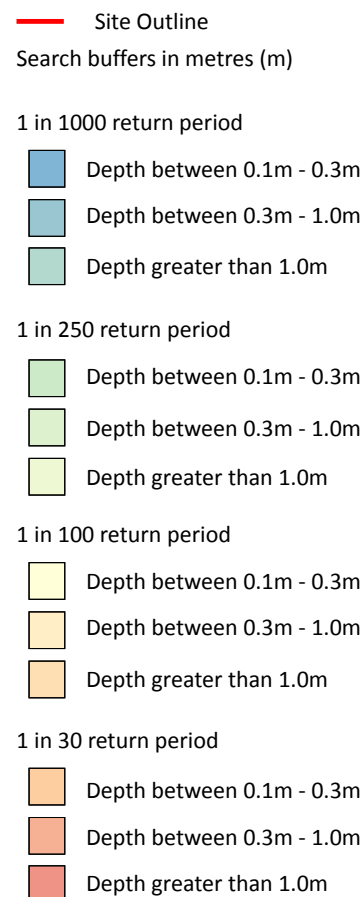
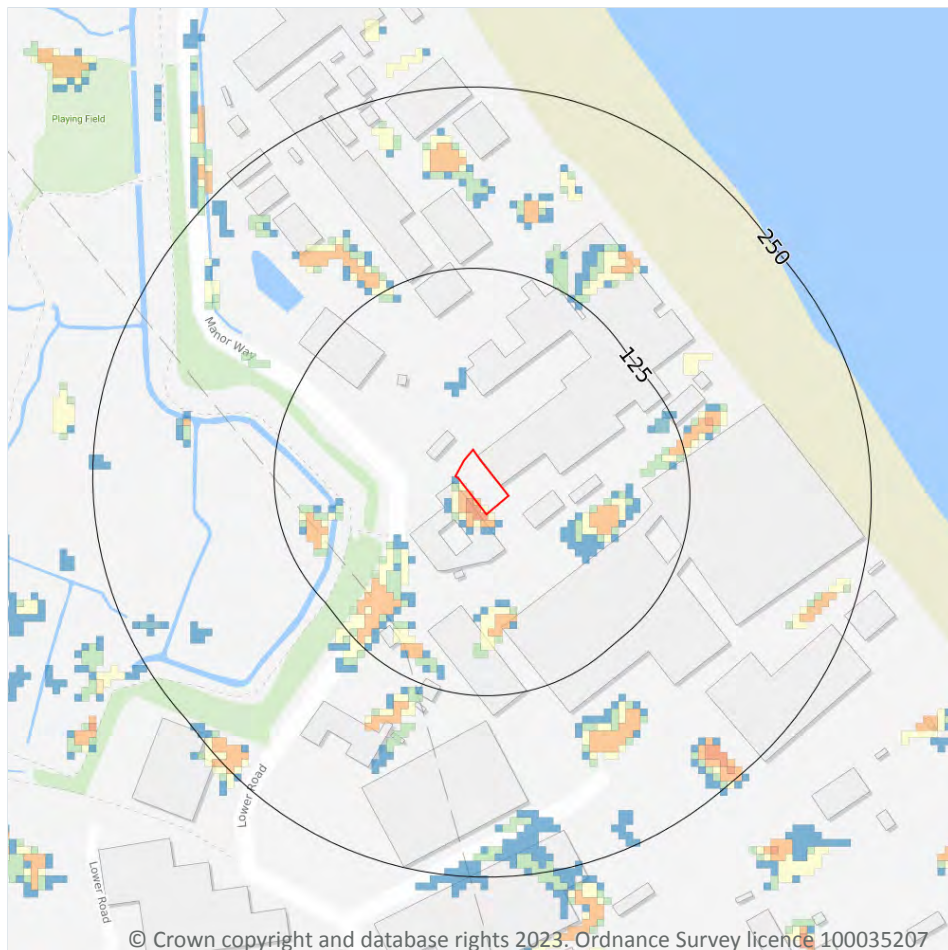
Features are displayed on the River and coastal flooding map on [page 96](#) >

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.

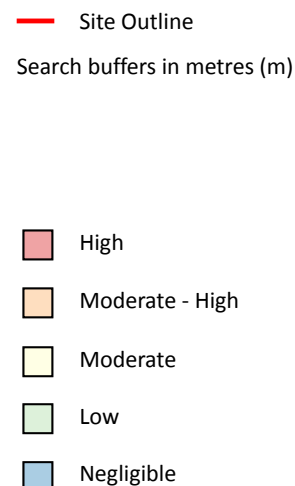
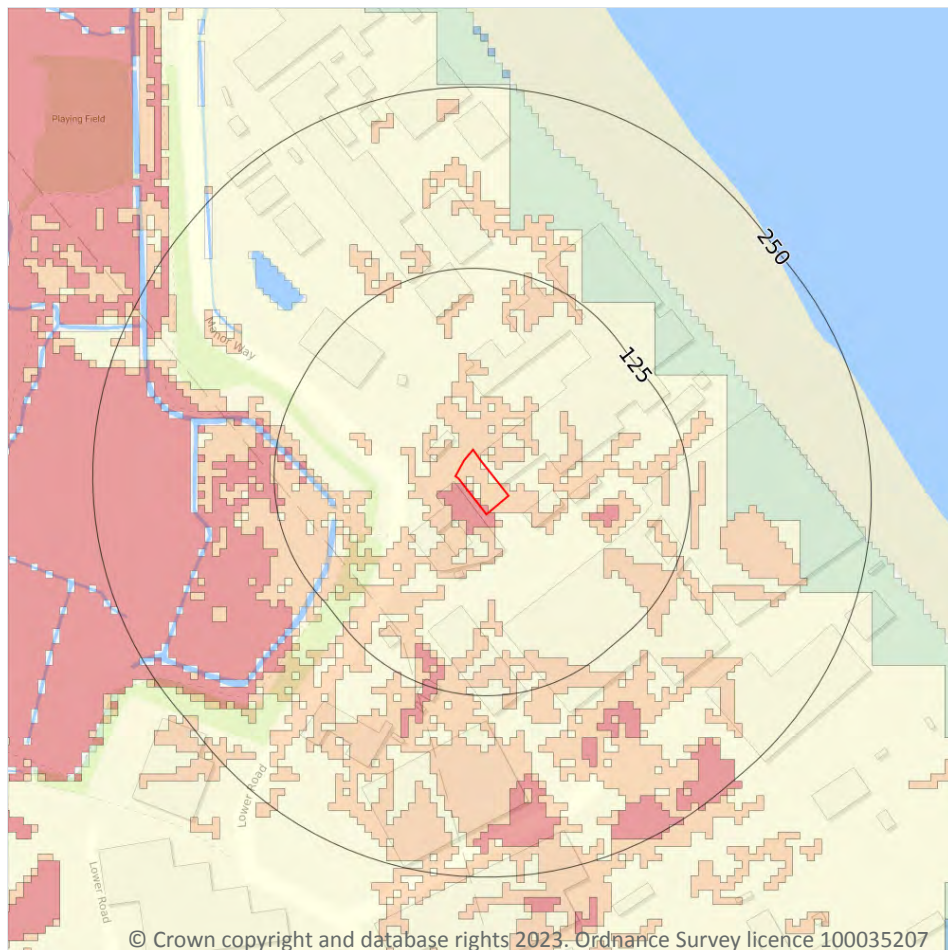
The table below shows the maximum flood depths for a range of return periods for the site.

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

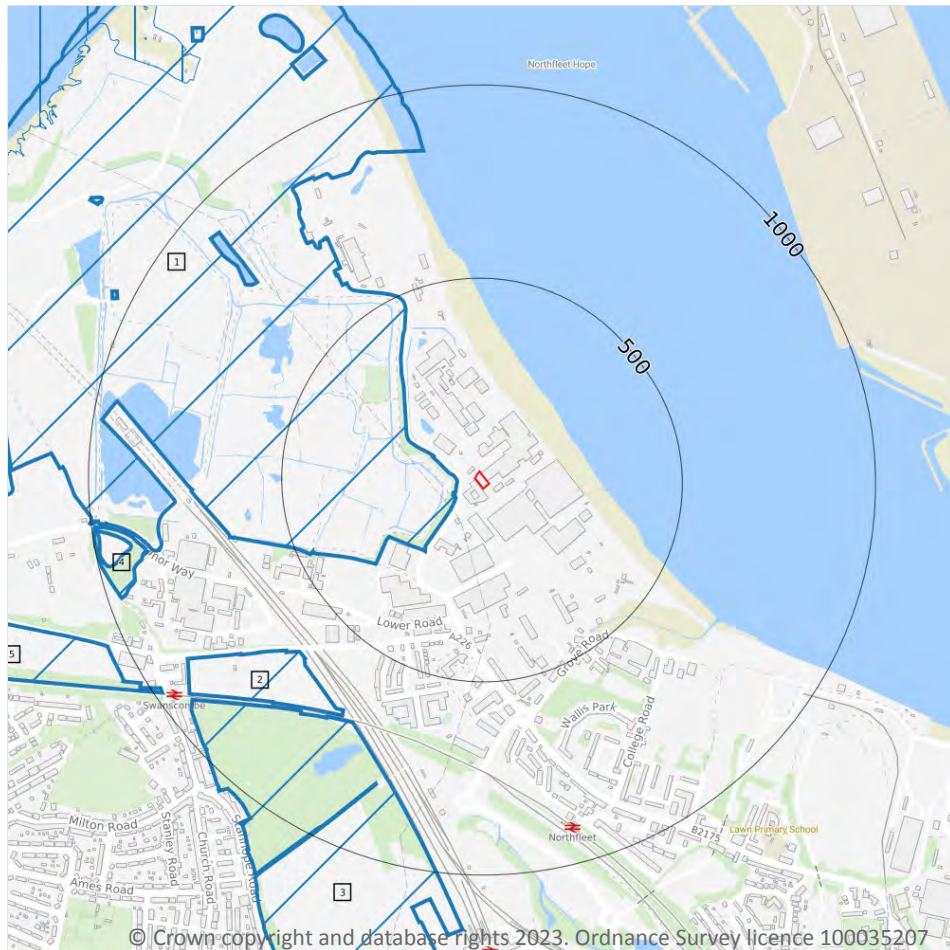
High

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

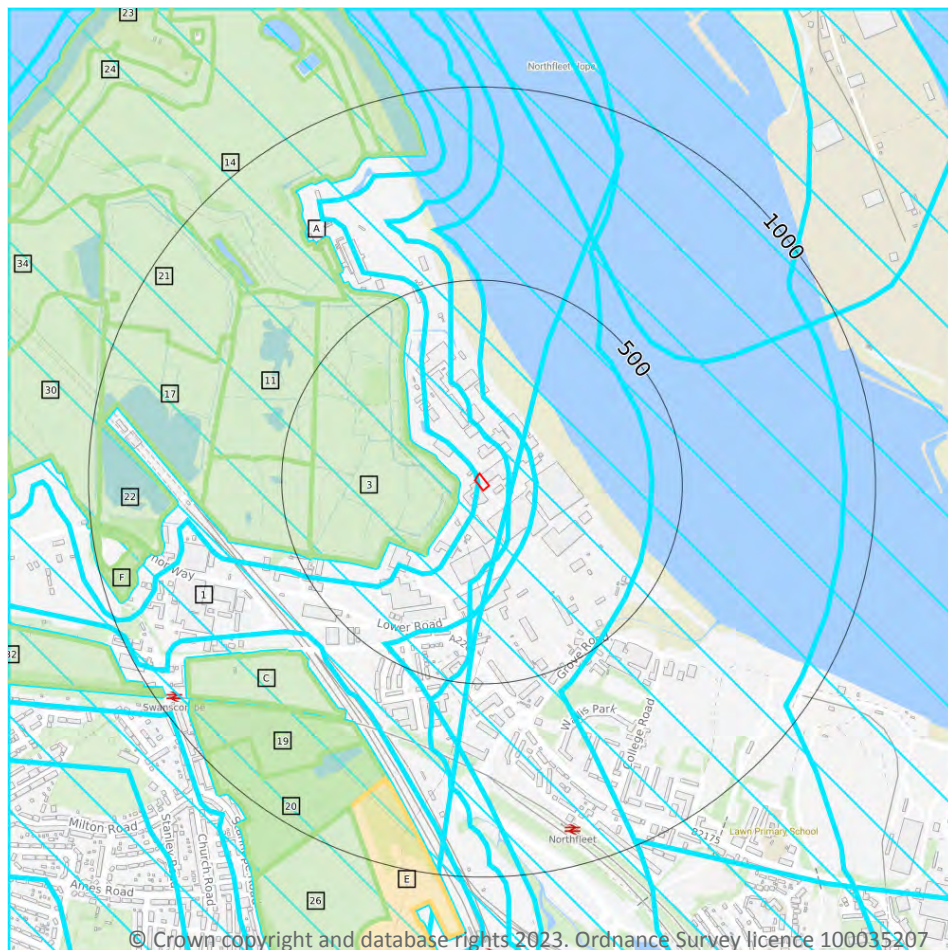
Areas at risk from agricultural nitrate pollution designated under the EC Nitrate Directive (91/676/EEC). These are areas of land that drain into waters polluted by nitrates. Farmers operating within these areas have to follow mandatory rules to tackle nitrate loss from agriculture.

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	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. 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. Wind and Solar - Solar schemes with footprint > 0.5ha, all wind turbines. Minerals, Oil and Gas - Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction. Rural non-residential - Large non residential developments outside existing settlements/urban areas where net additional gross internal floorspace is > 1,000m² or footprint exceeds 0.2ha. Residential - Residential development of 10 units or more. Rural residential - Any residential developments outside of existing settlements/urban areas with a total net gain in residential units. Air pollution - Any development that could cause AIR POLLUTION or DUST either in its construction or operation (incl: industrial/commercial processes, livestock & poultry units, slurry lagoons & digestate stores, manure stores). 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. 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. Composting - Any composting proposal. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management. 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. Water supply - Large infrastructure such as warehousing / industry where net additional gross internal floorspace is > 1,000m² or any development needing its own water supply .
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

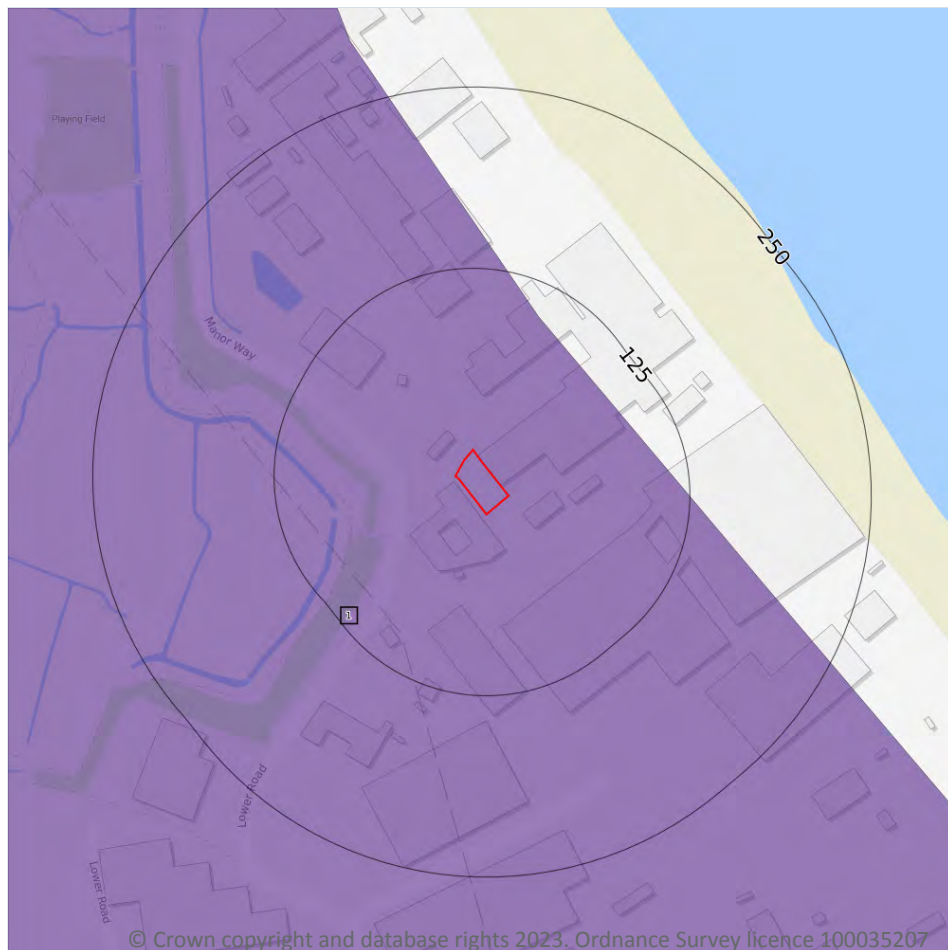
0

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.

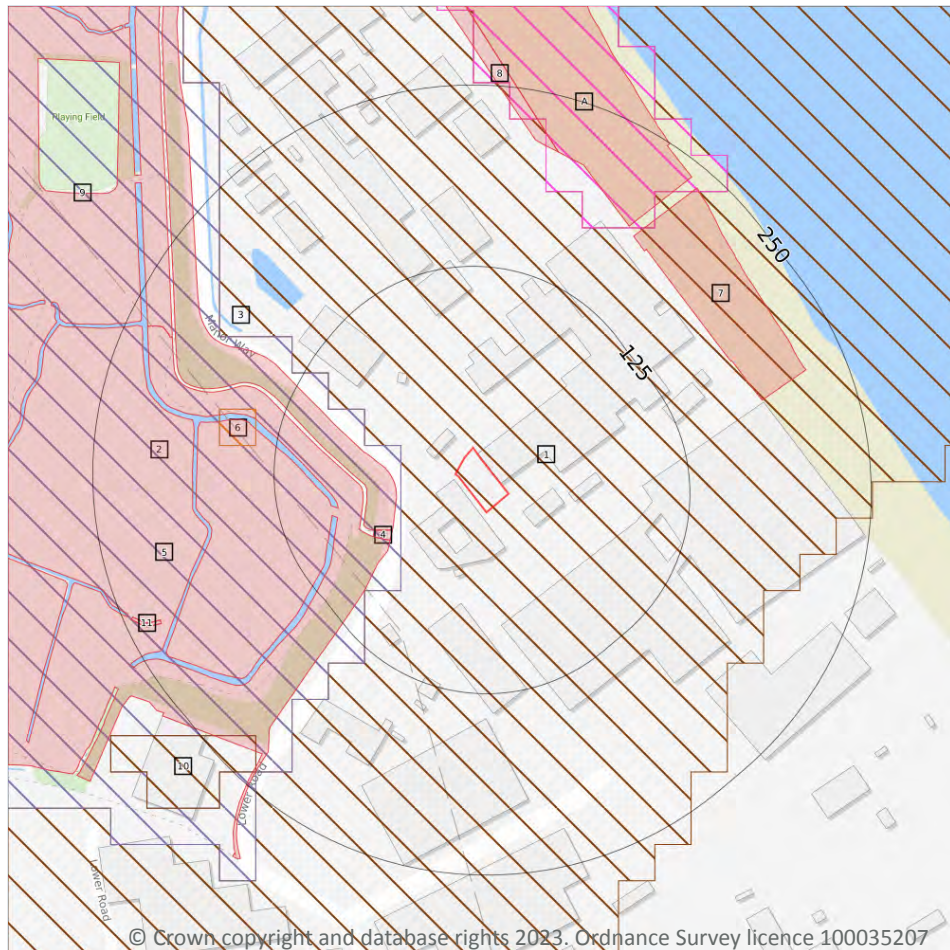
12.5 Countryside Stewardship Schemes

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

Records within 250m	5
----------------------------	----------

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
1	On site	Network Enhancement Zone 2	Not specified
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

Records within 250m	0
----------------------------	----------

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.

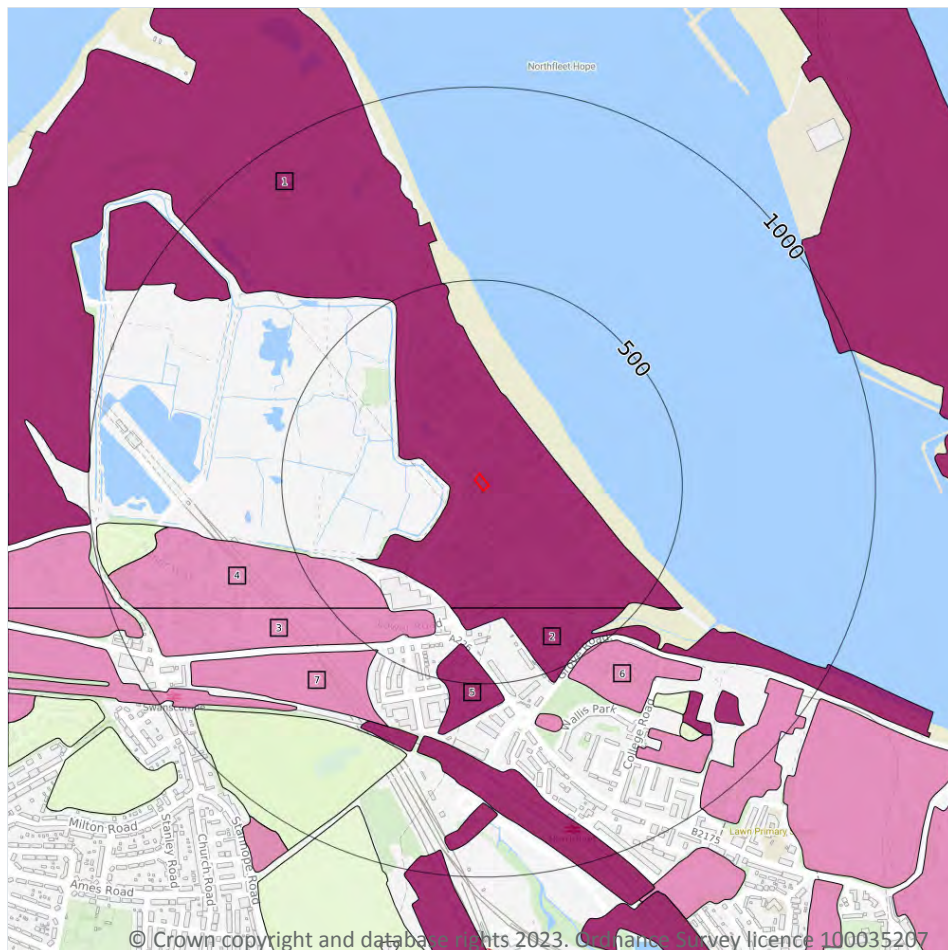
Features are displayed on the Geology 1:10,000 scale - Availability map on [page 132](#) >

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

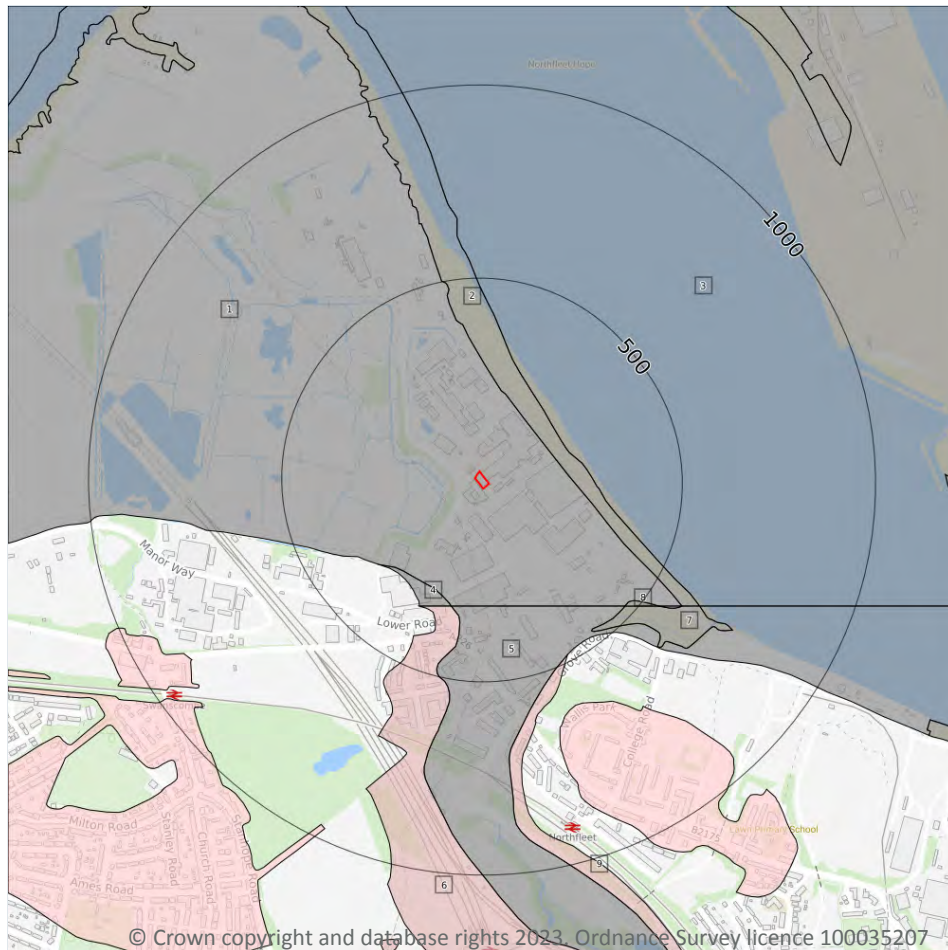


ID	Location	LEX Code	Description	Rock description
5	400m S	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
6	492m SE	WGR-VOID	Worked Ground (Undivided)	Void
7	495m SW	WGR-VOID	Worked Ground (Undivided)	Void

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

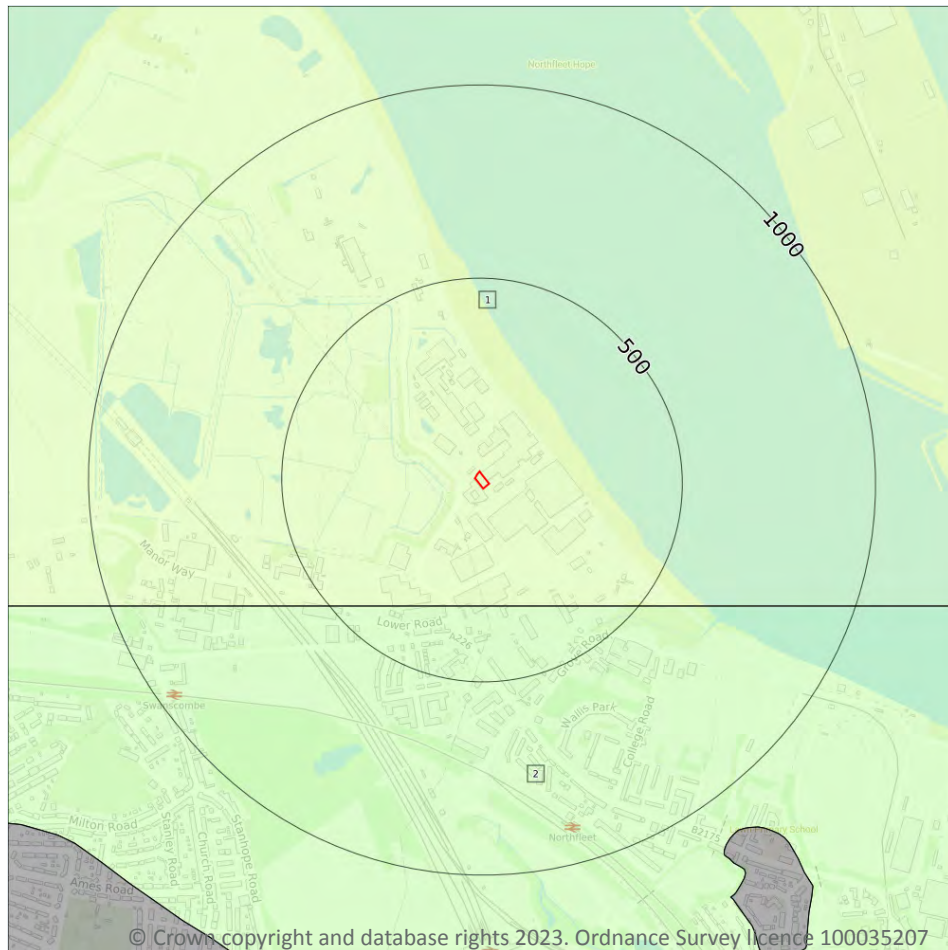
0

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.

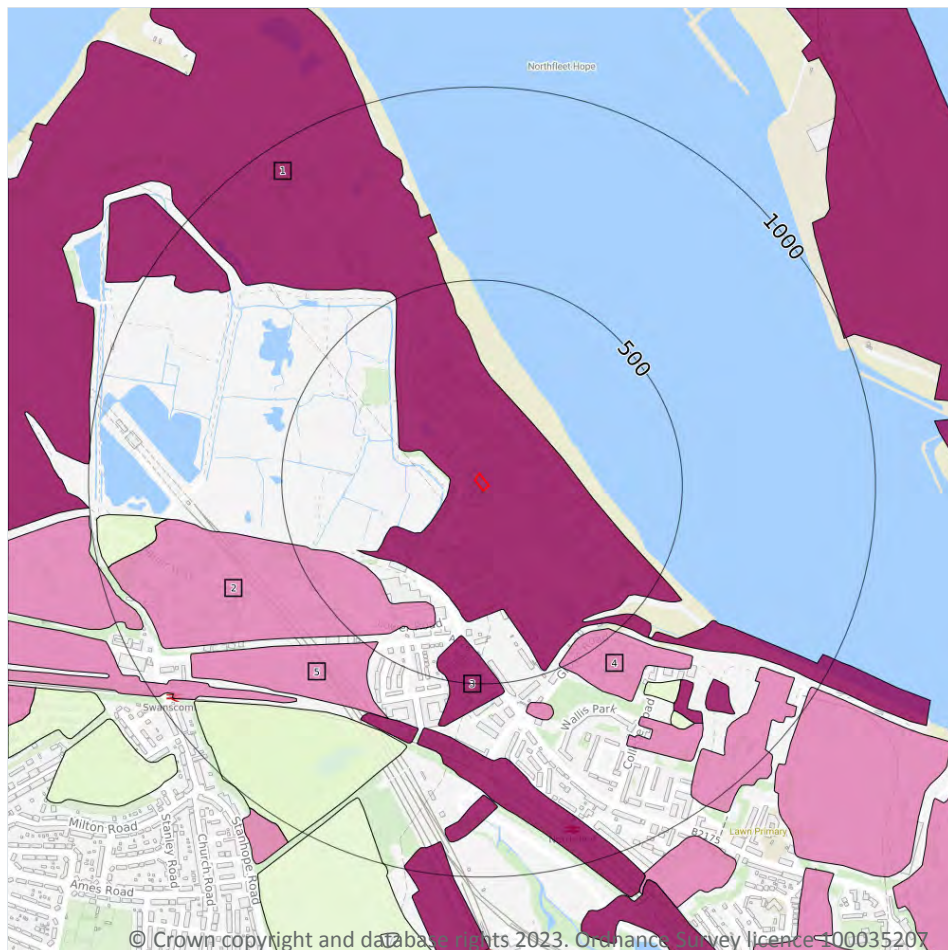
Features are displayed on the Geology 1:50,000 scale - Availability map on [page 139](#) >

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

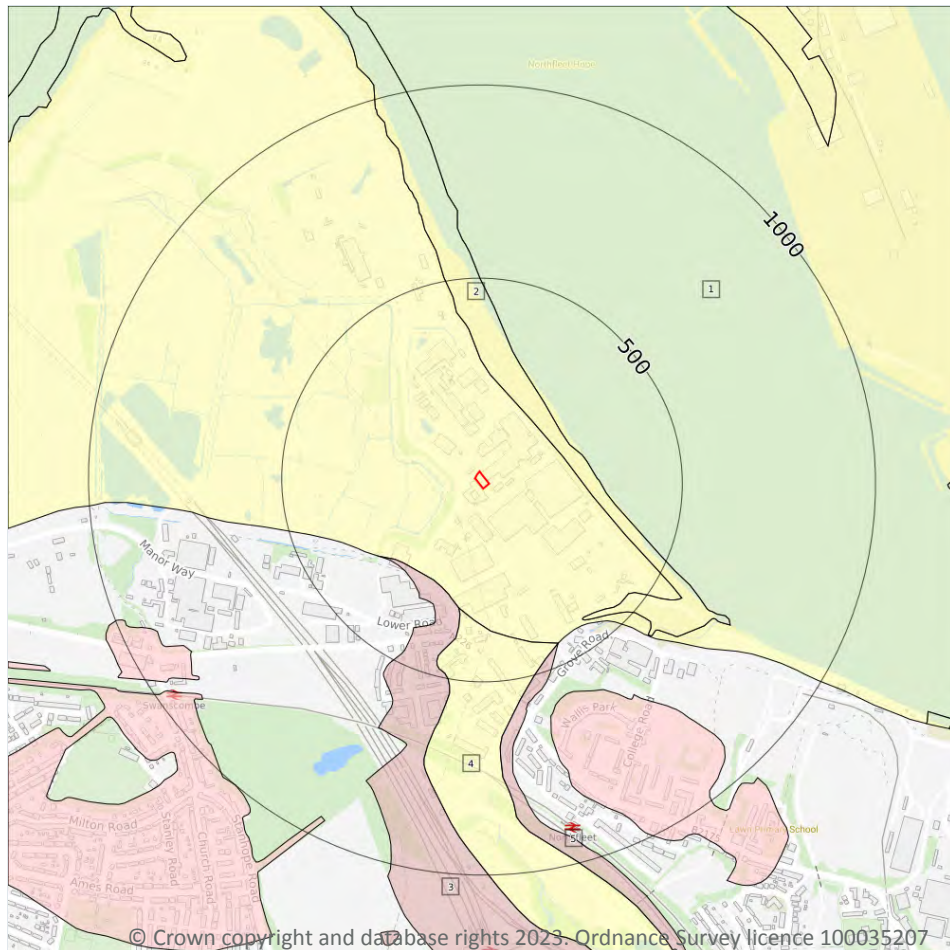
A qualitative classification of estimated rates of vertical movement of water from the ground surface through the unsaturated zone of any artificial deposits (the zone between the land surface and the water table).

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)

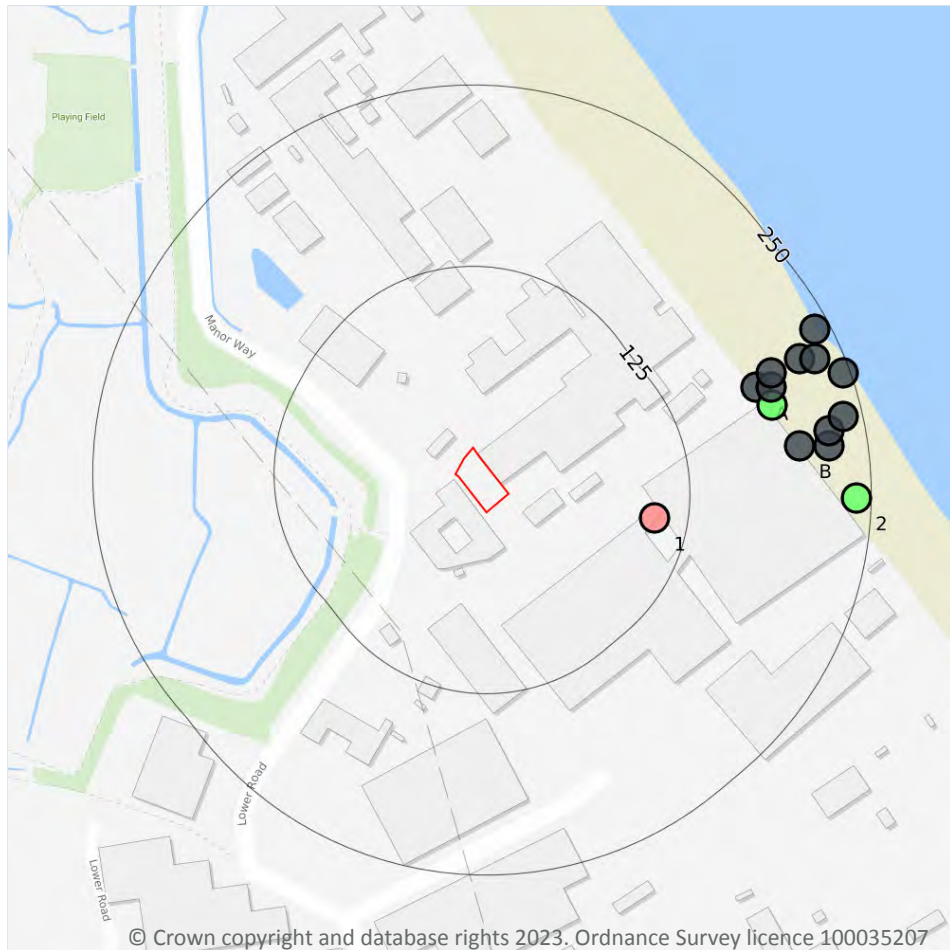
Records within 500m**0**

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	815036 ↗
A	186m E	561570 175390	TOWER WHARF NORTHFLEET E-18	-	Y	N/A
A	192m E	561581 175378	THAMES BARRIER PLA1966	25.5	N	815331 ↗

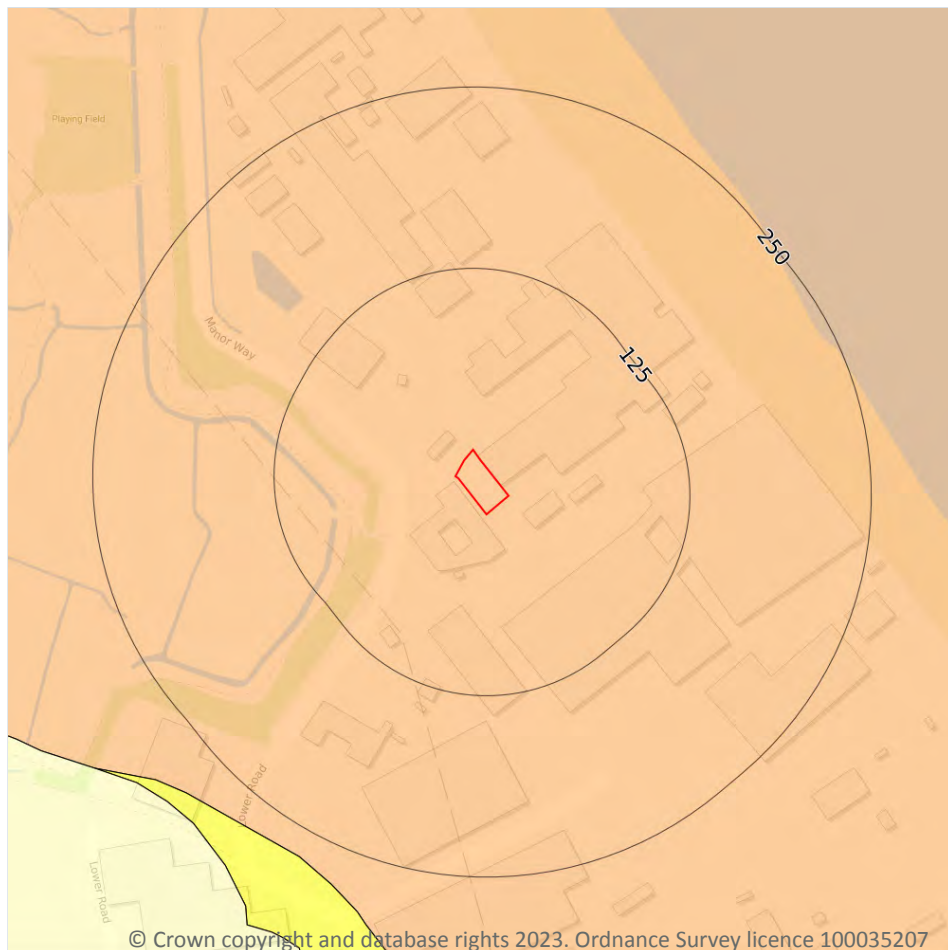


ID	Location	Grid reference	Name	Length	Confidential	Web link
A	195m E	561580 175390	TOWER WHARF NORTHFLEET E-19	-	Y	N/A
A	199m E	561580 175400	TOWER WHARF NORTHFLEET E-20	-	Y	N/A
B	204m E	561600 175350	TOWER WHARF NORTHFLEET F-18	-	Y	N/A
A	221m E	561600 175410	TOWER WHARF NORTHFLEET E-22	-	Y	N/A
B	223m 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	815332 ↗
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).

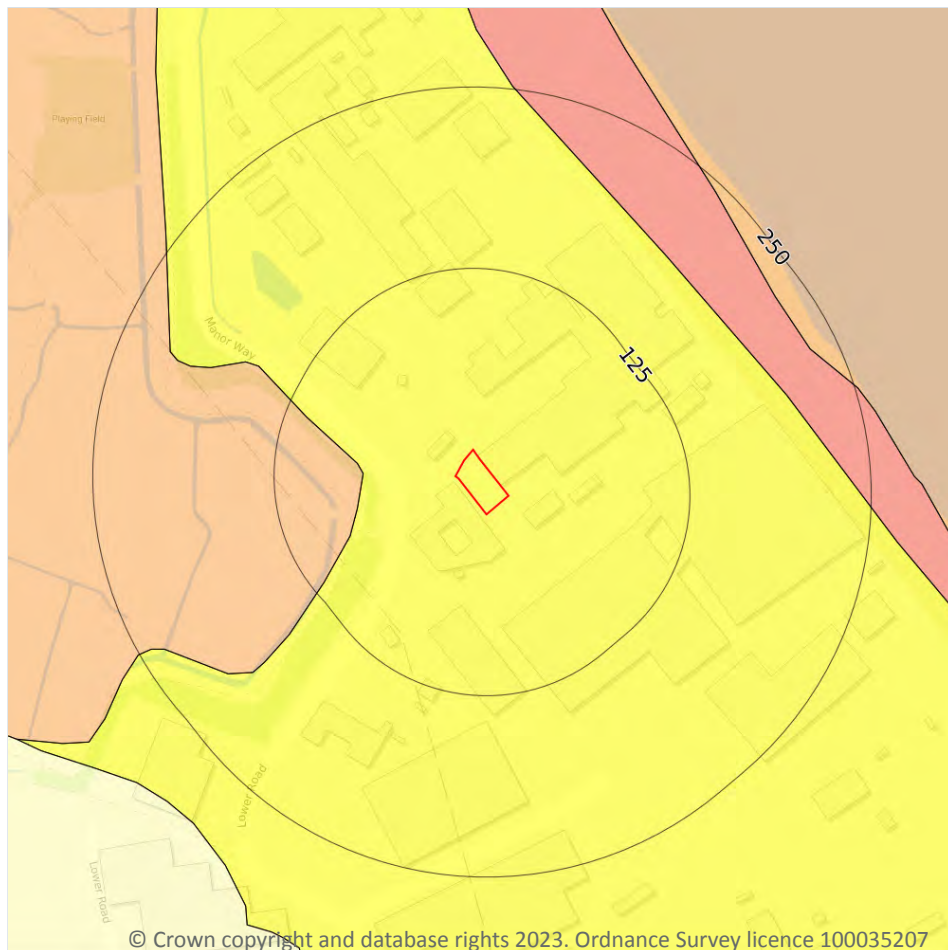
Features are displayed on the Natural ground subsidence - Shrink swell clays map on [page 148](#) >

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.

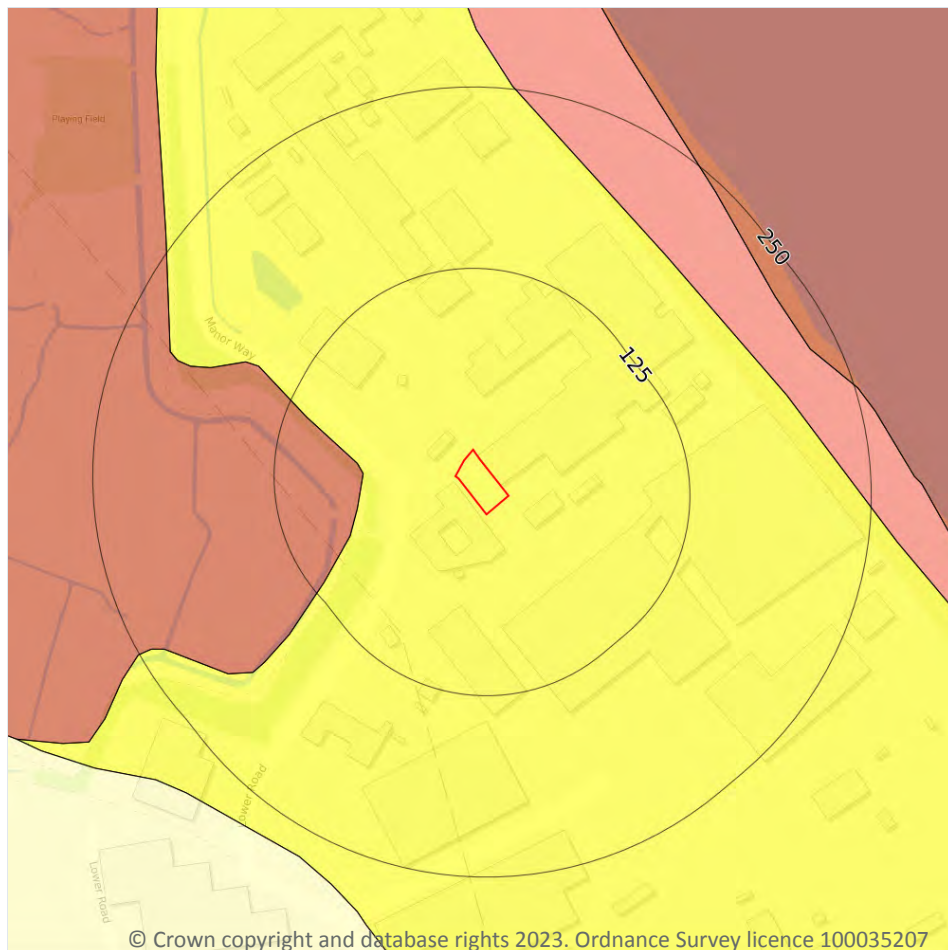
Features are displayed on the Natural ground subsidence - Running sands map on [page 149 >](#)

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.

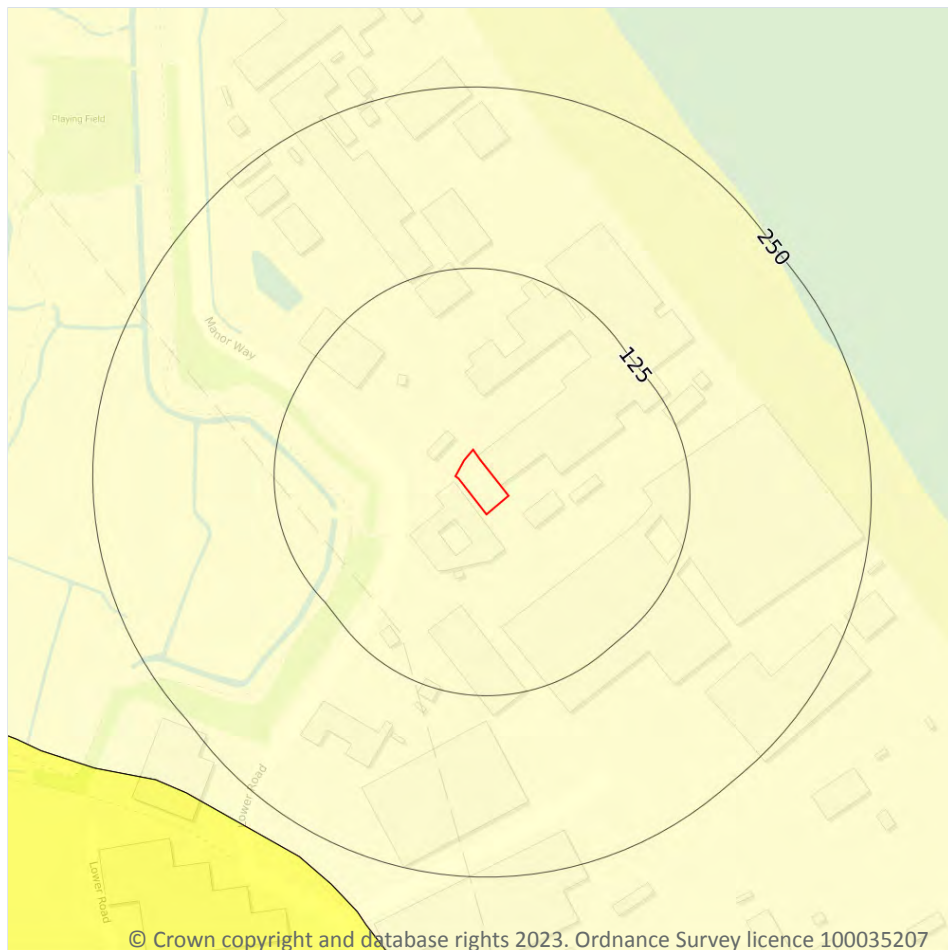
Features are displayed on the Natural ground subsidence - Compressible deposits map on [page 150 >](#)

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.

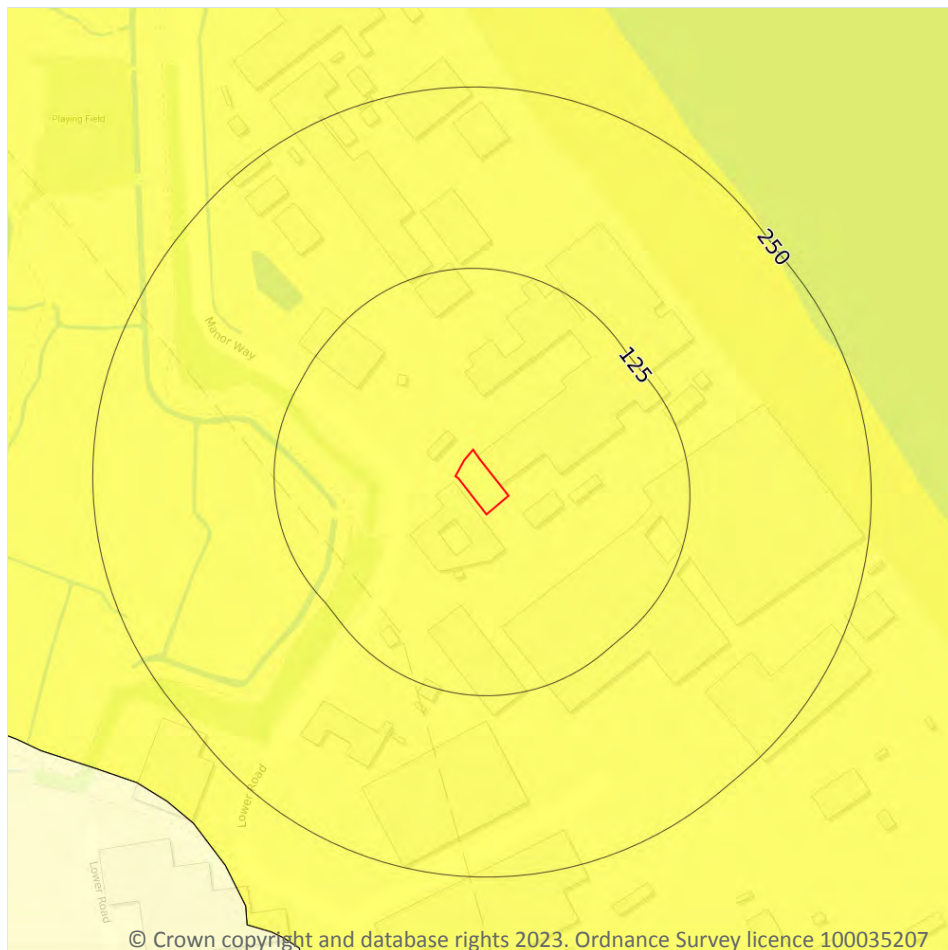
Features are displayed on the Natural ground subsidence - Collapsible deposits map on [page 151](#) >

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.

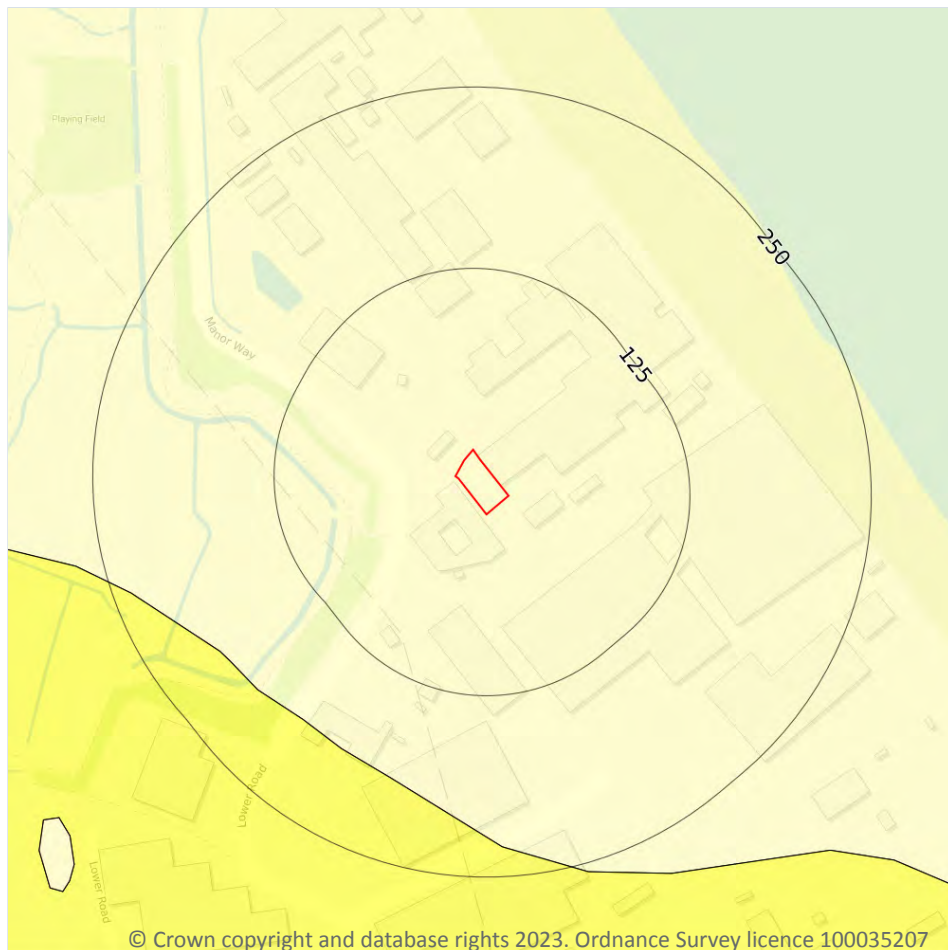
Features are displayed on the Natural ground subsidence - Landslides map on [page 152 >](#)

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 >](#)

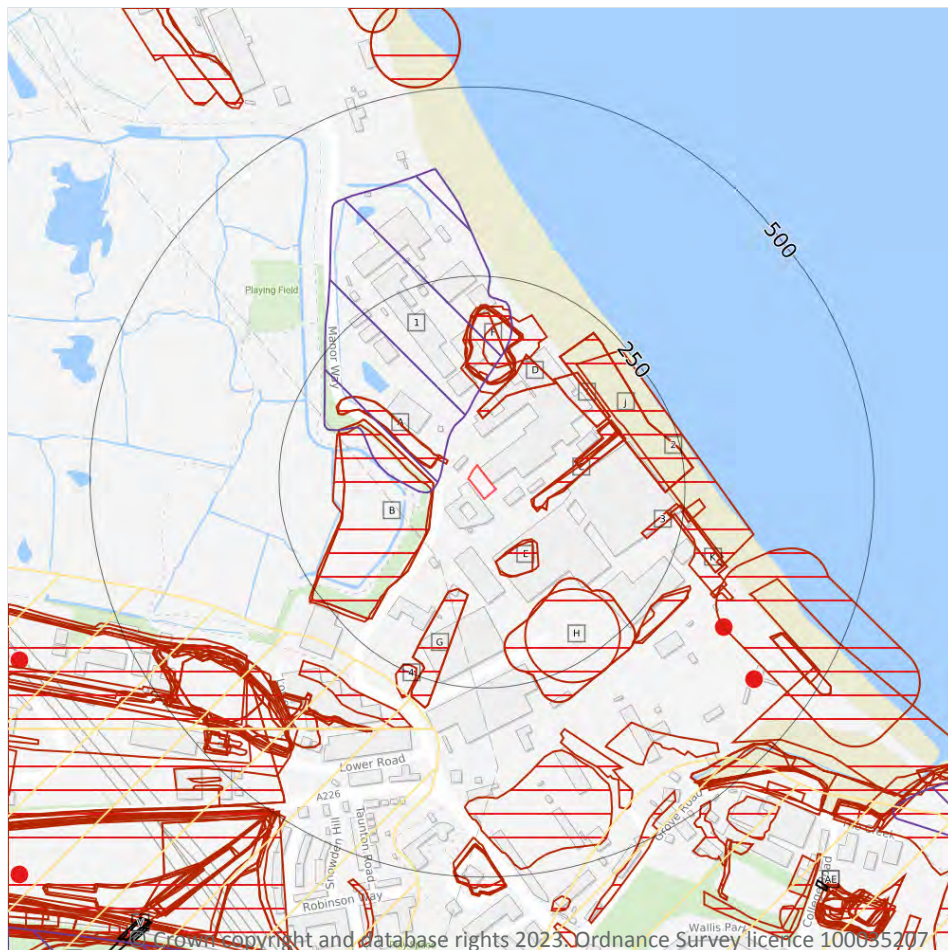
Location	Hazard rating	Details
On site	Negligible	Soluble rocks are either not thought to be present within the ground, or not prone to dissolution. Dissolution features are unlikely to be present.



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 Address: NORTHFLEET, Kent Commodity: Crushed Rock Status: Active	Type: Sea, river or canal wharf where mineral commodities are unloaded and stored 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 Address: NORTHFLEET, Kent Commodity: Marine Sand & Gravel Status: Active	Type: Sea, river or canal wharf where mineral commodities are unloaded and stored 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 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
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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.

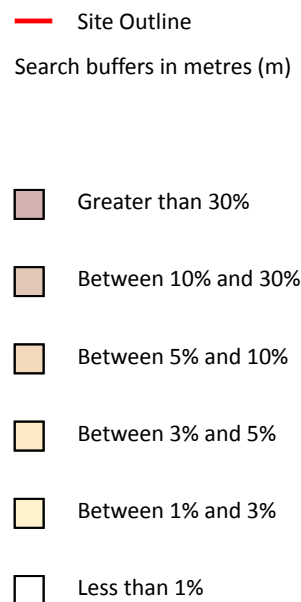
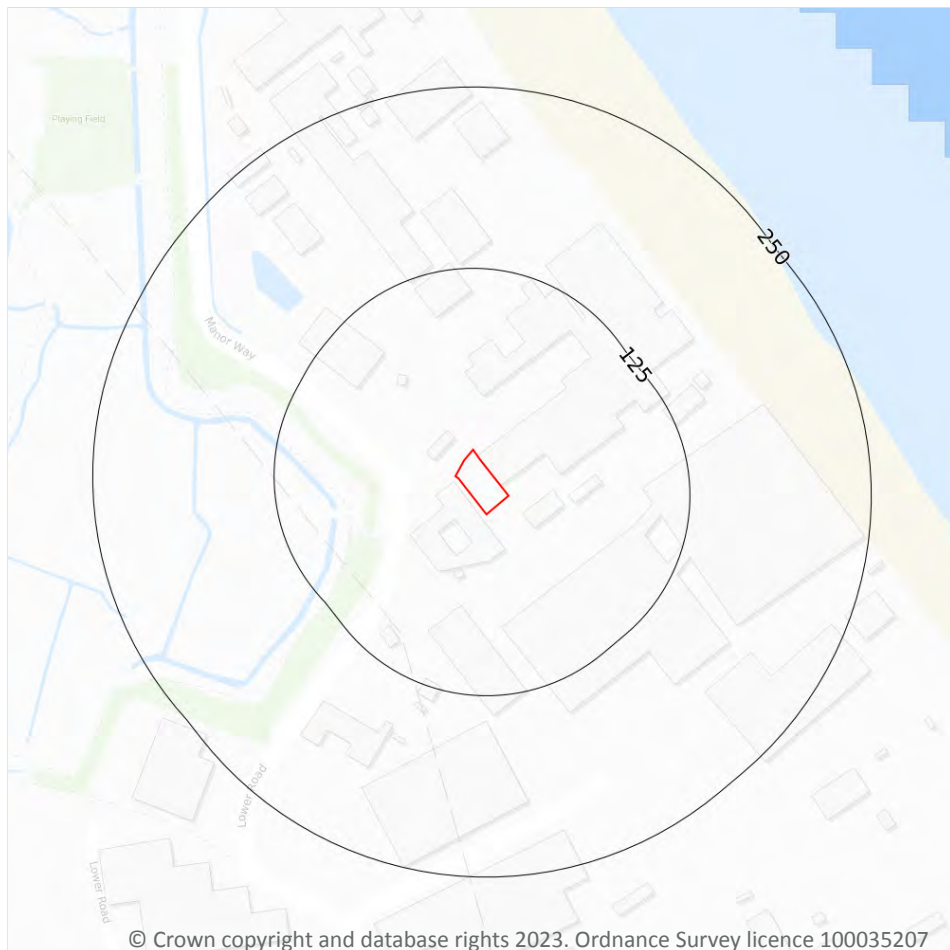
Since the database was set up in 2002 data covering most of the evaporite karst areas of the UK have now been added, along with data covering about 60% of the Chalk, and 35% of the Carboniferous Limestone outcrops. Many of the classic upland karst areas have yet to be included. Recorded so far are: Over 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 km². 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 km²; 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 km²).

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m

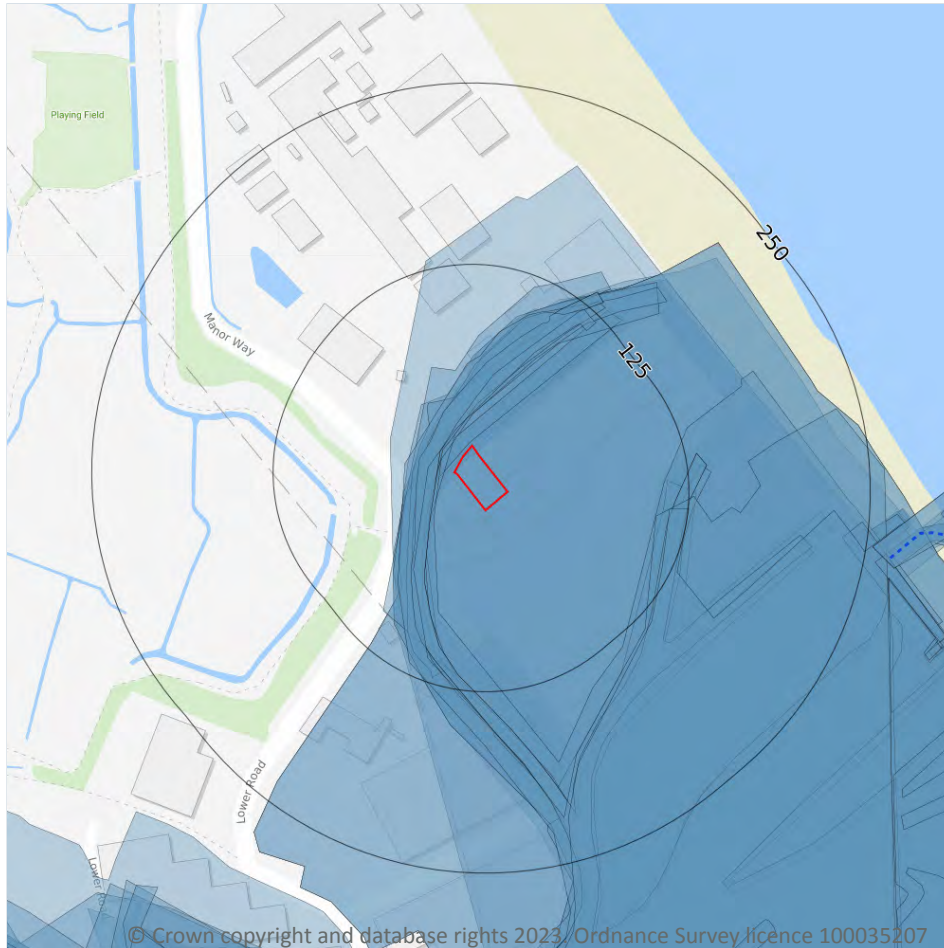
0

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 km².

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> ↗.

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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

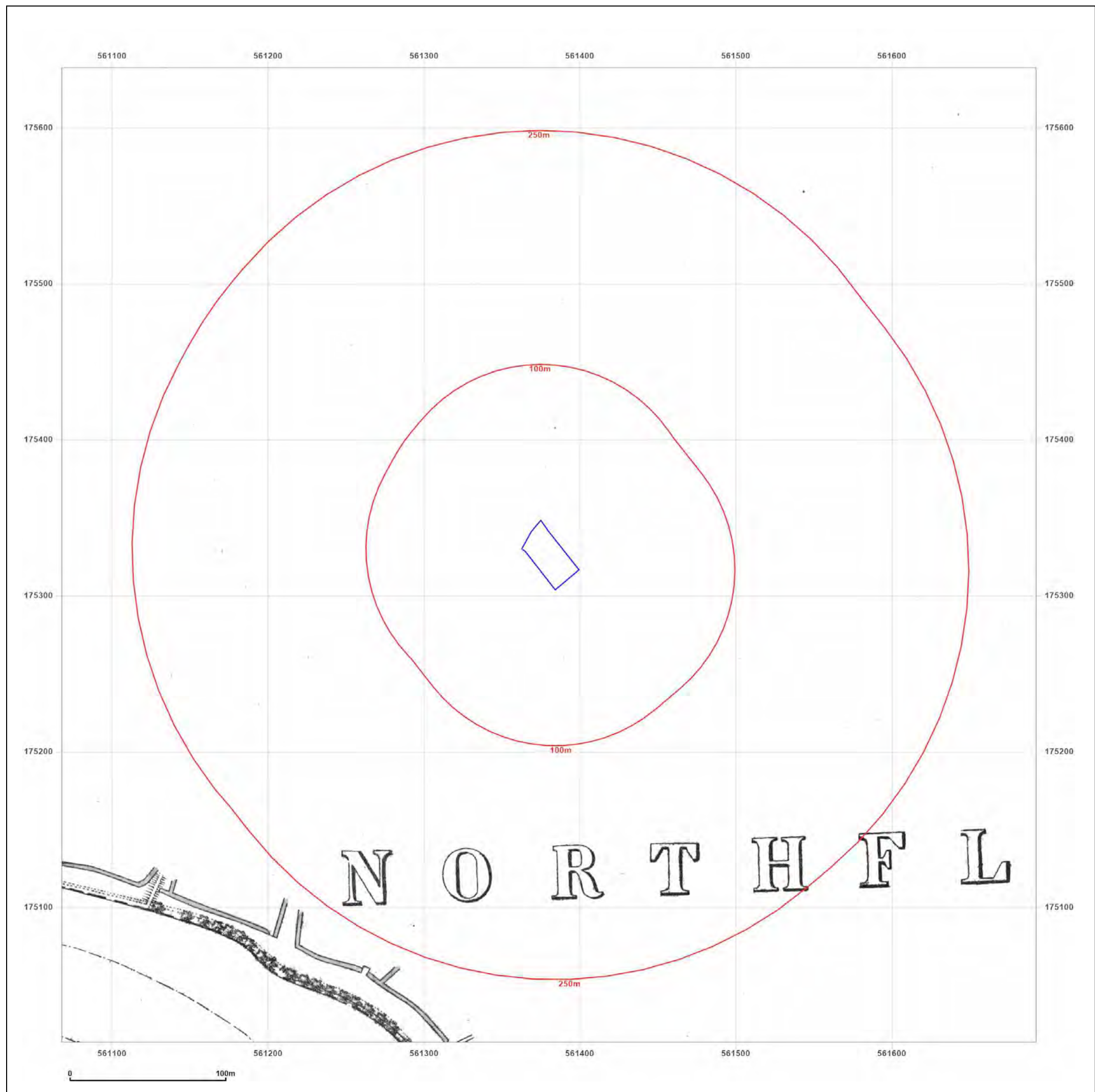
Phase One Geotechnical and Environmental Desk Study

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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Production date: 21 July 2023

Map legend available at:
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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: 1865

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1865
Revised 1865
Edition N/A
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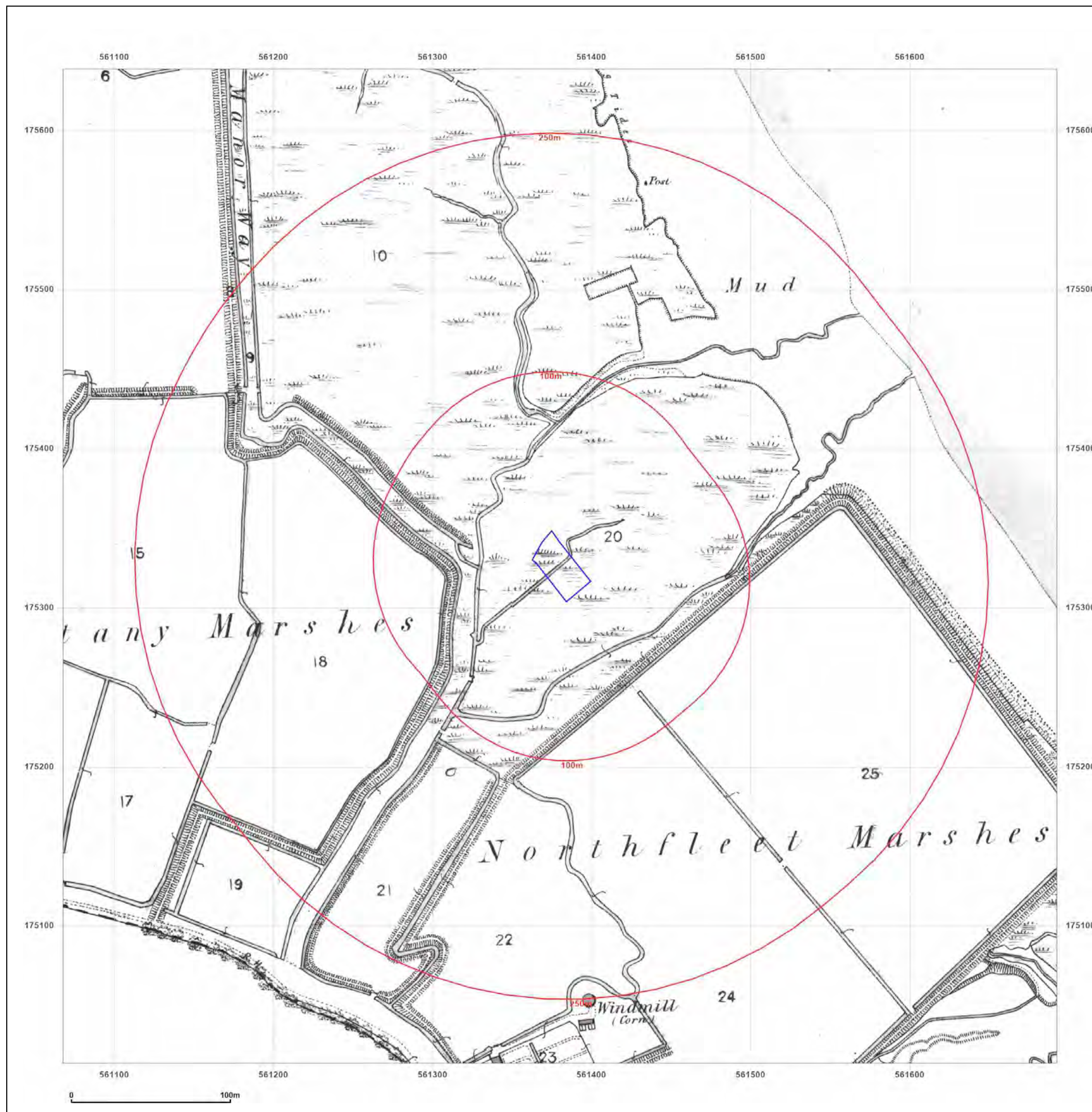


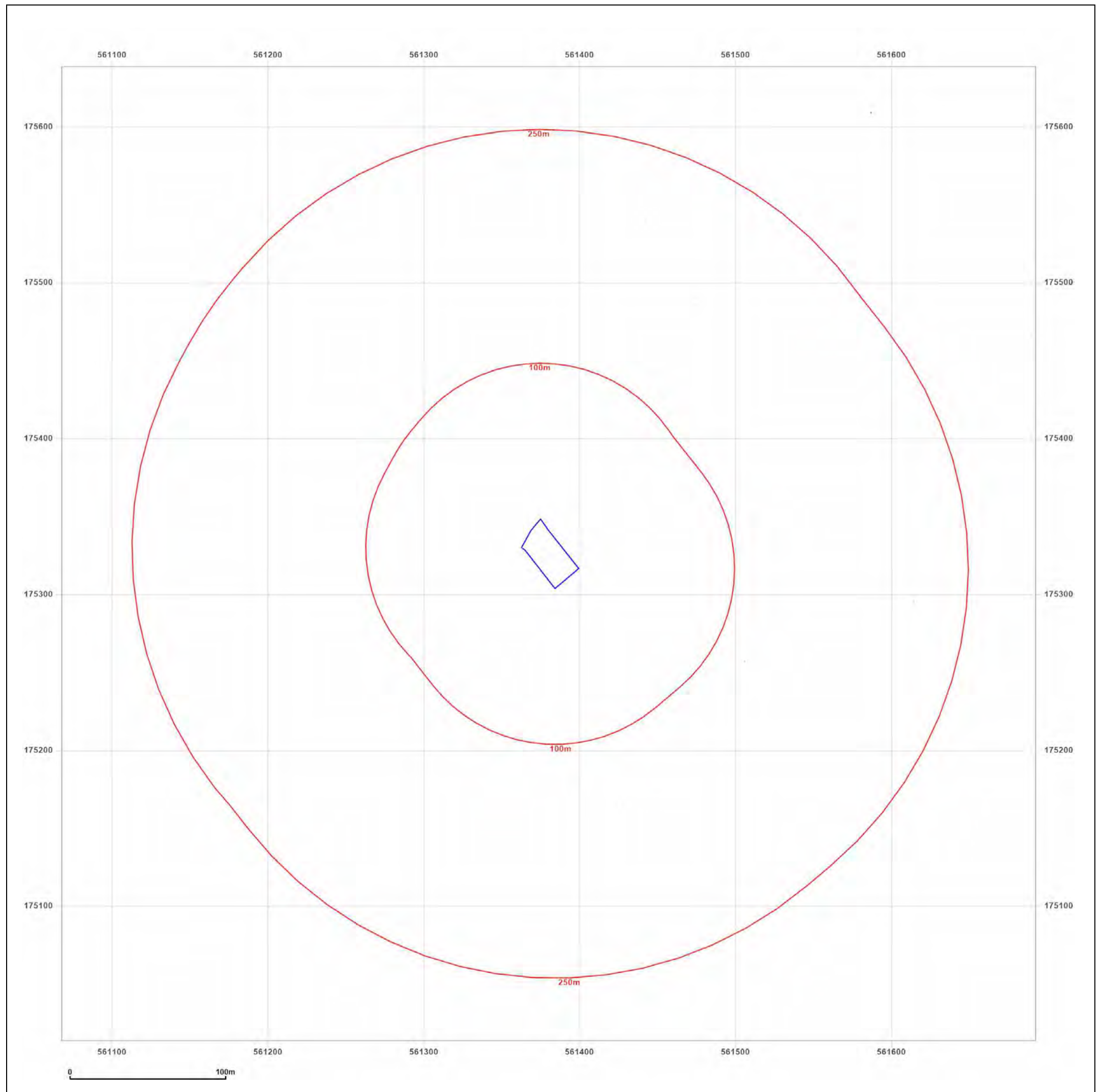
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Site Details:

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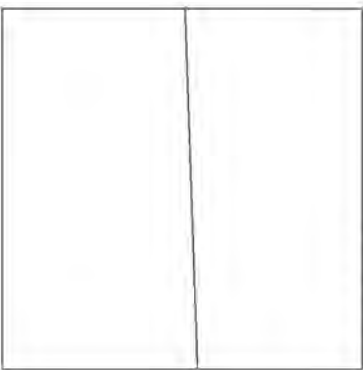
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Grid Ref: 561380, 175326

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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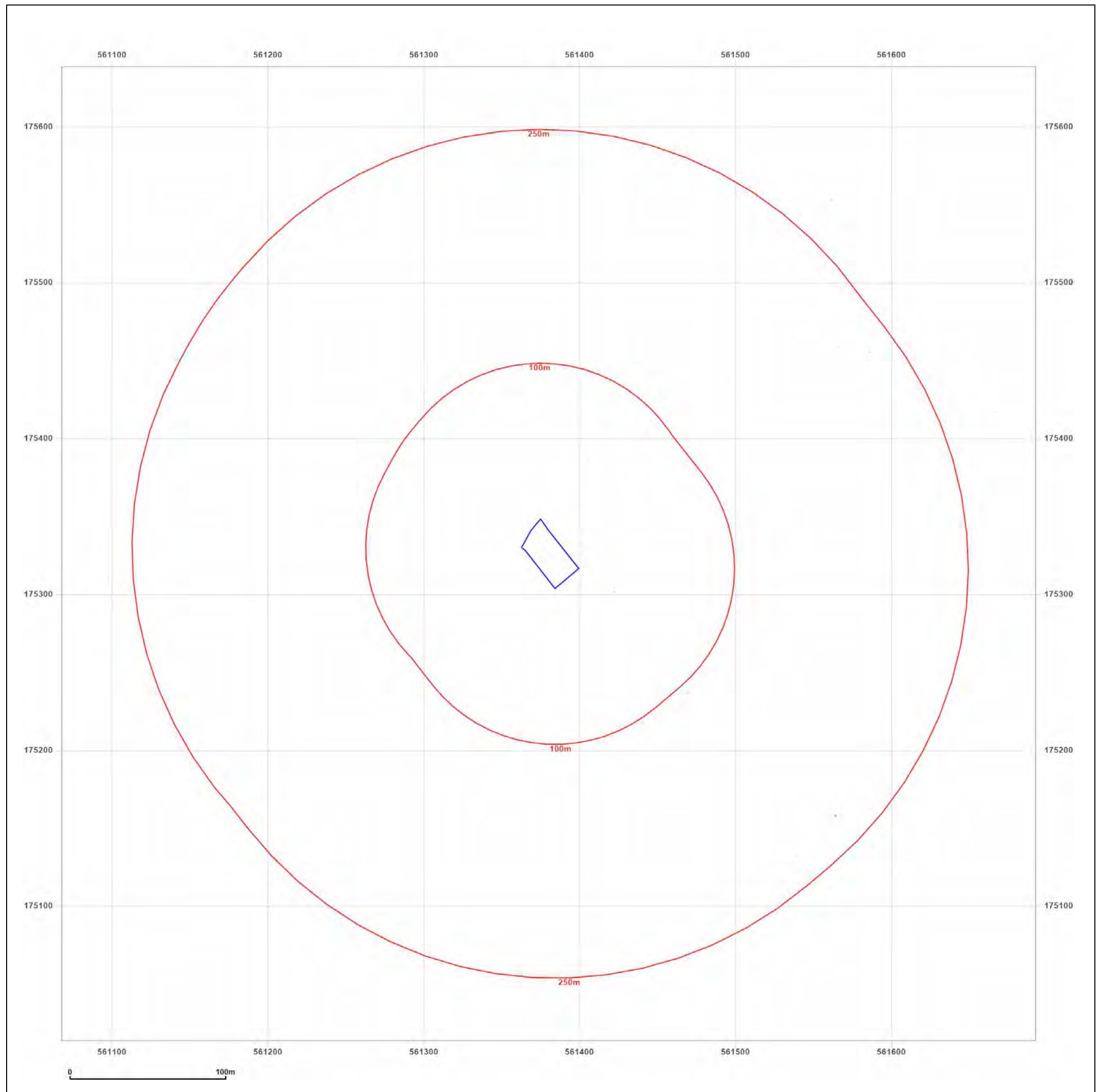


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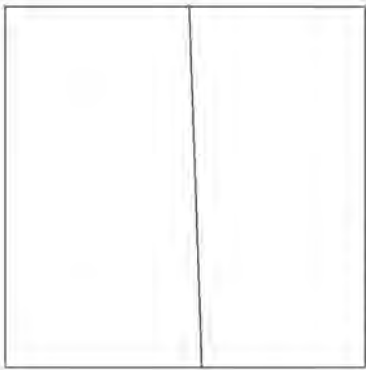
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Map Name: County Series

Map date: 1870

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
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Report Ref: EMS-882585_1128444
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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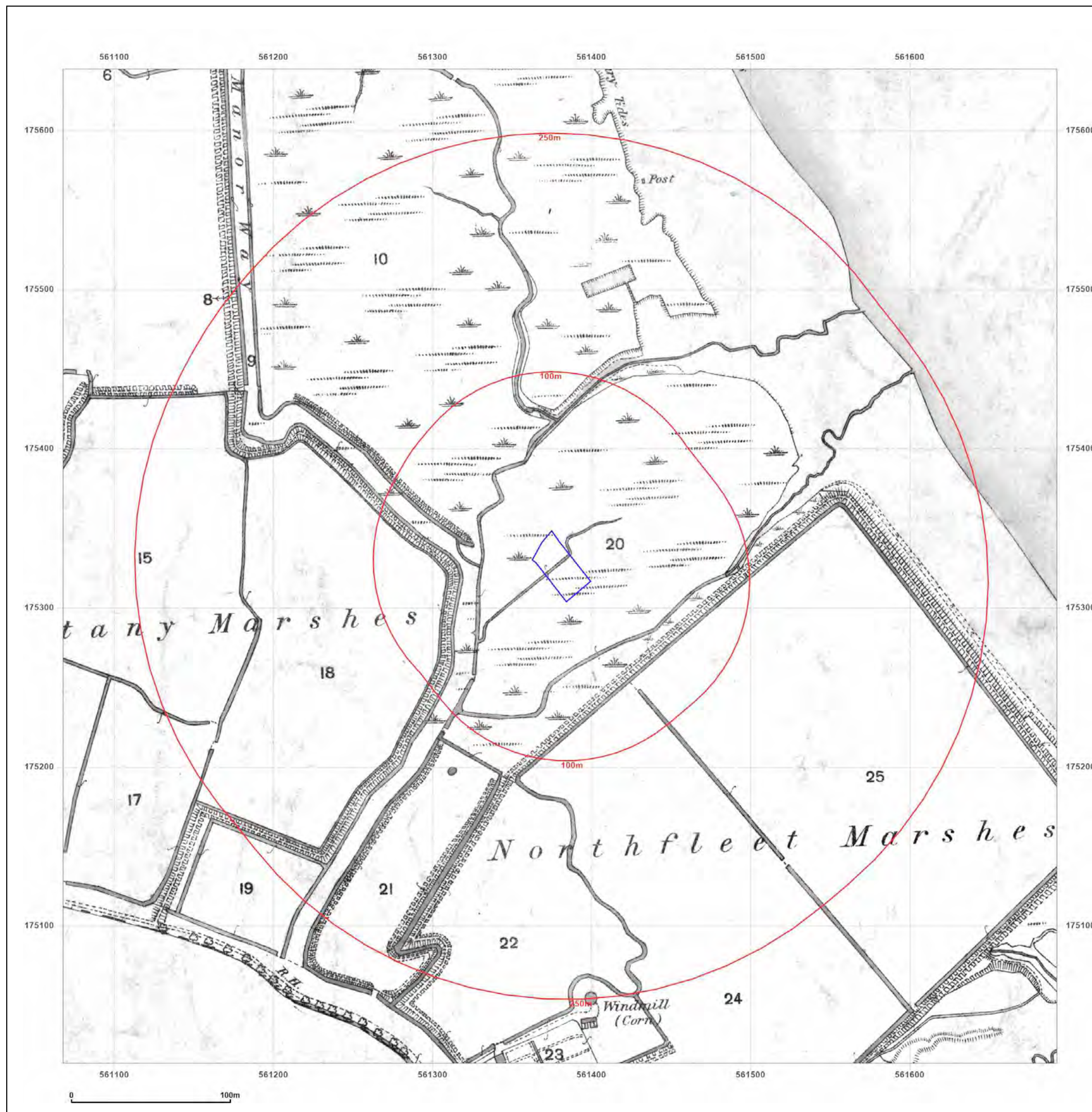


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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

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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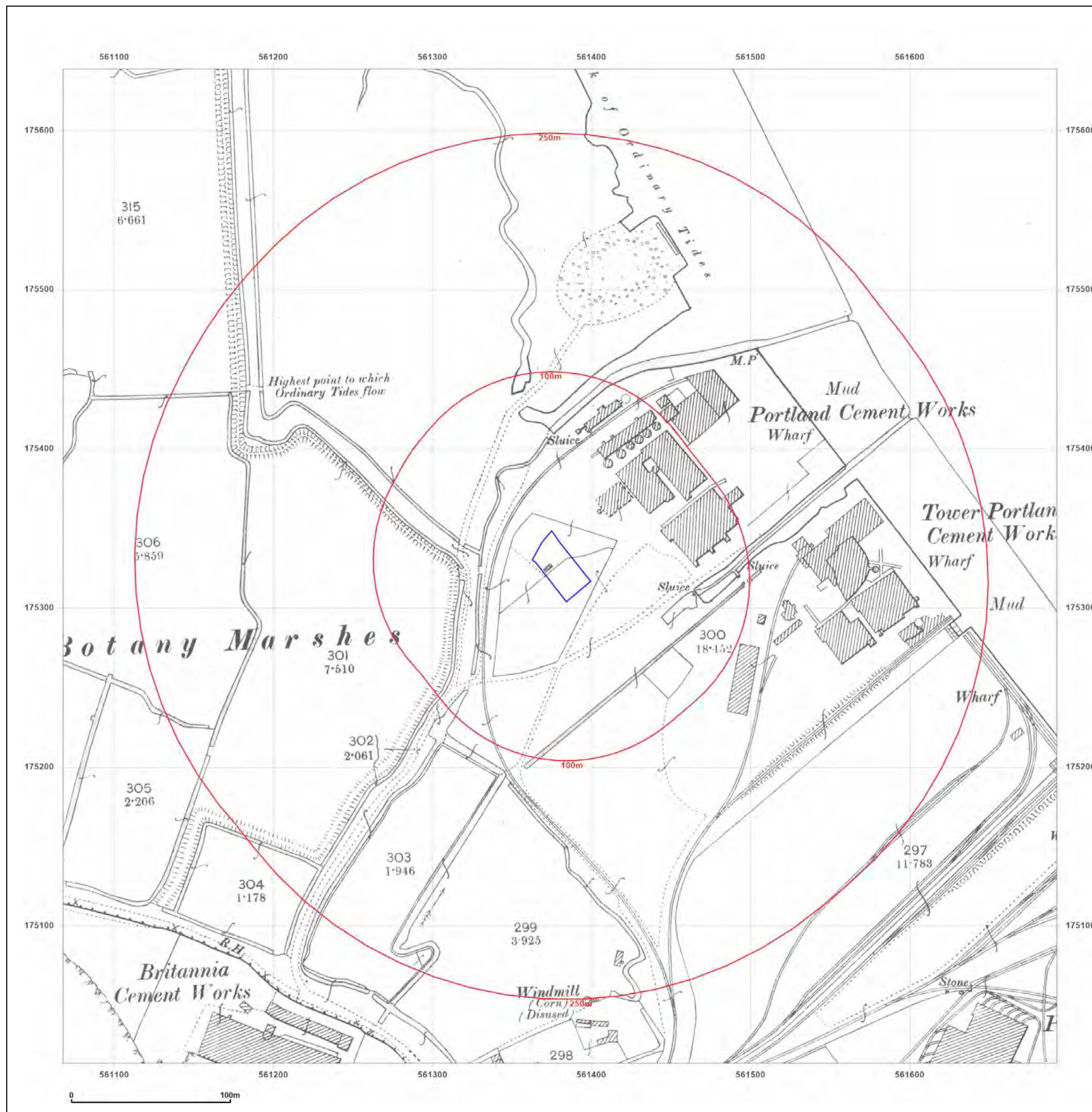


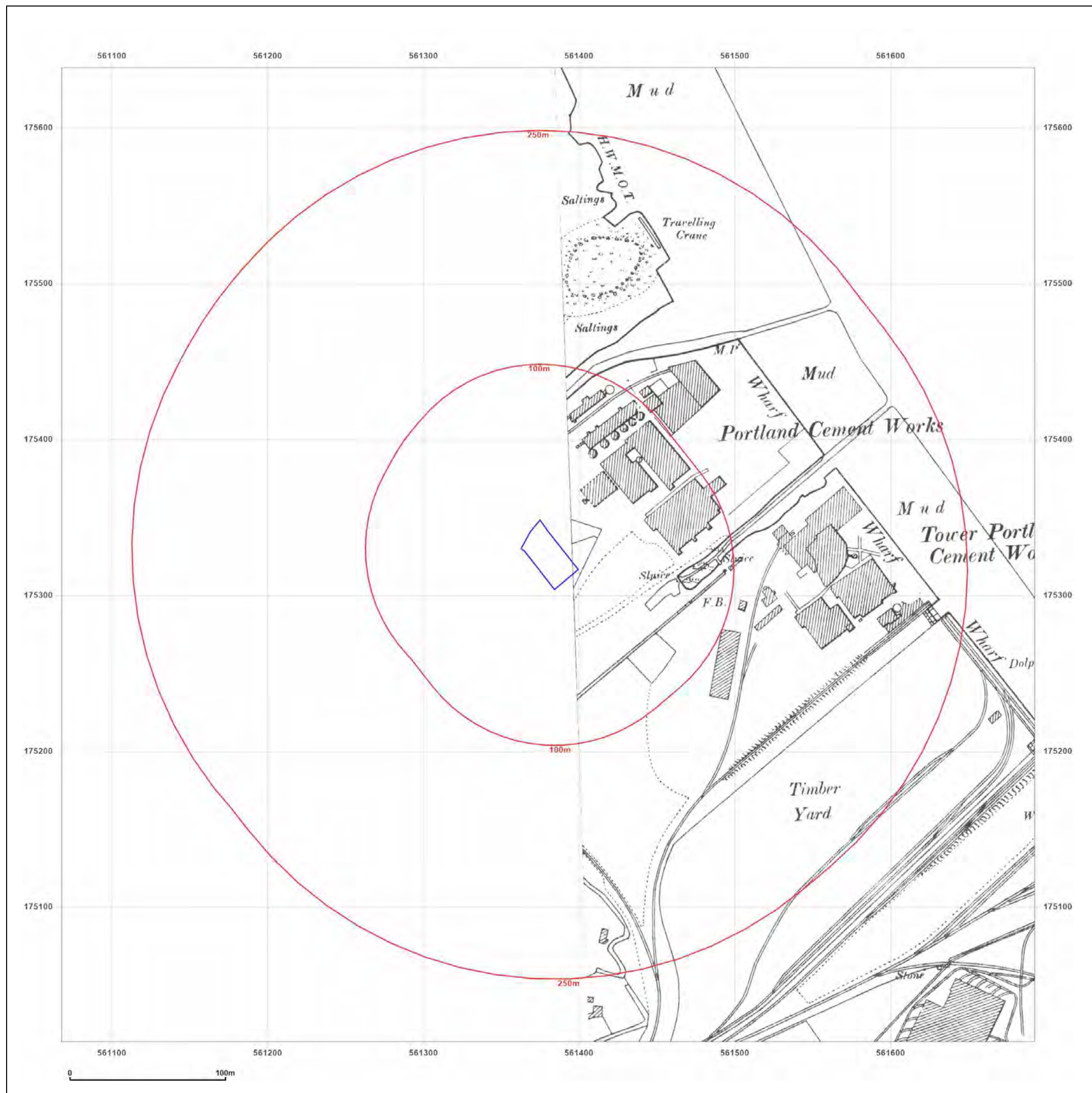
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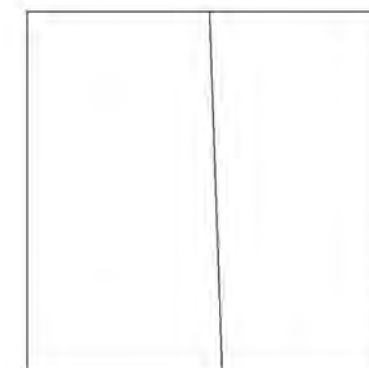
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Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1898

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1898
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Edition N/A
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Site Details:

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Client Ref: EMS_882585_1092154
Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1909

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1864
Revised 1907
Edition 1909
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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: 1952

Scale: 1:2,500

Printed at: 1:2,500



Surveyed 1952
Revised 1952
Edition N/A
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Site Details:

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Client Ref: EMS_882585_1092154
Report Ref: EMS-882585_1128444
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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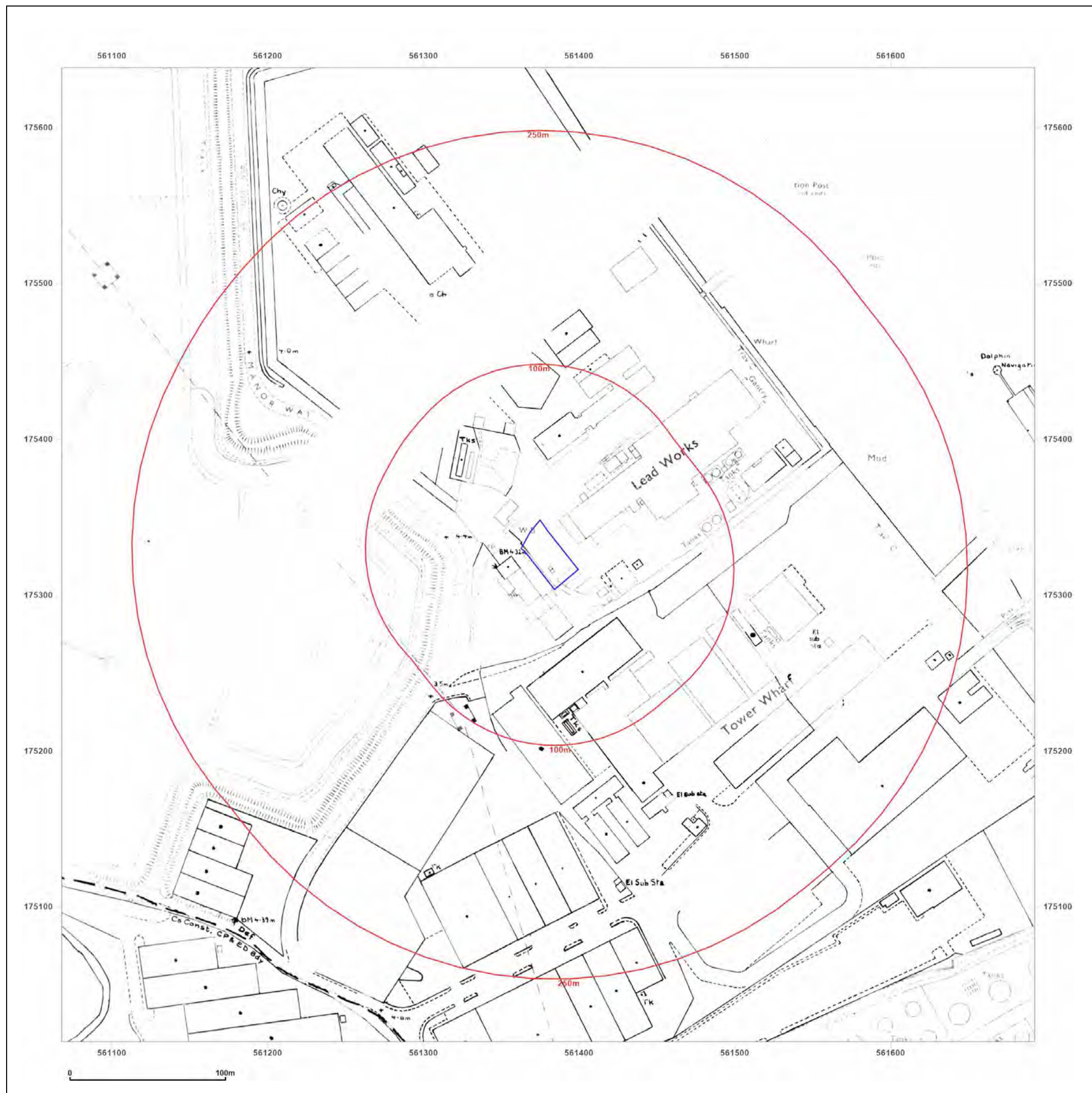
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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1989

Scale: 1:2,500

Printed at: 1:2,500



Surveyed N/A
Revised N/A
Edition N/A
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Site Details:

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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
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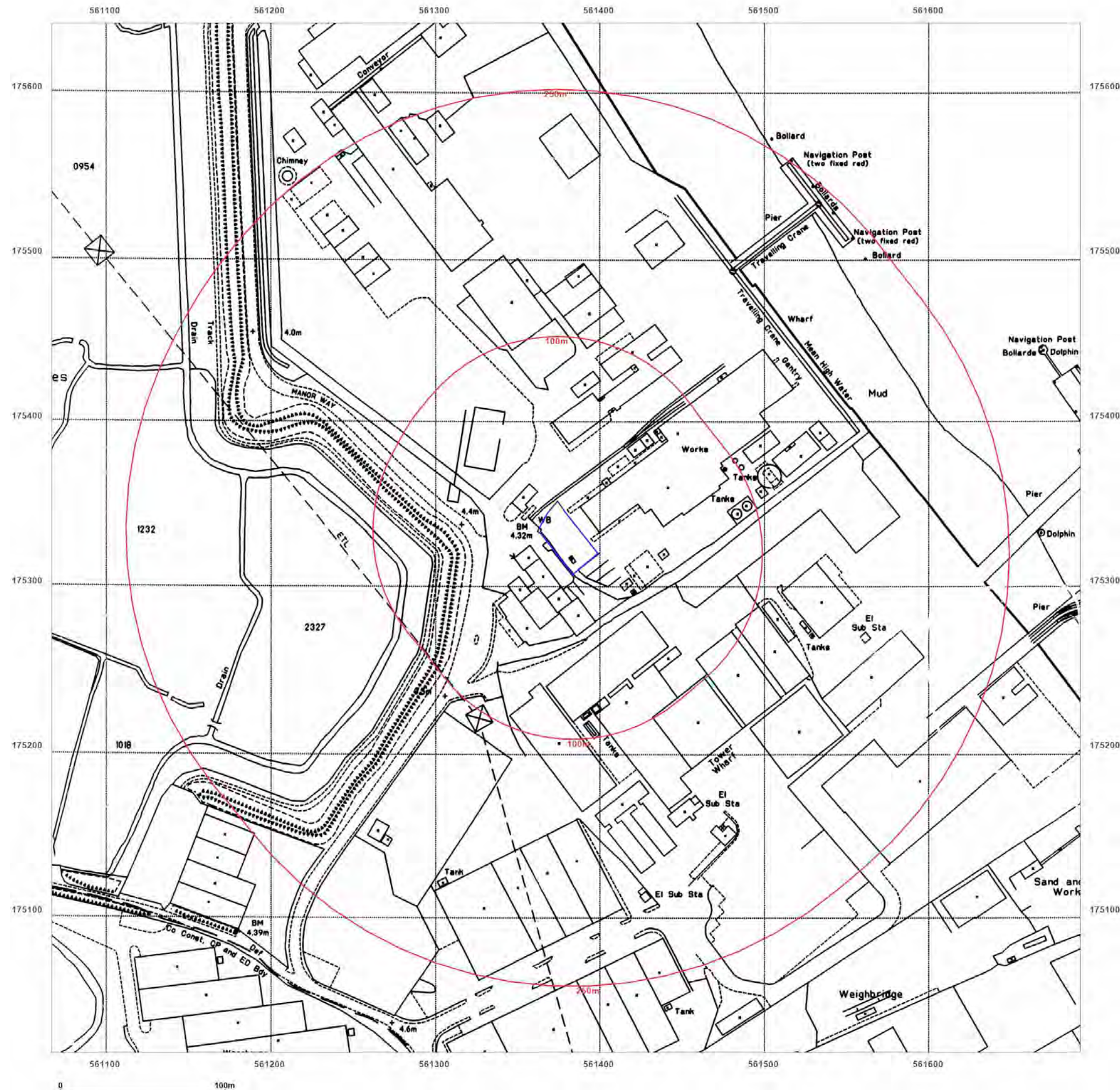


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Map Name: National Grid

Map date: 1993

Scale: 1:2,500

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Revised N/A
Edition N/A
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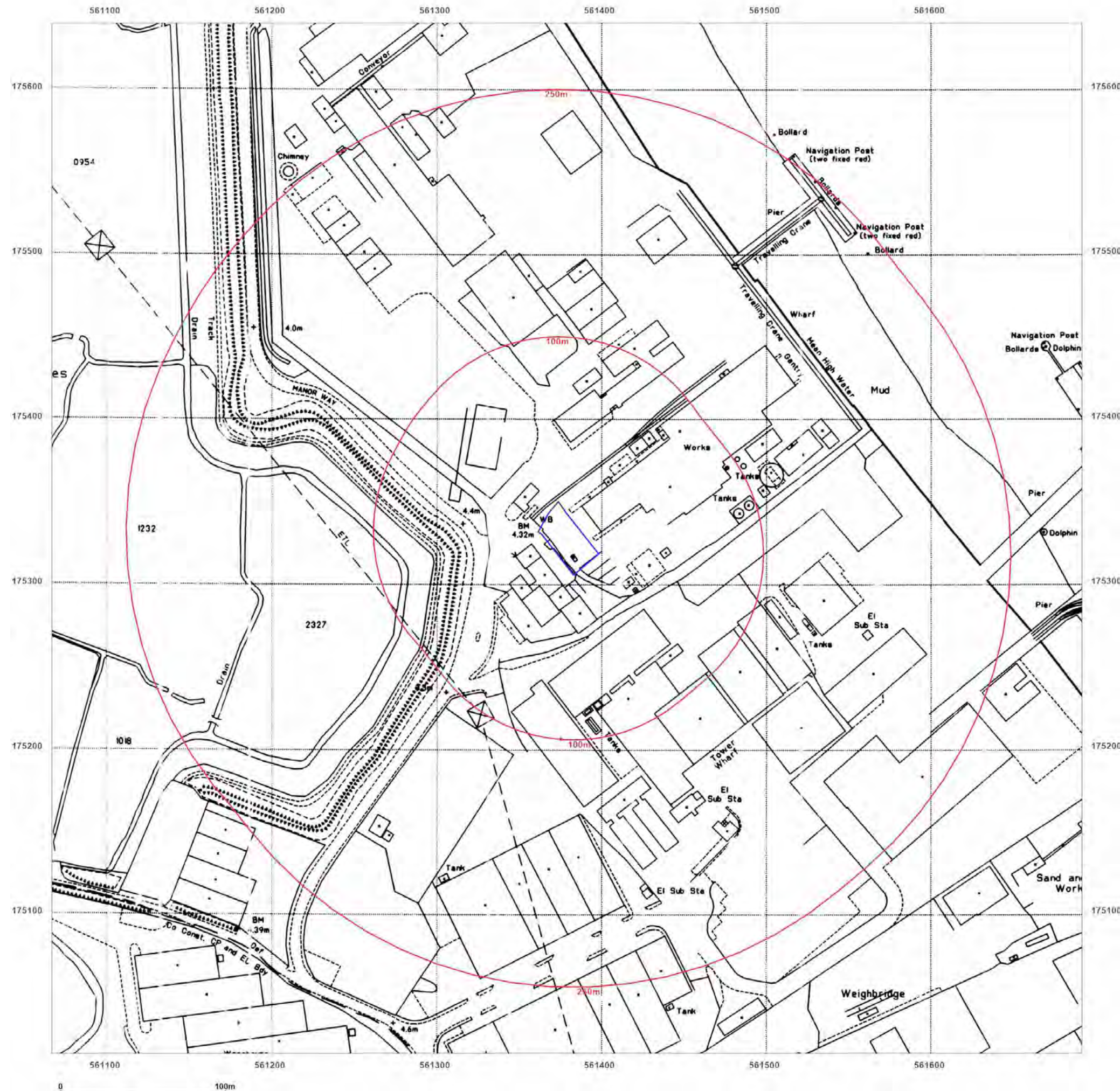


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Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1995

Scale: 1:2,500

Printed at: 1:2,500



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



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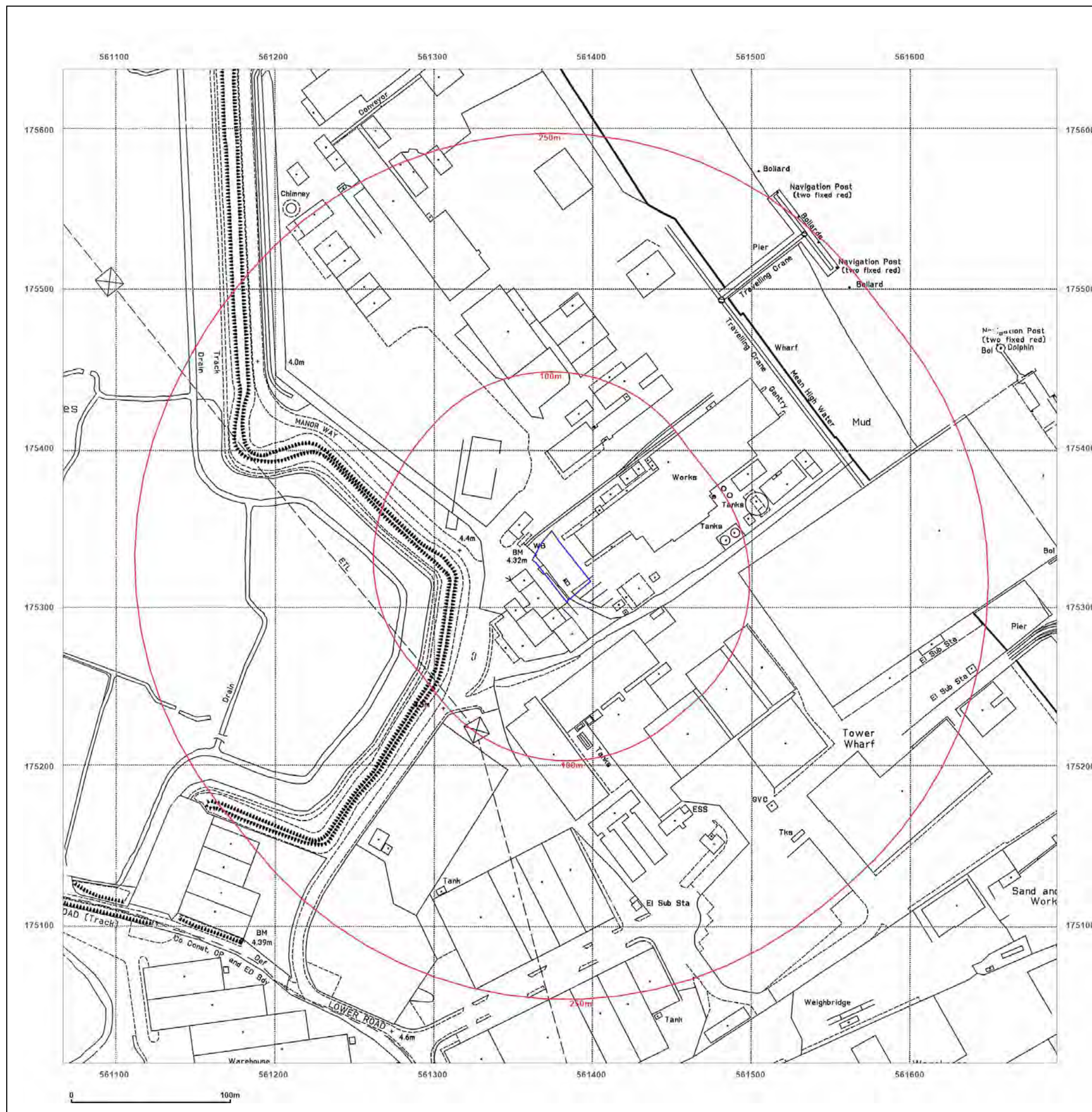


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Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1995

Scale: 1:2,500

Printed at: 1:2,500



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



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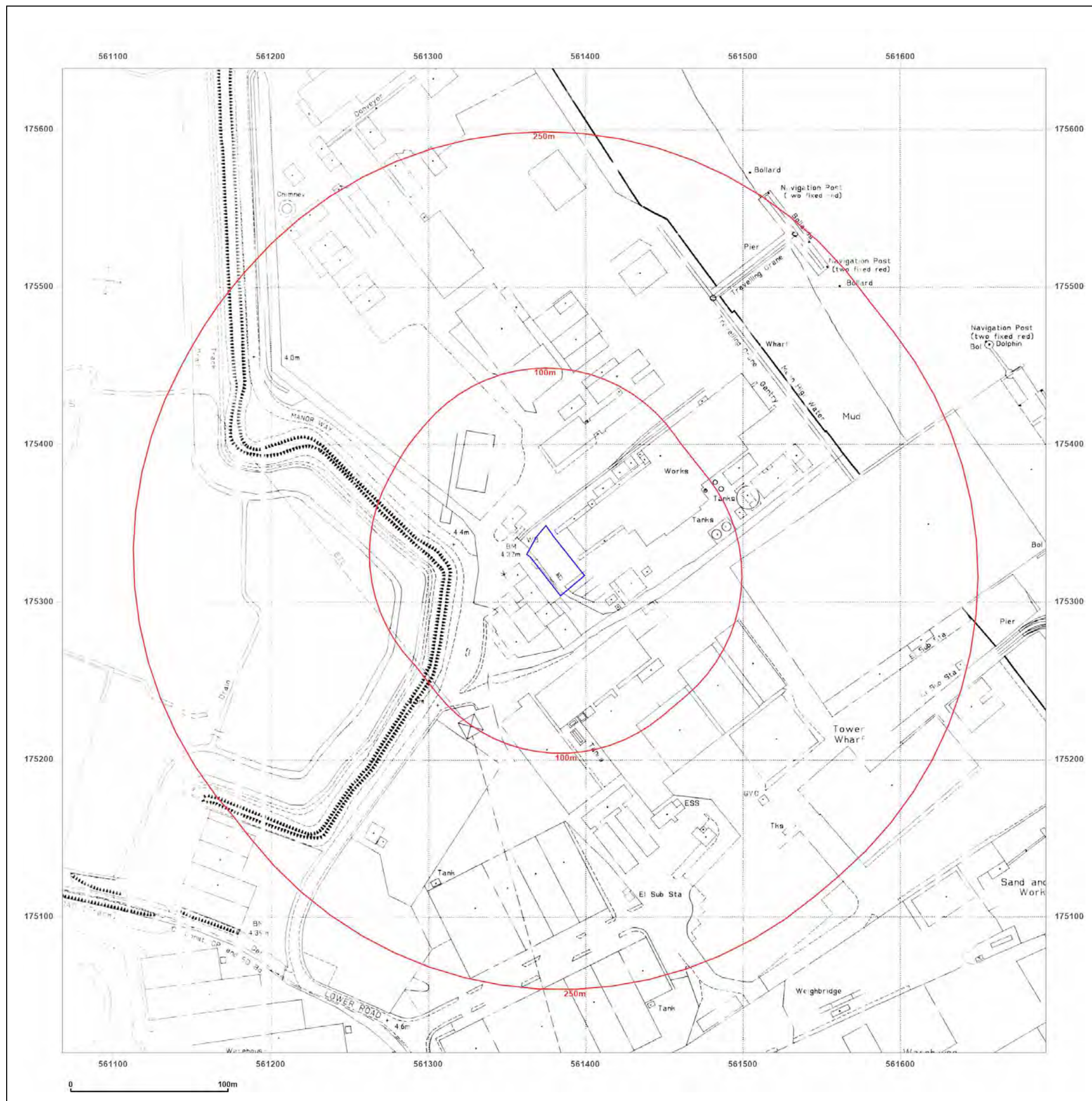


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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: LandLine

Map date: 2003

Scale: 1:1,250

Printed at: 1:1,250



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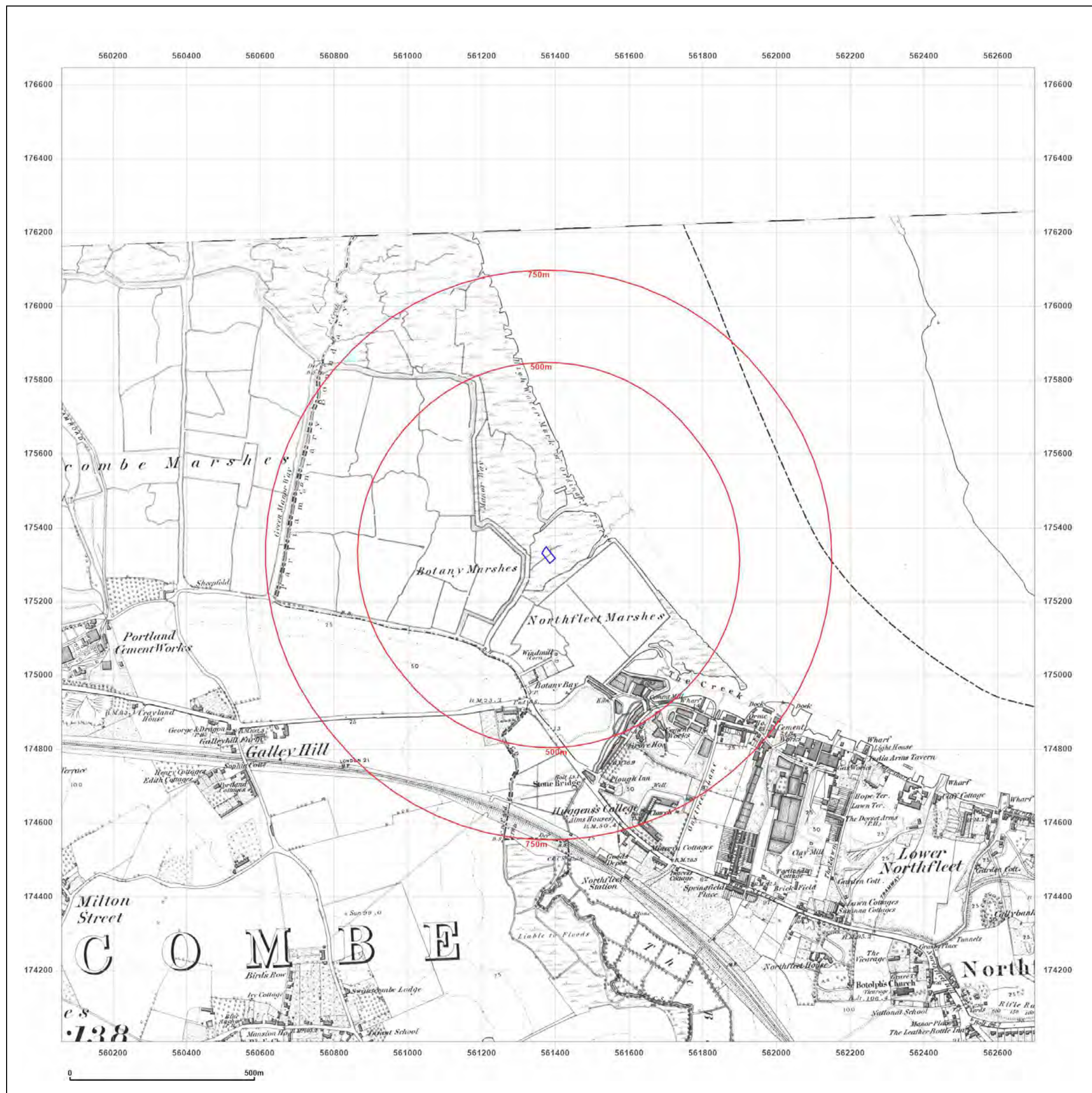
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Site Details:

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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
Copyright N/A
Levelled N/A



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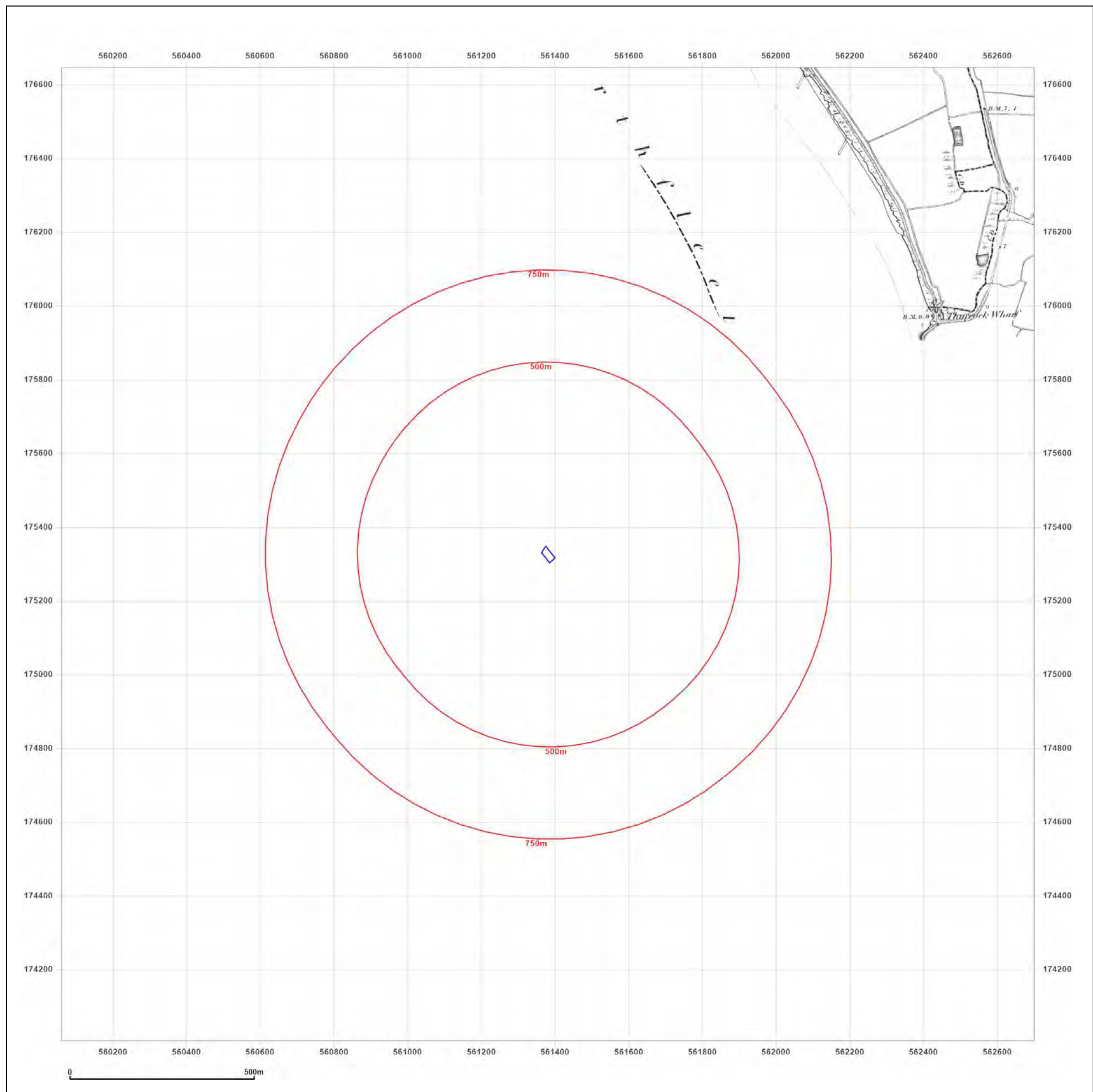


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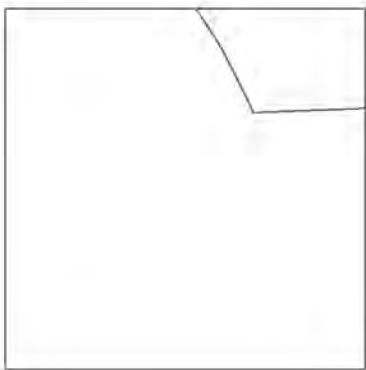
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Printed at: 1:10,560



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



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Map Name: County Series

Map date: 1895

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
Revised 1895
Edition 1899
Copyright N/A
Levelled N/A

Surveyed 1864
Revised 1895
Edition N/A
Copyright N/A
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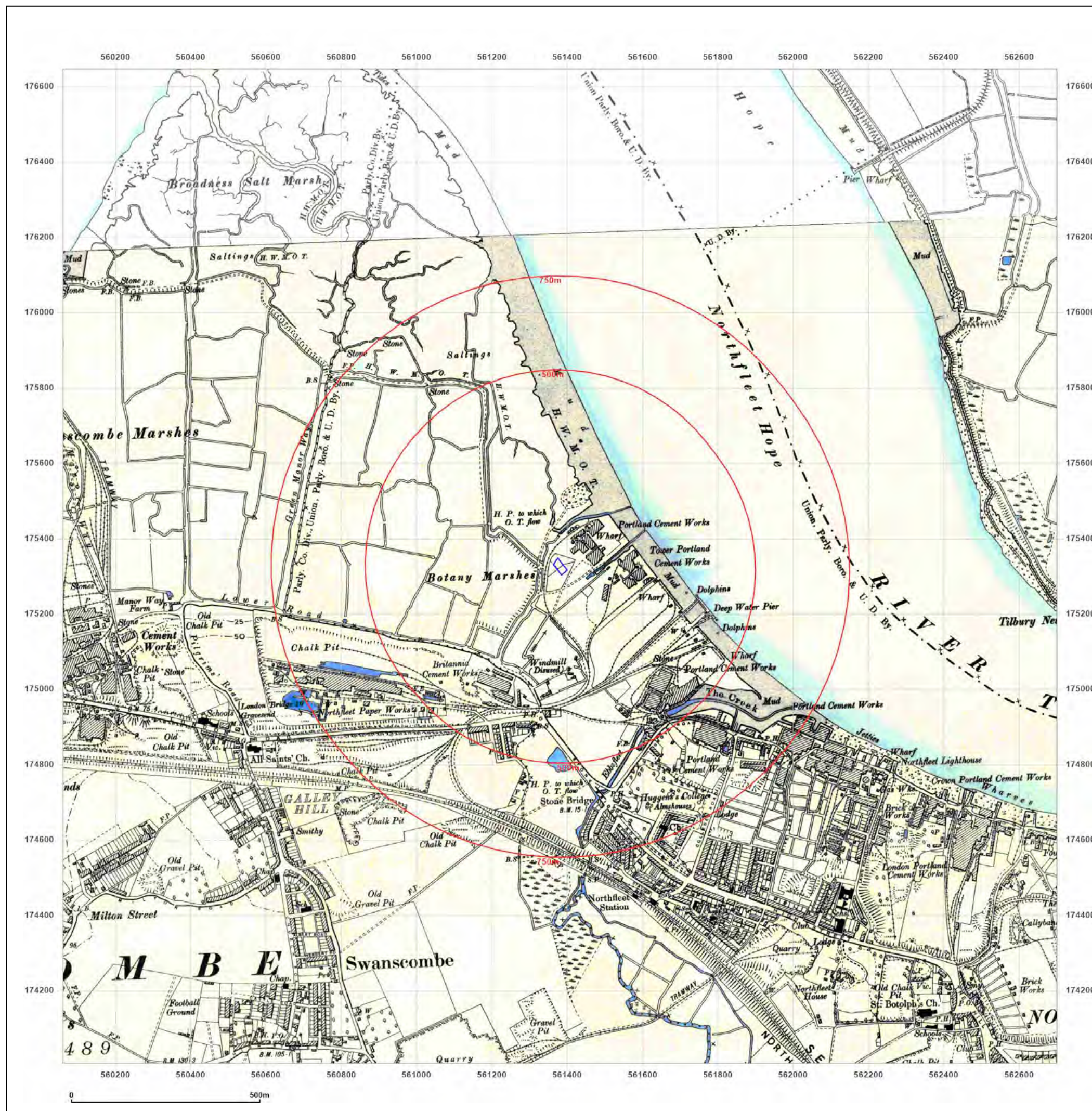


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Grid Ref: 561380, 175326

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
 Levelled N/A

Surveyed 1864
 Revised 1895
 Edition N/A
 Copyright N/A
 Levelled N/A



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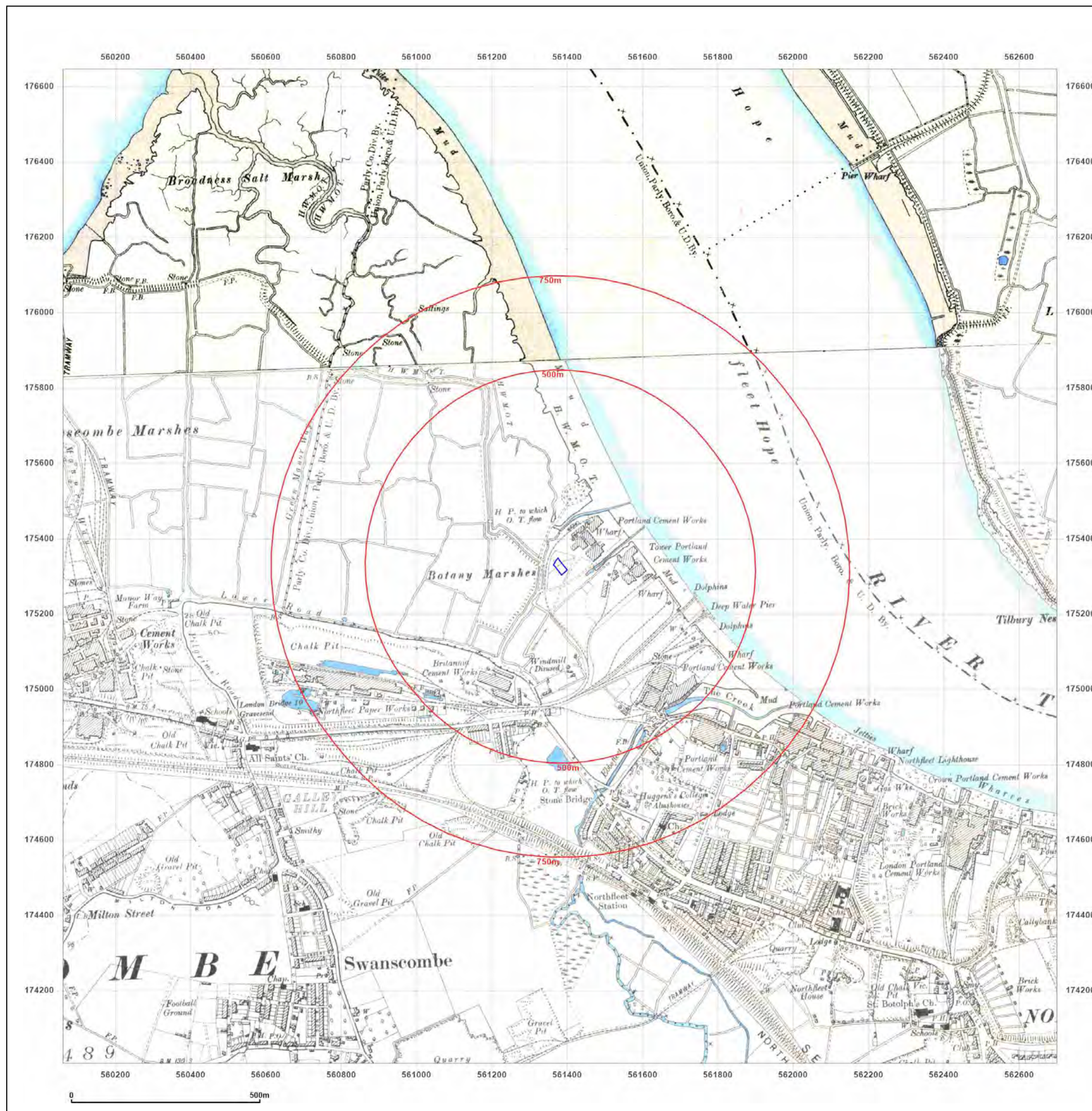


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Grid Ref: 561380, 175326

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
Levelled N/A

Surveyed 1866
Revised 1895
Edition N/A
Copyright N/A
Levelled N/A



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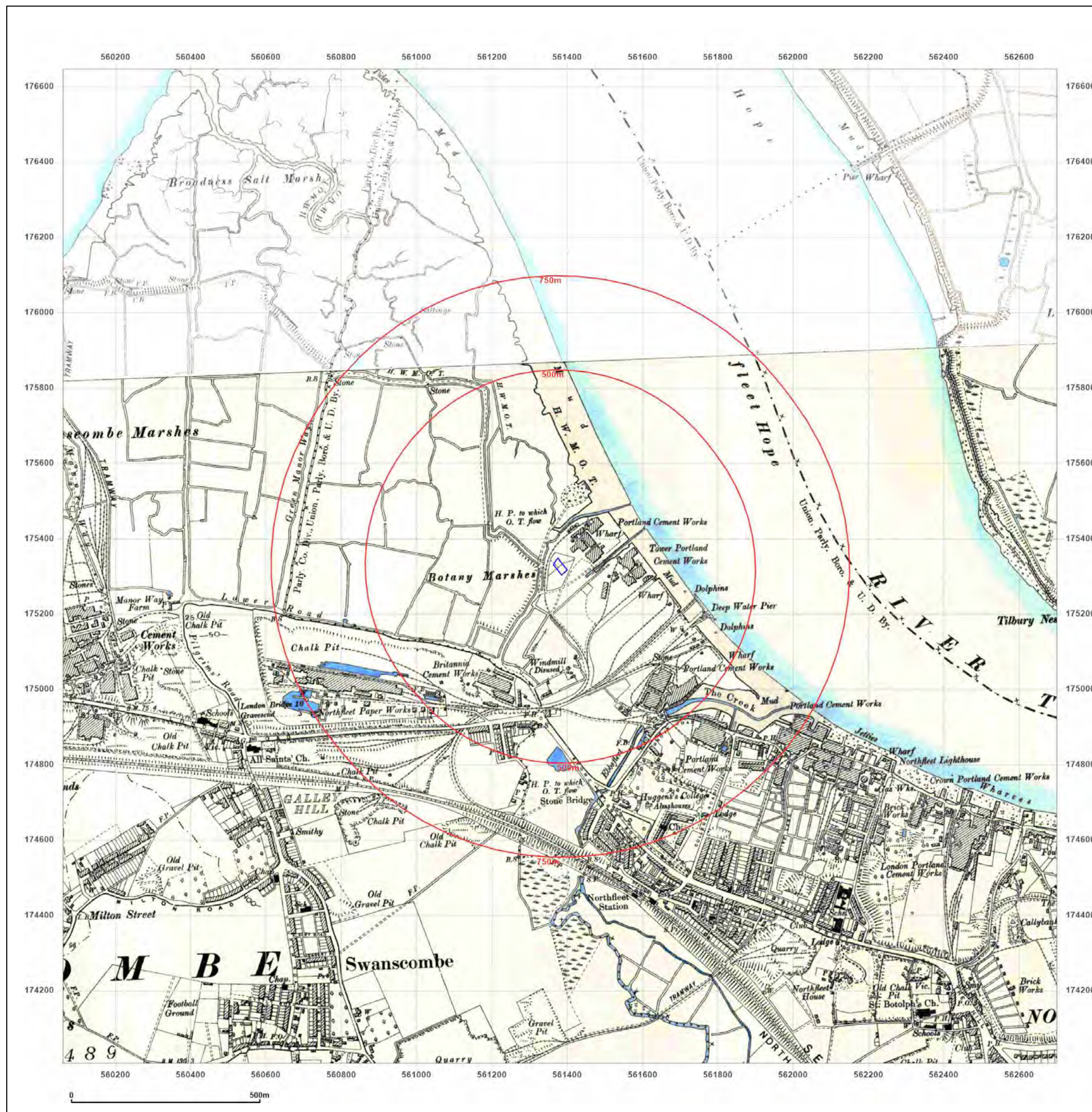


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Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1895-1899

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1866
 Revised 1895
 Edition N/A
 Copyright N/A
 Levelled N/A

Surveyed 1864
 Revised 1895
 Edition N/A
 Copyright N/A
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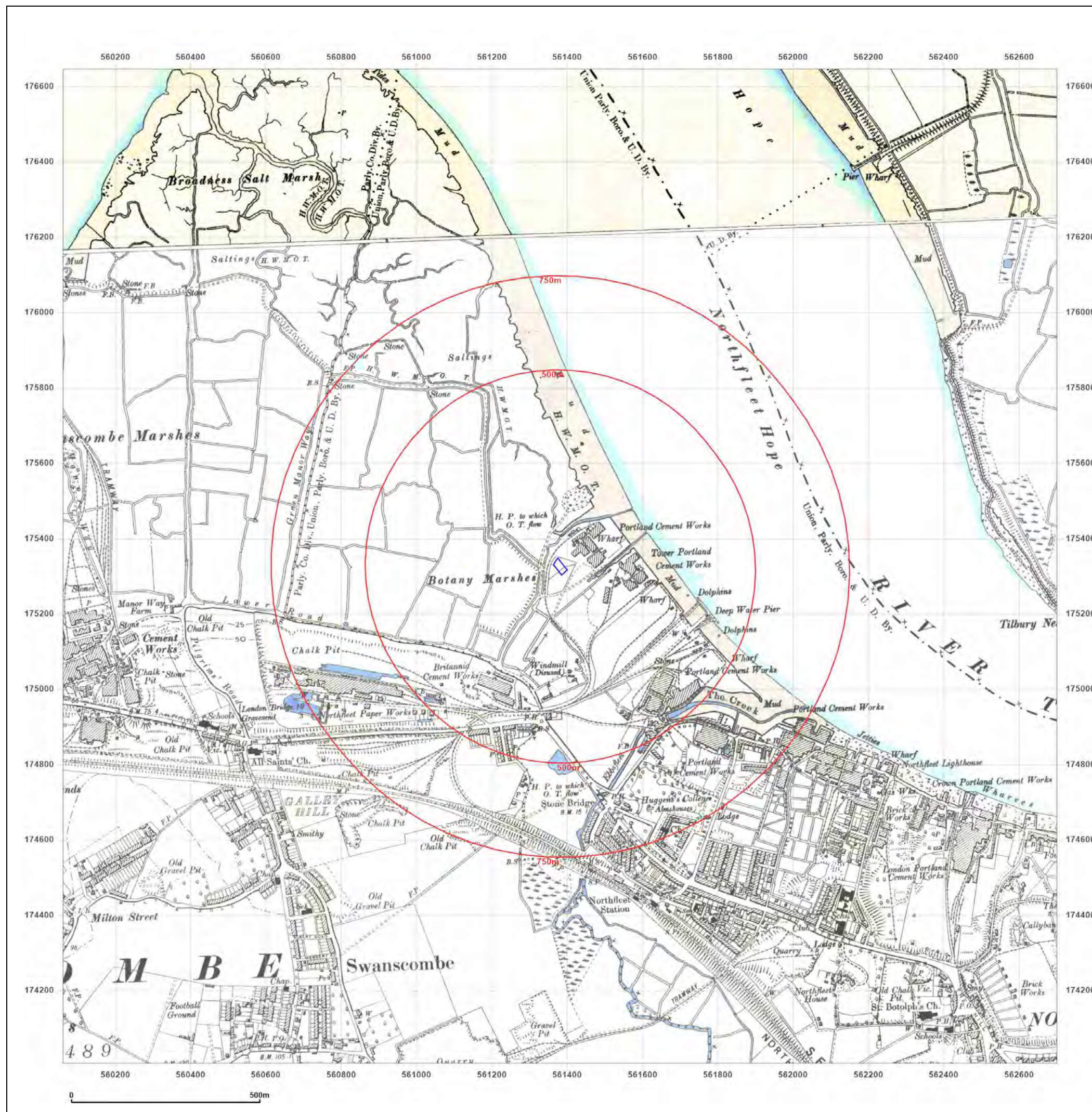


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Site Details:

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Client Ref: EMS_882585_1092154
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



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

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



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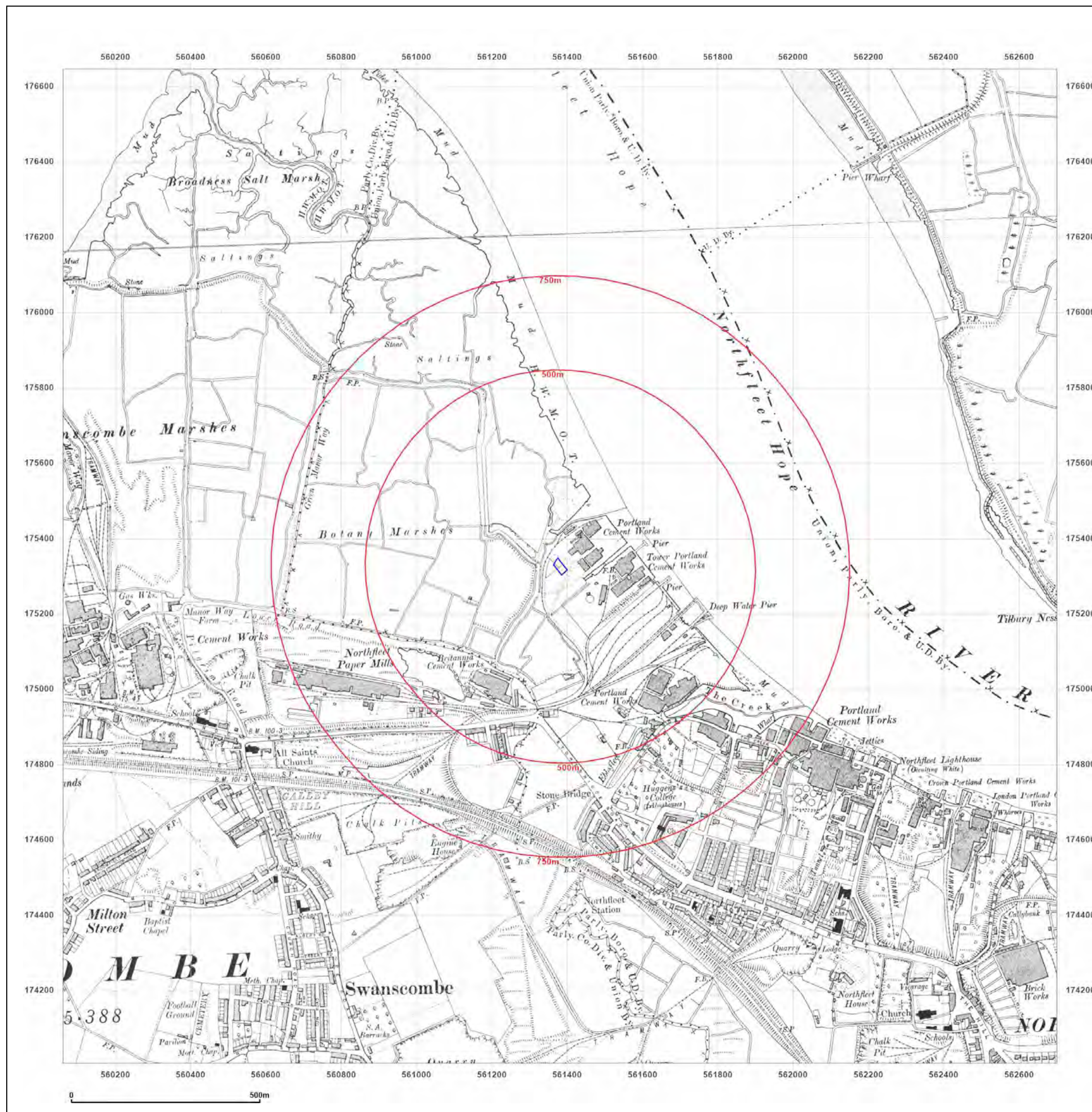


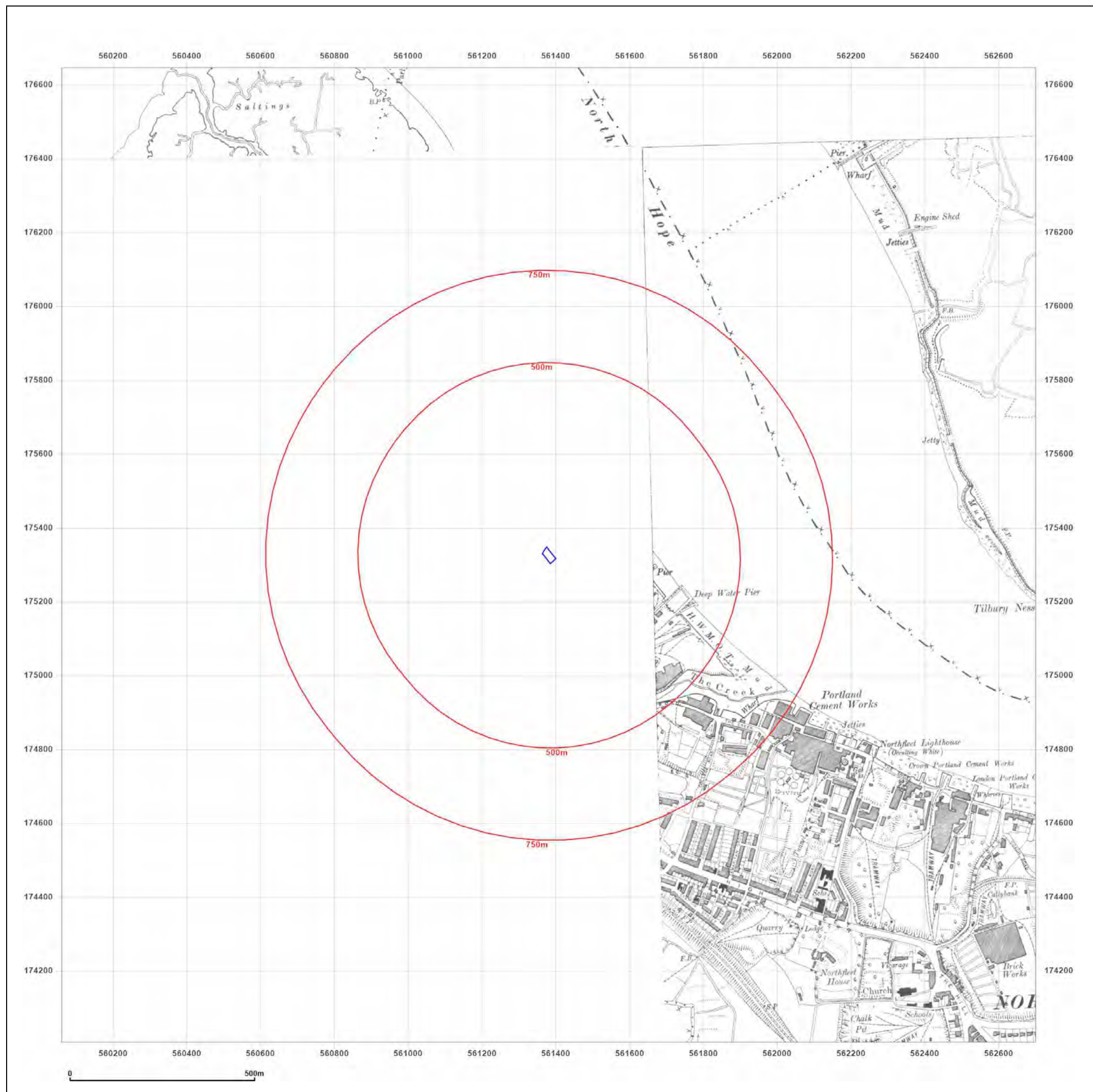
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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: County Series
Map date: 1916
Scale: 1:10,560
Printed at: 1:10,560

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

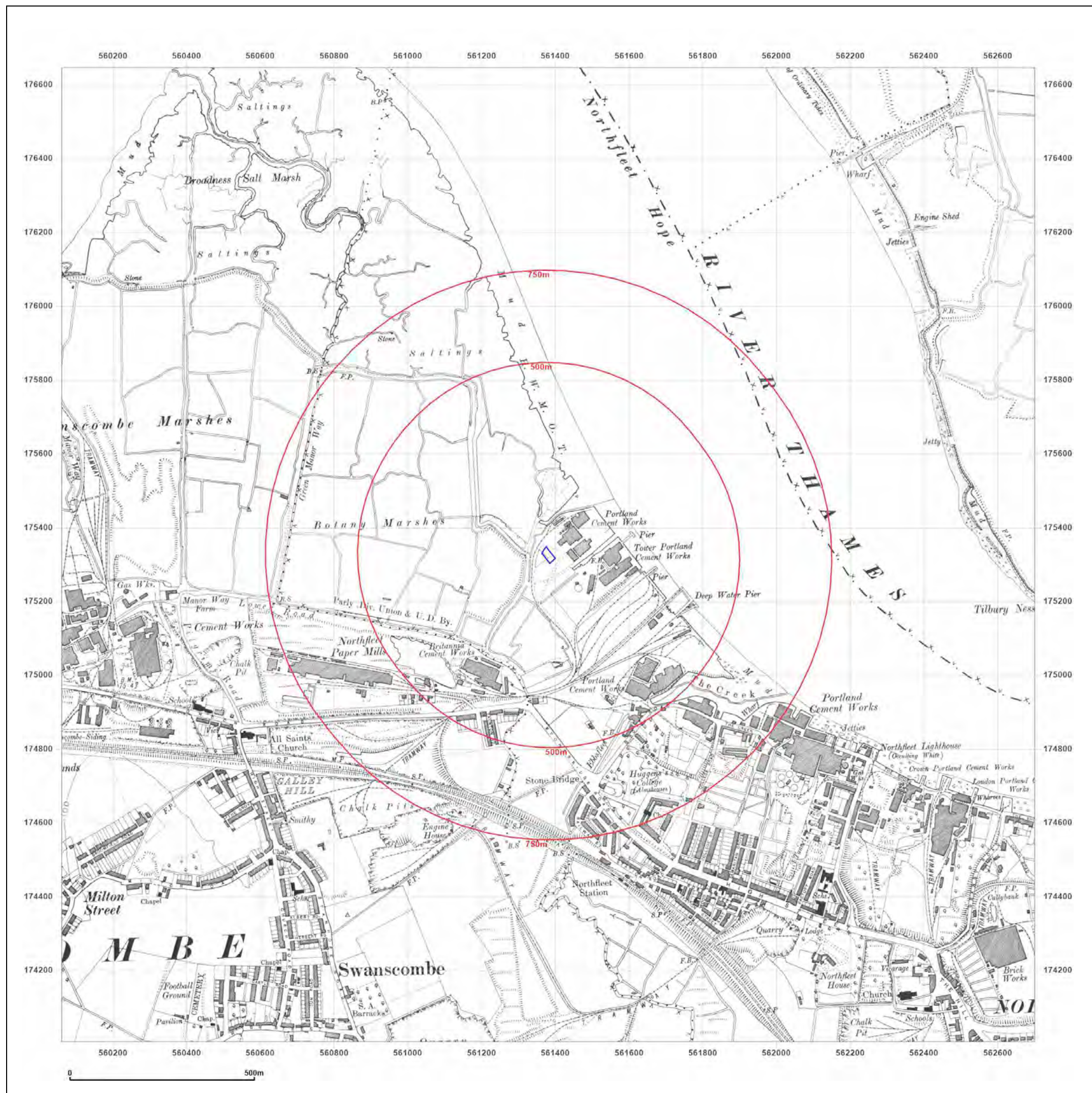
Surveyed 1864
Revised 1916
Edition N/A
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Site Details:

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Client Ref: EMS_882585_1092154
Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: County Series

Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1923
Edition 1923
Copyright N/A
Levelled N/A



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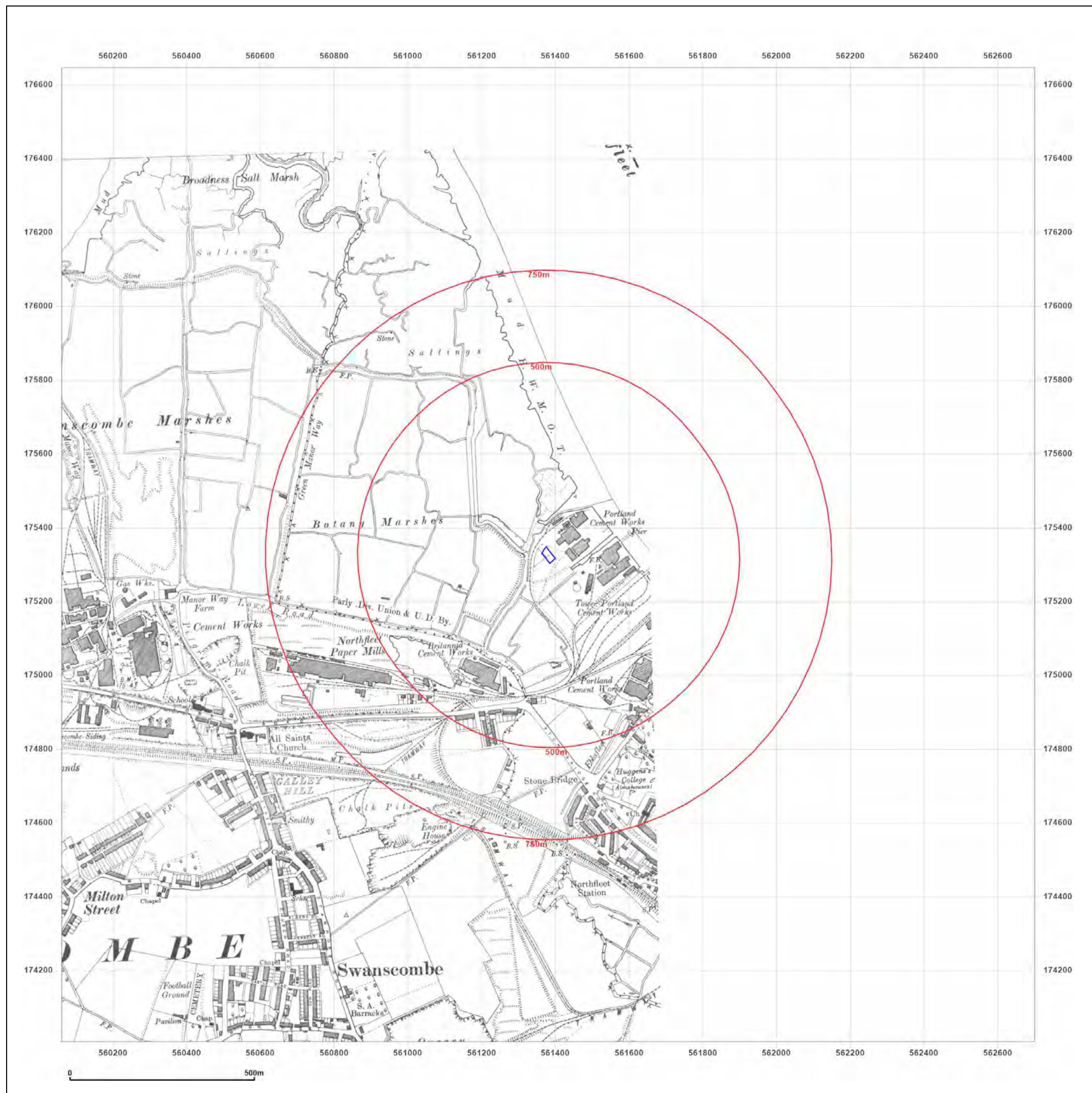


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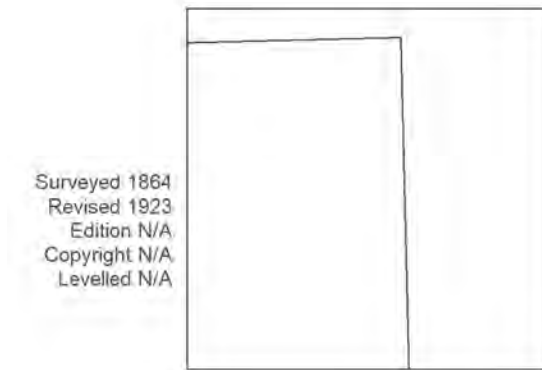
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Map Name: County Series

Map date: 1923

Scale: 1:10,560

Printed at: 1:10,560



Surveyed 1864
Revised 1923
Edition N/A
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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

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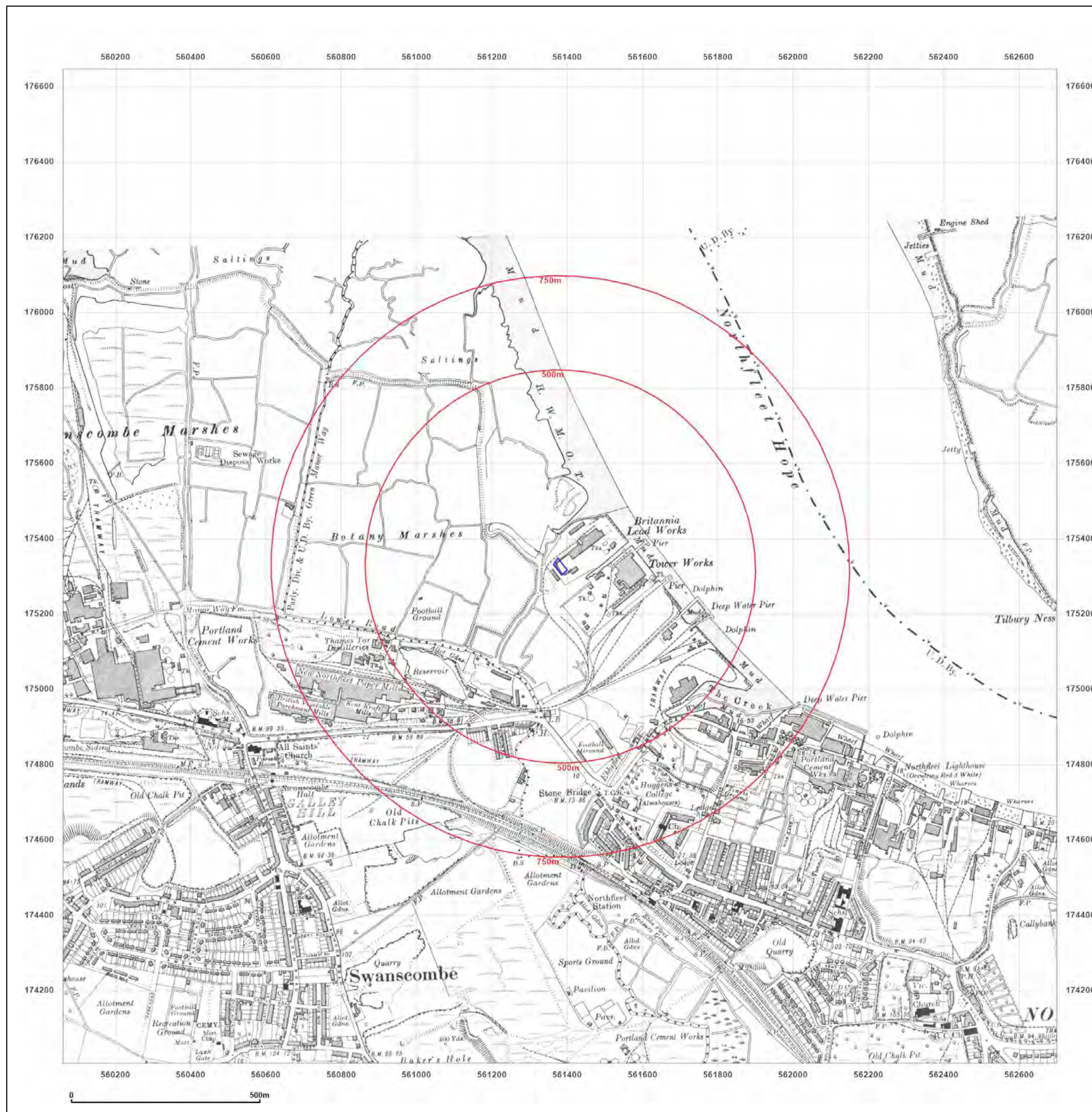


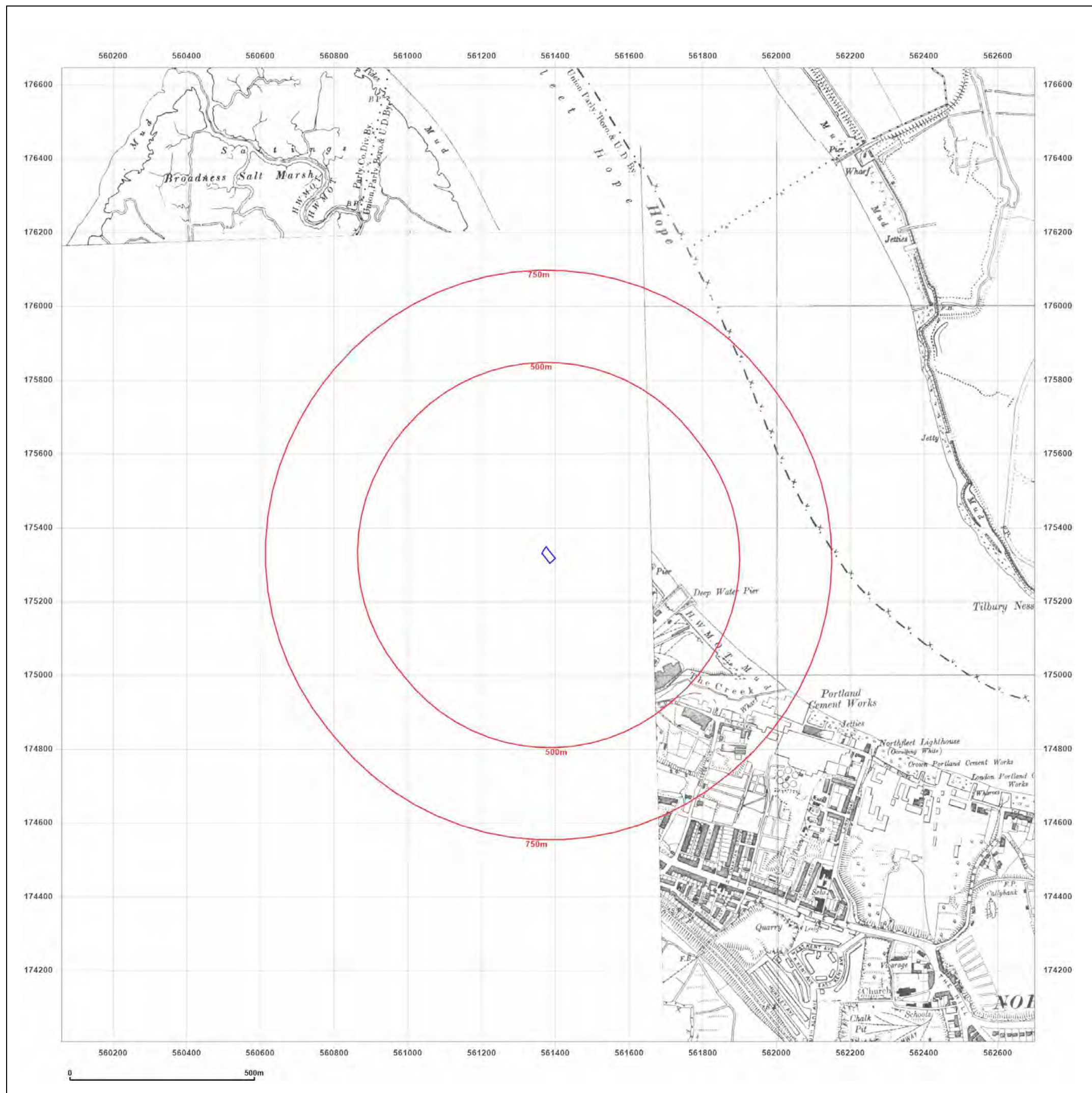
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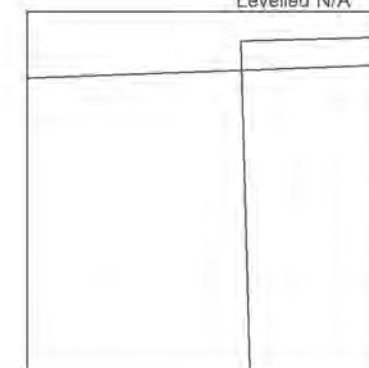
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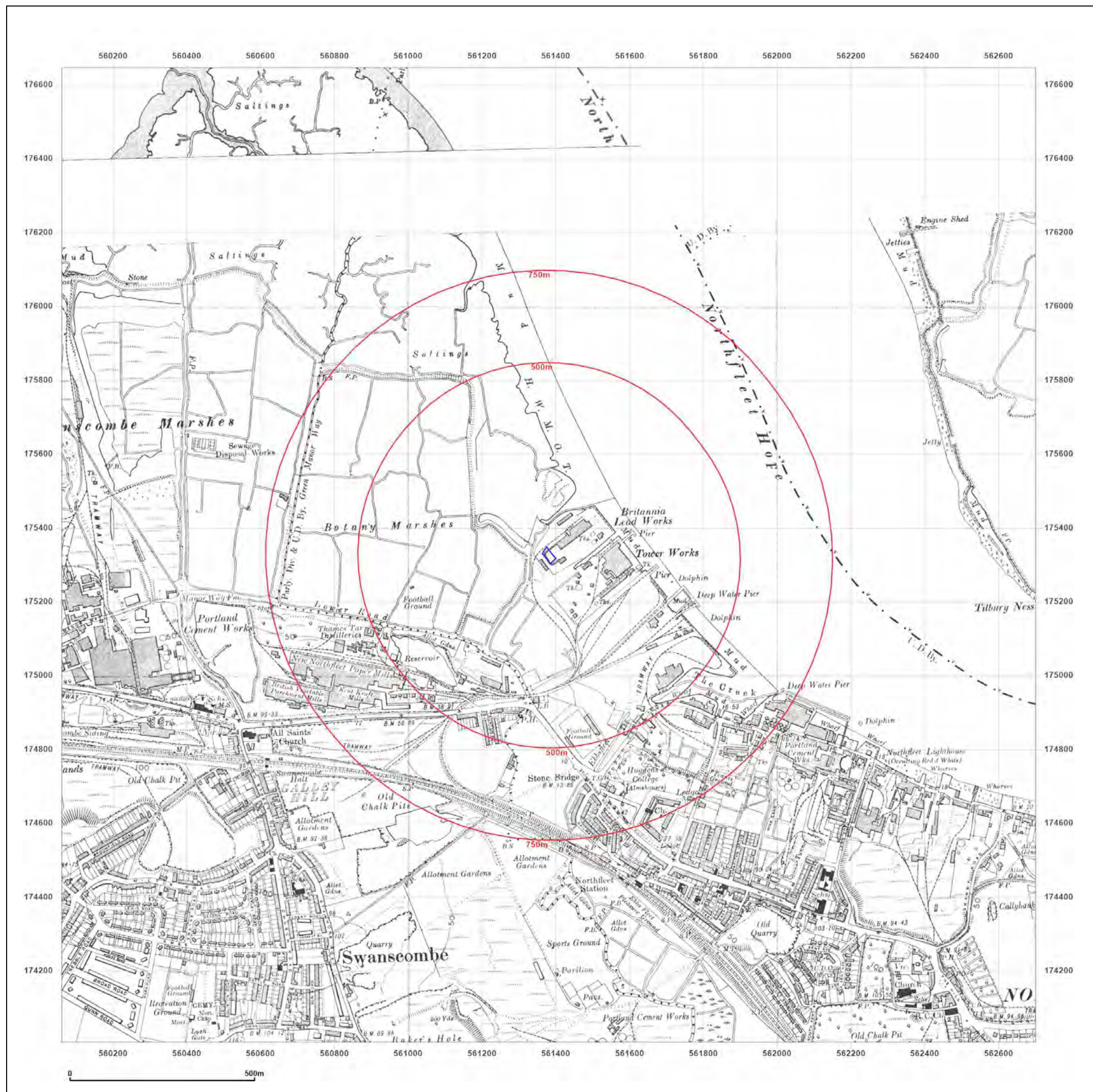


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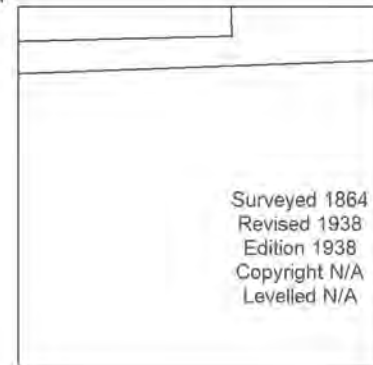
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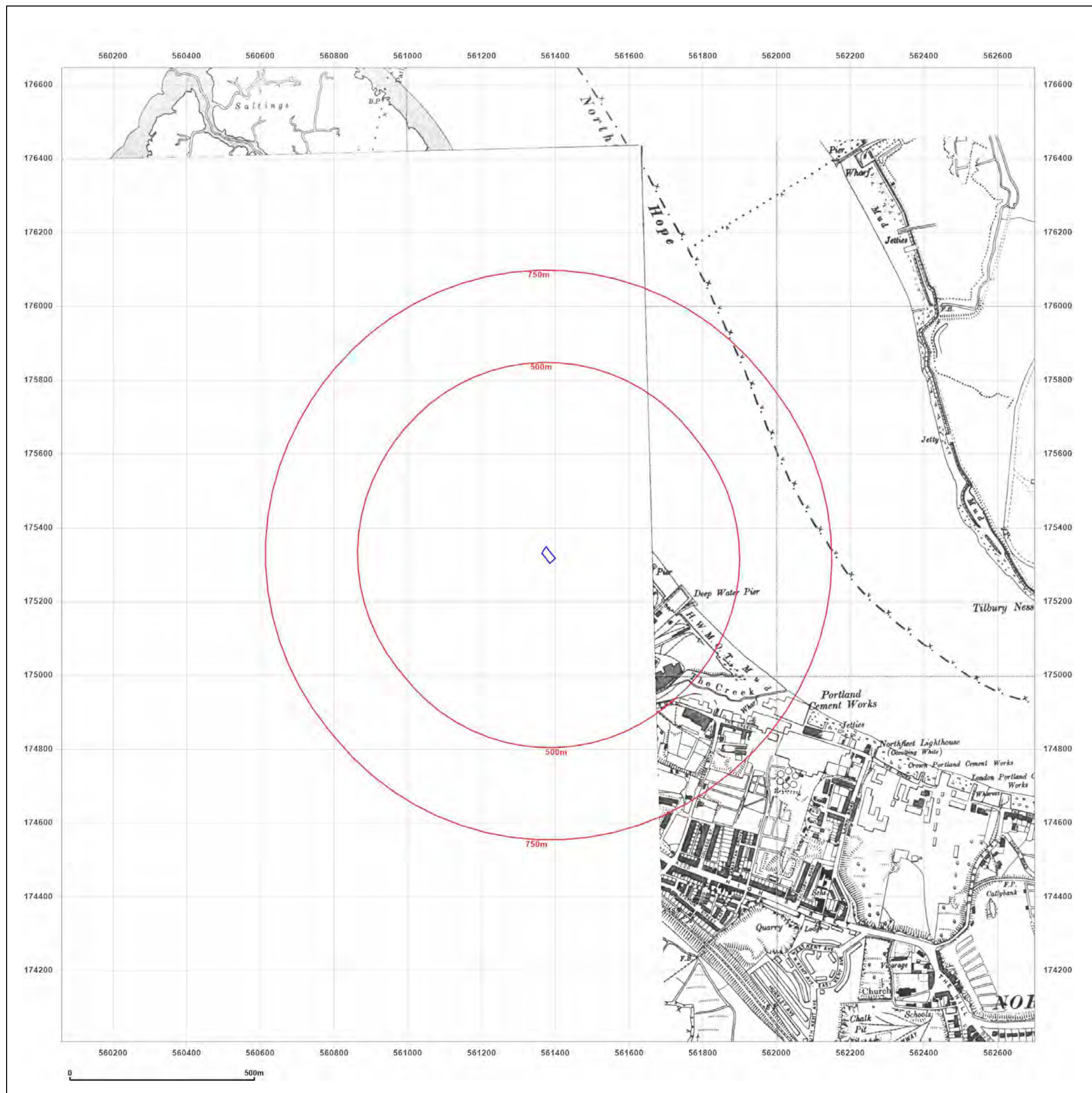


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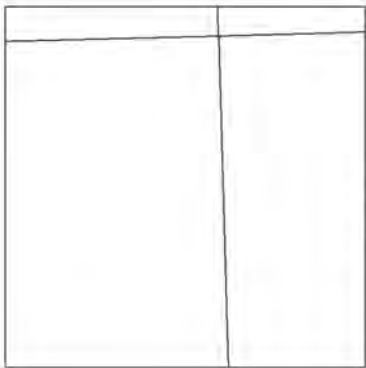
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Map Name: County Series

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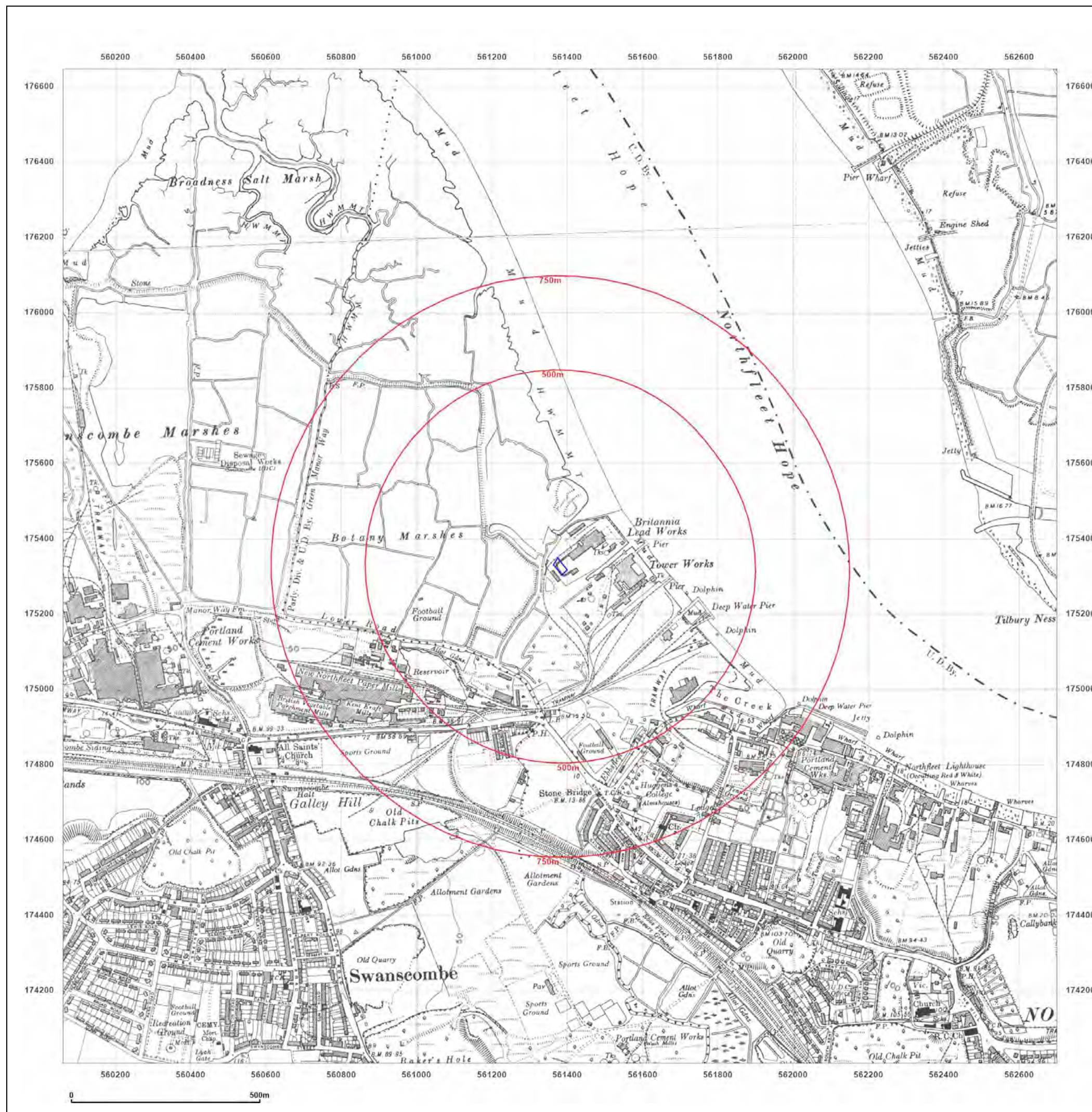


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Map Name: Provisional

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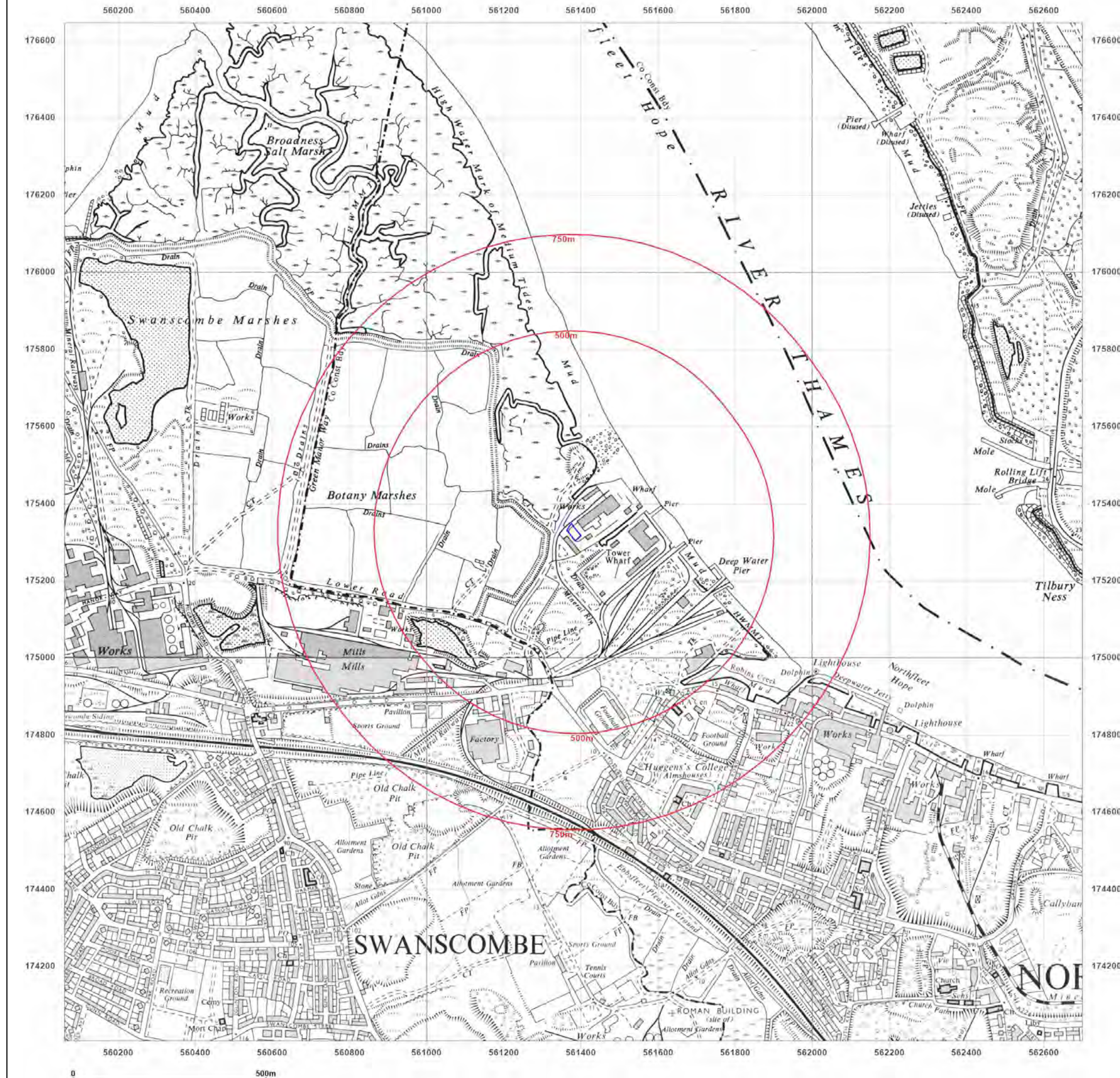


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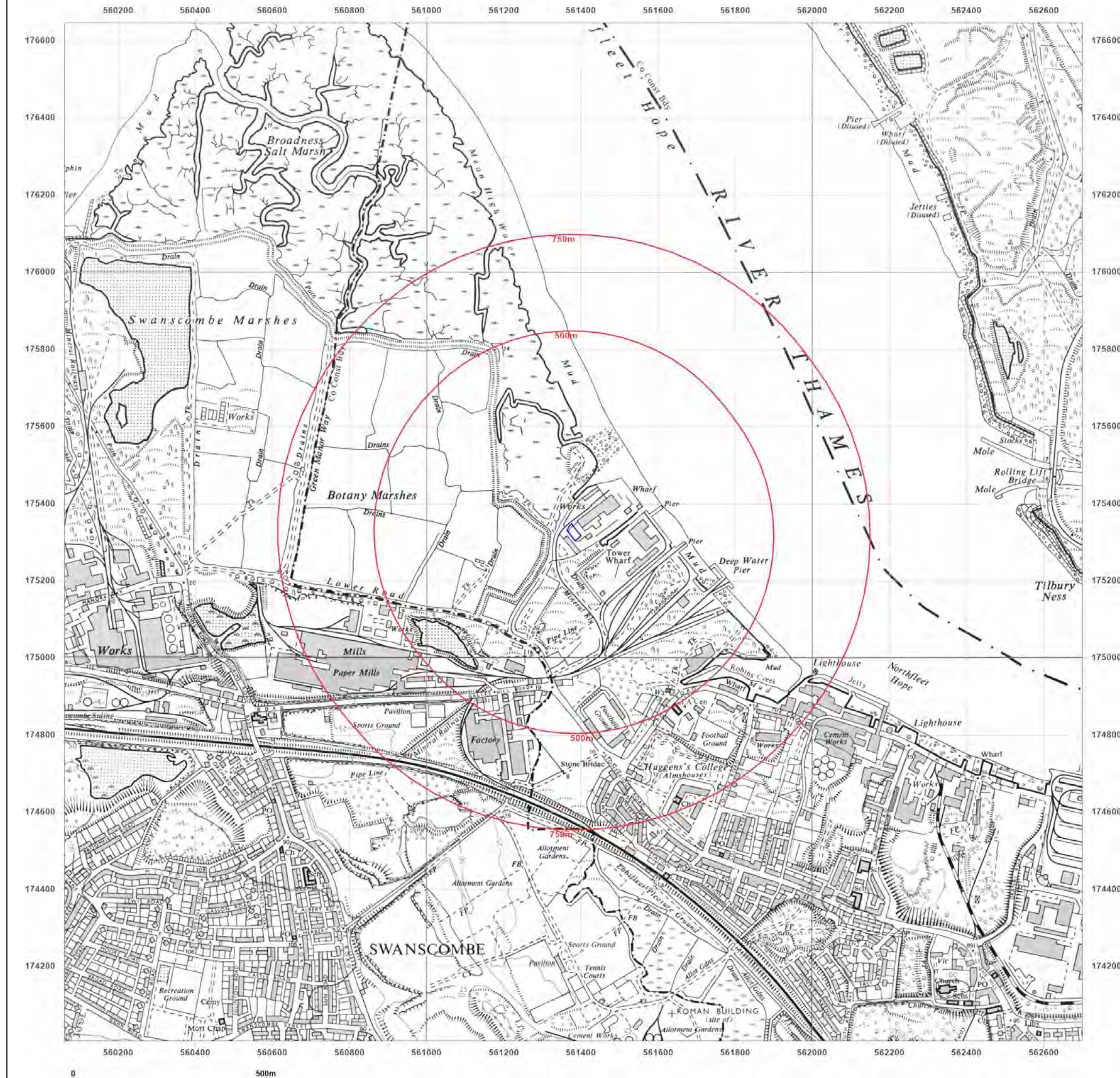


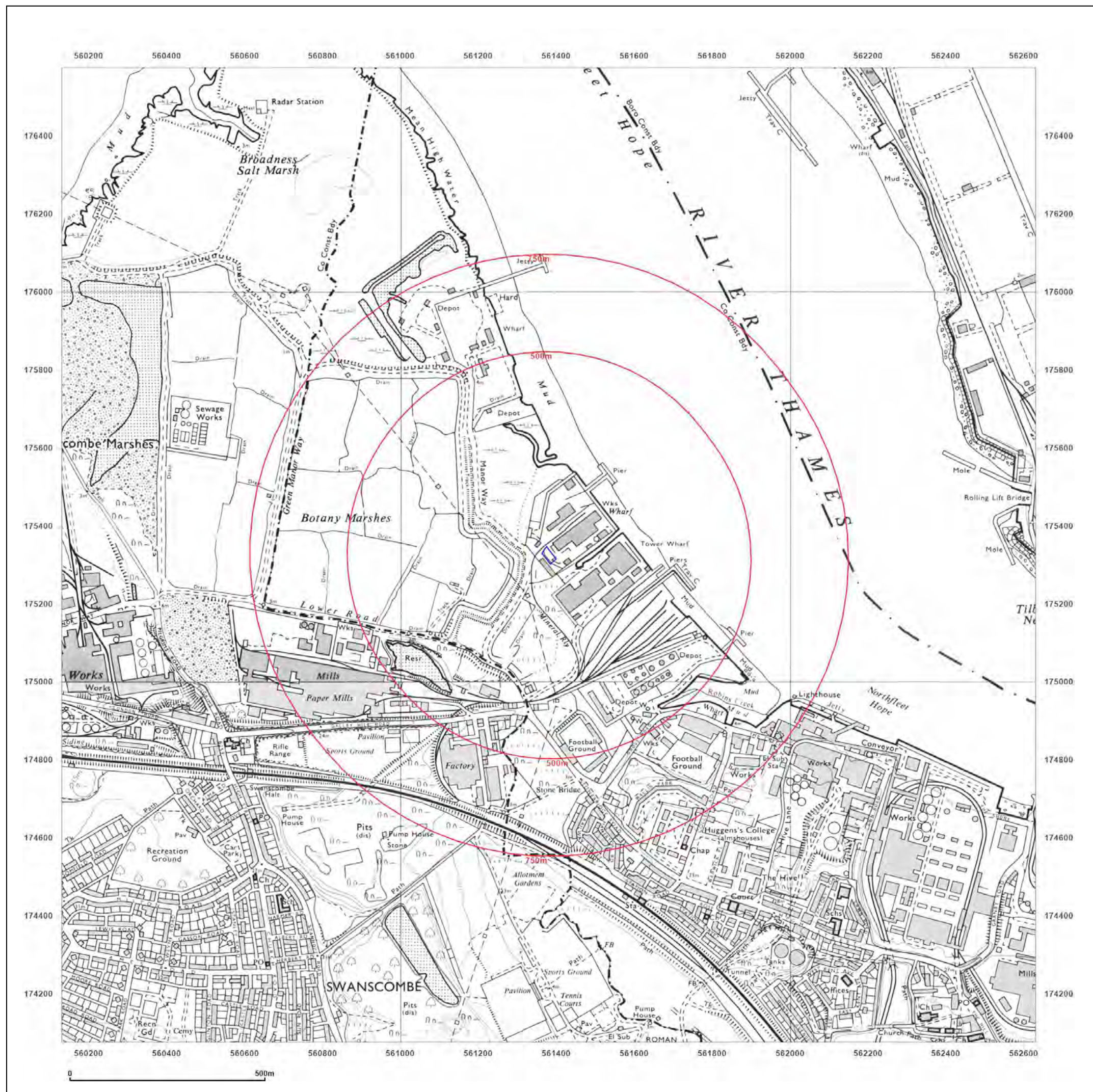
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Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1971-1973

Scale: 1:10,000

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Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1977-1982

Scale: 1:10,000

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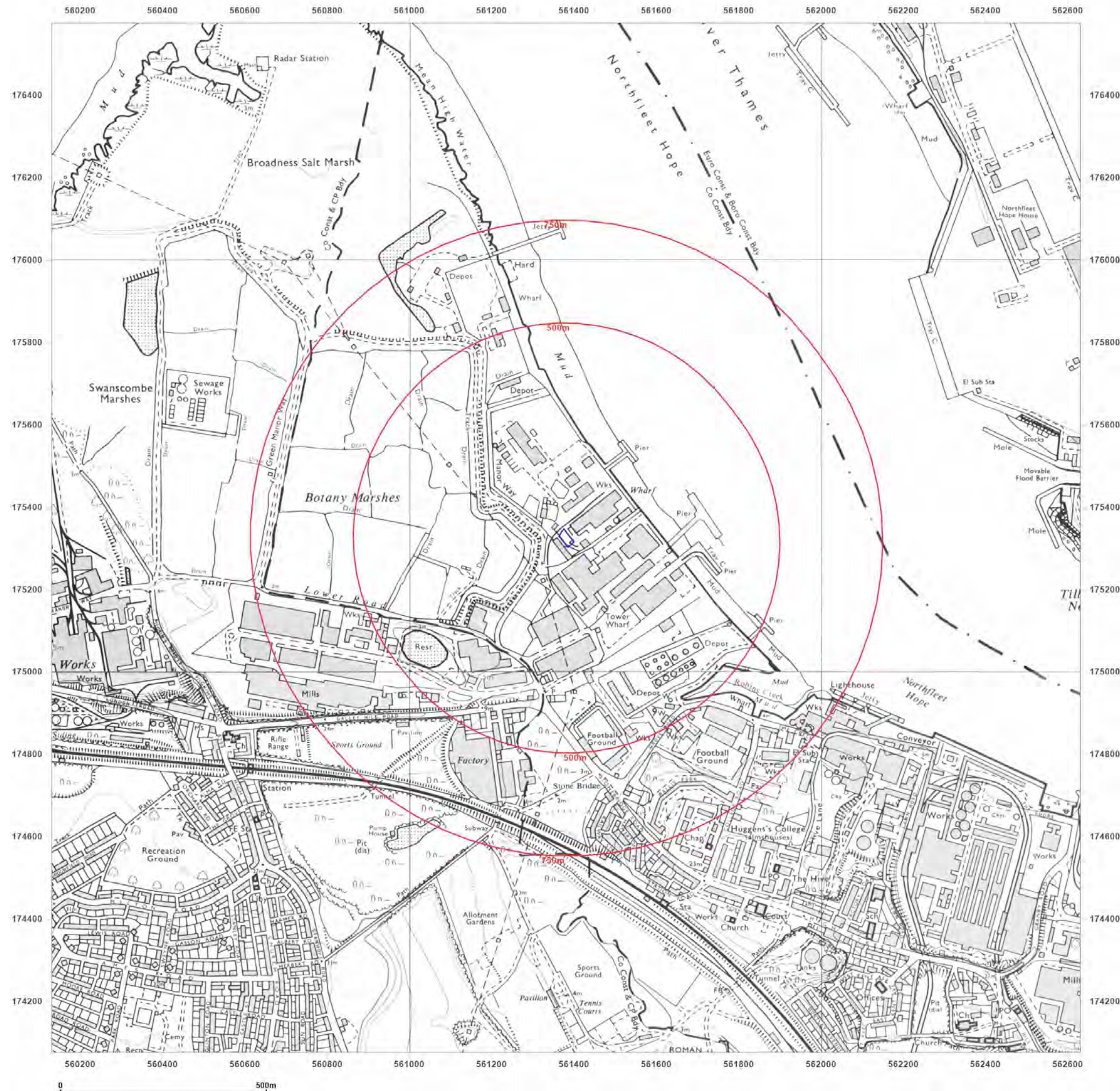


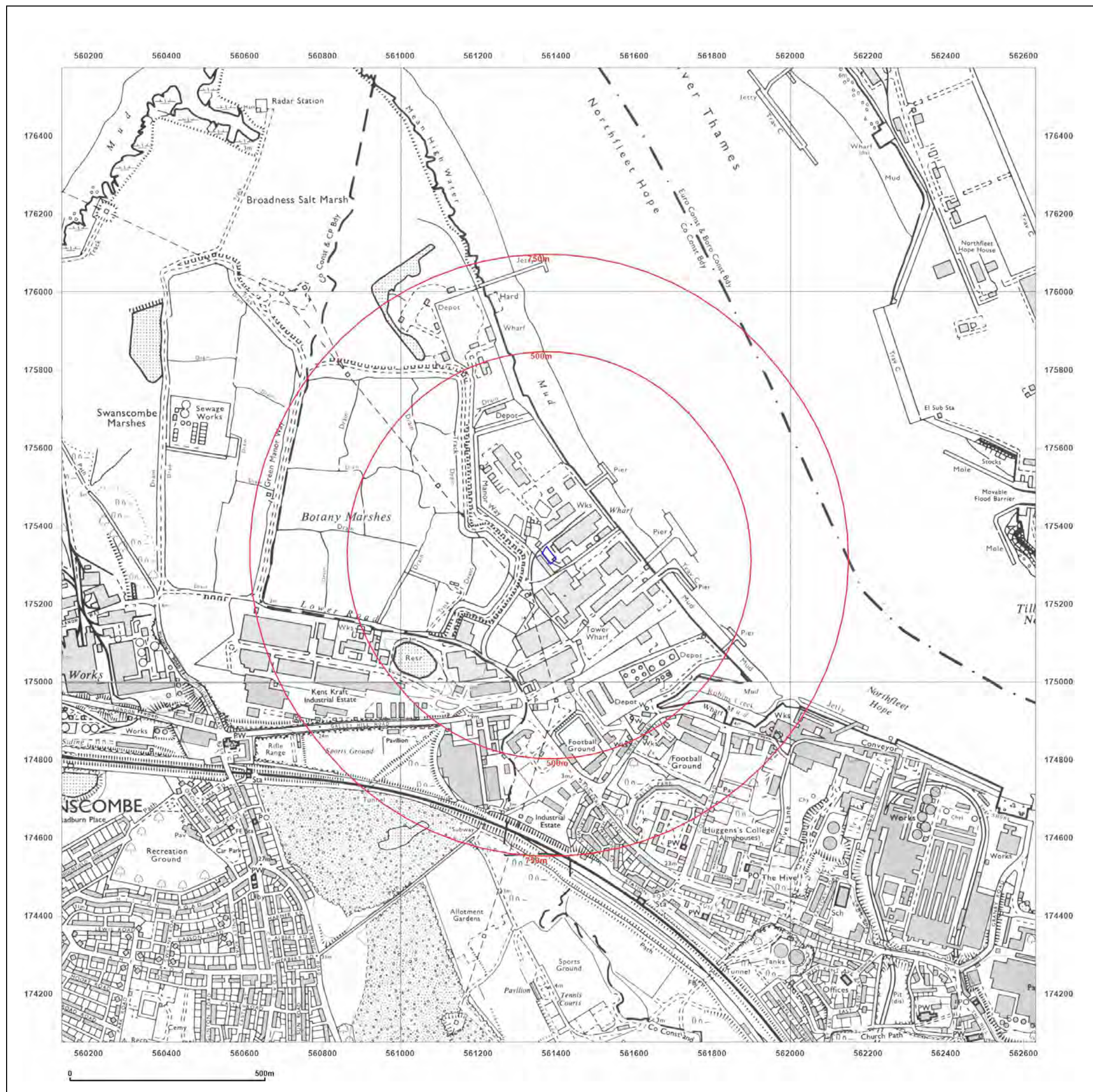
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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1990-1992

Scale: 1:10,000

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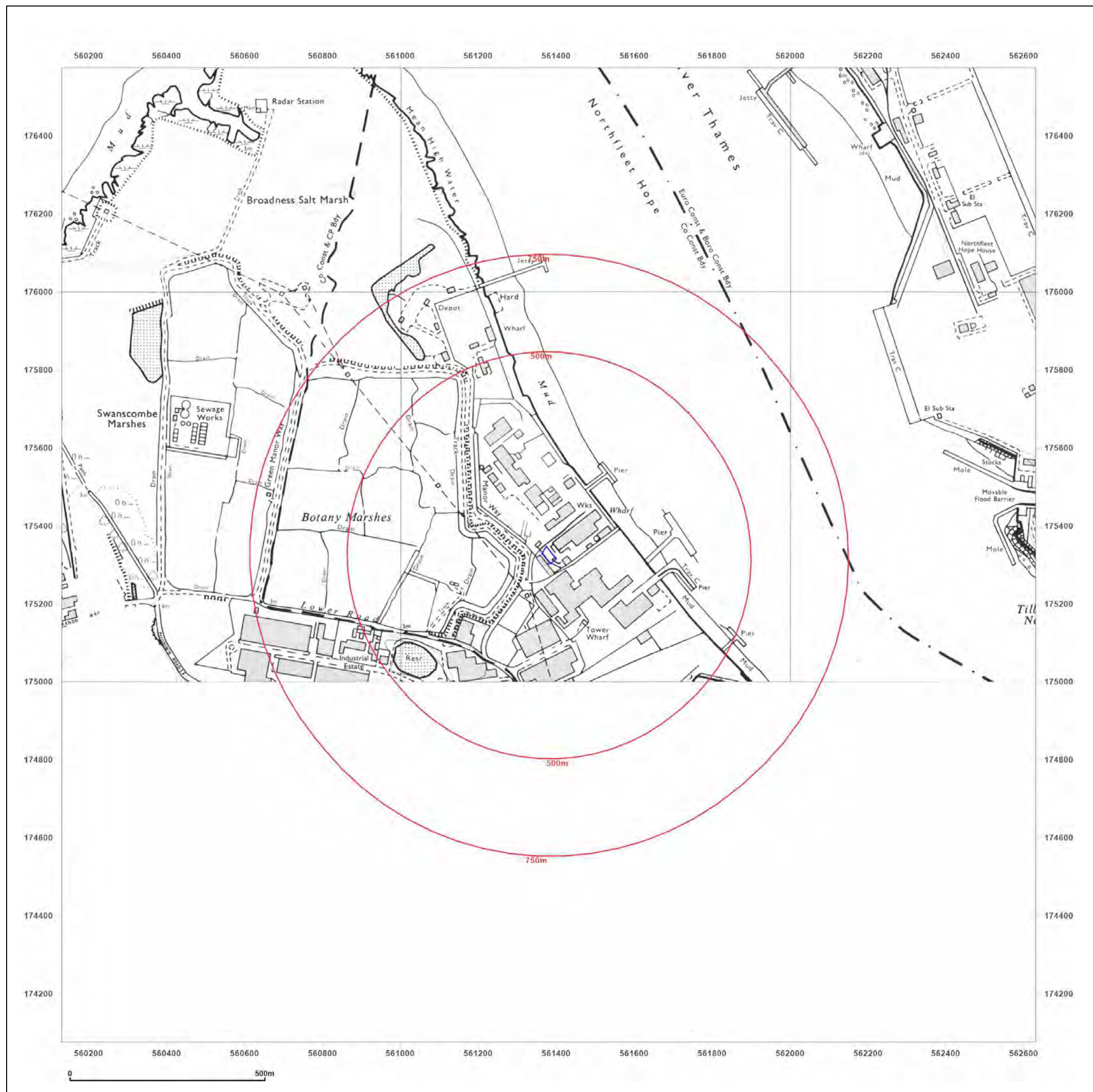


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Report Ref: EMS-882585_1128444
Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 1993

Scale: 1:10,000

Printed at: 1:10,000



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Map Name: National Grid
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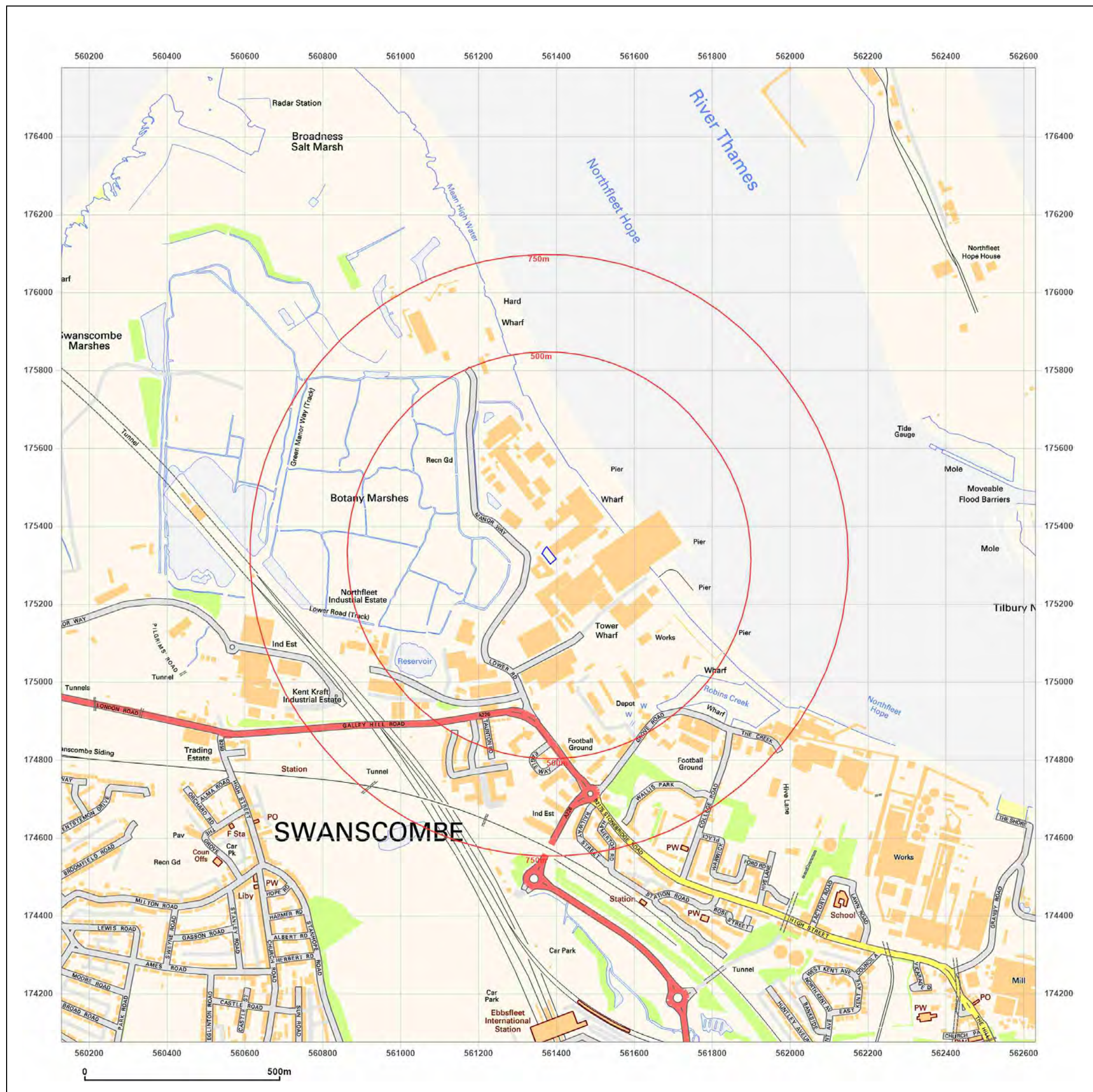


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Grid Ref: 561380, 175326

Map Name: National Grid

Map date: 2010

Scale: 1:10,000

Printed at: 1:10,000



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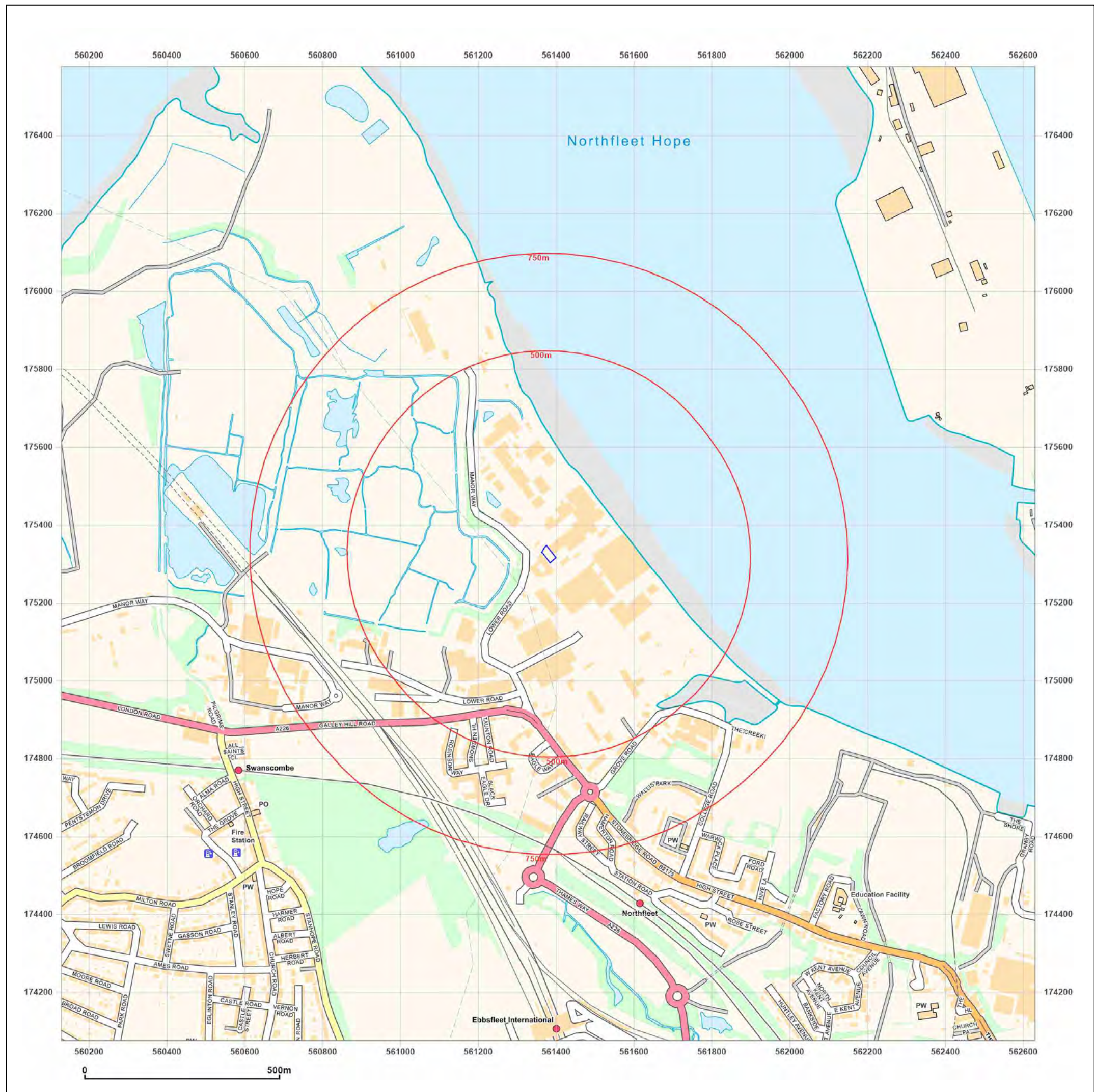


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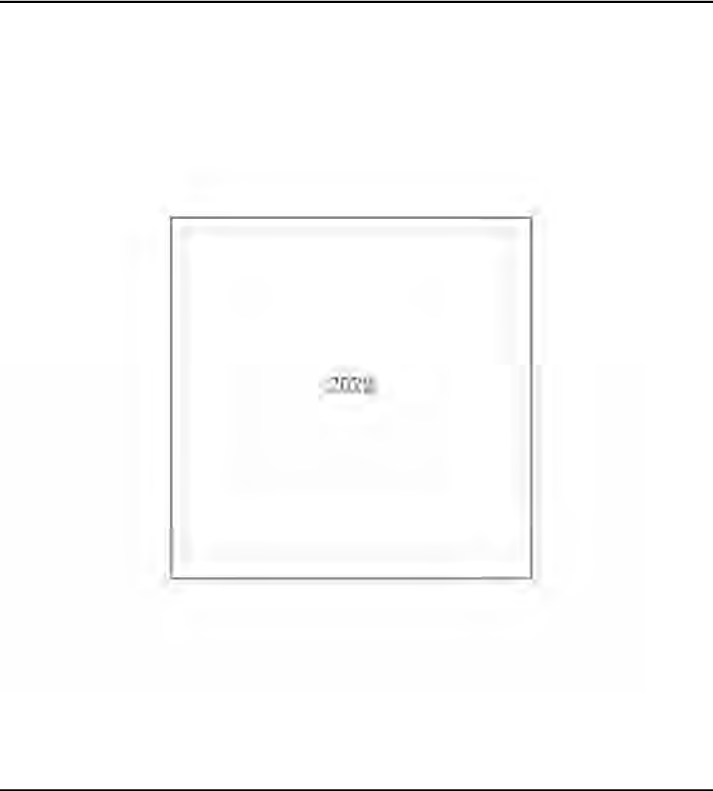
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Appendix D Detailed UXO Report

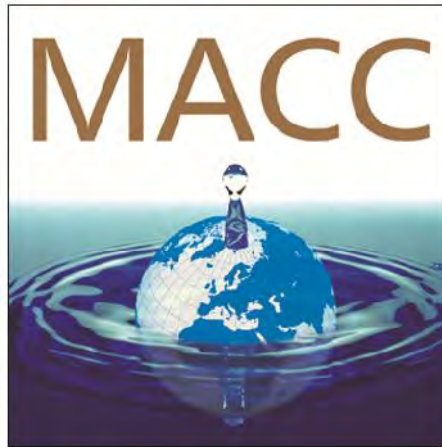
Phase One Geotechnical and Environmental Desk Study

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

Project Number: 4652
Version: Issue version 1.0
Dated: 08/02/2017
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Authors

Project Director: K Burrows
Project Manager: J Morrison

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MACC International Limited
Camilla Court
Nacton Ipswich
IP10 0EU

Telephone Number: 01473 655127

Fax Number: 01473 655098

Email: macc@macc-eod.com

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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 WP₄ 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

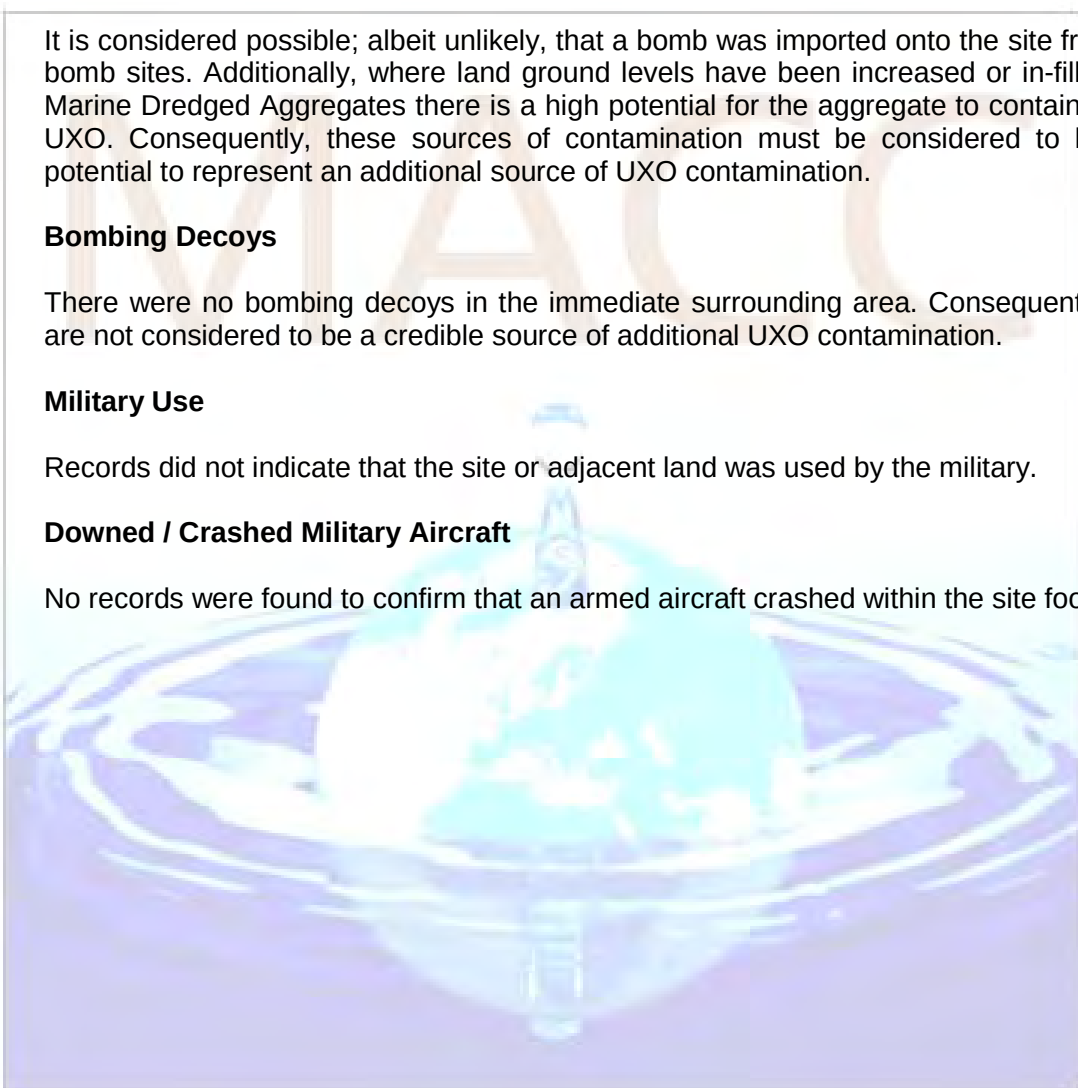
There were no bombing decoys in the immediate surrounding area. Consequently, these are not considered to be a credible source of additional UXO contamination.

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 (WP₄) 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)

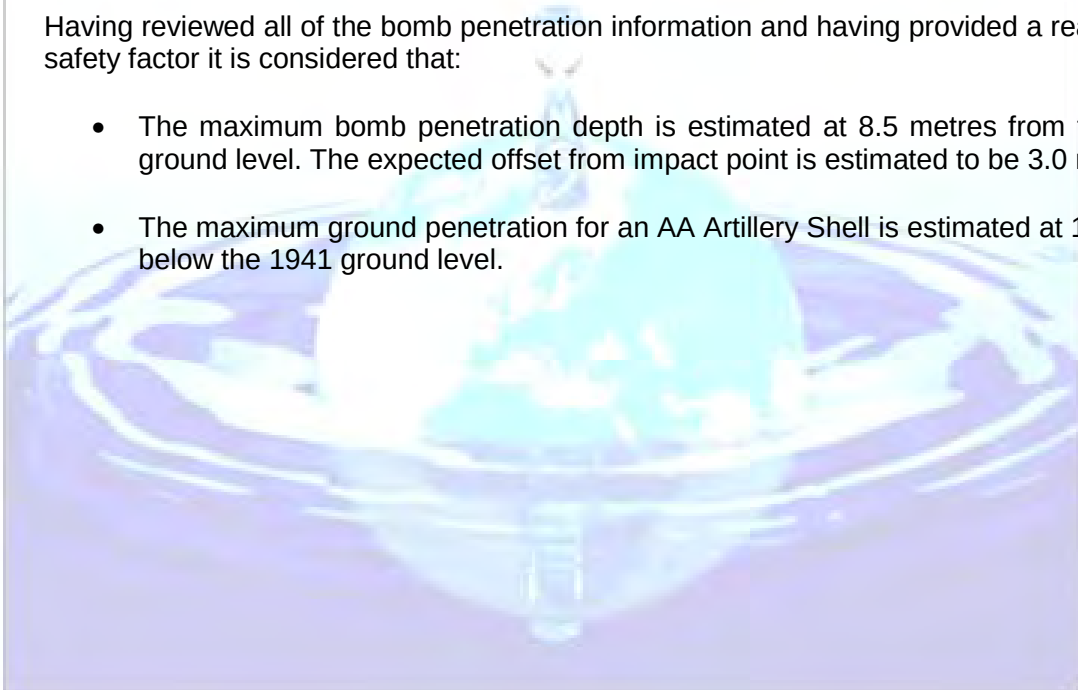
5.8.2 Table 1. Extract of Ministry of Home Security Bomb Penetration Study

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 $\frac{1}{3}$ rd 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 (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 (NH_4)
 - Sodium Nitrate (NaNO_3)
 - Nitro-glycerine ($\text{C}_3\text{H}_5\text{N}_3\text{O}_9$)
 - White Phosphorus (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 (H x W = L)	Consequence (S x P = C)	Risk Rating (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 (H x W = L)	Consequence (S x P = C)	Risk Rating (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
1= Minimal 5=significant LOW 0-100 MEDIUM 100-200 HIGH 200+			

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

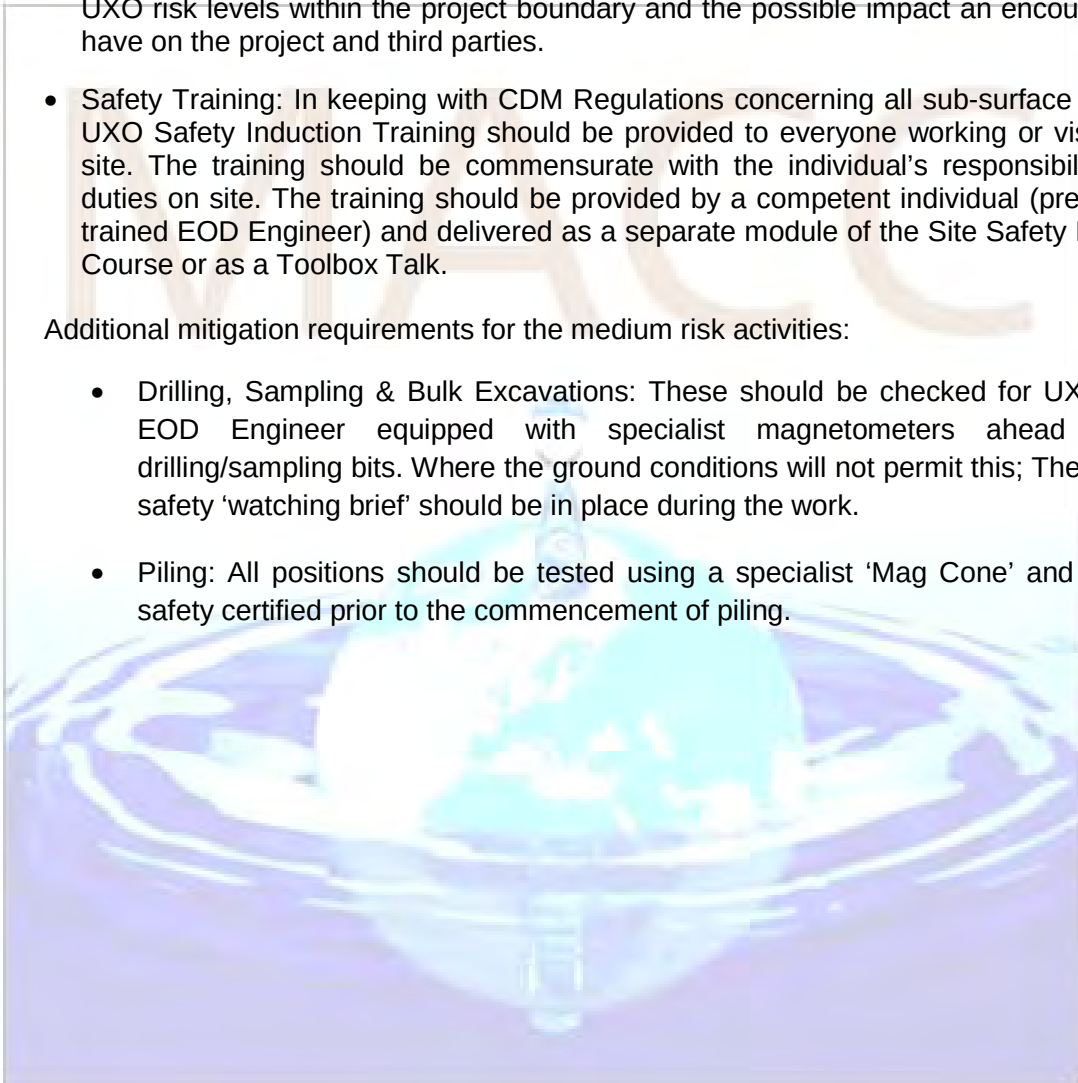
10.1 All Risk Level Activities

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.

MACC International Limited
Camilla Court
Nacton Ipswich
IP10 0EU

Telephone Number: 01473 655127

Fax Number: 01473 655098

Email: macc@macc-eod.com

Registered in England Company Registration Number 301447

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.

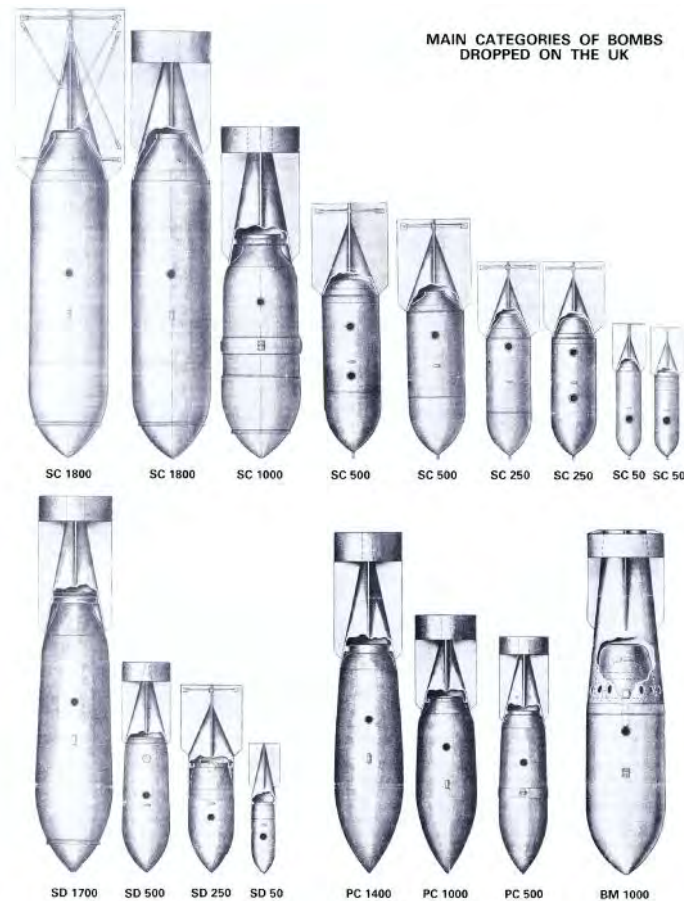
TABLE B-1 SAFETY DISTANCES FOR PERSONNEL

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

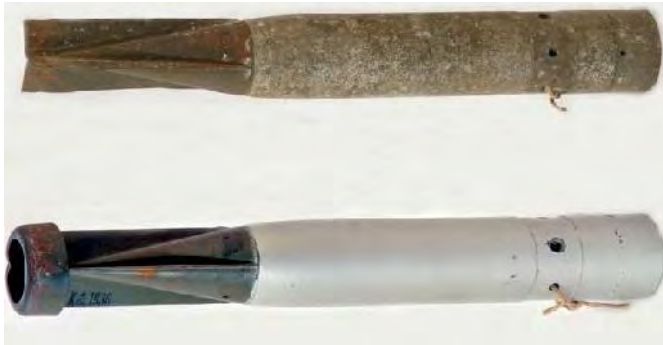
2.1 HE Bombs



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.



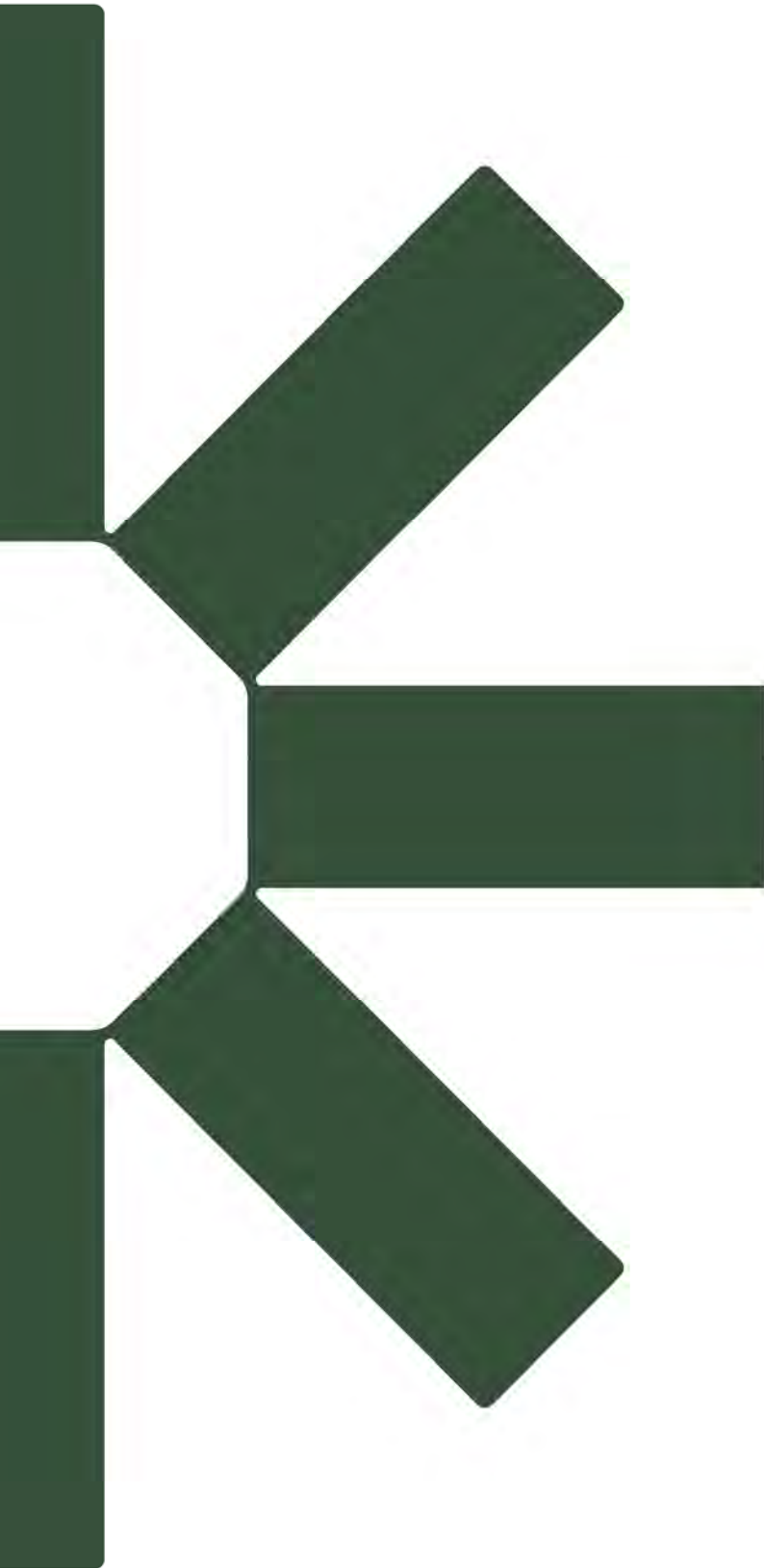
British H93 Gun in Hyde Park 1941. The 3.7" anti-aircraft gun could propel High Explosive and Incendiary shells up to 59,000 feet, higher than the German bomber aircraft could fly.



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