

Bravo Services Limited

Boxx Storage Worthing

Phase 1 Desk Study and Phase 2 Geo-environmental and Geotechnical Factual and Interpretative Report

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RSK GEOSCIENCES

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RSK GENERAL NOTES

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Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

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1 EXECUTIVE SUMMARY

Commissioning and purpose of assessment	RSK Environment Limited (RSK) was commissioned by Bravo Service Limited to carry out a geo-environmental site investigation at Boxx Storage, King Edward Avenue, Worthing, BN14 8FE. The overall aim of the project was to assess land contamination sources and geotechnical constraints associated with site owner ship and the proposed development in the eastern portion.
DESK-BASED ASSESSMENT	
Site description and proposed development	The 0.75 hectare site currently comprises an operational self-storage warehouse. It is proposed to construct a new three-storey self-storage warehouse to the east of the existing building.
History of site and surrounding area	In 1875-1876, it was undeveloped, featuring only a narrow track and trees along the eastern portion. By 1896-1912, greenhouses were constructed in the northern and eastern parts of the site, associated with commercial nurseries first named 'Railway Nurseries' and later 'Iris Nurseries.' From 1938, the greenhouses were removed. Between 1969 and 1978, the site was redeveloped with a grocery warehouse occupying much of the western and central areas, and a pump house was installed in the southeast corner, likely linked to the nearby railway. From 1981 to 2003, the grocery warehouse was relabelled, with a northwest extension added, an ancillary structure in the southeast, and an above-ground tank along the eastern side of the main building noted from the early 1990s. Since 2010, the site has taken on its current configuration, with the southeast building and above-ground tank no longer present. From 1875, the Brighton and South Coast Railway line and its embankment bordered the southern edge of the site. Between 1898 and 1912, several commercial greenhouses appeared to the north, northeast, and west, associated with 'Railway Nurseries' and later 'Iris Nurseries,' with railway sidings to the southwest and residential development emerging south of the railway line. From 1932 to 1943, residential growth increased in the northwest and north, gradually replacing the greenhouses. By 1951 to 1958, limited commercial and industrial activities such as a garage, warehouse, goodshed, and timber yard were noted nearby. Between 1966 and 1971, the area saw the addition of a general warehouse, catering depot, and engineering works to the east, with greenhouses to the north and northeast being replaced by playing fields and a school. From 1986 to 1992, no major changes occurred, except the garage was relabelled as a coach depot, and the railway sidings were removed. Between 1994 and 2003, the area took on a more modern configuration, with the coach depot replaced by a metal fabrication works, light commercial units constructed further southwest along Ivy Arch Road, and numerous warehouses and an electricity sub-station appearing near the western boundary.
Geological, Hydro-geological and Hydrological setting	The site is underlain by Made Ground, Alluvium and River Terrace Deposits over London Clay Formation. The site is underlain by a secondary B and undifferentiated aquifer relating to the River Terrace Deposits/Raised Beach Deposits and Alluvium deposits respectively. No groundwater features/bodies identified on or in close proximity to the site. The site is located within with a radon potential area between 3% and 5%.

Site reconnaissance findings	The existing building and hardstanding cover the majority of the site, with some trees and vegetation along the northern boundary and in the southwestern corner. The site is generally level with localised fall in the loading area. Remains of former building identified in the southeastern corner of the site. Water pumping station hut located adjacent to the site entrance.
Geotechnical constraints assessment	Principal constraints include shrinkable soils, variable ground conditions, low strength soils, existing substructures and pyritic ground conditions.
Initial conceptual site model (CSM) and preliminary risk assessment (PRA)	There were no potentially complete contaminant linkages identified with a risk estimate of moderate/ low or above. The site environmental liability can largely be classed as Low. Potential complete contaminant linkages were limited to risk from radon and aggressive ground conditions with respect building materials.
INTRUSIVE INVESTIGATION & ASSESSMENT	
SI scope	The purpose of the intrusive investigation was to identify any geotechnical and/or contamination constraints to the proposed development primarily to support the discharge of relevant planning conditions. The scope of the investigations comprised sinking of shallow boreholes within the eastern portion (i.e. in the vicinity of the proposed development).
SI factual findings	The exploratory holes revealed that the site is underlain by a variable thickness of made ground locally overlying superficial deposits (Alluvium and River Terrace Deposits) with the London Clay Formation encountered at depth. Perched water was recorded within the natural stratum. This appears to generally confirm the stratigraphical succession described within the preliminary CSM.
Contamination Assessment and recommendations	Chemical test results for soil were screened against commercial end-use Generic Assessment Criteria and no determinands exceeded their respective threshold concentrations. With respect to radon, a site specific BGS GeoReport (ref: 339584_55911) was obtained for the site, which confirmed that the site is located within a radon potential area of 3% to 5%, and basic radon protective measures are required on site.
Geotechnical assessment and recommendations	Traditional spread foundations are considered technically feasible, provided they extend into the firm to stiff London Clay Formation. However, due to potential disturbance from below-ground structures, low strength soils, variable ground conditions and the risk of ground movement from nearby tree roots, some foundations may need to be deepened or switched to piled foundations if depths exceed 2.5 meters or higher structural loads are required, subject to further ground investigation.
The information given in this summary is necessarily incomplete and is provided for initial briefing purposes only. The summary must not be used as a substitute for the full text of the report.	

2 INTRODUCTION

2.1 Commissioning

RSK Environment Limited (RSK) were engaged by Bravo Services Limited, ('Client')) to carry out a geo environmental and geotechnical site investigation at Boxx Storage Worthing, King Edward Ave, Worthing, BN14 8FE.

The works were undertaken by means of RSK's proposal (Ref. 305407 T01 (00), dated 27 March 2024) including RSKs Standard Terms and Conditions Issue No. 12, July 2023 which forms the appointment between ourselves and the Client.

References in this report to 'we', 'us', or 'our' shall mean RSK Geosciences as a trading name of RSK Environment Limited (company no.SC115530) at registered address 65 Sussex Street, Glasgow, G41 1DX.

The site location is provided in **Figure 1** and the site layout boundary to which this report refers is presented in **Figure 2**.

The report should be read and used in accordance with the limitations and constraints identified in the report text, and at **Appendix A – Service Constraints**.

2.2 Objectives

The site is being considered for development for commercial use.

The objective of the work is:

- to identify and contamination and geotechnical constraints to the proposed development and, where relevant, to support discharge of planning conditions (planning reference AWDM/0655/21)
- to identify whether additional investigation or remediation works may be required to support safe development to make the site suitable for use.

2.3 Scope of works

The scope of works has been developed in accordance with relevant British Standards and authoritative technical guidance as referenced through the report. The assessment of the contamination status of the site is in line with the technical approach presented in Land Contamination Risk Management (LCRM) (Environment Agency, 2021a) and in general accordance with BS 10175: 2011 + A2 2017 (BSI, 2017). It is also compliant with relevant planning policy and guidance (i.e. National Planning Policy Framework).

The scope of the intrusive investigation has been designed in line with the recommendations of BS5930:2015+A1:2020 Code of practice for ground investigations (BSI, 2020), which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. It has also been developed in general accordance with BS 10175: 2011 + A2 2017. Ground gas assessment has been undertaken in general accordance with BS8576: 2013 and BS 8485:2015+A1:2019.

The scope of works for the assessment has included the following:

Desk study:

- review of the history of development on the site and surroundings
- assessment of local geology, hydrogeology and hydrology
- to request and consider relevant information provided by the local planning authority
- review previous reports pertaining to the site condition where available
- to request a detailed UXO risk assessment
- completion of a site reconnaissance survey to assess the visual condition of the site
- development of an initial conceptual site model (CSM) and preliminary risk assessment of potential risks from land contamination
- preliminary consideration of geotechnical constraints and hazards.

Intrusive investigation:

- intrusive investigation works comprising:
    - buried service detection and cable avoidance
    - 5 window sampled boreholes up to 5m bgl
- laboratory analysis of soil samples for an appropriate scope of chemical analysis
- 3 rounds of post-investigation ground gas and water level monitoring
- one round of post-investigation groundwater sampling and taking up to 3 water samples for an appropriate scope of laboratory analysis
- refinement of the conceptual site model (CSM) and complete generic quantitative risk assessment (GQRA) of relevant contaminant linkages
- preparation of this interpretative geo-environmental and geotechnical report

2.4 Limitations

This report is subject to the RSK service constraints given in **Appendix A** and limitations that may be described below and throughout this document.

This report was prepared in accordance with good practice guidance at the time of issue. Consideration should be considered in the light of changes in legislation, statutory requirements, or industry practices subsequent to the date of issue.

The opinions expressed in this report, and the comments and recommendations given, are based on the information obtained from the desk assessment and the site reconnaissance survey. No intrusive investigations have been undertaken to confirm the actual ground conditions and hence the environmental status of the site.

The study aims to principally identify and assess the potential risks and liabilities associated with contamination of the ground, on and in the vicinity of the site. While this includes consideration of current operations and housekeeping on the site, the report does

not constitute a comprehensive environmental audit of the site, as covered under ISO 14001.

Although asbestos may not have been encountered as part of these works, it was observed on the roof of the site warehouse, therefore asbestos could be present in soil in discrete areas and may be encountered in future ground investigation.

A detailed survey of invasive plant species is outside the scope of this investigation therefore detailed comments with regards to such species have been omitted from this report.

In particular, it should be noted that there may be areas of made ground and potential contamination not detected due to the limited nature of the investigations or the thickness and quality of made ground and concentrations of contamination across the site may be variable. In addition, groundwater levels and groundwater concentrations may vary from those reported due to seasonal, or other, effects.

3 SITE DETAILS

3.1 Site location

Site location details are presented in Table 1 and a site location plan is provided on **Figure 1**.

Table 1 Site location details

Site name	Boxx Storage Worthing
Full site address and Post code	King Edward Avenue, Worthing, BN14 8FE
National Grid reference (centre of site)	515020E, 103513N

3.2 Site description

The Site boundary and current site layout are shown on **Figure 2.** The Site, covering an area of c. 0.75 hectares, is occupied by a self-storage warehouse comprising a 'L' shaped building with longest branch stretching on an east-west direction and short branch stretching north-south. Main parking space is found on the eastern side of the site, with few additional parking slots in the southern and western sides. A water pumping station is noted in the south-western corner of the site. Remnants of former ancillary building was found in the south-eastern corner of the site.

The site is generally level along Ivy Arch Road but does gradually fall away to the rear loading area/ car park. Once within the loading area located to the east, the site rises and falls adjacent to existing boundaries.

3.3 Surrounding land uses

The Site is located in Worthing, within a predominantly residential and commercial setting. Immediate surrounding land uses are described in Table 2.

Table 2 Surrounding land uses

North	The northern boundary abuts a row of rear private gardens belonging to semi-detached houses fronting King Edward Avenue with further houses beyond.
East	A single storey warehouse unit occupies the area immediately to the east with additional houses beyond.
South	Railway line on an embankment defines the southern boundary.
West	Light industrial units located immediately south-west, including a sheet metal fabrication works and storage units. An electricity sub-station is noted 20m south-west. Semi-detached houses are also noted to the west.

3.4 Proposed development plans

The precise details are unknown at this stage, however, it is understood that the development proposal will involve construction of a new self-storage building, along with car parking and associated works. The building will accommodate three storeys of self-storage space and will form part of the existing Ready Steady Store self-storage centre. The new building is to be located to the rear (to the east) of the main building within the service yard area. The proposed layout of the site, at the time of preparing this report, is shown in **Appendix B**.

4 DESK-BASED ASSESSMENT

The desk-based assessment was designed to generally meet the objectives of a preliminary or Phase 1 investigation, as defined by BS 10175:2011+A2:2017 (BSI, 2017) and BS 5930:2015, and is set in context of a Tier 1 preliminary risk assessment as defined in LCRM.

The "vicinity" of the site for the purposes of this report is defined as locations situated within an approximate 250m radius of the site, although certain sources and/ or sensitive targets further than 250m distance from the site may also have been considered.

4.1 Site history

4.1.1 Historical development record

The development history of the site and surrounding area based upon assessment of historical plans and records is detailed in Table 3 and Table 4 respectively.

The historical maps reviewed are shown within the environmental database report in **Appendix C**.

Table 3 Summary of historical development on site

Date from	Date to	Historical Land Use (on-site)	Area of site
1875	1876	Site undeveloped with a narrow track traversing the eastern portion of the site with trees situated parallel to the track.	Eastern section
1896	1912	Greenhouses present in the northern and eastern portion of the site, belonging to the nearby commercial nurseries (identified initially as 'Railway Nurseries', subsequently renamed 'Iris Nurseries')	Northern and eastern extent
1932	1933	No significant changes observed.	-
1938	1962	Greenhouses are no longer present.	-
1969	1978	The site redeveloped with a grocery warehouse occupying a large proportion of western and central portions. A pump house (most likely associated with the adjacent railway line) is noted in the south-east corner of the site.	Western/central section South-eastern corner
1981	2003	The Grocery Warehouse relabelled as an unspecified warehouse (later identified as Boxx Storage) with an extension added to the north-western flank. An ancillary structure in noted in the south-eastern corner of the site. An unspecified above ground tank is noted along the western elevation of the main building from the early 1990s.	Western/central /north-western section
2010	Present	The site layout resembles the current configuration. The building in the south-east corner is no longer present and the above ground tank is absent. A review of the planning	

Date from	Date to	Historical Land Use (on-site)	Area of site
		records alludes former above ground storage tank (unspecified) has been removed.	

Table 4 Summary of historical development in the vicinity of the site

Date from	Date to	Historical Land Use (off-site)	Distance (m) and orientation
1875	1878	Brighton and South Coast Railway line and associated embankment abuts the southern boundary.	0m south.
1898	1912	A number of commercial greenhouses occupy the immediate areas to the north, north-east and west of the site (associated with 'Railway Nurseries' and subsequently Iris Nurseries'). Railway sidings present to the south-west. Residential development was noted to the south of the railway line.	0 to 250m north, 0 to 150m west, 30m south-west.
1932	1943	Increased residential development noted in the northwest and north progressively replacing the nearby greenhouses.	0 to 250m north/north-west
1951	1958	Limited commercial/industrial activity noted in the immediate surrounding area, including a garage, warehouse, a goodshed and timbers yard.	10m west, 200m west, 250m south-west.
1966	1971	A general warehouse, catering depot and an engineering works are noted in the immediate area to the east. The greenhouses to the north/north-east are longer present and subsequently replaced by playing fields and a school	0m east, 150 to 250m north/north-east
1986	1992	No significant changes observed in the immediate surrounding area with the exception of the garage relabelled as a coach depot. The railway sidings are no longer present.	10m west
1994	2003	Much of the surrounding area resemble current configuration. The coach depot located to the immediate south-west had been replaced with a metal fabrication works with a series of unspecified light commercial units constructed further south-west fronting on to Ivy Arch Road. Numerous warehouses noted close to the western boundary with an electricity sub-station	10 to 250m west

4.1.2 Unexploded ordnance

A review of publicly available unexploded ordnance (UXO) risk maps indicates that the site is located in an area with medium potential for wartime bombs to be present (Zetica, 2024).

A detailed UXO report was also requested for the site. No recorded historical bomb strike was recorded within site boundaries as well as no bomb damage in the area. Nearest record of bomb strike found 300m away form site. Area was not deemed of military usage while there is no record for the site of being used for explosives or ammunitions production. The report concluded that no mitigation strategy is required for the site.

4.2 Information from environmental database report

Relevant environmental permits and incidents detailed within the environmental database report (see **Appendix C**) are summarised below in Table 5.

Table 5 Summary of environmental permits, landfills and incidents

Data type	Entries on-site	Entries <250m from site	Entries >250m from site of relevance	Details
Agency and hydrological				
Environmental permits – incorporating Environmental Permitting Regulations (EPR) and/ or Pollution Prevention and Control (PPC) permits; former Integrated Pollution Controls (IPC), Local Authority Pollution Control (LAPC)	-	-	-	None recorded on or in close proximity to the site.
Enforcement and prohibition notices	-	-	-	None recorded on or in close proximity to the site.
Pollution incidents to controlled waters, Prosecutions relating to controlled waters, Substantiated pollution incident register, Water Industry Act referrals	-	1	2	There are 4no. records, the nearest of which relate to minor impact (category 3) involving petrol at the nearby garage to the west (c.110m).
Discharge consents	4	1	n/a	on site: relates to sewer storm water run-off. off site: 12m southwest relating to surface water run-off.
Registered radioactive substances	-	-	-	None recorded on or in close proximity to the site.
Landfill and waste				
Active landfills	-	-	-	None recorded on or in close proximity to the site.
Historic / closed landfills	-	-	-	None recorded on or in close proximity to the site.

Data type	Entries on-site	Entries <250m from site	Entries >250m from site of relevance	Details
Other waste management licences	-	2	4	offsite: 364m east, waste exemptions (manual treatment of waste, construction waste, derived biodiesel, burning of waste as a fuel, waste storage, sorting and de-naturing drugs for disposal. offsite: 14m east: waste exemption licence for waste treatment of no agricultural origin
Potentially in-filled land (pit, quarry, pond, marsh, river, stream, dock etc)	-	-	-	None recorded on or in close proximity to the site.
Hazardous substances/ industrial land uses				
Control of Major Accident Hazards (COMAH) sites	-	-	-	None recorded on or in close proximity to the site.
Explosives sites, Notification of Installations Handling Hazardous Substances (NIHHS), Planning hazardous substance consents/ enforcements	-	-	-	None recorded on or in close proximity to the site.
Contaminated land Part 2A register entries and notices	-	-	-	-
Note: Entries have only been included within the table where they are located within a 250m radius of the site or, where they fall outside of this radius but are considered to comprise a significant entry.				

4.2.1 Contemporary trade directory entries

There are numerous records of potentially contaminative land uses identified in the contemporary trade directory and predominantly relate to the light commercial/industrial units associated with the Ivy Arch Trading Estate (west/south-west of the site), which include; Kuhr engineering Ltd – metalworks (23m southwest). Light commercial units are also noted to the immediate east, which comprise Prestige Paintworx - vehicle repairs (38m southeast), construction merchants (25m east). Two electricity sub-station were noted c.20m west and 49m east.

There are no records of active petrol stations in close proximity to the site.

4.3 Information from regulatory authorities

4.3.1 Planning records

Planning records held by the Local Authority Planning Department pertaining to the site and relevant to the current assessment are summarised in Table 6.

Table 6 Planning information

Year	Details and application reference no.	Part of site
2005	05/0197/FULL. "Replacement of above-ground enclosed bunded storage tank and two gravity tanks (Resubmission of WB/05/0002/FULL)."	Not specified
2021	AWDM/0655/21. "Construction of storage building (Use Class B8), including vehicle parking and associated works"	Far eastern section of the site

4.3.2 Local Authority environmental health department information

The Environmental Health Department of the local authority (Worthing Borough Council) has been contacted to confirm whether they hold records of contamination in connection with the site. RSK are still awaiting a response from the council, and thus the report will be updated following receipt of any records.

4.3.3 Site services

Service plans obtained from utility companies sourced either by RSK or provided by the client are contained in **Appendix F**.

Buried services indicated to be present on-site or located adjacent to site boundary as mapped on available plans comprise:

- City Fibre, adjacent or near site boundaries to the west and north
- Southern Water (clean), adjacent or near site boundaries to the west and north
- Southern Water (waste), adjacent to western and northern boundary, it crosses the site in the middle under the warehouse and the southern parking space and in the pump house in the SW corner of the site
- Virgin Media, adjacent to the western boundary of the site.
- BT (Openreach), found within site boundaries in its western part, particularly western side of warehouse and pump house in SW corner of the site
- SGN, 10"CI running along Ivy Arch Road to the west of the site, 125 PE (IN 6"CI) running adjacent to the northern boundary of the site on King Edward Road.

Buried utility services and their backfill can represent a constraint to development and act as preferential migration pathways for gas, vapour or groundwater towards a receptor.

4.4 Site geology

4.4.1 Anticipated geological sequence

Published geological records (British Geological Survey, 2024) for the area and available historical borehole logs indicate the geology of the site to be characterised by superficial deposits of Alluvium and River Terrace Deposits overlying the London Clay Formation. Raised Beach Deposits may also be present along the south-eastern margins.

There are 2 publicly available BGS historical boreholes located on or within 250m of the site, a selection of which are presented in **Appendix D**.

Table 7 Site geology

Strata	Description[1)]	Estimated thickness [2)]	Permeability[3)]
Superficial deposits			
Alluvium	Normally soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel	~5-7m	Low
River Terrace Deposits	Sand and gravel, locally with lenses of silt, clay or peat		Low
Raised Beach Deposits	Shingle, sand, silt and clay (possibly bedded or chaotic)		Low
Bedrock			
London Clay Formation	Bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite	~30m	Very Low to Low

Notes

1) Descriptions based on BGS Lexicon database

2) Thickness inferred from nearby BGS records

3) Permeability inferred from geology

In addition to the above, made ground may also be present, notably in the eastern and southern portion of the site (i.e. in the vicinity of the former structures and railway embankment).

4.4.2 Radon

UK Health Security Agency Radon Atlas indicates the site falls within a radon potential area of 3% to 5% (**Figure 4**).

4.5 Mining and quarrying

No evidence of any mining, quarrying, landfilling and land reclamation operations, past and present, which have taken place on or near the site.

4.6 Hydrogeology

A summary of the hydrogeological setting of the site, with respect to the anticipated geological sequence set out in Section 4.4 is presented below in Table 8.

Table 8 Summary of hydrogeological setting

Condition	Description
Aquifer characteristics and groundwater depth	The site is underlain by a secondary B and undifferentiated aquifer relating to the River Terrace Deposits/Raised Beach Deposits and Alluvium deposits respectively. Based on the BGS records, the anticipated groundwater level is within the region of 1.5-2.0m.. The site is underlain by an unproductive aquifer relating to the bedrock which mainly consists of London Clay Formation, with low permeability and negligible significance for water supply.
Groundwater recharge/ attenuation	Most of the site is currently covered with buildings and hardstanding and therefore this will limit infiltration to ground and groundwater recharge, except where SUDS are present.
Historical implications for hydrogeology	3 historical non-coal mines recorded for extraction of chalk outside site boundaries. The nearest is 180m south of site.
Licensed groundwater abstractions	The environmental database report indicates that there are no records of groundwater abstractions on or in the immediate vicinity of the site.
Source protection zones	Information available in the MAGIC website indicates that the site does not lie within a currently designated groundwater Source Protection Zone (SPZ).
Ground source potential	According to the BGS and EA online open loop GSHP initial screening tool for England and Wales the aquifer beneath the site is favourable based on a productive aquifer within 300m below the topographic surface. Additionally, the geology beneath the site has potential for providing space heating and hot water via closed loop ground source heat pumps. Should this be considered, further detailed assessment will be required to determine suitability.

4.7 Hydrology

A summary of the hydrology within the site area is summarised in Table 9.

Table 9 Summary of hydrology in site area

Condition	Description
Surface watercourses/features	None identified on or in close proximity to the site. The nearest is Tevile Stream located c.920m east.
Surface water abstractions	There are no surface water abstractions identified by the environmental database, within a 1 km radius of the site.
Site drainage	Surface drainage from the site appears to be discharged into the main drains.
Preliminary flood risk assessment	The indicative floodplain map for the area, shows that the site does not lie within a designated floodplain). The risk of flooding each year has been assessed by the EA as low –i.e. less than 0.1%. Groundsure environmental report identifies a 1 in 30 years risk from surface water flooding. A flood risk assessment (FRA) is outside the scope of this report.

4.8 Sensitive land uses

Table 10 provides a summary of any environmentally sensitive areas identified within 250m of the site based on the environmental database report.

Table 10 Environmentally sensitive areas

Feature	Present within 250m of site?	Details	Likely pathways from site?
International designations – Ramsar wetland, Special Area of Conservation (SAC), Special Protection Area (SPA)	N/A	Designation type, distance and direction from site	N/A
National designations – Site of Special Scientific Interest (SSSI), National Nature Reserve (NNR), ancient woodland	N/A	Designation type, distance and direction from site	N/A
Local designations – Local Nature Reserve, Site of Importance for Nature Conservation (SINC)	N/A	Designation type, distance and direction from site	N/A
Nearest high sensitivity development, e.g. residential	N/A	Designation type, distance and direction from site	N/A

4.9 Climate change

Planning policies place a requirement on developers to mitigate and adapt to future climate change.

LCRM (EA, 2023) requires land contamination assessments to '*factor in climate change impacts, including extreme weather events, to ensure site works and any long term remediation is sustainably robust*', this includes consideration in the CSM and potential contaminant linkages that may be affected and the related uncertainty.

The effects of climate change on the conceptual site model and the potential for climate change effects to improve or exacerbate site conditions with respect to potential contaminant linkages is uncertain. Effects identified in LCRM could include increased rainfall and extreme weather events (i.e. flood and storms), increased seasonal variations in groundwater levels, soil moisture content, and potential for mobilisation of contaminants.

RSK consider that sites that are likely to be more susceptible to climate change effects to be those located on or near to the coast and at risk of coastal flooding, or erosion and those located within the flood plain.

Qualitative consideration of climate change is provided for specific linkages in the qualitative risk assessment and in the assessment of uncertainty.

5 SITE RECONNAISSANCE FINDINGS

A site reconnaissance survey was completed on 18 April 2024 by RSK.

Feature observed	Presence Y/N	Description
Physical characteristics		
1. Are there any access constraints?	Y	The site is accessed off of Ivy arch Road via a remotely accessed electric fence.
2. Is the site approximately level?	Y	The site is mostly flat, but slightly dips to the west within the parking / proposed development area.
3. Any evidence of subsidence, landslip or slope erosion?	N	None observed.
4. Any changes in level between the site and adjacent sites?	Y	The site abruptly changes level on the southern boundary towards the adjacent railway line.
5. Surface cover	-	a) Approx. 90% hard surfacing.
	-	b) Approx. 10% hard surfacing.
	-	The site surfaces comprise hardstanding for car parking and loading / unloading between the warehouse for the majority of the site. Soft cover is situated alongside northern site boundary. It includes trees and vegetation.
Environmental characteristics		
6. Vegetation on site	Y	Semi-mature/mature trees (including Cypress spp. Hawthorn spp.) of varying height, shrubs and grasses are noted in northern/north-eastern margins. One mature tree is located alongside the eastern periphery.
7. Evidence for vegetation stress	N	None observed.
8. Invasive species	N	No evidence of invasive species recorded. However, a detailed ecological/aboricultural survey falls outside the scope of works.
9. Site visit undertaken in dormancy period?	Y	Site visit undertaken April.
10. Surface water features	N	No surface water features were identified on site.
11. Site drainage	-	Interceptors and drainage features observed within the hardstanding of the car park.
	Y	Several drainage covers and interceptors observed across the hardstanding area.

Feature observed	Presence Y/N	Description
Structures and services		
12. Existing buildings on-site	Y	The site primarily occupied by a warehouse structure with associated loading bays and office.
13. Buried and overhead services present	Y	Drainage covers and service covers observed across the hardstanding onsite. External water pumping features observed on the western exterior of the warehouse.
	N	No overhead service observed.
14. Underground structures	N	None observed.
Geotechnical characteristics		
15. Evidence of damage to existing building structures on site?	Y	Cracking observed on the brickwork of the building on the southern and northern building faces.
16. Remains of building structures present on or adjacent to site?	Y	Remains of previous development / former structures observed in the south-eastern corner of the site with historic brick walls/ footings observed in the ground alongside demolition rouble.
17. Retaining walls and adjacent buildings on or close to site boundary?	N	None observed.
18. Any abrupt changes in ground level present on or adjacent to site?	Y	There is an abrupt level change from the southern boundary to the railway line adjacent south to the site. Change in ground level also visible in the area between car park and loading area in the eastern part of the site.
19. Any potentially unstable slopes/ exposed ground present on or adjacent to site?	N	None observed.
20. Any mature trees on site?	Y	There is a small area of land to the north of the site which is landscaped whilst a small quantity of trees line the northern edge of the concrete hardstanding area. The southern site boundary is planted off-site along the railway embankment which is secured with chain link fencing.
21. Any visual evidence of infilled basements on site?	N	None observed.

Feature observed	Presence Y/N	Description
Potential evidence for contamination		
22. Underground/ above ground storage tanks and pipework	N	None observed.
23. Potentially hazardous materials storage and use	N	None observed.
24. Waste storage	Y	Small scale domestic waste storage (two bins near main gate).
25. Fly-tipping	N	None observed.
26. Electricity sub-stations/ transformers	Y	None observed.
27. Asbestos-containing materials	Y	Potential asbestos containing material (ACM) observed on the roofs of the buildings: Warning signs noted on the exteriors of the building for asbestos material on the roof. No evidence of ACMs at surface.
28. Fire suppression	N	None observed.
29. Fire history	N	No evidence observed.
30. Is there any visual evidence of potential contamination on site?	N	None observed.
31. Is there any visual evidence of potential contamination on adjacent sites?	N	None observed.

It should be noted that the site reconnaissance survey was subject to limitations that included access constraints in the form of sign in required at the reception, plus provision of codes to access main gate entrance in the western side of the site and the second internal gate entrance to the hardstanding car park and loading area.

The key findings from the site reconnaissance survey were as follows:

- hardstanding for car parking and loading covers the majority of the site. Soft cover is situated alongside northern site boundary. It includes trees and vegetation
- site mostly flat, slightly dipping to the west of the parking area, however the site abruptly changes level on the southern boundary adjacent railway
- several drainage covers and interceptors across hardstanding area
- buried services on site include: drainage and service covers, and pump box

- traces of building in the southeastern corner of the site with preexisting brick walls/ footings observed in the ground and demolition rouble
- small scale waste storage (two bins near main gate)
- semi-mature/mature trees in the northern portion and along the southern margins
- warning sign on building for asbestos material on roof
- no visible evidence of contamination within site boundaries.

A site layout plan is provided in **Figure 2** and photographic records are included in **Appendix F**.

6 PRELIMINARY GEOTECHNICAL CONSTRAINTS

6.1 Design class

BS EN 1997-1 defines three different Geotechnical Categories that structures may fall into, which are summarised as follows:

- Category 2: Conventional types of structure and foundation with no exceptional risk or difficult ground or loading conditions.

Based on the information provided above on the proposed development in the eastern portion of the site and in view of the anticipated ground conditions, a Geotechnical Category of Category 2 has been assumed for the purposes of designing the geotechnical investigation. This should be reviewed at all stages of the investigation and revised where necessary.

6.2 Preliminary geotechnical hazards assessment

A summary of commonly occurring geotechnical hazards associated with the anticipated geology outlined in Section 4.4 above is given in Table 11 together with an assessment of whether the site may be affected by each of the stated hazards.

Table 11 Summary of preliminary geotechnical risks that may affect proposed development in the eastern portion

Hazard category	Hazard status based on desk study findings and proposed development		Engineering considerations if hazard affects site
	Could be present and/or affect site	Unlikely to be present and/or affect site	
Sudden lateral changes in ground conditions associated with the drift boundaries (Alluvium, River Terrace Deposits and Raised Beach Deposits) and nature of the superficial deposits	☒	☐	Likely to affect ground engineering and foundation design and construction
Shrinkable clay soils[1)] associated with the superficial deposits and bedrock	☒	☐	London Clay/Superficial Deposits anticipated high volume change potential. Design to NHBC Standards Chapter 4.2 or similar
Highly compressible and low bearing capacity soils, (associated with the River Terrace Deposits (i.e. peat	☒	☐	Part of site presents highly compressible strata. As such, likely to affect ground

Hazard category	Hazard status based on desk study findings and proposed development		Engineering considerations if hazard affects site
	Could be present and/or affect site	Unlikely to be present and/or affect site	
lenses) and inherent nature of alluvial soils			engineering and foundation design and construction
Silt-rich soils (associated with the superficial deposits) susceptible to rapid loss of strength in wet conditions[1)]	☒	☐	London Clay Formation anticipated to be silty locally. Likely to affect ground engineering and foundation design and construction
Running sand at and below water table	☐	☒	Running sand presence considered low. Unlikely to affect ground engineering and foundation design and construction
Karstic dissolution features (including 'swallow holes' in Chalk terrain) [1)]	☐	☒	Likely to affect ground engineering and foundation design and construction – refer to Section 0
Evaporite dissolution features and/or subsidence [1)]	☐	☒	Likely to affect ground engineering and foundation design and construction
Ground subject to or at risk from landslides[1)]	☐	☒	Likely to require special stabilisation measures
Ground subject to peri-glacial valley cambering with gulls possibly present	☐	☒	Likely to affect ground engineering and foundation design and construction
Ground subject to or at risk from coastal or river erosion[1)]	☐	☒	Likely to require special protection/stabilisation measures
High groundwater table (including waterlogged ground) [1)]	☐	☒	May affect temporary and permanent works
Rising groundwater table due to diminishing abstraction in urban areas [1)]	☐	☒	May affect deep foundations, basements and tunnels
Geological faults, fissures and break lines	☐	☒	May affect ground engineering and

Hazard category	Hazard status based on desk study findings and proposed development		Engineering considerations if hazard affects site
	Could be present and/or affect site	Unlikely to be present and/or affect site	
			foundation design and construction
Underground mining including shafts and adits (e.g. coal, mineral)	☐	☒	May affect ground engineering and foundation design and construction
Existing sub-structures (e.g. foundations) associated with the former ancillary structure beneath the footprint of the proposed development	☒	☐	Likely to affect ground engineering and foundation design and construction
Filled and made ground of significant thickness	☐	☒	Likely to affect ground engineering and foundation design and construction
Adverse ground chemistry (including weathering of sulphides to sulphates in London Clay and alluvial soils)	☒	☐	Likely to affect ground engineering and foundation design and construction
Site topography, including presence of steep slopes	☐	☒	Likely to affect ground engineering and foundation design and construction
Note: Seismicity is not included in the above table as this is not normally a design consideration in the UK. [1)] The potential for these geohazards to impact the site may be exacerbated by climate change related fluctuations in temperature and precipitation.			

7 INITIAL CONCEPTUAL SITE MODEL

In the UK land contamination is assessed using a risk-based approach taking account of the magnitude (severity of the hazard) and likelihood (probability) of occurrence. A 'receptor' is something that could be adversely affected by contamination (e.g. people, an ecological system, property or a water body). A 'pathway' is a route or means by which a receptor is or could be exposed to or affected by a contaminant. A 'contaminant source' is a hazard but it can only pose a risk to a receptor where a pathway is present.

The relationship between sources, pathways and receptors are referred to as a conceptual site model. A risk can only be realised where a contaminant source, pathway and receptor are all in place, referred to as a 'contaminant linkage'.

In line with LCRM (Environment Agency, 2021a) and BS 10175: 2011 + A2 2017 (BSI, 2017), RSK has used information in the preceding sections to identify hazards (sources of contaminants), receptors that may be impacted and plausible linking pathways. Where all three are present this is termed a potentially complete contaminant linkage and a qualitative risk estimation is made.

7.1 Potential soil, soil vapour and groundwater linkages

7.1.1 Potential sources of contamination

Potential sources of soil and groundwater contamination identified from current activities and the history of the site and surrounding area are presented in Table 12.

Table 12 Potential sources of soil and groundwater contamination

Potential sources	Contaminants of potential concern (CoPC)
On-site	
Made ground (i.e. fill material).	Unknown fill material but potentially including brick, ash and clinker and containing toxic and phytotoxic metals, inorganics, polycyclic aromatic hydrocarbons (PAHs), asbestos.
Historical site activities associated with the former greenhouses and grocery store (i.e. storage of any fuel oils within above ground tank).	Fuel oils, lubricating oils, heavy metals, polycyclic aromatic hydrocarbons (PAHs), solvents, asbestos, and pesticides.
Natural geology.	Radon and sulphate bearing soils.
Off-site	
Railway line and embankment, adjacent to southern boundary of site.	Toxic and phytotoxic metals, inorganics, PAHs, asbestos, herbicides.
Electricity sub-stations, 20m west and 49m east.	Mineral oils and polychlorinated biphenyls (PCBs).
Current commercial activities associated with Ivy trading estate to	

Potential sources	Contaminants of potential concern (CoPC)
the west (including garage and warehouse facility).	Fuel oils, lubricating oils, heavy metals, polycyclic aromatic hydrocarbons (PAHs), solvents, asbestos, phenols, and other common industrial contaminants.
Historical industrial land uses including garage, engineering works, timber yard, unspecified works in the immediate east and west.	

7.1.2 Sensitive receptors

Sensitive receptors identified at or in the vicinity of the site that could be affected by the potential sources identified above comprise:

- current / future site users commercial
- adjacent site users (residential land use to the north and commercial workers)
- current / future buildings and services (i.e. foundations and potable water pipes)
- secondary B Aquifer unit
- concrete foundations and potable pipes.

7.1.3 Potential contaminant pathways

Exposure pathways applicable to receptors include:

- direct ingestion, inhalation and dermal contact with soil and soil-derived dust
- vapour migration followed by indoor or outdoor inhalation
- asbestos fibre release followed by inhalation
- wind-blown dust and deposition off-site followed by direct ingestion, inhalation, and dermal contact;
- leaching from impacted soils/percolation to aquifer.

Ecological receptors are only considered within the conceptual model in the context of statutory protected sites.

Please note that construction workers and future maintenance workers have not been identified in the conceptual model as receptors because risks are considered to be managed through health and safety procedures according to the Health & Safety at Works Act 1970 and associated regulations and guidance.

Where there are potential instances that construction methods may result in short term environmental impacts, these will need to be assessed at design stage, within a construction phase environmental management plan and mitigation measures put in place where required.

7.2 Potential ground gas linkages

7.2.1 Ground gas generation potential

Degradable materials within a soil matrix of Made Ground, are generally low risk source of bulk gases, except where there is a high proportion or readily degradable material in deeper fill (e.g. unregulated landfill). Made Ground beneath the site is anticipated to be superficial and largely comprise anthropogenic material with very low degradable organic content.

The organic material in Alluvium is 'locked' in a low permeability matrix. The gas generation rates are incredibly low and is effectively immobile in the ground because of the saturation and low permeability of alluvial soils. Methane is also adsorbed onto the organic material.

In view of the above, natural alluvium and Made Ground are very unlikely to be credible sources of ground gas beneath the site.

With regards to off site, no credible sources have been identified.

7.2.2 Radon

Radon (Rn-222) is a naturally-occurring radioactive gas, resulting from the radioactive decay of uranium, which can be released from bedrock and ground water. If radon is allowed to collect, for example beneath buildings, it may constitute a health hazard.

A site specific BGS GeoReport (ref: 339584_55911) was obtained for the site, which confirmed that the site is located within a radon potential area of 3% to 5%, and basic radon protective measures are required on site.

7.3 Preliminary risk assessment

The preliminary risk assessment findings and potentially complete contaminant linkages are shown in Table 13.

The risk classification is based on the combination of hazard consequence and probability using a risk matrix from CIRIA C552 (Rudland et al., 2001). The requirement for a preliminary qualitative risk assessment is in accordance with LCRM (Environment Agency, 2021a). A summary of the risk assessment process is in **Appendix H**.

Table 13 Risk estimation for potentially complete contaminant linkages

Potential source	Potential receptor	Possible pathway	Likelihood	Severity	Risk Rating	Justification
On-site sources						
On-site Made ground	Human Health (on/off site current/future workers and nearby residents)	Direct contact via ingestion and dermal contact.	Unlikely	Medium	Low	It is unlikely future/current occupants will come in contact with made ground as its currently encapsulated beneath hardcover. Whilst the eastern portion of the site is targeted for redevelopment, this will consist of a new building with no proposed soft landscaping.
		Inhalation of contaminated dust	Unlikely	Medium	Low	Nuisance dust emissions from construction activities are typically controlled and monitored during groundworks.
		Ingress of soil gases & inhalation of vapours	Unlikely	Medium	Low	Hazardous ground gas and volatiles may ingress into future buildings however no direct evidence has been identified. Fill material is most likely characterised by demolition debris (i.e. inert material). In line with 'The Local Authority Guide to Ground Gas' Table 3.1, made ground (with low degradable organic content), the risk level for site development is considered to be very low. With regards to soil vapour, no evidence has been identified.
	Groundwater (Secondary B aquifer)	Leaching to groundwater	Low	Mild	Low	Given the geological and hydrogeological setting, underlying aquifer unit is of low sensitivity. Furthermore, the site is currently hard covered in its entirety and therefore any infiltration and subsequently leaching is unlikely to occur.

Potential source	Potential receptor	Possible pathway	Likelihood	Severity	Risk Rating	Justification
	Potable pipes/concrete	Direct contact	Low	Mild	Low	Made ground is expected to largely comprise inert material that pose low risk to water supply pipes. With respect to concrete, depending on the nature of the development and foundation type, made ground unlikely to contain aggressive chemical agents.
Former site activities including greenhouses and fuel storage	Human Health (on/off site current/future workers and nearby residents), groundwater, building material	Direct oral ingestion, inhalation and dermal contact with soil and soil-derived dust	Unlikely	Medium	Low	No direct evidence of contamination (in the form of spills/leakages/staining) was identified during the course of the investigation. Furthermore, there is no ongoing source and given the age and site setting, it is unlikely to pose an unacceptable risk to receptors. Any organic pesticides are likely to have degraded within the soils.
Natural Geology (Radon)	Future site occupants	inhalation	Likely	Medium	Moderate	Site is located in an area of 3% to 5% radon risk. The areas of risk broadly correspond with geology and exposure of the bedrock. Basic radon protective measures are required on the site.
Natural Geology (Pyritic ground)	Concrete	Direct impact	Likely	Medium	Moderate	With respect to concrete, depending on the nature of the development and foundation type, London Clay is considered to be pyritic (i.e. sulphate bearing minerals).
Off-site sources						
Railway line and embankment (adj. south)	Human Health (future and current users), Groundwater	Direct contact, surface run off and	Unlikely	Medium	Low / Medium	Made Ground likely encroach on site's southern boundary during construction of the railway line and embankment. However, it is unlikely future/current occupants will come in contact with made ground as its currently encapsulated

Potential source	Potential receptor	Possible pathway	Likelihood	Severity	Risk Rating	Justification
		migration via groundwater				beneath hardcover. Potential contaminants may migrate onto site via surface runoff, although no evidence of contamination has been identified during the walkover. Given the geological/hydrogeological setting the risk is unlikely to pose an unacceptable risk.
Former and current industrial/ commercial activities (including vehicle repair, testing and services, metal works, electricity sub-station)	Site	Surface run off, inhalation, dissolved migration,	Unlikely	Medium	Low	Given the nature of the activities identified, their various distances, topographic elevation, underlying ground conditions, intervening land uses and the site's hydrological setting, they are considered to pose a very low risk

Risk matrix		Consequences			
		Severe	Medium	Mild	Minor
Probability	Highly likely	Very high	High	Moderate	Moderate/low
	Likely	High	Moderate	Moderate/low	Low
	Low likelihood	Moderate	Moderate/low	Low	Very low
	Unlikely	Moderate/low	Low	Very low	Very low
	Very Unlikely	Low	Very Low	Negligible	Negligible

7.4 Data gaps and uncertainties

Key data gaps and uncertainties identified in the CSM at desk study stage include:

- large gaps in historical dataset
- there are no previous investigations available for the site, therefore no information on actual concentrations of contaminants in soil and groundwater or ground gas at this stage
- groundwater depth and flow direction are conceptual at this stage
- no information about the pumping station present on site
- no response has been received from the local authorities contaminated land officer in relation to the site.

8 SITE INVESTIGATION STRATEGY & METHODOLOGY

8.1 Introduction

RSK carried out intrusive investigation works and subsequent monitoring of boreholes between April 2024 and May 2024. It should be noted that the works were limited to the proposed area of development in the eastern portion of the site.

8.2 Selection of investigation methods

The techniques adopted for the investigation were chosen with consideration of the objectives and site constraints, which are described below.

Prior to conducting intrusive works, utility service plans were obtained and buried service clearance undertaken in line with RSK's health and safety procedures. Copies of statutory service records obtained by RSK as part of the agreed scope of works are contained in **Appendix E**.

8.3 Investigation strategy

The ground investigation was carried out using intrusive ground investigation techniques in general accordance with the recommendations of BS5930:2015+A1:2020, which maintains compliance with BS EN 1997-1 and 1997-2 and their related standards. Whilst every attempt was made to record full details of the strata encountered in the boreholes, techniques of hole formation and sampling will inevitably lead to disturbance, mixing or loss of material in some soils and rocks.

The investigation comprised an exploratory investigation, focussing on the eastern side of the site with targeted boreholes across the area proposed for development.

The constraints to the investigation were as follows:

- exploratory hole WS05 was repositioned to the east of the original marked WS05 position. The position originally aimed to target a potential fuel storage tank identified in the desk based assessment. It was repositioned because the location was provisionally placed within the footprint of the warehouse depots. The exploratory hole was moved just outside the depots (to the east)
- exploratory hole WS05 was terminated at 0.90m bgl due to water ingress at the base of hand pit. The presence of water within the hand pit prevented safe digging as the excavation surface was obscured. A hand pit depth of 1.20m bgl is required before drilling can commence as part of the G5.15 procedure for buried service avoidance
- as the site comprises a hardstanding car park, an additional day of works was allowed, comprising concrete coring in order to access underlying soils.

Details of the investigation locations, installations and rationale are presented in Table 14. 5no. dynamic sample boreholes were drilled to a maximum depth of 5m bgl. 4 selected

boreholes were installed with combined gas and groundwater monitoring wells. An exploratory hole location plan is shown on **Figure 3**.

Table 14 Exploratory hole and monitoring well location rationale

Investigation type	Number	Designation	Monitoring well installation	Rationale
Boreholes by dynamic/ windowless sampling methods	5	WS01, WS02, WS03, WS04, WS05	Gas/ groundwater	To determine the contamination status of the ground beneath the site and to install additional dual purpose groundwater and gas monitoring wells. The exploratory points were positioned around the proposed new building. WS1 to WS4 were installed with dual purpose gas and groundwater monitoring wells.

8.3.1 Implementation of investigation works

The site investigation works were carried out in general accordance with the UK Specification for Ground Investigation (UKSGI), third edition (AGS, 2022).

The exploratory holes were logged by an engineer in general accordance with the recommendations of BS5930:2015+A1:2020 (which incorporates the requirements of BS EN ISO 14688-1, 14688-2 and 14689-1).

The monitoring well construction and associated response zones are detailed on the exploratory hole records in **Appendix I**. The response zones were installed to target identified gas generation sources or migration pathways detailed in the initial preliminary CSM.

The soil sampling and analysis strategy was designed to characterise each encountered soil strata, permit an assessment of the potential contaminant linkages identified and investigate the geotechnical characteristics. In addition, samples were taken to allow for geo-environmental and geotechnical testing to be undertaken.

Soils collected for laboratory analysis were placed in a variety of containers appropriate to the anticipated testing suite required. They were dispatched to the laboratory in cool boxes under chain of custody documentation. Samples were stored in accordance with the RSK quality procedures to maintain sample integrity and preservation and to minimise the chance of cross contamination.

Selected samples were placed in polythene bags for headspace screening with a photo-ionisation detector (PID) fitted with a 10.6 eV bulb. The PID screening results are presented on the exploratory hole records.

A photographic log for the investigation works is displayed within **Appendix F**.

8.4 Monitoring programme

8.4.1 Ground gas monitoring

Whilst no credible ground gas sources were identified during the PRA, monitoring wells were installed within four of the five exploratory points WS1 to WS4, a total of 3 monitoring rounds have been undertaken to provide data.

A calibrated infrared gas meter was used to measure gas flow, concentrations of carbon dioxide (CO_2), methane (CH_4) and oxygen (O_2) in percentage by volume, while hydrogen sulphide (H_2S) and carbon monoxide (CO) were recorded in parts per million.

Initial and steady state concentrations were recorded. In addition, during the first monitoring round, all wells were screened with a PID to establish if there are any interferences and cross-sensitivity of other hydrocarbons with the infrared gas meter.

The atmospheric pressure before and during monitoring, together with the weather conditions, were recorded. The monitoring included periods of falling atmospheric pressures and after/during rainfall.

All ground gas monitoring results together with the temporal conditions are contained within **Appendix I**. Equipment calibration certificates are available on request.

8.4.2 Groundwater monitoring and sampling

A total of 3 rounds of groundwater level monitoring were undertaken on a two-weekly basis between 3 and 30 May 2024.

1 round of groundwater sampling was carried out alongside the monitoring visit on the 16 May 2024. Groundwater samples were retrieved using low flow sampling methods where appropriate in general accordance with British Standard 5667 (2009). The low-flow groundwater monitoring records are displayed in **Appendix I**.

Water samples were dispatched to the laboratory in cool boxes under chain of custody documentation.

Development of the monitoring wells following installation was undertaken prior to the groundwater sampling on 8 May 2024. This comprised the removal of three well volumes using a plastic bailer.

8.5 Laboratory testing

Laboratory testing was undertaken at a UKAS accredited laboratory with ISO17025 and MCERTS accredited test methods were specified where applicable for contamination testing and as shown in the laboratory test certificates appended.

8.5.1 Chemical analysis of soil samples

The soil sampling strategy was designed to characterise made ground and/or natural strata typically within the upper 1m of the ground profile whilst also characterising deeper strata and the potential for contaminant migration from relevant sources of identified within the preliminary CSM.

The programme of chemical tests undertaken on soil samples obtained from the intrusive investigation is presented in Table 15 with the laboratory testing results contained in **Appendix J**.

Table 15 Summary of chemical testing of soil samples

Stratum	Tests undertaken	No. of tests
Made ground	Asbestos screening and ID	3
	RSK Soil Suite 2 – Speciated polycyclic aromatic hydrocarbons (PAH-16MS), Total Petroleum Hydrocarbon Criteria Working Group pH, arsenic (As), cadmium (Cd), total chromium (Cr), copper (Cu), mercury (Hg), lead (Pb), nickel (Ni), selenium (Se), Zinc (Zn), total sulphate, water soluble (ws) sulphate	6
	Total Organic Carbon	6
Skip contents (made ground and natural soils)	Waste Assessment Criteria test (Liquid:Solid ratio 10:1)	1

8.5.2 Geotechnical analysis of soils

Where appropriate disturbed, bulk and undisturbed soil samples were taken for geotechnical classification testing with the depth and nature of samples detailed within the exploratory hole records.

Where appropriate, testing was undertaken in accordance with BS 1377:1990: Parts 1 to 4 Method of Tests for Soils for Civil Engineering Purposes or, where superseded, by the relevant part of BS EN ISO 17892:2014 Geotechnical investigation and testing - Laboratory Testing of Soil. Tests carried out in order to classify the concrete class required on-site have been undertaken following the procedures within BRE SD1:2005.

The programme of geotechnical tests undertaken on samples obtained from the intrusive investigation is presented in Table 16. The results and UKAS accreditation of tests methods are shown in **Appendix J**.

Table 16 Summary of geotechnical testing undertaken

Strata	Tests undertaken	No. of tests
Alluvium (clay)	Organic matter	1
	BRE Suite D Brownfield site (Pyrite present): pH, Chloride BRE, SO_4 equiv. (water sol 2:1), Nitrate BRE, SO4 equiv, (water sol 2:1), Sulphate BRE (water sol 2:1), Sulphate BRE (acid sol), Sulphur BRE (total), Magnesium BRE(water sol 2:1)	1
River Terrace Deposits	Organic matter	1
	Moisture content %	4

Strata	Tests undertaken	No. of tests
London Clay Formation	Liquid/ plastic limits	4
	Particle size distribution (PSD) wet sieving method	4
	BRE, Suite D Brownfield site (Pyrite present): pH, Chloride BRE, SO_4 equiv. (water sol 2:1), Nitrate BRE, SO4 equiv, (water sol 2:1), Sulphate BRE (water sol 2:1), Sulphate BRE (acid sol), Sulphur BRE (total), Magnesium BRE(water sol 2:1)	3

8.5.3 Chemical analysis of groundwater and surface water samples

Groundwater samples were collected in containers appropriate to the anticipated testing suite required. The containers were filled to capacity and placed in a cool box to minimise volatilisation.

Chemical testing undertaken on water samples obtained during the monitoring programme is presented in Table 17. Laboratory testing results are provided in **Appendix J**.

Table 17 Summary of chemical testing of water samples

Sample type	Tests undertaken	No. of tests
Groundwater	RSK Water suite 2, Speciated polycyclic aromatic hydrocarbons (PAH-16MS), Total Petroleum Hydrocarbon Criteria Working Group, pH, arsenic (As), cadmium (Cd), total chromium (Cr), copper (Cu), mercury (Hg), lead (Pb), nickel (Ni), selenium (Se), Zinc (Zn), water soluble (ws) sulphate	3
	Alkalinity as CaCO3	3
	Dissolved organic carbon (DOC)	3
	Volatile organic compounds (VOC suite)	3
	Speciated phenols suite	3

9 SITE INVESTIGATION FACTUAL FINDINGS

The results of the intrusive investigation and subsequent geo-environmental and geotechnical laboratory analysis undertaken are detailed below.

9.1 Ground conditions encountered

The descriptions of the strata encountered, notes regarding visual or olfactory evidence of contamination, list of samples taken, field observations of soil and groundwater, in-situ testing and details of monitoring well installations are included on the exploratory hole records presented in **Appendix I**.

The exploratory holes revealed that the site is underlain by a variable thickness of made ground locally overlying superficial deposits (Alluvium and River Terrace Deposits) with the London Clay Formation encountered at depth. This appears to generally confirm the stratigraphical succession described within the preliminary CSM.

For the purpose of discussion, the ground conditions encountered during the fieldworks are summarised in Table 18 with the strata discussed in subsequent subsections.

Table 18 General succession of strata encountered

Stratum	Exploratory holes encountered	Depth to top of stratum m bgl	Proven thickness (m)
Concrete hardstanding	WS01, WS02, WS03, WS04 and WS05	GL (0.00)	0.16 to 0.35
Made Ground	WS01, WS02, WS03, WS04 and WS05	0.16 to 0.35	0.24 to 1.15
Alluvium	WS03	1.00	1.25
River Terrace Deposits	WS02	1.00	0.40
	WS05	0.60	Proven to the base of the investigation (0.90m bgl)
London Clay Formation	WS01 to WS04	0.40 to 2.25	Proven to the base of the investigation (5.45m bgl)

9.1.1 Made ground

The exploratory holes beneath the proposed footprint encountered a variable thickness of Made Ground. Reference should be made to the individual records, however in general comprised an initial concrete reinforced slab overlying a granular sub-base layer. Beneath this, the Made Ground consisted of reworked silty clay with variable proportions of brick, concrete and timber.

9.1.2 Alluvium

Alluvium was found to be underlying the made ground locally at WS03 between 1.00 and 2.25m bgl and comprised soft (locally firm) dark black mottled grey / green sandy silty clay with varying proportions of gravel and occasional rootlets and shell fragments. Sand is fine to coarse. Gravel is angular to subrounded fine to coarse of flint to firm dark slightly sandy silty clay.

A summary of the in-situ and laboratory test results recorded for the Alluvium Deposits are presented in Table 19.

Table 19 Summary of in-situ and laboratory test results for Alluvium

Soil parameters	Min. Value	Max. Value	Reference
Moisture content (%)	50.9		**Appendix N**
Modified moisture content (%)	53.02		**Appendix N**
Liquid limit (%)	68		**Appendix N**
Plastic limit (%)	36		**Appendix N**
Plasticity index (%)	32		**Appendix N**
Modified plasticity index (%)	30.72		**Appendix N**
Plasticity term	High		**Appendix N**
Consistency index	0.53		
Volume change potential	Medium		**Appendix N**
Grading (%)			
Very Coarse	0		**Appendix N**
Gravel	16		**Appendix N**
Sand	22		**Appendix N**
Fines (<0.063mm)	62		**Appendix N**
SPT 'N' values	0*	6	**Appendix I**
N60 Value**	0*	8.8	
Undrained shear strength measured by shear vane testing (kN/m^2)***	26.7		**Appendix I**
Undrained shear strength inferred from SPT 'N60' values (kN/m^2)***	39.16		
Consistency term from field description	Very soft to soft (locally firm)		**Appendix I**

Notes: An SPT 'N' value of 0 was recorded within the Alluvium between 1.00 and 1.45 m bgl, which infers the SPT hammer sunk under its own weight before the test was able to be carried out. This suggests that the Alluvium deposits on site are highly compressible, and pose a geotechnical risk to the future design of foundations.

**energy ratio of 87.78% based on SPT calibration test provided by Oakland SI.

*** derived using a Stroud Factor of 4.45 derived utilising an average PI% of 32

9.1.3 River Terrace Deposits

This stratum was encountered within locations WS02 and WS05 at depths of 1.00 and 0.70m bgl respectively. The River Terrace Deposits comprised a cohesive soil, generally described as firm brown sandy gravelly clay. Sand is fine to coarse. Gravel is subangular to subrounded of flint. Thicknesses of the River Terrace Deposits were between 0.40 in WS02 and a not proven thickness of 0.30m within WS05.

A summary of the in-situ test results recorded in the stratum are presented in Table 20.

Table 20 Summary of in-situ and laboratory test results for The River Terrace Deposits

Soil parameters	Min. Value	Max. Value	Reference
SPT 'N' values	10		**Appendix I**
N60 Value**	14.6		
Undrained shear strength inferred from SPT 'N' values (kN/m^2)*	45		**Appendix I**
Undrained shear strength inferred from SPT 'N60' values (kN/m^2)*	65.7		
Undrained shear strength measured by shear vane testing (kN/m^2)	98		**Appendix I**
Consistency term from field description	Firm	Firm to stiff	**Appendix I**
Strength term from field description	High		
Notes: *derived using a Stroud Factor of 4.5 in the absence of laboratory PI test results for the River Terrace Deposits. **energy ratio of 87.78% based on SPT calibration test provided by Oakland SI.			

9.1.4 London Clay Formation

This stratum was generally encountered at depths between 1.40m and 2.00m bgl beneath the River Terrace Deposits and Alluvium, apart from at exploratory hole WS01 where it was uncovered at 0.40m beneath the made ground. The London Clay Formation comprised stiff to very stiff blueish grey silty clay with varying proportions of fine sand. Thicknesses proven to the base of the investigation (5.45m bgl).

A summary of the in-situ and laboratory test results recorded in the stratum are presented in Table 21.

Table 21 Summary of in-situ and laboratory test results for The London Clay Formation

Soil parameters	Min. Value	Max. Value	Reference
Moisture content (%)	29.5	30.7	**Appendix N**
Modified moisture content (%)	29.5	31.33	**Appendix N**
Liquid limit (%)	62	77	**Appendix N**
Plastic limit (%)	26	30	**Appendix N**

Soil parameters	Min. Value	Max. Value	Reference
Plasticity index (%)	36	47	**Appendix N**
Modified plasticity index (%)	35.28	47	**Appendix N**
Plasticity term	High	Very High	**Appendix N**
Consistency index	0.90	0.99	
Volume change potential	Medium	High	**Appendix N**
Grading (%)			
Very Coarse	0	0	**Appendix N**
Coarse	0	3	**Appendix N**
Sand	24	5	**Appendix N**
Fines (<0.063mm)	76	92	**Appendix N**
SPT 'N' values	9	21	**Appendix I**
N60 Value**	13.2	30.72	
Undrained shear strength inferred from SPT 'N' values (kN/m^2)*	51.3*	119.7*	**Appendix I**
Undrained shear strength inferred from SPT 'N60' values (kN/m^2)*	75.24	175.104	
Undrained shear strength measured by shear vane testing (kN/m^2)	50	102	**Appendix I**
Consistency term from field description	Firm	Firm to stiff	**Appendix I**
Strength term from field description	Medium	High	
Notes: *derived using a Stroud Factor of 5.7 (F White et al, 2019) **energy ratio of 87.78% based on SPT calibration test provided by Oakland SI.			

9.1.5 Visual/olfactory evidence of soil contamination

No visual or olfactory evidence of contamination was encountered within any of the exploratory holes.

Selected samples were placed in polythene bags for headspace screening with a photo-ionisation detector (PID) fitted with a 10.6 eV bulb. The PID screening results are presented on the exploratory hole records in **Appendix H** and detailed in Table 22 below.

Table 22 Summary of PID screening results

Exploratory hole I.D	Depth of sample (m bgl)	PID result (ppm)
WS01	0.20	0.1
	0.70	0.0
WS02	0.20	0.0
	0.60	0.1
WS03	0.40	0.0

Exploratory hole I.D	Depth of sample (m bgl)	PID result (ppm)
	1.00	0.2
WS04	0.25	0.0
	0.60	0.0
WS05	0.18	0.0
	0.40	0.0

9.2 Groundwater and surface water

9.2.1 Groundwater encountered during intrusive works

Groundwater was encountered during the intrusive investigation works as detailed on the exploratory logs in **Appendix H**. Water strikes were recorded from a minimum level of 0.9m bgl in WS05 to a maximum of 5.0m bgl in WS02. Water rose from 5.0m to 4.95m in WS02, from 0.9m to 0.8m bgl in WS05. A groundwater strike was observed at 2.0m bgl in WS03 during drilling and was recorded to rest at 3.0m bgl after installation of the monitoring well. The results are considered to reflect shallowed groundwater, possibly perched, within the top of the London Clay Formation / within the superficial deposits.

Groundwater was encountered during monitoring. Resting groundwater levels recorded during the monitoring programme are summarised in Table 23 below.

Table 23 Summary of groundwater monitoring results

Monitoring well	Response zone stratum (m depth)	TOC elevation (m AOD)	Depth to water (mb TOC)	Depth to base (mb TOC)	Groundwater elevation (m AOD) – min.	Groundwater elevation (m AOD) – max.
WS01	London Clay Formation (1.50 – 5.00)	2.830	0.12 – 0.59	4.55	2.245	2.710
WS02	London Clay Formation (1.50 – 5.00)	3.195	0.53 – 0.54	5.050	2.655	2.665
WS03	London Clay Formation (1.00 – 5.00)	3.142	0.56 – 1.23	4.790 – 4.890	1.912	2.582
WS04	London Clay Formation (1.00 – 5.00)	2.946	0.75 – 1.04	5.030 – 5.040	1.906	2.201

It should be noted that groundwater levels might fluctuate for a number of reasons including seasonal variations that is not captured in the above monitoring programme.

9.2.2 Visual/olfactory evidence of groundwater contamination

No visual or olfactory evidence of contamination was found during the well development, groundwater sampling and gas/groundwater monitoring visits.

9.3 Chemical laboratory results

The results of the chemical soil and groundwater testing are presented in **Appendix J**.

9.4 Geotechnical laboratory results

The results of the geotechnical testing are presented in **Appendix J**.

9.5 Ground gas monitoring

The results of the ground gas monitoring and testing carried out are provided in **Appendix I**.

10 GEO-ENVIRONMENTAL ASSESSMENT

10.1 Refinement of initial CSM

The exploratory holes generally confirmed the predicted ground model and no additional sources from those at the PRA stage were identified. Superficial thickness of Made Ground was recorded in all the exploratory holes (typically ≤1m, locally up to 1.4m), therefore this source is deemed to exist.

With respect to ground gas, very little biodegradable material was visually noted within the underlying soil material and the presence of volatiles were not identified following the in-situ screening using a photo-ionisation detector and the ground gas monitoring to date indicated negligible concentration and flow of carbon dioxide and methane (albeit, large proportion of the response zones were consistently flooded). As such, the ground conditions are not considered to be a significant source of ground gases or volatiles.

Considering the current and anticipated layout in the eastern portion (i.e. proposed development) predominantly comprising hardcover, the principal risk pathway would be indoor vapour inhalation. As no evidence of volatiles (together with ground gas) was recorded, the risk is low. Additionally, the groundwater bodies are designated as Secondary B/Undifferentiated Aquifers and therefore of low sensitivity due to the low permeable nature of the underlying soils. As prescribed in the initial CSM, the presence of hardcover will reduce infiltration and therefore leaching of any mobile contaminants.

Irrespective of the above, Section 10.2 provides an assessment of human health linkages to further demonstrate low risk.

With respect to pyritic ground conditions, this is further discussed in Section 11 (geotechnical consideration).

Concerning radon, a site specific BGS GeoReport (ref: 339584_55911) was obtained for the site via British Geological Survey (BGS), which confirmed that the site is located within a radon potential area and basic radon protective measure (i.e. a radon membrane across the footprint of the building) is required. It is recommended that the membrane is installed in accordance with BRE Report BR 211, Radon: guidance on protective measures for new building (2023).

A copy of the site specific BGS radon GeoReport is presented within **Appendix O**.

10.2 Generic quantitative risk assessment

In accordance with Stage 1 of LCRM (Environment Agency, 2021a) the Tier 2 GQRA comprises the comparison of soil, groundwater, soil vapour and / or ground gas results with generic assessment criteria (GAC) appropriate to the linkage being assessed. This comparison can be undertaken directly against the laboratory results or following statistical analysis depending upon the sampling procedure that was adopted. This assessment relates to LCRM Stage 1, Tier 2 generic quantitative risk assessment.

Following the refinement of the CSM, the potentially complete contaminant linkages that require further assessment and the methodology of assessment are presented in Table 24.

Table 24 Linkages for GQRA

Potentially relevant contaminant linkage	Assessment method
H1. Oral, dermal and inhalation exposure with impacted soil, soil vapour and dust by future site users	Human health GAC in **Appendix K** for a proposed commercial end use.
H2. Inhalation exposure of future site users to asbestos fibres	Human health GAC in **Appendix K** for a proposed commercial end use. Consideration given to the applicability of the use of Statistical Assessment.
H3. Inhalation exposure to future site users from groundwater derived vapour	Human health GAC in **Appendix K** for a proposed commercial end use. Consideration given to the applicability of the use of Statistical Assessment.
H4 Leaching of contaminants into the underlying groundwater.	The results have been compared against EQS criteria for a freshwater environment, as presented in **Appendix L**.

10.3 Methodology and assessment of human health linkages

The linkages pertaining to human exposure to chemical contamination are as follows:

- H1. Oral, dermal and inhalation exposure with impacted soil, soil vapour and dust by future site users
- H2. Inhalation exposure of future site users to asbestos fibres
- H3. Inhalation exposure to future site users from groundwater derived vapour.

10.3.1 H1. Oral, dermal and inhalation exposure with impacted soil by future occupants/site users

The chemical soil testing results have been directly compared against the Human health GAC for commercial land use based on a 1% soil organic matter in order to be conservative. The screened results are presented within in **Appendix L**.

10.3.1.1 Summary of results

Results indicate that all contaminants in soil were below the relevant GAC therefore it is considered that a relevant contaminant linkage does not exist.

10.3.2 H2. Inhalation exposure of future occupants to asbestos fibres

The assessment of risk from human exposure to asbestos fibres from soil has been undertaken on a qualitative basis with consideration to the type, concentration, and form of asbestos detected, the soil conditions, the proposed land use, and potential for fibre release and subsequent inhalation.

The visual inspection at the laboratory identified no materials suspected of potentially containing asbestos and the scheduled laboratory screening for asbestos found no detectable asbestos fibres within the samples of made ground and reworked natural. It should be noted however that asbestos containing materials were observed on the

existing building, and therefore vigilance should be maintained for its potential presence in the made ground.

10.3.3 H3. Inhalation exposure to future site users from groundwater-derived soil vapour

Inhalation exposure from dissolved phase volatile compounds within groundwater has been assessed through the direct comparison of groundwater analytical data with the RSK GrAC presented in **Appendix L**.

All VOCs determinants analysed were found to be below the laboratory limit of detect.

Laboratory results are presented within **Appendix L**.

10.4 Methodology and assessment of controlled waters-related linkages

The potential contaminant linkages pertaining to controlled waters receptors are as follows:

- W1. Migration of dissolved phase contaminants in groundwater to secondary aquifer.

The assessment of the identified controlled waters receptors has been undertaken by comparison of groundwater concentrations against GAC applicable to the receptor.

The primary controlled waters receptor at the site is considered by RSK to be the underlying secondary aquifer.

As the primary controlled waters receptors are the Secondary aquifer and surface waters to which the aquifer provides baseflow, the analytical results for groundwater samples have been assessed against freshwater EQS values protective of surface water quality.

10.4.1 W1. Migration of dissolved phase contaminants to wider Secondary aquifer

The assessment shows that no elevated concentrations of PAHs or petroleum hydrocarbons have been recorded above the assessment criteria. Elevated concentrations of metals cadmium, copper, lead, nickel and zinc were recorded in-excess of their respective assessment criteria. The source of the metals is not clear, however the concentrations are low and are not considered to pose a risk to the wider aquifer which is considered to be of low sensitivity. Furthermore, the proposed development will comprise 100% coverage with hard standing, thereby limiting the leaching potential of any heavy metals recorded within the underlying made ground.

The screened laboratory results are presented in **Appendix L**.

10.5 Uncertainties and implications in refined CSM and GQRA

In accordance with good practice, data gaps and uncertainties in the refined CSM have been identified at this stage. These are summarised in Table 25 along with the likely implications.

Table 25 Data gaps and uncertainties

Data gap/ uncertainty	Details	Implications
Asbestos not found in made ground samples tested.	Although not encountered to date, asbestos containing material (ACM) could still be present in discrete locations.	Vigilance should be maintained for any potential ACM or fibrous material during below ground works.
Exploratory hole location WS05 was terminated at 0.90m bgl due to water ingress.	Due to water ingress into the hand dug trial pit, this location could not be advanced.	If depth to bedrock is required to be proven in this location, additional site investigation may be required within this area.
Impact to potable pipes.	Limited samples obtained and depth/route of potable pipe unknown.	Potentially elevated organic contamination (e.g. BTEX, MTBE, SVOCs) within the Made Ground may permeate potable supply pipes.

11 PRELIMINARY WASTE ASSESSMENT

In accordance with the definition provided in the Waste Framework Directive (WFD), materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded, by the holder'. Naturally occurring soils are not considered waste if reused on the site of origin for the purposes of development. Soils such as made ground that are not of clean and natural origin (irrespective of whether they are contaminated or not) and other materials such as recycled aggregate, do not become waste until the criteria above are met. Further background information is provided in **Appendix G**.

Excavation arisings from the development may therefore be classified as waste if surplus to requirements or unsuitable for reuse. The following assessments assume the material tested is classified subsequently as waste (after reuse options have been excluded).

11.1 Hazardous waste assessment

It is a legal requirement to correctly assess and classify waste. Technical Guidance WM3 (Environment Agency, 2022b) sets out the requirements for waste sampling. The level of sampling should be proportionate to the volume of waste and its heterogeneity.

The preliminary assessment provided below is based only upon the available sample results from site investigation works and may not be sufficient to adequately classify the waste.

11.1.1 Chemical contaminants

Envirolab, an RSK company, has developed a waste soils characterisation assessment tool (HASWASTE), which follows the guidance within Technical Guidance WM3. The analytical results have been assessed using this tool to assess the hazardous properties to support potential off-site disposal of materials in the future. Note that it is ultimately for landfills to confirm what wastes they are able to accept within the constraints of their permit.

The results are presented in full in **Appendix M**.

No samples were found to have hazardous properties based on this assessment, as shown within **Appendix J**. This suggests that if applicable the waste would require disposal at a suitably permitted inert or non-hazardous waste landfill.

11.1.2 Asbestos within waste soils

Technical Guidance WM3 requires that within a mixed waste the separately identifiable wastes be assessed separately.

For instance, where waste soil contains identifiable pieces of asbestos (visible to the naked eye) the asbestos should, where feasible, be separated from the soil and classified separately. This should be disposed of within a hazardous, stable non-reactive hazardous waste landfill or a special cell in a non-hazardous waste landfill.

Samples of made ground which had the potential to comprise ACM or fibres were collected from the site and analysed for the presence of asbestos, the results of which are presented in **Appendix J**.

Analysis confirmed that asbestos is not present within samples collected.

11.2 WAC assessment

A composite skip sample (WAC-SKIP) was submitted for waste acceptance criteria (WAC) testing for WAC Full Suite, the results of which are presented in **Appendix J**.

The results of the WAC testing indicate that the leaching limit values and total content of organic parameters for inert waste have not been exceeded and therefore the waste is suitable for disposal at an inert landfill or a site that has a valid exemption from the Environmental Permitting (England and Wales) Regulations 2016 (as amended) registered with the EA.

WM3 guidance recommends that a Sampling Plan be prepared to support any waste classifications and hazardous waste assessments, prior to any material being excavated. Given the level of data obtained, scale of the development and heterogeneity of the site soils, the following assessment should be considered indicative and further assessment should be undertaken following the preparation of a waste sampling plan.

12 GEOTECHNICAL ASSESSMENT

12.1 Proposed development

As prescribed in Section 3.4, the proposed development involves the construction of a three storey self-storage building. At this stage no specific information relating to building loads has been provided and it has been assumed that the current site levels will remain the same.

12.2 Key geotechnical hazards / development constraints

The key risks identified from the available ground investigation data are discussed below:

- the presence of shrinkable soils at near surface, with medium to high volume change potential
- shrink/swell behaviour due to influence of trees/vegetation along the northern and southern peripheries
- low strength soils within the shallow Alluvium (inferred from in-situ testing) within the vicinity of WS103 (southeastern corner of the site)
- silt rich soils in Alluvial and London Clay Formation susceptible to rapid loss of strength in wet conditions
- existing sub-structures (e.g. foundations) associated with the former ancillary structure beneath the footprint of the proposed development
- pyritic ground chemistry association with London Clay Formation, likely to affect foundation design.

12.3 Foundations

12.3.1 Foundation options

In view of the ground conditions encountered beneath the proposed footprint and subject to the structural loads, the adoption of traditional spread foundations appears technically feasible provided they are extending into the firm to stiff London Clay Formation. However, the potential for disturbance during the removal of any below ground structures to former building (south-east corner) together with the compressible strata (i.e. soft Alluvium) and made ground is likely to dictate the requirement for some of the proposed foundations to be depended. Furthermore, the foundation design may need to take into account the potential for damaging ground movements as a result of shrinkage of the clay soils in close proximity to the existing trees along the site peripheries. Should traditional spread foundations need to extend to depths below 2.5 m (due to any of the constraints detailed above) or be required to support higher structural loads, recourse to piled foundations is likely to be required (subject to further ground investigation).

12.3.2 Spread foundations

It is envisaged that spread foundations founded within the London Clay at a minimum depth of 1.00 m below the existing ground level or at least 0.2 m into the firm to stiff clays

may be appropriate for this option. Design Approach 1 - Combination 2 results are summarised in Table 26.

Table 26 Comparison of ULS design resistance and SLS design pressures

Foundation Dimensions				DA1-C2 Design Resistance (kN/m²)	SLS (25 mm Settlement) (kN/m²)
Width (m)	Length (m)	Depth (m)	Area (m²)		
Strip/Trench Fill Foundations					
0.50	30.00	1.00	15.00	284	217
1.00	30.00		30.00	261	109
1.50	30.00		45.00	253	72
2.00	30.00		60.00	242	54
Pad Foundations					
1.00	1.00	1.00	1.00	306	203
1.50	1.50		2.25	296	136
2.00	2.00		4.00	282	102
3.00	3.00		9.00	268	68
Notes: Depth refers to depth below ground level or m bgl					

12.3.3 Foundation works risk assessment

It is anticipated that a foundation works risk assessment report will not be required for the development because:

- a considerable thickness of cohesive superficial and bedrock stratum has been encountered beneath the site (proven thickness of at least 5.00m bgl) and is likely to significantly retard migration pathways and the foundations proposed will not affect this.

12.4 Excavations for foundations and services

Generally, the hand pits remained stable during excavation which indicates that foundation excavations should also remain stable in the short term. In the event that excavations are to remain open for longer periods, consideration should be given to the use of trench support systems.

Man entry into any excavations should not be undertaken without provision of suitable shoring and support and dewatering or suitable regrading and battering of side slopes to safe angles. Confined spaces protocols for the Health and Safety of personnel should always be used where man entry into excavations is to be undertaken as low oxygen conditions may be present.

However, perched groundwater was encountered within the hand pit of WS05, and in all monitoring wells during return visits. Therefore, dewatering may therefore be required to facilitate foundation excavation.

The cohesive nature of the soils encountered suggests that pumping from open sumps should be sufficient to keep the excavations reasonably dry.

12.5 Floor slabs

No specific details have been provided on the design loading for the proposed ground floor slabs at the time of writing this report, however, based upon the ground conditions encountered (i.e. presence of soft compressible strata and variable thickness of Made ground), ground bearing slabs may not be feasible and consideration should be given to suspending the floor slab. Furthermore, consideration should be given to the zone of influence of trees and therefore the appropriateness of adopting ground bearing over suspended floor slabs.

12.6 Chemical attack on buried concrete

This assessment of the potential for chemical attack on buried concrete at the site is based on BRE Special Digest 1: Concrete in aggressive ground, which represents the most up-to-date guidance on this topic currently available in the UK.

The desk study and site reconnaissance indicate that, for the purposes of assessing the aggressive chemical environment of the site, the site should be considered as comprising brownfield ground likely to contain pyrite.

Based on testing results, Table 27 gives the characteristic pH, water-soluble and total sulphate content values for soils from each of the geological units and groundwater encountered on-site.

Table 27 Characteristic pH, water soluble sulphate and total sulphate values

Stratum	pH	Water Soluble Sulphate (mg/l)	Total Potential Sulphate (mg/l)
Alluvium	8.0	328[1)]	0.48
London Clay	8.29	–591[1)]	2.25
Groundwater	7.7	49[1)]	-

Notes.
1) maximum concentration recorded

Based on the results above and following the steps outlined in the BRE guidance, the Design Sulphate Classes and Aggressive Chemical Environment for Concrete classifications are summarised in Table 28, on the basis of water soluble sulphate and total potential sulphate, respectively.

Table 28 Concrete design class

Stratum	Ground water	Water Soluble Sulphate		Total Potential Sulphate	
		DS Class	AC Class	DS Class	AC Class
Alluvium	Mobile	DS-1	AC-1	DS-2	AC-2
London Clay Formation	Mobile	DS-2	AC-2	DS-4	AC-4
Groundwater	-	DS-1	AC-1	N/A	N/A

Assuming minimal ground disturbance (i.e. excavation without backfill) the recommended:

- ACEC Classification is therefore AC-1 with a Design Sulphate Class of DS-1 (Alluvium)
- ACEC Classification is therefore AC-2 with a Design Sulphate Class of DS-2 (London Clay Formation).

If the proposals include the reuse of the pyritic London Clay Formation, i.e. cutting and filling, the recommended ACEC Classification will increase to AC-4 with a Design Sulphate Class of DS-4.

It should be noted that the above classification for London Clay Formation is based on the maximum water soluble sulphate concentration recorded in the soils due to the limited data set available. Consideration may be given to testing further samples to increase the data set with the potential of reducing the classification.

13 CONCLUSIONS

13.1 Geo-environmental assessment

Following the site investigation, all samples tested were compared against the GACs for commercial use. The results found that all samples were below the GAC. In view of the site's continued use as a commercial site, anticipated layout (i.e. presence of hardcover predominantly throughout) and the site's geological/hydrogeological setting, the risk from contamination is considered to be low, and no specific remedial measures are considered to be necessary.

Although asbestos containing materials (ACM) has not been encountered to date, vigilance should be maintained for any potential ACM or fibrous material during below ground works.

Irrespective of the above, the site is located within a radon potential area of 3% to 5%, and basic radon protective measures are required on site. Protection measures may consist of a proprietary radon barrier across the building footprint. It is recommended that this is confirmed with the contaminated land officer at Worthing Borough Council.

13.2 Geotechnical assessment

The key findings of the geotechnical assessment are as follows:

- conventional spread foundations may be feasible provide the foundations are formed within the London Clay Formation. However, the depth of the foundation will be dictated by the made ground and low bearing soils. Furthermore, consideration will need to be given to the influence of trees and vegetation along the northern and southern site boundaries
- in view of the ground conditions, ground bearing slabs may not be feasible and consideration should be given to suspending the floor slabs
- concrete should be designed for a Design Sulphate Class of DS-2 and Aggressive Chemical Environment for Concrete (ACEC) Classification of AC-2. This assumes mobile groundwater conditions and no significantly disturbed clay comes into contact with concrete foundations or structures.

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FIGURES

Figure 1 SITE LOCATION PLAN



Rev	Date	Amendment	Drawn	Chkd	Appd
C01	16.04.2024	First Issue	SW	RDP	RDP

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RSK GEOSCIENCES
Chancery House, Premier Way
Abbey Park industrial Estate
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S051 9DQ
Tel: +44(0)1794 329276
Email: info@rsk.co.uk
Web: www.rsk.co.uk

Client: Bravo Services Limited

Project Name: Boxx Storage Worthing

Description: Site Location Plan

Dimension	Size	Scale	Geolocation	Project ID	Drawing no.	Rev	File name
m	A4	1:25,000	515020, 103513	305407	11101	C01	305407-ST-111-SS-D-C-11101-C01

Figure 2 SITE LAYOUT PLAN

DO NOT SCALE FROM THIS DRAWING

N



LEGEND

Site boundary

Notes:

Base plan provided by Client
Drawing Ref.: 15175/2-102

Rev	Date	Amendment	Drawn	Chkd	Appd
C01	16.04.2024	First Issue	SW	RDP	RDP

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Web: www.rsk.co.uk

Client
Bravo Services Limited

Project Name
Boxx Storage Worthing

Description
Site Layout Plan

Project ID	Drawing no.	Revision
305407	11201	C01

File name
305407-ST-112-SS-D-C-11201-C01

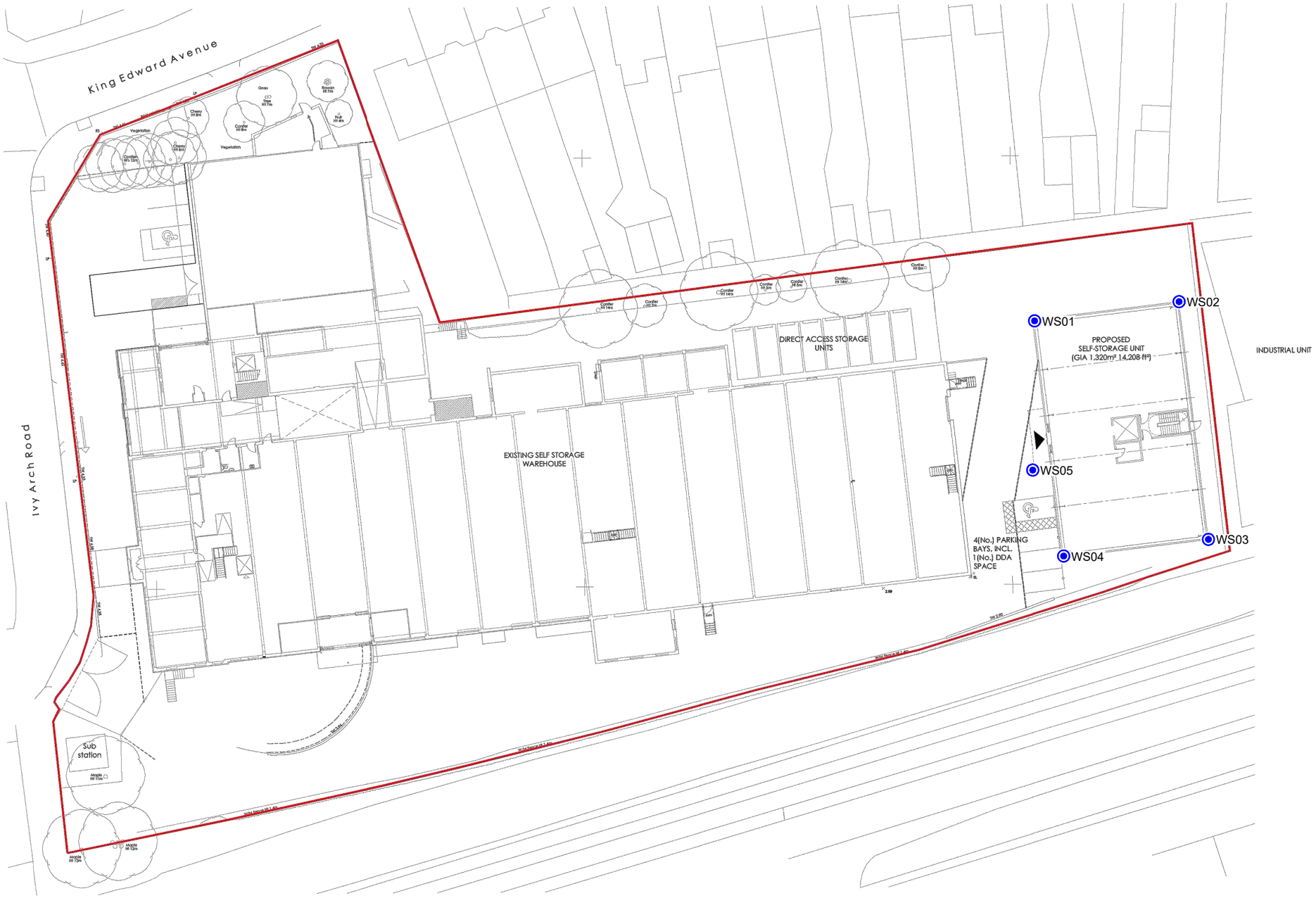
Dimensions	Scale	Size
m	1:500	A3

0 5 10 15 20 25m

Figure 3 EXPLORATORY HOLE LOCATION PLAN

DO NOT SCALE FROM THIS DRAWING

N



LEGEND

- Site boundary
- Window sample location

Notes:

Base plan provided by Client
Drawing Ref.: 15175/2-102

Rev	Date	Amendment	Drawn	Chkd	Appd
C01	12.06.24	First Issue	LS	RD	RD

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Client
Bravo Services Limited

Project Name
Boxx Storage Worthing

Description
Exploratory Hole Location Plan

Project ID	Drawing no.	Revision
305407	22201	C01

File name
305407-ST-222-SS-D-C-22201-C01

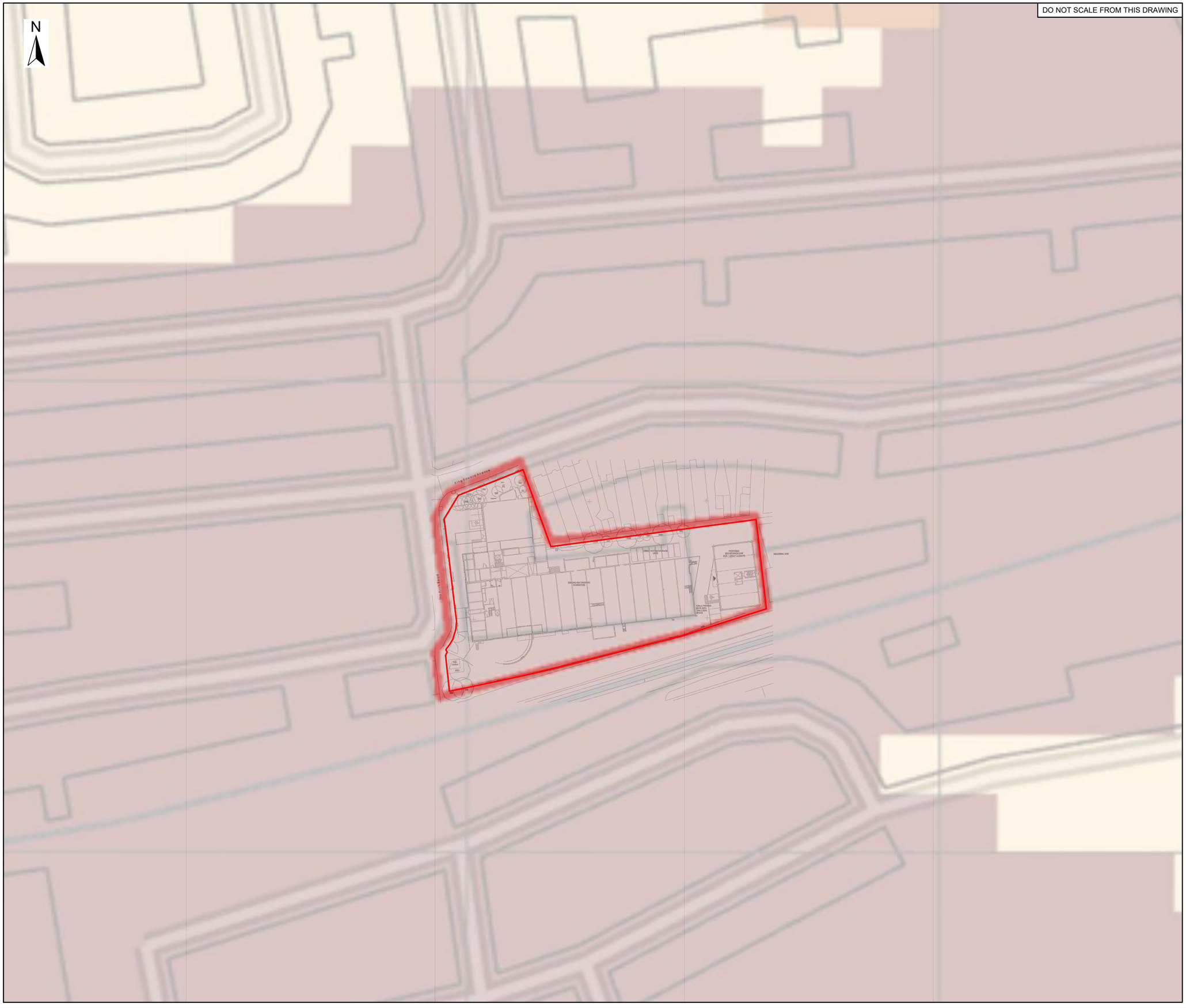
Dimensions	Scale	Size
m	1:500	A3

0 5 10 15 20 25m

Figure 4 RADON AFFECTED MAP

DO NOT SCALE FROM THIS DRAWING

N



LEGEND

- Site boundary
- 0-1%
- 1-3%
- 3-5% of homes estimated to be at or above the action level

Notes:

The radon plan has been obtained by BGS GeoReport ref: BGS_339584_55911 and overlaid onto the client provided base plan

Base plan provided by Client
Drawing Ref.: 15175/2-102

Rev	Date	Amendment	Drawn	Chkd	Appd
C01	28.08.24	First Issue	LS	LP	LP

RSK GEOSCIENCES
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Client
Bravo Services Limited

Project Name
Boxx Storage Worthing

Description
Boxx Storage Radon Affected Area

Project ID	Drawing no.	Revision
305407	12801	C01

File name
305407-ST-128-XX-D-G-12801-C01

Dimensions	Scale	Size
m	1:1500	A3

0 20 40 60 80m

APPENDICES

Appendix A
SERVICE CONSTRAINTS

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SERVICE CONSTRAINTS

1. Service Constraints for all Reports

1.1. This Report (the “Report”) and any study, inspection, investigation, sampling, testing and or interpretation carried out in connection with the Report (together the "Services") were compiled and carried out by RSK Environment Limited (RSK) trading as Carbon Zero Consulting, Leap Environmental or RSK Geosciences, for the Client named in the first paragraph of the Report (the "Client") in accordance with the terms of an RSK Fee Proposal including RSK Environment Standard Terms and Conditions (the “Appointment”) between RSK and the Client, unless otherwise stated in the first paragraph of the Report. The Services were performed by RSK with the reasonable skill and care ordinarily exercised by a geo-environmental consultant at the time the Services were performed. Nothing in this Report shall be construed as imposing any fitness for purpose obligation. Further, and in particular, the Services were performed by RSK taking into account the limits of the scope of works required by the Client, the time scale involved and the resources, including financial and manpower resources, agreed between RSK and the Client.

1.2 Other than that, expressly contained in paragraph 1 above, RSK provides no other representation or warranty whether express or implied, in relation to the Services. RSK shall not be liable in respect of any action or proceedings arising out of or in connection with this Report whether in contract, in tort, for breach of statutory duty or otherwise after the expiry of six (6) years from either (i) the date of the Report or (ii) such earlier date as prescribed by law, unless varied in the terms of the Appointment.

1.3 Unless otherwise agreed in writing, the Services were performed by RSK exclusively for the purposes of the Client. RSK is not aware of any interest of or reliance by any party other than the Client in or on the Services. Unless expressly provided in writing, RSK does not authorise, consent, or condone any party, other than the Client relying upon the Services. Should this Report or any part of this Report, or details of the Services or any part of the Services, be made known to any such party, and such party relies thereon, that party does so wholly at its own and sole risk, and RSK disclaims any liability to such parties. Any such party would be well advised to seek independent advice from a competent geo-environmental consultant and/or lawyer.

1.4 The Client shall not, without the prior written consent of RSK, assign, transfer, charge, mortgage, subcontract, or deal in any other manner with all or any of the benefits provided in this Report. Unless specified in the Appointment, RSK shall not be obliged to assign the benefit of the Report whether by collateral warranty, third party rights pursuant to the Contracts (Rights of Third Parties) Act 1999, letter of reliance or otherwise. If RSK agrees to any assignment of the benefit of this Report, in whatever form, benefits to third parties through collateral warranties, third party rights or letters of reliance shall not be provided unless a fee for each right, warranty or letter is agreed. The form of wording used in the warranty or letter shall be provided by RSK for agreement by the Client. Any reasonable changes to the form of wording will be implemented by mutual agreement, however the terms in the warranty or letter cannot offer the third party any greater benefit than the Appointment offered to the Client.

1.5 It is the understanding of RSK that this Report is to be used for the purpose described in the introduction to the Report. That purpose was a significant factor in determining the scope and level of the Services. Should the purpose for which the Report is used, or the proposed use of the site change, this Report may no longer be valid and any further use of or reliance upon the Report in those circumstances by the Client without the review and advice of RSK shall be at the Client's sole and own risk. RSK shall not be liable for any use of this Report for any purpose other than that for which it was provided.

1.6 The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the Report inaccurate or unreliable. The information and conclusions contained in this Report should not be relied upon in the future without the written advice of RSK. In the absence of such written advice of RSK, reliance on the Report in the future shall be at the Client's own and sole risk.

1.7 The observations and conclusions described in this Report are based solely upon the Services which were provided pursuant to the agreement between the Client and RSK. RSK has not performed any observations, investigations, studies or testing not specifically set out, or required by the Appointment between the Client and RSK. RSK is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the Services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this Report, RSK did not seek to evaluate the presence on or off site of asbestos, invasive plants, electromagnetic fields, lead paint, heavy metals, radon gas, fuel storage, persistent bio-accumulative or toxic chemicals (including PFAS and related compounds) or other radioactive or hazardous materials, unless specifically identified in the Services.

1.8 The Services are based upon RSK's observations of existing physical conditions at the Site gained from a visual inspection of the site together with RSK's interpretation of desk based publicly available information, including documentation, obtained from third parties and from the Client on the history and usage of the site, unless specifically identified in the Services and the limitations below:

a. The Services were based on information and/or analysis provided by independent testing and information services or laboratories upon which RSK was reasonably entitled to rely.

b. The Services were limited by the accuracy of the information, including documentation, reviewed by RSK and the observations possible at the time of the visual inspection.

c. The Services did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the Client or third parties, including laboratories and information services, during the performance of the Services.

d. The Client has identified in writing to RSK, the information, reports, findings, surveys and preliminary works RSK may not rely upon when providing the Services.

RSK is not liable for any inaccurate information or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to RSK, and including the doing of any independent investigation of the information provided to RSK, save as otherwise provided in the terms of the Appointment between the Client and RSK.

1.9 Any site drawing(s) provided in this Report is (are) not meant to be an accurate base plan for scale measurement but is (are) used to present the general relative locations of features on, and surrounding, the site. Features (intrusive and sample locations etc) annotated on site plans are not drawn to scale but are centred over the approximate location. Such features should not be used for accurate setting out and should be considered indicative only.

1.10 Should RSK be requested to review the Report after the date of issue of this Report, RSK shall be entitled to additional payment at the existing rates, or such other terms as agreed between RSK and the Client.

2. Service Constraints where the Report provides an intrusive assessment of ground conditions:

2.1 The intrusive environmental ground investigation aspects of the Services are a limited sampling of soil from the site, at pre-determined locations based on the known historic / operational configuration of the site. The conclusions given in this Report are based on information gathered at the specific test locations and can only be extrapolated to an undefined limited area around those locations. The extent of the limited area depends on the properties of the materials adjacent and local conditions, together

with the position of any current structures and underground utilities and facilities, and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters (as stipulated in the scope agreed between the Client and RSK, based on an understanding of the available operational and historical information) and it should not be inferred that other chemical species (not tested) are not present.

2.2 The comments given in this Report and the opinions expressed are based on the ground conditions encountered during the site work and on the results of tests made in the field and in the laboratory. The extent of the exploratory holes, laboratory testing and monitoring undertaken may have been restricted due to a number of factors including accessibility, the presence of buried or overhead services, current development, site usage, timescales or the Client's specification. The exploratory holes only assess a small proportion of the site area with respect to the site as a whole, and as such may only provide an indicative assessment of ground conditions on site. There may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account. In particular, it should be noted that there may be areas of made ground not detected due to the limited nature of the investigation or the thickness and quality of made ground across the site may be variable. In addition, groundwater levels and ground gas concentrations and flows, may vary from those reported due to seasonal, or other, effects and the limitations stated in the data should be recognised. The presence of hotspots of undisclosed contamination or exceptional and unforeseen ground conditions cannot be discounted.

2.3 Where the Services include Investigation of an exploratory nature or relating to physical ground works, any costings and prices provided in the Report are estimated and provided for guidance purposes only. The actual cost and time quantities shall be remeasured and shall be dependent upon the ground or other conditions, constraints present, and number and depth of the investigation locations, which shall influence the number of samples and tests required, and the quantities of soil being classified.

2.4 Asbestos is often observed to be present in soils in discrete areas. Whilst asbestos-containing materials may have been locally encountered during the fieldworks or supporting laboratory analysis, the history of brownfield and demolition sites indicates that asbestos fibres may be present more widely in soils and aggregates, which could be encountered during more extensive ground works. However, this Report does not constitute an asbestos survey. On this basis, the presence of asbestos on site cannot be discounted and a full asbestos survey should be undertaken.

2.5 Unless stated otherwise, only preliminary geotechnical recommendations are presented in this Report and these should be verified in a Geotechnical Design Report, once proposed construction and structural design proposals are confirmed. Eurocode 7 gives guidance on the type of sampling, sample quality, number and spacing of intrusive investigations, and number of laboratory tests required. It is intended that the Geotechnical Information section of this Report will fulfil the general requirements of the Ground Investigation Report as set out in section 6 of Eurocode7, although this is subject to the restrictions imposed on the investigation, as listed above. For geotechnical design, Eurocode 7 requires the Geotechnical Design Report to address both the geotechnical and structural aspects of the geotechnical design for both the limit and serviceability states. The Geotechnical Appraisal section of this Report will not meet the requirements of a Geotechnical Design Report (GDR) and should therefore be used for preliminary guidance only.

3. Service Constraints where the Report relates to Surface Water Management:

3.1 The Surface Water Management Inspection (SWMI) Report, documents provided, observations, actions, and recommendations, with respect to the management of potential pollution issues to surface waters, made during the site Inspection visit, are those present at the time of the visit, and may not represent those recorded by others on the same day.

3.2 The comments given in this Report and the opinions expressed are based on the weather, ground and ground water conditions encountered during the site work and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not

been disclosed by the inspection and therefore could not be taken into account. In addition, groundwater levels and flows, may vary from those Reported due to seasonal, or other, effects and the limitations stated in the data should be recognised.

3.3 RSK places a degree of dependence upon oral information provided by site representatives, which is not readily verifiable through visual inspection, or supported by any available written documentation. RSK shall not be held responsible for conditions or consequences arising from relevant facts that were not fully disclosed by facility or site representatives at the time this Report was prepared.

3.4 This Report is a live document, to be continually reviewed and updated as the development progresses or other changes occur on site. RSK can only maintain the currency of this Report through the Client requesting support with supplementary site visits or attendance at meetings ahead of key stages of the development in relation to surface water management. Our risk rating assesses a number of risk factors in line with the source-pathway- receptor model and is therefore subject to constant change.

3.5 Standard design drawings are indicative. Material types, dimensions and construction details will need to be adjusted by the Client to suit the specific conditions / flows on Site.

3.6 The full responsibly for implementing the site-specific protection and maintenance measures to protect the surface water system as stated in this Report, remains with the Client and their site management team. Additional control measures may be required to achieve the objectives set out in the Surface Water Management Plan to be implemented and financed by the Client.

4. Service Constraints where the Report relates to Waste Management:

4.1 In accordance with the definition provided in the Waste Framework Directive (WFD), materials are only considered waste if 'they are discarded, intended to be discarded or required to be discarded, by the holder'. Naturally occurring soils are not considered waste if re-used on the site of origin for the purposes of development. Soils such as made ground that are not of clean and natural origin (irrespective of whether they are contaminated or not) and other materials such as recycled aggregate, do not necessarily become waste until the criteria above are met. Excavation arisings from the development may therefore be classified as waste if surplus to requirements and/or unsuitable for re-use.

4.2 It is the duty of the waste producer, to ensure that all waste is accurately classified prior to waste disposal. Technical Guidance WM3 (EA, 2018) sets out in its Appendix D requirements for waste sampling. It is a legal requirement to correctly assess and classify waste. The level of sampling should be proportionate to the volume of waste and its heterogeneity. Unless otherwise stated, the waste assessment presented in this Report should be considered as preliminary and further testing and assessment of the waste under the provisions of a Waste Sampling Plan may be required to obtain the necessary level of data required for basic characterisation of the waste in support of disposal.

4.3 Unless stated otherwise in the Report, information relating to historical operations at the site was not reviewed as part of the assessment by RSK. In addition, unless otherwise stated in the Services, RSK was not present during the collection of the samples nor had any input on the chemical testing suite. Therefore, the waste assessment and classification detailed in this Report are based solely on any information that were provided to RSK (e.g., laboratory chemical data, exploratory hole records) and were completed without prejudice for our Client.

4.4 RSK's assumes that any ground investigation data, chemical testing results etc., that were provided by the Client to inform the waste assessment and supporting review were carried out in accordance with current best practice and relevant guidance/ standards, where applicable. Thus, the comments given in this Report and the opinions expressed are based solely on the information provided by the Client. However, it is noted that there may be conditions pertaining to the site that have not been disclosed by the investigation and therefore could not be taken into account as part of the RSK assessment.

5. Service Constraints for Construction Environmental Management Plan Reports:

5.1 This Report should be considered in the light of any changes in legislation, statutory requirement or industry practices that may have occurred subsequent to the date of issue.

5.2 The measures and comments outlined in this Report and any opinions expressed are based on the plans provided at the time and discussions with relevant parties. However, there may be conditions pertaining to the site that have not been disclosed by investigations and therefore could not be taken into account.

5.3 This CEMP is a live document and is subject to change throughout the project, as and when necessary, to ensure management of environmental aspects remains relevant, and to ensure continued compliance with legislation and commitments as they may change. RSK understands that this CEMP will be reviewed by the Client every six months and updated as and when necessary.

5.4 It is the full responsibility of the Principal Contractor/ Client to ensure that their works do not contravene legal requirements, and adherence to this CEMP alone cannot be a full defence regarding legal action against the Principal Contractor.

6. Service Constraints where the Report relates to Ground Gas Membrane Verification:

6.1 This Report is limited to the verification of the gas resistant membrane/vapour membrane/ radon barrier after installation and no inspections were undertaken of the substrate (i.e. prepared ground). The Report therefore does not constitute as a full verification of ground gas protection system.

6.2 The comments given in this Report and the opinions expressed, are based on the condition of the ground gas membrane as encountered at the time of inspection by suitably qualified personnel. RSK cannot accept liability for any subsequent change to the status of the gas membrane by follow-on trades or other construction activity.

6.3 Where not designed by RSK, the verification of protection measures is carried out with reference to the gas protection design provided by the Client. RSK assume the scope of gas protection measures as determined by third parties to be correct and to have achieved any required approval from authorities.

6.4 The Ground Gas Design Report/Remediation Strategy and Verification Plan contains details of the procedures to be adopted for inspection and validation of the works. However, it should be noted that responsibility for the correct implementation of the strategy lies with the appointed contractor. RSK cannot be held responsible for any remedial works that are carried out without the agreed procedures involving either direct supervision by RSK, or inspection and validation of the works by a representative from RSK.

7. Service Constraints for Environmental Due Diligence (EDD)Reports:

7.1 The comments given in this Report and the opinions expressed are based on the information obtained and reviewed as part of the desk-based assessment. However, there may be conditions pertaining to the Site that have not been disclosed by the assessment and therefore could not be taken into account. Furthermore, no intrusive investigations, monitoring or sampling have been undertaken to confirm the environmental status of the site, therefore any comments relating to ground conditions and subsurface contamination are based solely on a review of desk-based information.

7.2 This Report describes the results of the EDD exercise. The scope of this EDD Report, where appropriate, covers legal or regulatory compliance with respect to UK or international regulations associated with environmental matters.

7.3 As with any EDD exercise, there is a certain degree of dependence upon information provided by the target company. The EDD does not include a site walkover / visit or liaison with site representatives unless identified in the Services. Therefore, the assessment is based on the available desk study information. Also, there is a certain degree of dependence upon oral information provided

by site representatives, which is not readily verifiable through visual inspection, or supported by any available written documentation. RSK shall not be held responsible for conditions or consequences arising from relevant facts that were not fully disclosed by facility or site representatives at the time this EDD exercise was performed.

7.4 This Report, including all supporting data and notes (collectively referred to hereinafter as "information"), was prepared or collected by RSK for the benefit of its Client.

7.5 The comments given in this Report and the opinions expressed are based on the information obtained and reviewed as part of the desk-based assessment and the site inspection visit. However, there may be conditions pertaining to the Site that have not been disclosed by the assessment and therefore could not be taken into account. Furthermore, no intrusive investigations, monitoring or sampling have been undertaken to confirm the environmental status of the Site therefore any comments relating to ground conditions and subsurface contamination are based solely on a review of desk-based information and observations collected during the site inspection visit.

8. Service Constraints for Ground source heat energy Reports:

8.1 It is understood that this is a desktop survey only and that there are no requirements for a site walkover, service utility survey, or provision of service plans. These services can be provided upon request if required.

8.2 At a later stage, it is possible that a thermal response test (TRT) will need to be completed, for which a test borehole will have to be drilled, and these would be costed at the time. RSK can provide all aspects of subsequent site work for a GSHP system if required.

9. Service Constraints for Water Abstraction Borehole Reports:

9.1 The Report aims principally to only identify and assess the suitability of the site for a water abstraction borehole. This Report should be considered in the light of any changes in legislation, statutory requirements, and industry practices, that have occurred subsequent to the date of the Report.

9.2 Unless stated in the Report, the opinions expressed in this Report including all comments and recommendations provided are on the basis of the information obtained from a desk-based assessment.

Appendix B
DEVELOPMENT DRAWINGS


King Edward Avenue
Ivy Arch Road
EXISTING SELF STORAGE WAREHOUSE
DIRECT ACCESS STORAGE UNITS
PROPOSED SELF-STORAGE UNIT (GIA 1,320m² 14,208 ft²)
INDUSTRIAL UNIT
4(No.) PARKING BAYS, INCL. 1(No.) DDA SPACE
Sub station
Vegetation
Grass
Cherry Ht 8m
Conifer Ht 8m
Rowan Ht 7m
Pear Ht 4m
Conifer Ht 15m
Maple Ht 12m
Conifer Ht 14m
Conifer Ht 16m
Conifer Ht 9m
Conifer Ht 14m
Conifer Ht 8m
Conifer Ht 14m
Conifer Ht 8m
Conifer Ht 14m
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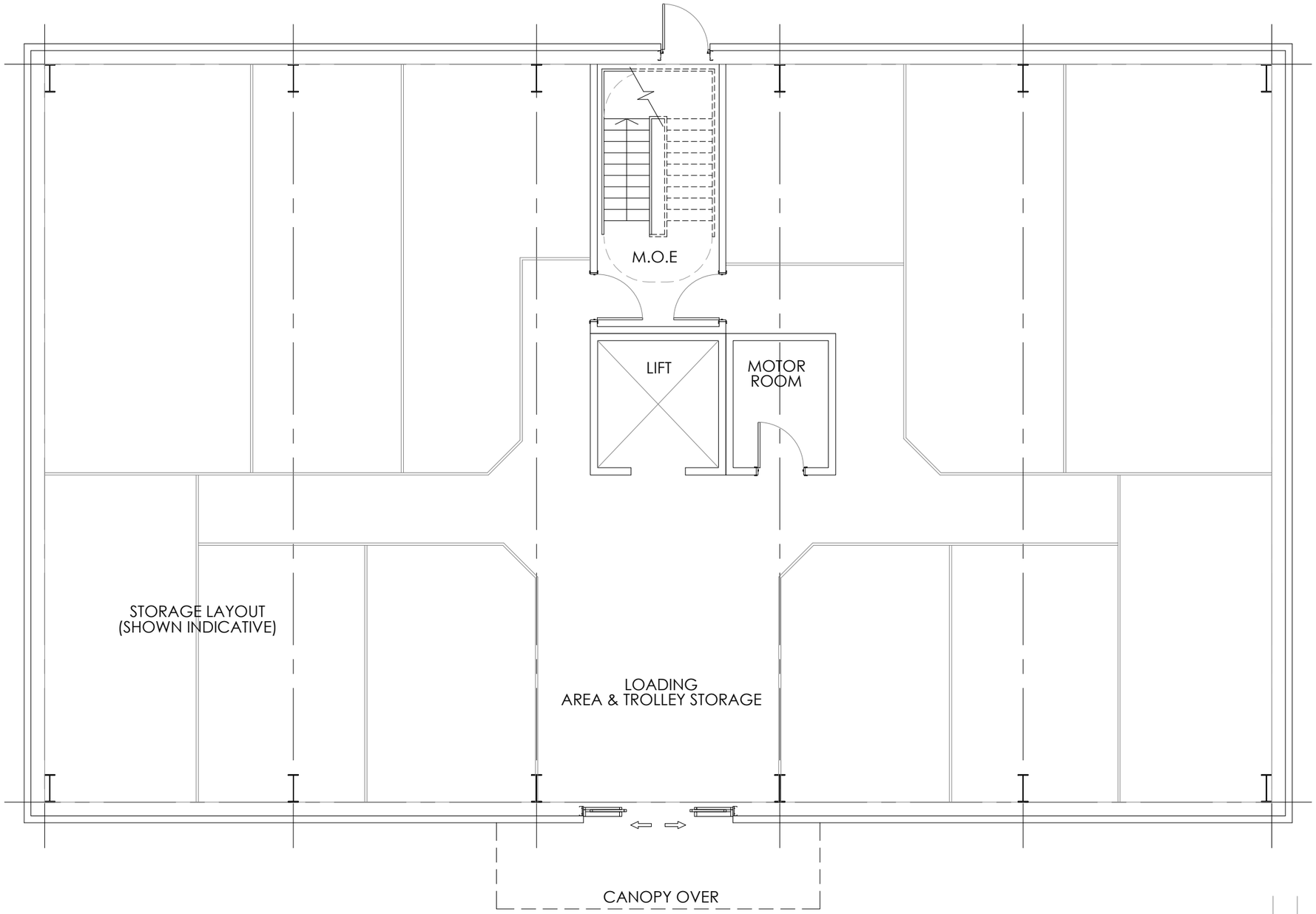
Conifer Ht 14m
Conifer Ht 8m
Maple Ht 12m
Maple Ht 12m
Maple Ht 12



Rev	Date	Description	Rev By	Chk'd By
B	02/08/21	Changes in ground, first and second floors, sections and elevations.	PD	PW
A	23/07/21	Building footprint and roof form amended.	PW	RO'D

Project Title	PROPOSED ANCILLARY UNIT READY STEADY STORE BIDFOOD DEPOT KING EDWARD AVENUE WORTHING
Client	BRAVO SERVICES LTD
Status	PLANNING
Scale	1:100
Drawing Size	A3
Date	02/12/2020
Drawn By	PAW
Checked	RO'D

Drawing Title: PROPOSED GROUND FLOOR PLAN

Job-Dwg No: 15175/2-103 Rev: B

2 St. Johns North,
Wakefield, WF1 3QA
t. 01924 291800

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Manchester, M1 2HG
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Newport Pagnell, MK16 8AB
t. 01908 211577

101 London Road,
Reading, RG1 5BY
t. 0118 9507700

10 Gees Court, St Christophers Place,
London, W1U 1JJ
t. 0207 4091215

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1m 2m 3m 4m 5m 6m 7m
Scale Bar 1:100

CAD file reference CAD FILE REFERENCE

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Appendix C
ENVIRONMENTAL DATABASE REPORT

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Boxx Storage Worthing, King Edward Ave, Worthing, BN14 8FE.

Order Details

Date: 12/04/2024

Your ref: P02148166

Our Ref: GS-HKX-KZW-H76-HMR

Site Details

Location: 515046 103513

Area: 0.76 ha

Authority: Adur and Worthing 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

Certified B Corporation

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 >	4	9	17	37	-
18 >	1.2 >	Historical tanks >	0	3	5	23	-
20 >	1.3 >	Historical energy features >	0	1	2	21	-
21	1.4	Historical petrol stations	0	0	0	0	-
21 >	1.5 >	Historical garages >	0	3	7	17	-
22	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
23 >	2.1 >	Historical industrial land uses >	5	12	22	50	-
27 >	2.2 >	Historical tanks >	0	3	6	35	-
29 >	2.3 >	Historical energy features >	0	1	11	51	-
31	2.4	Historical petrol stations	0	0	0	0	-
31 >	2.5 >	Historical garages >	0	8	12	29	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
34	3.1	Active or recent landfill	0	0	0	0	-
34	3.2	Historical landfill (BGS records)	0	0	0	0	-
35	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
35	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
35 >	3.5 >	Historical waste sites >	0	0	1	0	-
35 >	3.6 >	Licensed waste sites >	0	0	0	2	-
36 >	3.7 >	Waste exemptions >	0	1	0	5	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
38 >	4.1 >	Recent industrial land uses >	2	6	21	-	-
40 >	4.2 >	Current or recent petrol stations >	0	0	0	1	-
41	4.3	Electricity cables	0	0	0	0	-
41	4.4	Gas pipelines	0	0	0	0	-
41	4.5	Sites determined as Contaminated Land	0	0	0	0	-

41	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
41	4.7	Regulated explosive sites	0	0	0	0	-
42	4.8	Hazardous substance storage/usage	0	0	0	0	-
42	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
42	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
42 >	4.11 >	Licensed pollutant release (Part A(2)/B) >	0	0	1	1	-
43	4.12	Radioactive Substance Authorisations	0	0	0	0	-
43 >	4.13 >	Licensed Discharges to controlled waters >	2	1	0	1	-
44	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
44	4.15	Pollutant release to public sewer	0	0	0	0	-
44	4.16	List 1 Dangerous Substances	0	0	0	0	-
44	4.17	List 2 Dangerous Substances	0	0	0	0	-
44 >	4.18 >	Pollution Incidents (EA/NRW) >	0	0	2	2	-
45	4.19	Pollution inventory substances	0	0	0	0	-
45	4.20	Pollution inventory waste transfers	0	0	0	0	-
46	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	Hydrogeology >	On site	0-50m	50-250m	250-500m	500-2000m
47 >	5.1 >	Superficial aquifer >	Identified (within 500m)				
49 >	5.2 >	Bedrock aquifer >	Identified (within 500m)				
51 >	5.3 >	Groundwater vulnerability >	Identified (within 50m)				
52 >	5.4 >	Groundwater vulnerability- soluble rock risk >	Identified (within 0m)				
53	5.5	Groundwater vulnerability- local information	None (within 0m)				
54 >	5.6 >	Groundwater abstractions >	0	0	0	0	11
57	5.7	Surface water abstractions	0	0	0	0	0
57 >	5.8 >	Potable abstractions >	0	0	0	0	4
58	5.9	Source Protection Zones	0	0	0	0	-
59	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	Hydrology >	On site	0-50m	50-250m	250-500m	500-2000m
60	6.1	Water Network (OS MasterMap)	0	0	0	-	-

60	6.2	Surface water features	0	0	0	-	-
61 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
61 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
61 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding >	On site	0-50m	50-250m	250-500m	500-2000m
63	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
64 >	7.2 >	Historical Flood Events >	0	1	0	-	-
64	7.3	Flood Defences	0	0	0	-	-
64	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
64	7.5	Flood Storage Areas	0	0	0	-	-
65	7.6	Flood Zone 2	None (within 50m)				
65	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
66 >	8.1 >	Surface water flooding >	1 in 30 year, Greater than 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
68 >	9.1 >	Groundwater flooding >	High (within 50m)				
Page	Section	Environmental designations	On site	0-50m	50-250m	250-500m	500-2000m
69	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
69	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
69	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
69	10.4	Special Protection Areas (SPA)	0	0	0	0	0
70	10.5	National Nature Reserves (NNR)	0	0	0	0	0
70	10.6	Local Nature Reserves (LNR)	0	0	0	0	0
70	10.7	Designated Ancient Woodland	0	0	0	0	0
70	10.8	Biosphere Reserves	0	0	0	0	0
71	10.9	Forest Parks	0	0	0	0	0
71	10.10	Marine Conservation Zones	0	0	0	0	0
71	10.11	Green Belt	0	0	0	0	0
71	10.12	Proposed Ramsar sites	0	0	0	0	0

71	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
72	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
72	10.15	Nitrate Sensitive Areas	0	0	0	0	0
72 >	10.16 >	Nitrate Vulnerable Zones >	0	0	0	0	2
73 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
74	10.18	SSSI Units	0	0	0	0	0
Page	Section	Visual and cultural designations	On site	0-50m	50-250m	250-500m	500-2000m
75	11.1	World Heritage Sites	0	0	0	-	-
75	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
75	11.3	National Parks	0	0	0	-	-
75	11.4	Listed Buildings	0	0	0	-	-
76	11.5	Conservation Areas	0	0	0	-	-
76	11.6	Scheduled Ancient Monuments	0	0	0	-	-
76	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
77 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
78	12.2	Open Access Land	0	0	0	-	-
78	12.3	Tree Felling Licences	0	0	0	-	-
78	12.4	Environmental Stewardship Schemes	0	0	0	-	-
78	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations >	On site	0-50m	50-250m	250-500m	500-2000m
79 >	13.1 >	Priority Habitat Inventory >	0	0	5	-	-
80	13.2	Habitat Networks	0	0	0	-	-
80	13.3	Open Mosaic Habitat	0	0	0	-	-
80	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
81 >	14.1 >	10k Availability >	Identified (within 500m)				
82 >	14.2 >	Artificial and made ground (10k) >	2	0	0	0	-
83 >	14.3 >	Superficial geology (10k) >	3	1	4	1	-

84	14.4	Landslip (10k)	0	0	0	0	-
85 >	14.5 >	Bedrock geology (10k) >	2	0	2	2	-
86 >	14.6 >	Bedrock faults and other linear features (10k) >	1	1	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
87 >	15.1 >	50k Availability >	Identified (within 500m)				
88	15.2	Artificial and made ground (50k)	0	0	0	0	-
88	15.3	Artificial ground permeability (50k)	0	0	-	-	-
89 >	15.4 >	Superficial geology (50k) >	2	1	1	1	-
90 >	15.5 >	Superficial permeability (50k) >	Identified (within 50m)				
90	15.6	Landslip (50k)	0	0	0	0	-
90	15.7	Landslip permeability (50k)	None (within 50m)				
91 >	15.8 >	Bedrock geology (50k) >	1	0	1	1	-
92 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
92 >	15.10 >	Bedrock faults and other linear features (50k) >	1	0	0	0	-
Page	Section	Boreholes >	On site	0-50m	50-250m	250-500m	500-2000m
93 >	16.1 >	BGS Boreholes >	0	1	4	-	-
Page	Section	Natural ground subsidence >					
95 >	17.1 >	Shrink swell clays >	Low (within 50m)				
96 >	17.2 >	Running sands >	Low (within 50m)				
98 >	17.3 >	Compressible deposits >	High (within 50m)				
99 >	17.4 >	Collapsible deposits >	Low (within 50m)				
101 >	17.5 >	Landslides >	Very low (within 50m)				
102 >	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
104	18.1	BritPits	0	0	0	0	-
105 >	18.2 >	Surface ground workings >	0	1	3	-	-
105	18.3	Underground workings	0	0	0	0	0
105	18.4	Underground mining extents	0	0	0	0	-
105	18.5	Historical Mineral Planning Areas	0	0	0	0	-

106 >	18.6 >	Non-coal mining >	0	0	3	0	0
106	18.7	JPB mining areas	None (within 0m)				
106	18.8	The Coal Authority non-coal mining	0	0	0	0	-
107 >	18.9 >	Researched mining >	0	0	0	1	-
107	18.10	Mining record office plans	0	0	0	0	-
107	18.11	BGS mine plans	0	0	0	0	-
107	18.12	Coal mining	None (within 0m)				
108	18.13	Brine areas	None (within 0m)				
108	18.14	Gypsum areas	None (within 0m)				
108	18.15	Tin mining	None (within 0m)				
108	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes	On site	0-50m	50-250m	250-500m	500-2000m
109	19.1	Natural cavities	0	0	0	0	-
109	19.2	Mining cavities	0	0	0	0	0
109	19.3	Reported recent incidents	0	0	0	0	-
109	19.4	Historical incidents	0	0	0	0	-
110	19.5	National karst database	0	0	0	0	-
Page	Section	Radon >					
111 >	20.1 >	Radon >	Between 3% and 5% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
113 >	21.1 >	BGS Estimated Background Soil Chemistry >	7	1	-	-	-
113	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
114	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
115	22.1	Underground railways (London)	0	0	0	-	-
115	22.2	Underground railways (Non-London)	0	0	0	-	-
116	22.3	Railway tunnels	0	0	0	-	-
116 >	22.4 >	Historical railway and tunnel features >	1	21	9	-	-
117	22.5	Royal Mail tunnels	0	0	0	-	-

117	22.6	Historical railways	0	0	0	-	-
118 >	**22.7 >**	**Railways >**	0	6	2	-	-
118	22.8	Crossrail 1	0	0	0	0	-
118	22.9	Crossrail 2	0	0	0	0	-
119	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 20/04/2021

Site Area: 0.76ha

Recent site history - 2018 aerial photograph



Capture Date: 28/06/2018

Site Area: 0.76ha

Recent site history - 2012 aerial photograph



Capture Date: 13/09/2012

Site Area: 0.76ha

Recent site history - 2010 aerial photograph



Capture Date: 24/04/2010

Site Area: 0.76ha

Recent site history - 1999 aerial photograph



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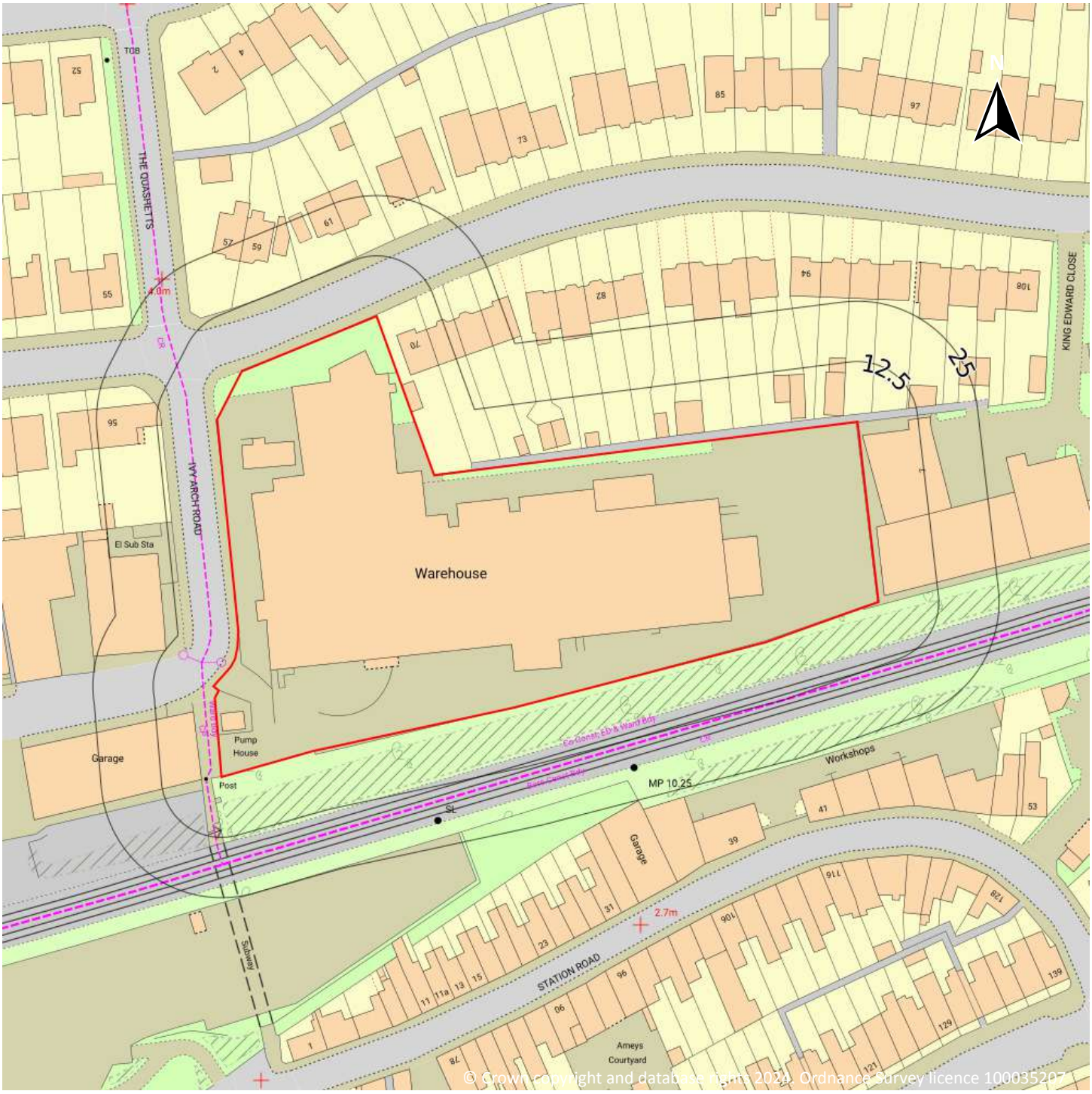
Capture Date: 29/08/1999

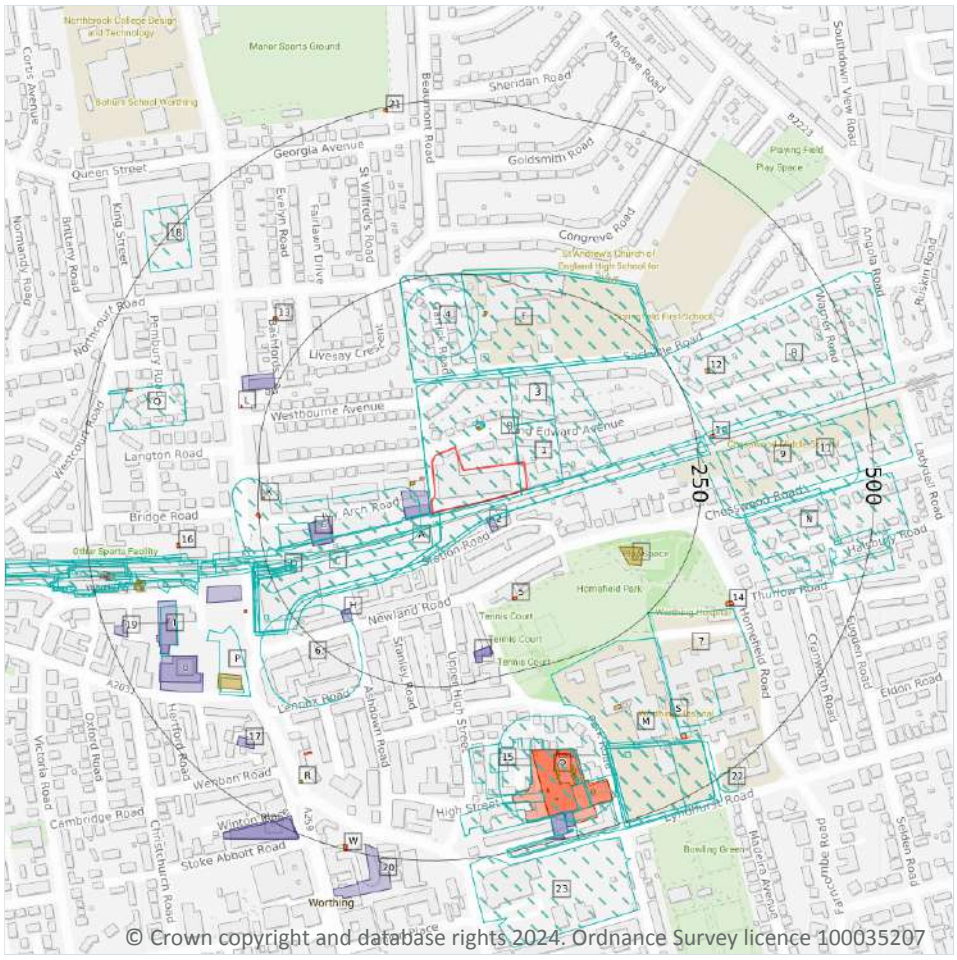
Site Area: 0.76ha

OS MasterMap site plan



Site Area: 0.76ha

1 Past land use



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1.1 Historical industrial land uses

Records within 500m	67

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
1	**On site**	**Nursery**	**1896**	**2161074**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Railway Sidings**	**1950**	**2168688**
B	**On site**	**Nurseries**	**1909 - 1932**	**2193410**
B	**On site**	**Nurseries**	**1896**	**2196007**
A	0m E	Railway Sidings	1909 - 1932	2269692
C	1m SW	Railway Sidings	1962 - 1969	2212886
C	11m SE	Railway Sidings	1896	2261132
D	16m SW	Railway Sidings	1875	2249732
C	17m SW	Railway Sidings	1971 - 1978	2221788
E	18m SW	Nurseries	1896	2168179
B	41m N	Unspecified Heap	1909	2135666
B	42m N	Unspecified Tank	1909	2287036
B	42m N	Unspecified Tank	1932	2276493
3	55m NE	Windmill	1896	2128432
F	98m N	Nurseries	1896	2282817
F	98m N	Nurseries	1909 - 1932	2285813
F	114m N	Nurseries	1950 - 1962	2270689
4	131m N	Windmill	1896	2128431
E	178m W	Telephone Exchange	1991	2157924
G	181m SE	Unspecified Tank	1950	2153445
6	192m SW	Steam Saw Mills	1875	2165182
J	210m SW	Railway Building	1971 - 1978	2227360
J	212m SW	Railway Building	1962 - 1969	2273298
J	218m SW	Railway Sidings	1909	2269840
J	218m SW	Railway Sidings	1932	2283487
J	218m SW	Railway Building	1950	2189325
J	235m SW	Goods Shed	1875	2164592
J	240m SW	Railway Building	1896	2223117
7	250m SE	Nurseries	1896	2168181

ID	Location	Land use	Dates present	Group ID
8	250m NE	Nurseries	1909 - 1932	2238878
9	252m E	Nursery	1932	2161073
M	255m SE	Hospital	1981	2191081
11	277m E	Nurseries	1896	2168180
D	278m SW	Railway Building	1896	2148016
N	313m E	Nurseries	1932	2253220
N	314m E	Nurseries	1896	2193999
O	316m S	Sanatorium	1875	2141936
D	320m W	Railway Sidings	1978	2221752
D	322m W	Railway Building	1875	2148018
P	332m SW	Unspecified Works	1962	2159227
O	343m S	Unspecified Commercial/Industrial	1962 - 1969	2293051
D	344m W	Railway Sidings	1933	2262740
D	345m W	Railway Sidings	1938	2180117
D	345m W	Railway Sidings	1896 - 1909	2239979
D	355m W	Railway Building	1938	2148017
15	357m S	Mortuary	1896	2160891
Q	360m W	Nursery	1933 - 1938	2195524
O	363m S	Corporation Depot	1909	2165900
P	365m SW	Unspecified Tank	1950	2153161
D	372m W	Railway Building	1875	2148015
M	385m SE	Hospital	1909 - 1932	2202390
M	388m SE	Hospital	1962 - 1971	2185771
M	390m SE	Infirmary	1896	2164564
T	392m SW	Garage	1969	2168473
M	393m SE	Nursery	1875	2161072
M	399m SE	Mortuary	1909	2160893
M	405m SE	Mortuary	1896	2160892

ID	Location	Land use	Dates present	Group ID
O	417m S	Unspecified Tank	1962 - 1969	2225603
D	426m W	Railway Station	1875	2258992
O	428m S	Water Works	1875	2139645
D	430m W	Railway Station	1938 - 1991	2192746
D	443m W	Railway Station	1896 - 1909	2232303
18	444m NW	Unspecified Depot	1962	2146888
D	445m W	Railway Station	1933	2228192
O	464m S	Steam Saw Mill	1875	2151470
22	497m SE	Unspecified Pit	1896	2123507
23	500m S	Unspecified Commercial/Industrial	1950	2273282

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**31**

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 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	28m W	Unspecified Tank	1932	360048
B	41m N	Unspecified Tank	1912	398373
B	43m N	Unspecified Tank	1898	382615
B	54m N	Unspecified Tank	1932	360047
G	157m SE	Unspecified Tank	1943	360069
F	193m N	Unspecified Tank	1943	360045
F	197m N	Unspecified Tank	1952	383859
K	240m W	Unspecified Tank	1912	360051

ID	Location	Land use	Dates present	Group ID
12	292m NE	Unspecified Tank	1912	360046
M	337m SE	Unspecified Tank	1976 - 1999	394461
P	361m SW	Unspecified Tank	1943	360050
S	386m SE	Unspecified Tank	1952	395400
S	387m SE	Unspecified Tank	1969	390755
S	387m SE	Unspecified Tank	1952	407849
O	393m S	Unspecified Tank	1952	382923
O	399m S	Unspecified Tank	1943	360068
O	405m S	Tanks	1952	392037
O	407m S	Unspecified Tank	1932	360067
O	412m S	Tanks	1943	374896
O	412m S	Tanks	1952	384670
O	413m S	Tanks	1943	403134
O	413m S	Tanks	1932	385069
O	418m S	Tanks	1952	400236
O	420m S	Unspecified Tank	1912	360066
D	426m W	Unspecified Tank	1952	397720
R	428m SW	Unspecified Tank	1952 - 1981	382264
D	430m W	Unspecified Tank	1952 - 1971	388563
D	430m W	Unspecified Tank	1952	387587
D	433m W	Tanks	1932	374898
O	441m S	Unspecified Tank	1875	360049
O	442m S	Unspecified Tank	1875	360065

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	24

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 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	14m W	Electricity Substation	1974	241611
5	144m S	Electricity Substation	1969 - 1999	267218
K	246m W	Electricity Substation	1971 - 1988	259182
10	270m E	Electricity Substation	1952	288709
L	284m W	Electricity Substation	1952	252263
L	285m W	Electricity Substation	1952	252622
13	300m NW	Electricity Substation	1974	241612
D	302m SW	Electricity Substation	1952	264426
14	330m SE	Electricity Substation	1969 - 1999	276892
O	365m S	Electricity Works	1912	281612
O	365m S	Electricity Substation	1992 - 1999	262635
O	365m S	Electricity Works	1952 - 1969	276399
O	365m S	Electricity Depot	1976	249919
16	367m W	Electricity Substation	1981 - 1988	267676
O	373m S	Electricity Substation	1988 - 1992	279258
O	374m S	Electricity Substation	1969	252590
O	379m S	Electricity Substation	1976 - 1999	278736
R	385m SW	Electricity Substation	1971 - 1988	279359
S	417m SE	Electricity Substation	1969 - 1992	275775
O	424m S	Electricity Substation	1976	241609
Q	444m W	Electricity Substation	1974	241613

ID	Location	Land use	Dates present	Group ID
W	493m S	Electricity Substation	1970 - 1999	284472
21	493m N	Electricity Substation	1974 - 1988	266072
W	493m S	Electricity Substation	1990	280267

This data is sourced from Ordnance Survey / Groundsure.

1.4 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, 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'.

This data is sourced from Ordnance Survey / Groundsure.

1.5 Historical garages

Records within 500m	27

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 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	4m SW	Garage	1952	78970
A	4m SW	Garage	1952	79997
2	27m SE	Garage	1976 - 1999	80909
E	147m W	Garage	1971 - 1981	81669
E	149m W	Garage	1986	75074
H	182m SW	Garage	1971 - 1981	83321
H	182m SW	Garage	1986	79168
I	205m S	Garage	1976	77074

ID	Location	Land use	Dates present	Group ID
I	206m S	Garage	1988 - 1992	82586
I	206m S	Garage	1995 - 1999	82112
L	250m NW	Garage	1952	77704
L	251m NW	Garage	1952 - 1974	85541
D	295m SW	Garage	1981 - 1986	86219
T	390m W	Garage	1952	77718
U	397m SW	Garage	1981 - 1988	81736
U	398m SW	Garage	1971	75656
T	399m SW	Garage	1952	75073
17	416m SW	Garage	1971 - 1988	82241
O	463m S	Garage	1988 - 1992	80678
O	463m S	Garage	1976	79849
O	464m S	Garage	1995	78359
O	464m S	Garage	1995 - 1999	82176
19	467m W	Garage	1952	82863
V	481m SW	Garage	1981	76565
V	485m SW	Garage	1971	79850
V	485m SW	Garage	1952	80134
20	486m S	Garage	1976	76505

This data is sourced from Ordnance Survey / Groundsure.

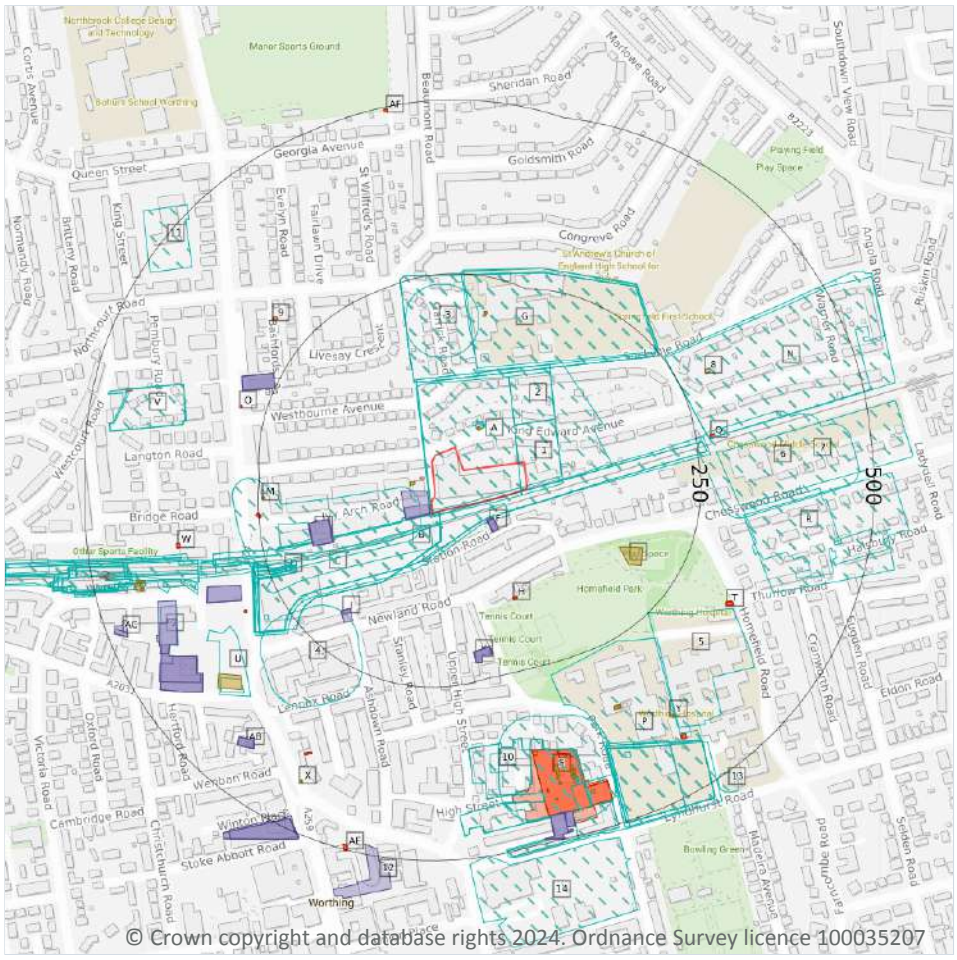
1.6 Historical military land

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
250
500
King Edward Avenue
Bridge Road
Langton Road
Westbourne Avenue
Newland Road
Homefield Park
Worthing
Stoke Abbott Road
Cambridge Road
Goldsmith Road
Congreve Road
Georgia Avenue
Queen Street
Sheridan Road
Chesswood Road
Thurlow Road
Lyndhurst Road
Arch Road
Lennox Road
Stanley Road
Ashdown Road
Homefield Road
Cranworth Road
Eldon Road
Selden Road
Wenban Road
Herbert Road
Victoria Road
Oxford Road
Christchurch Road
High Street
Manor Sports Ground
Other Sports Facility
Tennis Court
Bowling Green
Play Space
Paying Field
Northbrook College Design and Technology
Durrington High School
Beaumont Road
Marlowe Road
Southdown View Road
Angola Road
Ruskin Road
Livesay Crescent
Fairlawn Drive
Evelyn Road
St Winifred's Road
Pembury Road
Northmour Road
Westcourt Road
Normandy Road
Brittany Road
King Street
Corfe Avenue
Lyndhurst Road
Malvern Road
Labrum Road
Eldon Road
Selden Road
Madeira Avenue
Ferncroft Road
Winton House
Ash
Tennis Court
Tennis Court
Tennis Court
Washing Heights
Other Sports Facility
Bowling Green
Play Space
Paying Field
Play Space
Tennis Court
Tennis Court
Tennis Court

ID	Location	Land Use	Date	Group ID
A	**On site**	**Nurseries**	**1896**	**2196007**
B	**On site**	**Railway Sidings**	**1950**	**2168688**
B	0m E	Railway Sidings	1932	2269692
B	0m E	Railway Sidings	1909	2269692
C	1m SW	Railway Sidings	1969	2212886
C	1m SW	Railway Sidings	1962	2212886
C	11m SE	Railway Sidings	1896	2261132
D	16m SW	Railway Sidings	1875	2249732
C	17m SW	Railway Sidings	1971	2221788
C	17m SW	Railway Sidings	1978	2221788
E	18m SW	Nurseries	1896	2168179
A	41m N	Unspecified Heap	1909	2135666
A	42m N	Unspecified Tank	1909	2287036
A	42m N	Unspecified Tank	1932	2276493
2	55m NE	Windmill	1896	2128432
G	98m N	Nurseries	1896	2282817
G	98m N	Nurseries	1932	2285813
G	98m N	Nurseries	1909	2285813
G	114m N	Nurseries	1950	2270689
G	118m N	Nurseries	1962	2270689
3	131m N	Windmill	1896	2128431
E	178m W	Telephone Exchange	1991	2157924
I	181m SE	Unspecified Tank	1950	2153445
4	192m SW	Steam Saw Mills	1875	2165182
L	210m SW	Railway Building	1971	2227360
L	210m SW	Railway Building	1978	2227360
L	212m SW	Railway Building	1969	2273298
L	212m SW	Railway Building	1962	2273298

ID	Location	Land Use	Date	Group ID
L	218m SW	Railway Sidings	1932	2283487
L	218m SW	Railway Sidings	1909	2269840
L	218m SW	Railway Building	1950	2189325
L	235m SW	Goods Shed	1875	2164592
L	240m SW	Railway Building	1896	2223117
5	250m SE	Nurseries	1896	2168181
N	250m NE	Nurseries	1932	2238878
N	250m NE	Nurseries	1909	2238878
6	252m E	Nursery	1932	2161073
P	255m SE	Hospital	1981	2191081
7	277m E	Nurseries	1896	2168180
D	278m SW	Railway Building	1896	2148016
R	313m E	Nurseries	1932	2253220
R	314m E	Nurseries	1896	2193999
S	316m S	Sanatorium	1875	2141936
D	320m W	Railway Sidings	1978	2221752
D	322m W	Railway Building	1875	2148018
U	332m SW	Unspecified Works	1962	2159227
S	343m S	Unspecified Commercial/Industrial	1962	2293051
S	343m S	Unspecified Commercial/Industrial	1969	2293051
D	344m W	Railway Sidings	1933	2262740
D	345m W	Railway Sidings	1938	2180117
D	345m W	Railway Sidings	1909	2239979
D	345m W	Railway Sidings	1896	2239979
D	355m W	Railway Building	1938	2148017
10	357m S	Mortuary	1896	2160891
V	360m W	Nursery	1933	2195524
V	361m W	Nursery	1938	2195524

ID	Location	Land Use	Date	Group ID
S	363m S	Corporation Depot	1909	2165900
U	365m SW	Unspecified Tank	1950	2153161
D	372m W	Railway Building	1875	2148015
P	385m SE	Hospital	1932	2202390
P	388m SE	Hospital	1962	2185771
P	388m SE	Hospital	1969	2185771
P	388m SE	Hospital	1971	2185771
P	390m SE	Hospital	1909	2202390
P	390m SE	Infirmary	1896	2164564
Z	392m SW	Garage	1969	2168473
P	393m SE	Nursery	1875	2161072
P	399m SE	Mortuary	1909	2160893
P	405m SE	Mortuary	1896	2160892
S	417m S	Unspecified Tank	1962	2225603
S	417m S	Unspecified Tank	1969	2225603
D	426m W	Railway Station	1875	2258992
S	428m S	Water Works	1875	2139645
D	430m W	Railway Station	1938	2192746
D	435m W	Railway Station	1991	2192746
D	435m W	Railway Station	1971	2192746
D	435m W	Railway Station	1969	2192746
D	435m W	Railway Station	1978	2192746
D	435m W	Railway Station	1962	2192746
D	443m W	Railway Station	1909	2232303
D	443m W	Railway Station	1896	2232303
11	444m NW	Unspecified Depot	1962	2146888
D	445m W	Railway Station	1933	2228192
S	464m S	Steam Saw Mill	1875	2151470

ID	Location	Land Use	Date	Group ID
13	497m SE	Unspecified Pit	1896	2123507
14	500m S	Unspecified Commercial/Industrial	1950	2273282

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**44**

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 23 >**

ID	Location	Land Use	Date	Group ID
B	28m W	Unspecified Tank	1932	360048
A	41m N	Unspecified Tank	1912	398373
A	43m N	Unspecified Tank	1898	382615
A	54m N	Unspecified Tank	1932	360047
I	157m SE	Unspecified Tank	1943	360069
G	193m N	Unspecified Tank	1943	360045
G	197m N	Unspecified Tank	1952	383859
G	197m N	Unspecified Tank	1952	383859
M	240m W	Unspecified Tank	1912	360051
8	292m NE	Unspecified Tank	1912	360046
P	337m SE	Unspecified Tank	1995	394461
P	337m SE	Unspecified Tank	1995	394461
P	337m SE	Unspecified Tank	1999	394461
P	338m SE	Unspecified Tank	1988	394461
P	338m SE	Unspecified Tank	1992	394461
P	339m SE	Unspecified Tank	1976	394461
U	361m SW	Unspecified Tank	1943	360050
Y	386m SE	Unspecified Tank	1952	395400

ID	Location	Land Use	Date	Group ID
Y	387m SE	Unspecified Tank	1952	407849
Y	387m SE	Unspecified Tank	1969	390755
S	393m S	Unspecified Tank	1952	382923
S	393m S	Unspecified Tank	1952	382923
S	399m S	Unspecified Tank	1943	360068
S	405m S	Tanks	1952	392037
S	405m S	Tanks	1952	392037
S	407m S	Unspecified Tank	1932	360067
S	412m S	Tanks	1943	374896
S	412m S	Tanks	1952	384670
S	413m S	Tanks	1943	403134
S	413m S	Tanks	1932	385069
S	418m S	Tanks	1952	400236
S	418m S	Tanks	1952	400236
S	420m S	Unspecified Tank	1912	360066
D	426m W	Unspecified Tank	1952	397720
D	426m W	Unspecified Tank	1952	397720
X	428m SW	Unspecified Tank	1981	382264
X	428m SW	Unspecified Tank	1971	382264
X	428m SW	Unspecified Tank	1952	382264
D	430m W	Unspecified Tank	1971	388563
D	430m W	Unspecified Tank	1952	388563
D	430m W	Unspecified Tank	1952	387587
D	433m W	Tanks	1932	374898
S	441m S	Unspecified Tank	1875	360049
S	442m S	Unspecified Tank	1875	360065

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	63

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 23 >**

ID	Location	Land Use	Date	Group ID
B	14m W	Electricity Substation	1974	241611
H	144m S	Electricity Substation	1995	267218
H	144m S	Electricity Substation	1999	267218
H	144m S	Electricity Substation	1995	267218
H	144m S	Electricity Substation	1976	267218
H	144m S	Electricity Substation	1988	267218
H	144m S	Electricity Substation	1992	267218
H	145m S	Electricity Substation	1969	267218
M	246m W	Electricity Substation	1981	259182
M	246m W	Electricity Substation	1986	259182
M	246m W	Electricity Substation	1988	259182
M	247m W	Electricity Substation	1971	259182
Q	270m E	Electricity Substation	1952	288709
Q	270m E	Electricity Substation	1952	288709
O	284m W	Electricity Substation	1952	252263
O	285m W	Electricity Substation	1952	252622
9	300m NW	Electricity Substation	1974	241612
D	302m SW	Electricity Substation	1952	264426
D	302m SW	Electricity Substation	1952	264426
T	330m SE	Electricity Substation	1988	276892
T	330m SE	Electricity Substation	1992	276892
T	330m SE	Electricity Substation	1995	276892
T	330m SE	Electricity Substation	1999	276892

ID	Location	Land Use	Date	Group ID
T	330m SE	Electricity Substation	1995	276892
T	331m SE	Electricity Substation	1976	276892
T	331m SE	Electricity Substation	1969	276892
S	365m S	Electricity Works	1912	281612
S	365m S	Electricity Substation	1995	262635
S	365m S	Electricity Substation	1999	262635
S	365m S	Electricity Substation	1995	262635
S	365m S	Electricity Works	1952	276399
S	365m S	Electricity Depot	1976	249919
S	365m S	Electricity Works	1952	276399
S	365m S	Electricity Works	1969	276399
S	365m S	Electricity Substation	1992	262635
W	367m W	Electricity Substation	1981	267676
W	367m W	Electricity Substation	1986	267676
W	367m W	Electricity Substation	1988	267676
S	373m S	Electricity Substation	1988	279258
S	373m S	Electricity Substation	1992	279258
S	374m S	Electricity Substation	1969	252590
S	379m S	Electricity Substation	1995	278736
S	379m S	Electricity Substation	1999	278736
S	379m S	Electricity Substation	1995	278736
S	379m S	Electricity Substation	1976	278736
X	385m SW	Electricity Substation	1981	279359
X	385m SW	Electricity Substation	1986	279359
X	385m SW	Electricity Substation	1988	279359
X	385m SW	Electricity Substation	1971	279359
Y	417m SE	Electricity Substation	1988	275775
Y	417m SE	Electricity Substation	1992	275775

ID	Location	Land Use	Date	Group ID
Y	417m SE	Electricity Substation	1969	275775
Y	418m SE	Electricity Substation	1976	275775
S	424m S	Electricity Substation	1976	241609
V	444m W	Electricity Substation	1974	241613
AE	493m S	Electricity Substation	1970	284472
AE	493m S	Electricity Substation	1976	284472
AE	493m S	Electricity Substation	1999	284472
AE	493m S	Electricity Substation	1990	280267
AE	493m S	Electricity Substation	1990	280267
AF	493m N	Electricity Substation	1974	266072
AF	494m N	Electricity Substation	1988	266072
AF	494m N	Electricity Substation	1988	266072

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	49

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 23 >**

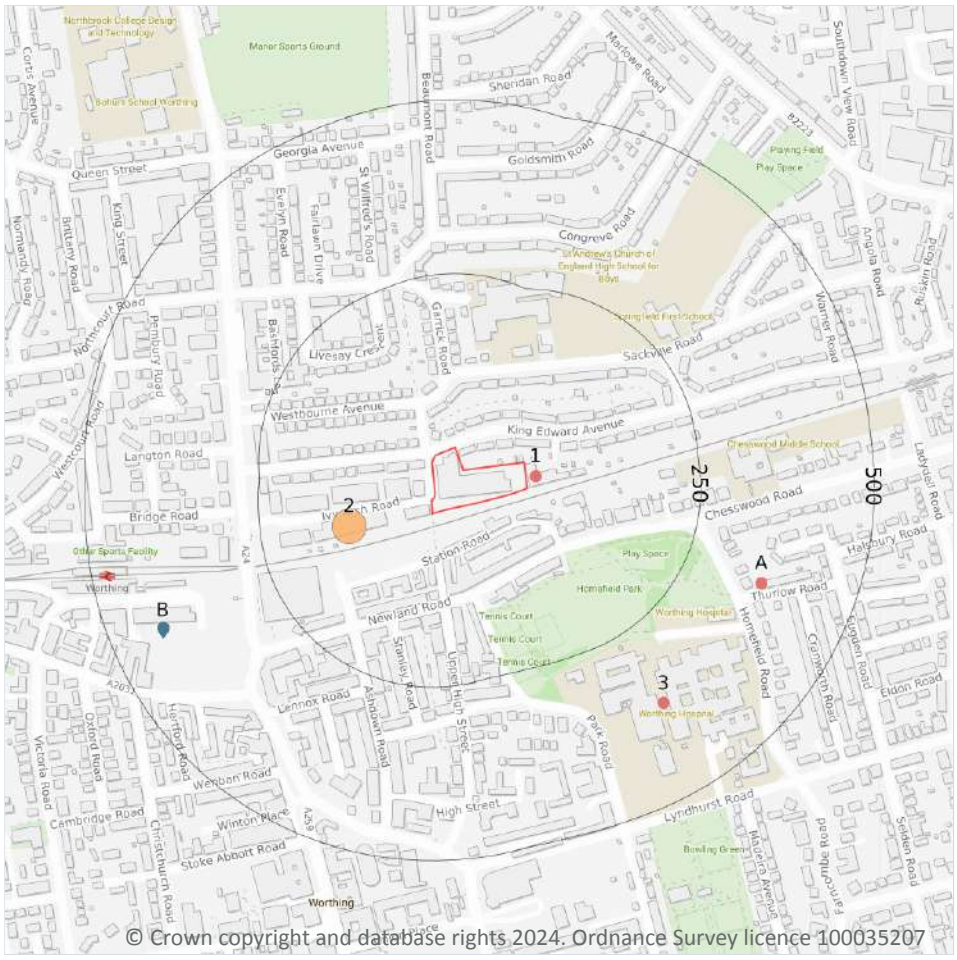
ID	Location	Land Use	Date	Group ID
B	4m SW	Garage	1952	78970

ID	Location	Land Use	Date	Group ID
B	4m SW	Garage	1952	79997
F	27m SE	Garage	1988	80909
F	27m SE	Garage	1992	80909
F	27m SE	Garage	1976	80909
F	28m SE	Garage	1999	80909
F	28m SE	Garage	1995	80909
F	28m SE	Garage	1995	80909
E	147m W	Garage	1981	81669
E	148m W	Garage	1971	81669
E	149m W	Garage	1986	75074
J	182m SW	Garage	1981	83321
J	182m SW	Garage	1971	83321
J	182m SW	Garage	1986	79168
K	205m S	Garage	1976	77074
K	206m S	Garage	1988	82586
K	206m S	Garage	1992	82586
K	206m S	Garage	1999	82112
K	206m S	Garage	1995	82112
K	206m S	Garage	1995	82112
O	250m NW	Garage	1952	77704
O	251m NW	Garage	1974	85541
O	251m NW	Garage	1966	85541
O	251m NW	Garage	1952	85541
D	295m SW	Garage	1981	86219
D	295m SW	Garage	1986	86219
Z	390m W	Garage	1952	77718
AA	397m SW	Garage	1988	81736
AA	397m SW	Garage	1981	81736

ID	Location	Land Use	Date	Group ID
AA	397m SW	Garage	1986	81736
AA	398m SW	Garage	1971	75656
Z	399m SW	Garage	1952	75073
AB	416m SW	Garage	1988	82241
AB	416m SW	Garage	1981	82241
AB	416m SW	Garage	1986	82241
AB	416m SW	Garage	1971	82241
S	463m S	Garage	1988	80678
S	463m S	Garage	1992	80678
S	463m S	Garage	1976	79849
S	464m S	Garage	1995	78359
S	464m S	Garage	1999	82176
S	464m S	Garage	1995	82176
AC	467m W	Garage	1952	82863
AC	472m SW	Garage	1952	82863
AD	481m SW	Garage	1981	76565
AD	485m SW	Garage	1952	80134
AD	485m SW	Garage	1971	79850
AD	485m SW	Garage	1952	80134
12	486m S	Garage	1976	76505

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	1

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 34 >**

ID	Location	Address	Further Details	Date
2	96m W	Site Address: 2a, Ivy Arch Road, WORTHING, West Sussex, BN14 8BX	Type of Site: Metal Recycling Unit (Conversion) Planning application reference: 09/0163/FULL Description: Scheme comprises change of use from furniture outlet to metal recycling unit, no motor trade (county matters application). An application (ref: 09/0163/FULL) for detailed planning permission was submitted to Worthing B.C. 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	2

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

Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Details		
B	424m SW	Site Name: Southern Car Parts Site Address: Southern Car Parts, 30/32, Tenville Road, Worthing, West Sussex, BN12 6LD Correspondence Address: -	Type of Site: Metal Recycling Site (Vehicle Dismantler) Size: 25000 tonnes Environmental Permitting Regulations (Waste) Licence Number: ROW001 EPR reference: EA/EPR/HP3894HM/A001 Operator: Rowell Roger Waste Management licence No: 19656 Annual Tonnage: 30000	Issue Date: 18/04/1994 Effective Date: - Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked
B	424m SW	Site Name: Southern Car Parts Site Address: 30/32 Southern Car Parts, Tenville Road, Worthing, West Sussex, BN12 6LD Correspondence Address: -	Type of Site: Metal Recycling Site (Vehicle Dismantler) Size: >= 25000 tonnes 75000 tonnes Environmental Permitting Regulations (Waste) Licence Number: 635518 EPR reference: EA/EPR/HP3894HM Operator: Roger Rowell Waste Management licence No: 19656 Annual Tonnage: 30000	Issue Date: 18/04/1994 Effective Date: 18/04/1994 Modified: - Surrendered Date: - Expiry Date: - Cancelled Date: - Status: Revoked

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

3.7 Waste exemptions

Records within 500m **6**

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.

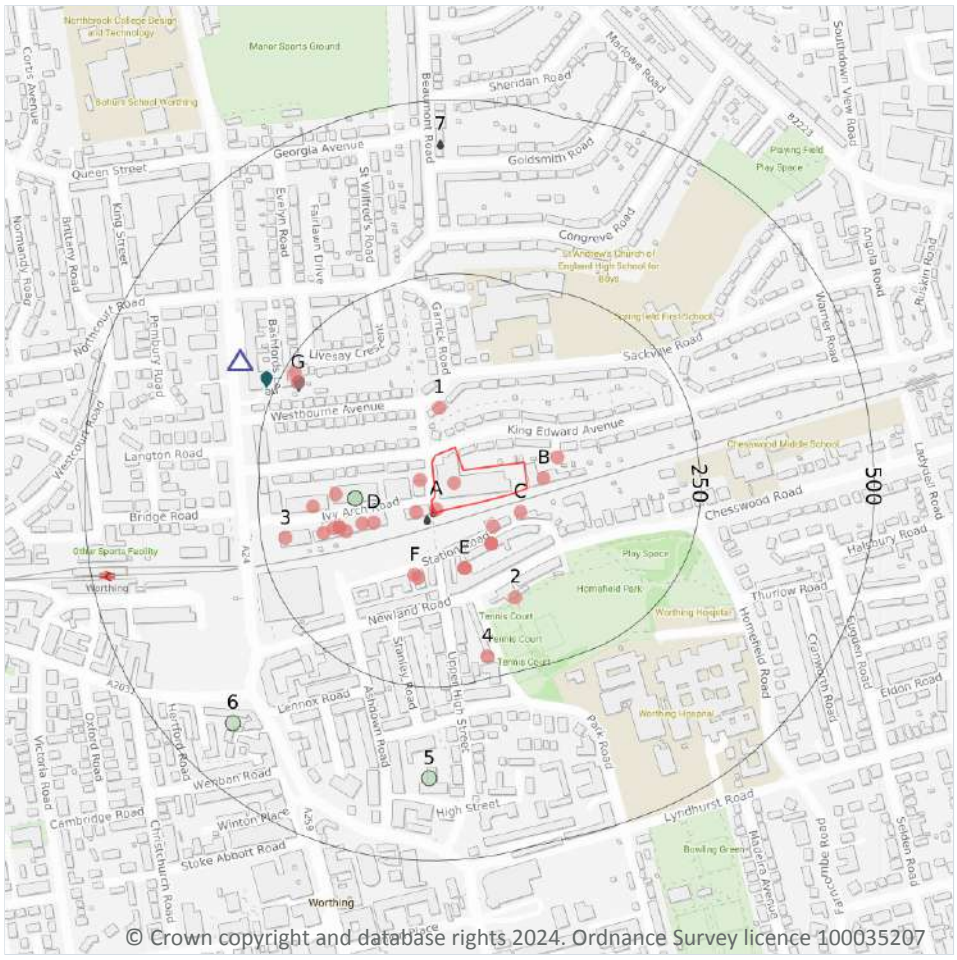
Features are displayed on the Waste and landfill map on **page 34 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	14m E	7 King Edward Close WORTHING West Sussex BN14 8DJ	EPR/HF0506XH/A001	Treating waste exemption	Non-Agricultural Waste Only	Manual treatment of waste
A	364m E	1B, THURLOW ROAD, WORTHING, BN11 2JB	WEX184798	Using waste exemption	Not on a farm	Use of waste in construction
A	364m E	1B, THURLOW ROAD, WORTHING, BN11 2JB	WEX184798	Using waste exemption	Not on a farm	Use of waste derived biodiesel as fuel

ID	Location	Site	Reference	Category	Sub-Category	Description
A	364m E	1B, THURLOW ROAD, WORTHING, BN11 2JB	WEX184798	Using waste exemption	Not on a farm	Burning of waste as a fuel in a small appliance
A	364m E	1B, THURLOW ROAD, WORTHING, BN11 2JB	WEX184798	Storing waste exemption	Not on a farm	Storage of waste in a secure place
3	366m SE	Worthing Hospital Lyndhurst Road Worthing West Sussex BN11 2DH	EPR/RF0434JL/A001	Treating waste exemption	Non-Agricultural Waste Only	Sorting and de-naturing of controlled drugs for disposal

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

4 Current industrial land use



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4.1 Recent industrial land uses

Records within 250m	29

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Company	Address	Activity	Category
A	**On site**	**Pump House**	**West Sussex, BN14**	**Water Pumping Stations**	**Industrial Features**
A	**On site**	**Ready Steady Store**	**Unit 1a, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8FE**	**Container and Storage**	**Transport, Storage and Delivery**

ID	Location	Company	Address	Activity	Category
A	20m W	Electricity Sub Station	West Sussex, BN14	Electrical Features	Infrastructure and Facilities
A	23m SW	Kuhr Engineering Ltd	-, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Metalworkers Including Blacksmiths	Construction Services
B	25m E	Palace Plasterwork	Unit 4, King Edward Close, Broadwater, Worthing, West Sussex, BN14 8DJ	General Construction Supplies	Industrial Products
C	28m SE	Workshops	West Sussex, BN11	Unspecified Works Or Factories	Industrial Features
C	38m SE	Prestige Paintworx	35, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JY	Vehicle Repair, Testing and Servicing	Repair and Servicing
B	49m E	Electricity Sub Station	West Sussex, BN14	Electrical Features	Infrastructure and Facilities
1	62m NW	Aranea Creations Ltd	6, Garrick Road, Broadwater, Worthing, West Sussex, BN14 8BE	Electrical Equipment Repair and Servicing	Repair and Servicing
C	62m S	Paul Cunningham Renault Repairs	Ameys Courtyard 90-96, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JY	Vehicle Repair, Testing and Servicing	Repair and Servicing
C	62m S	Dee Motors	Unit 1-2 Ameys Courtyard 90-96, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JY	Vehicle Repair, Testing and Servicing	Repair and Servicing
D	86m W	Camerons Soft Drinks	Unit 2a, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Distribution and Haulage	Transport, Storage and Delivery
E	88m S	Swift Motor Services Ltd	74-76, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JY	Vehicle Repair, Testing and Servicing	Repair and Servicing
E	88m S	C G Motors Sussex Ltd	74-76, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JY	Vehicle Repair, Testing and Servicing	Repair and Servicing
F	92m SW	Leewards Car Body Repairs	62, Station Road, Worthing Central, Worthing, West Sussex, BN11 1JP	Vehicle Repair, Testing and Servicing	Repair and Servicing
F	95m SW	Works	West Sussex, BN11	Unspecified Works Or Factories	Industrial Features
D	103m W	Doncaster Pharmaceuticals	C P L House, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Medical Equipment, Supplies and Pharmaceuticals	Industrial Products
D	127m W	Works	West Sussex, BN14	Unspecified Works Or Factories	Industrial Features

ID	Location	Company	Address	Activity	Category
D	136m W	Works	West Sussex, BN14	Unspecified Works Or Factories	Industrial Features
D	136m W	Austen Tapes	Unit 5a, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Seals, Tapes, Taps and Valves	Industrial Products
D	138m W	T G Precision	Roberts Warehouse, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Precision Engineers	Engineering Services
D	144m W	Ivy Arch Studios	Unit 5b, Ivy Arch Road, Gaisford, Worthing, West Sussex, BN14 8BX	Recording Studios and Record Companies	IT, Advertising, Marketing and Media Services
2	145m S	Electricity Sub Station	West Sussex, BN11	Electrical Features	Infrastructure and Facilities
D	161m W	Works	West Sussex, BN14	Unspecified Works Or Factories	Industrial Features
D	172m W	Telephone Exchange	West Sussex, BN14	Telecommunications Features	Infrastructure and Facilities
3	215m W	Works	West Sussex, BN14	Unspecified Works Or Factories	Industrial Features
4	219m S	Worthing Auto Electrics	153, Park Road, Worthing Central, Worthing, West Sussex, BN11 2AL	Vehicle Repair, Testing and Servicing	Repair and Servicing
G	224m NW	Super 7 Autos Works	16, Bashfords Lane, Gaisford, Worthing, West Sussex, BN14 8AF	Vehicle Repair, Testing and Servicing	Repair and Servicing
G	235m NW	Works	West Sussex, BN14	Unspecified Works Or Factories	Industrial Features

This data is sourced from Ordnance Survey.

4.2 Current or recent petrol stations

Records within 500m **1**

Open, closed, under development and obsolete petrol stations.

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Company	Address	LPG	Status
G	314m NW	OBSOLETE	28, Broadwater Road, Basfords Lane (Cul De Sac), Worthing, West Sussex, BN14 8AQ	Not Applicable	Obsolete

This data is sourced from Experian.

4.3 Electricity cables

Records within 500m	0

High voltage underground electricity transmission cables.

This data is sourced from National Grid.

4.4 Gas pipelines

Records within 500m	0

High pressure underground gas transmission pipelines.

This data is sourced from National Grid.

4.5 Sites determined as Contaminated Land

Records within 500m	0

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

This data is sourced from Local Authority records.

4.6 Control of Major Accident Hazards (COMAH)

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.7 Regulated explosive sites

Records within 500m	0

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

This data is sourced from the Health and Safety Executive.

4.8 Hazardous substance storage/usage

Records within 500m	0

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

This data is sourced from Local Authority records.

4.9 Historical licensed industrial activities (IPC)

Records within 500m	0

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

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

4.10 Licensed industrial activities (Part A(1))

Records within 500m	0

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

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

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

Records within 500m	2

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 38 >**

ID	Location	Address	Details	
G	222m NW	A E Ledger (Coachworks) Ltd, 16 Bashfords Lane, Broadwater Rd, Worthing, BN14 8AF	Process: Respraying of Road Vehicles Status: Revoked Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
G	266m NW	Jet, Worthing Motors, 28 Broadwater Rd, Worthing, BN14 8AG	Process: Unloading of Petrol into Storage at Service Stations Status: Revoked 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	4

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 38 >**

ID	Location	Address	Details	
A	**On site**	**IVYARCH ROAD PS, IVYARCH ROAD PS, WORTHING, SUSSEX**	**Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: A00960 Permit Version: 1 Receiving Water: FRESHWATER RIVER**	**Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 23/07/2001 Effective Date: 23/07/2001 Revocation Date: 20/08/2001**
A	**On site**	**IVYARCH ROAD PS, IVYARCH ROAD PS, WORTHING, SUSSEX**	**Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: A00960 Permit Version: 2 Receiving Water: FRESHWATER RIVER**	**Status: PRE NRA LEGISLATION WHERE ISSUE DATE 01-SEP-89 (HISTORIC ONLY) Issue date: 20/08/2001 Effective Date: 20/08/2001 Revocation Date: -**
A	12m SW	IVY ARCH ROAD WPS WORTHING, IVY ARCH ROAD WPS, IVY ARCH ROAD, WORTHING, WEST SUSSEX, BN14 8BX	Effluent Type: SEWAGE DISCHARGES - SEWER STORM OVERFLOW - WATER COMPANY Permit Number: A01479 Permit Version: 1 Receiving Water: TRIB OF TEVILLE STREAM	Status: NEW CONSENT (WRA 91, S88 & SCHED 10 AS AMENDED BY ENV ACT 1995) Issue date: 10/09/2007 Effective Date: 10/09/2007 Revocation Date: -
7	436m N	FACTORY ON INDUSTRIAL ESTATE, FACTORY ON INDUSTRIAL ESTATE, DOMINION WAY, WORTHING, WEST SUSSEX	Effluent Type: MISCELLANEOUS DISCHARGES - SURFACE WATER Permit Number: N02120 Permit Version: 1 Receiving Water: FRESHWATER RIVER	Status: POST NRA LEGISLATION WHERE ISSUE DATE > 31-AUG-89 (HISTORIC ONLY) Issue date: 01/04/1991 Effective Date: 01/04/1991 Revocation Date: 01/07/1991

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

4.14 Pollutant release to surface waters (Red List)

Records within 500m	0

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

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

4.15 Pollutant release to public sewer

Records within 500m	0

Discharges of Special Category Effluents to the public sewer.

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

4.16 List 1 Dangerous Substances

Records within 500m	0

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

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

4.17 List 2 Dangerous Substances

Records within 500m	0

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

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

4.18 Pollution Incidents (EA/NRW)

Records within 500m	4

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

Features are displayed on the Current industrial land use map on **page 38 >**

ID	Location	Details	
D	110m W	Incident Date: 04/06/2002 Incident Identification: 82736 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
D	110m W	Incident Date: 04/06/2002 Incident Identification: 82736 Pollutant: Oils and Fuel Pollutant Description: Petrol	Water Impact: Category 3 (Minor) Land Impact: Category 3 (Minor) Air Impact: Category 3 (Minor)
5	381m S	Incident Date: 05/07/2001 Incident Identification: 13935 Pollutant: Other Pollutant Pollutant Description: Other	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
6	417m SW	Incident Date: 07/07/2003 Incident Identification: 171538 Pollutant: Specific Waste Materials Pollutant Description: Vehicles and Vehicle Parts	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	0

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

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

4.20 Pollution inventory waste transfers

Records within 500m	0

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

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

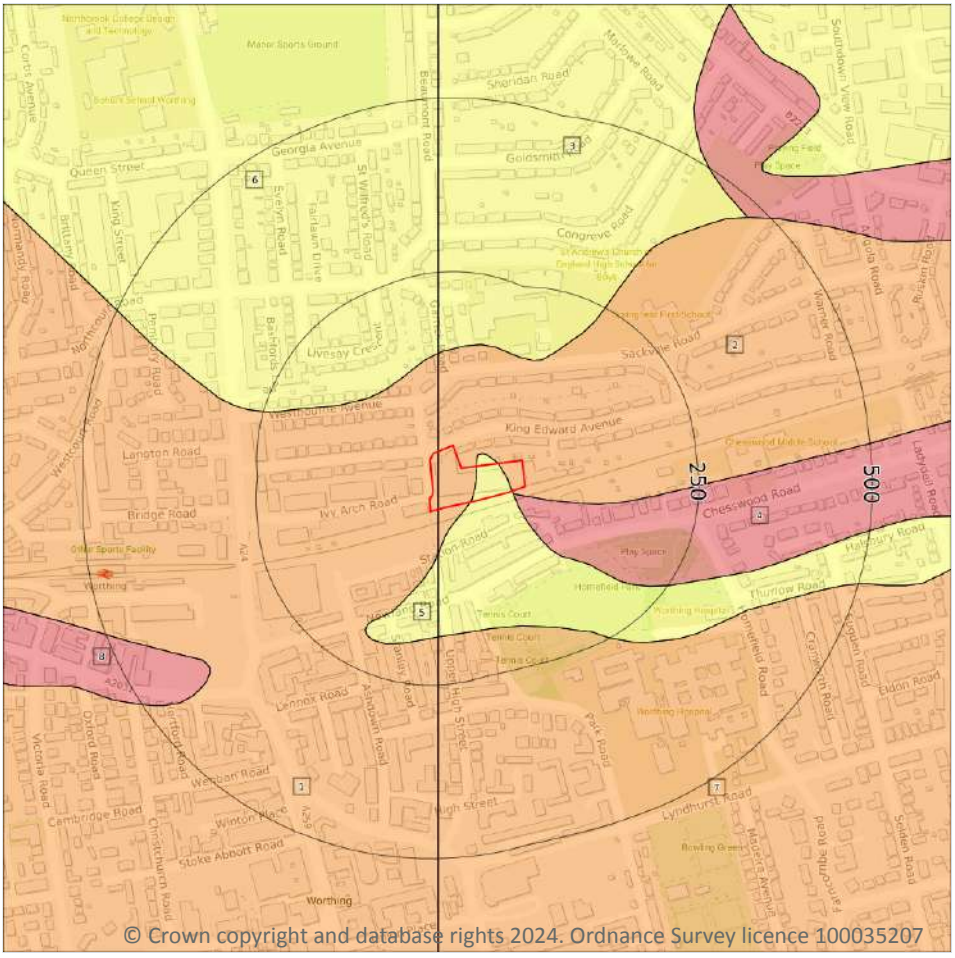
4.21 Pollution inventory radioactive waste

Records within 500m	0

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

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

5 Hydrogeology - Superficial aquifer



Site Outline

Search buffers in metres (m)

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

5.1 Superficial aquifer

Records within 500m **8**

Aquifer status of groundwater held within superficial geology.

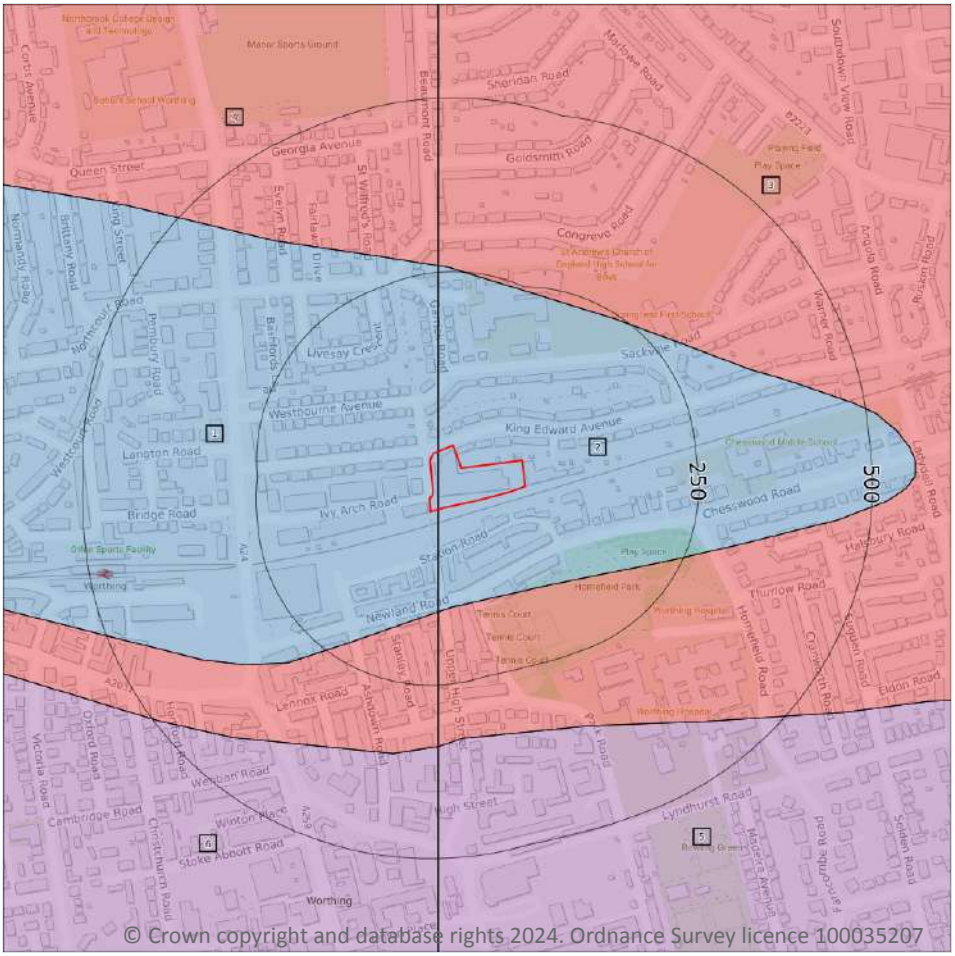
Features are displayed on the Hydrogeology map on **page 47 >**

ID	Location	Designation	Description
1	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers
2	On site	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers

ID	Location	Designation	Description
3	**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**
4	4m E	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	61m SW	Secondary Undifferentiated	Assigned where it is not possible to attribute either category A or B to a rock type. In general these layers have previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the rock type
6	115m NW	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
7	180m S	Secondary B	Predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers
8	390m SW	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

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

Bedrock aquifer



5.2 Bedrock aquifer

Records within 500m	6

Aquifer status of groundwater held within bedrock geology.

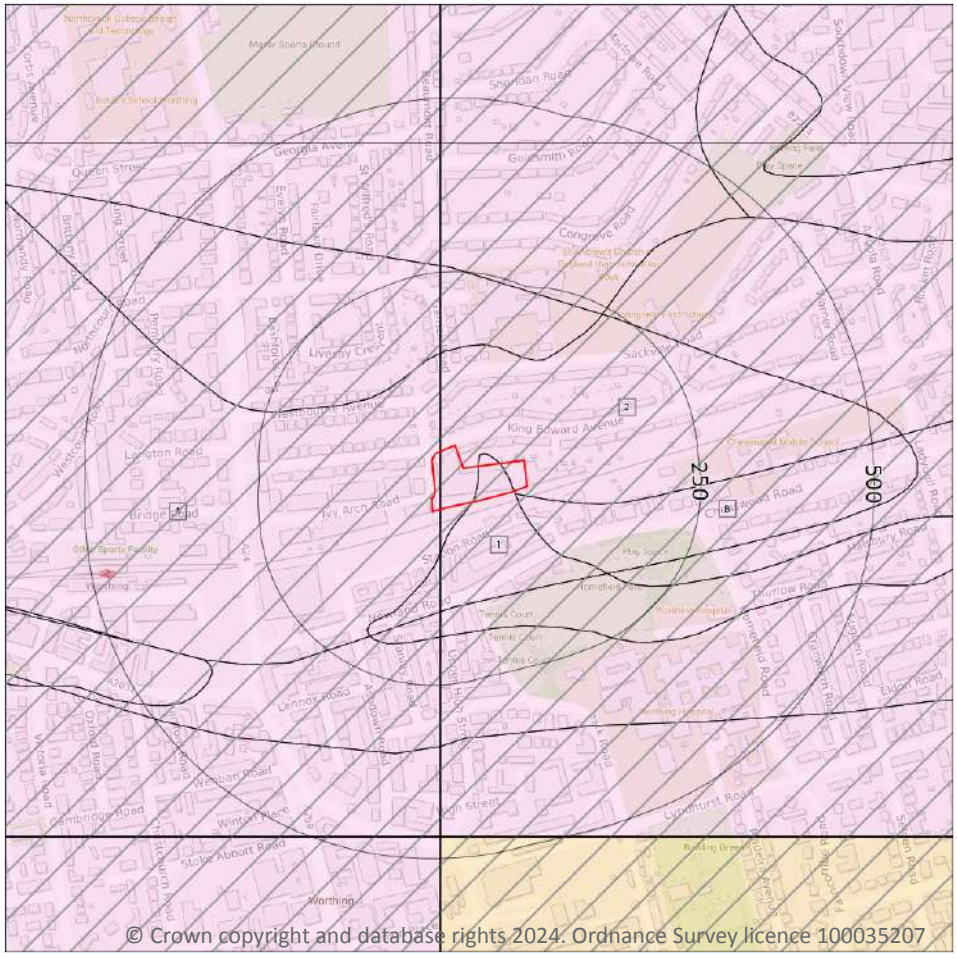
Features are displayed on the Bedrock aquifer map on **page 49 >**

ID	Location	Designation	Description
1	On site	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow
2	On site	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	141m 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
4	145m S	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
5	330m 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
6	339m 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



Site Outline

Search buffers in metres (m)

Superficial vulnerability
- Principal superficial aquifer, high vulnerability
- Secondary superficial aquifer, high vulnerability
- Principal superficial aquifer, medium vulnerability
- Secondary superficial aquifer, medium vulnerability
- Principal superficial aquifer, low vulnerability
- Secondary superficial aquifer, low vulnerability

Bedrock vulnerability
- Principal bedrock aquifer, high vulnerability
- Secondary bedrock aquifer, high vulnerability
- Principal bedrock aquifer, medium vulnerability
- Secondary bedrock aquifer, medium vulnerability
- Principal bedrock aquifer, low vulnerability
- Secondary bedrock aquifer, low vulnerability

Other information
- Unproductive aquifer
- Soluble rock risk
- Local information

5.3 Groundwater vulnerability

Records within 50m	4

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 51 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures**
2	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures**
A	**On site**	**Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer**	**Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year**	**Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: High**	**Vulnerability: Unproductive Aquifer type: Unproductive Flow mechanism: Well connected fractures**
B	4m E	Summary Classification: Secondary superficial aquifer - Medium Vulnerability Combined classification: Unproductive Bedrock Aquifer, Productive Superficial Aquifer	Leaching class: Intermediate Infiltration value: >70% Dilution value: 300-550mm/year	Vulnerability: Medium Aquifer type: Secondary Thickness: 3-10m Patchiness value: >90% Recharge potential: Medium	Vulnerability: Unproductive Aquifer type: Unproductive 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	**2**

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.**	**20.0%**

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
B	**Significant soluble rocks are likely to be present. Problems unlikely except with considerable surface or subsurface water flow.**	**18.0%**

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

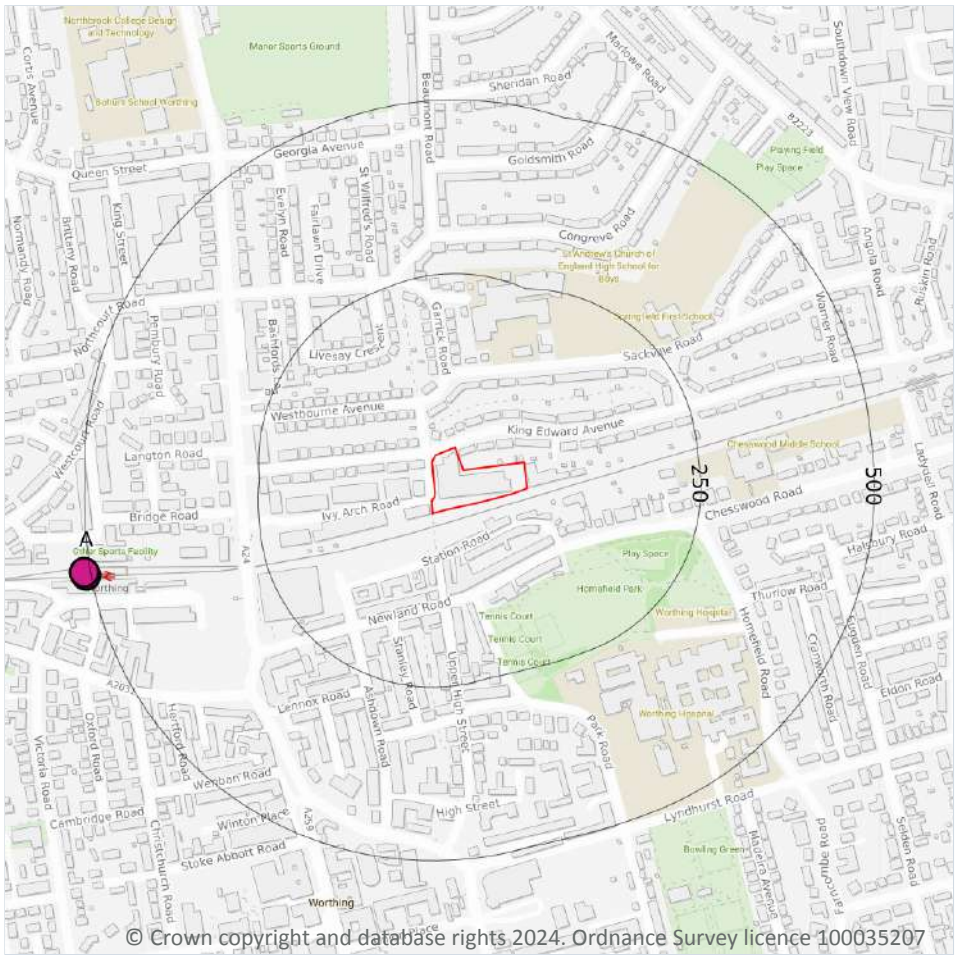
5.5 Groundwater vulnerability- local information

Records on site	**0**

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

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

Abstractions and Source Protection Zones



Site Outline

Search buffers in metres (m)

- Source Protection Zone 1 — Inner catchment
- Source Protection Zone 2 — Outer catchment
- Source Protection Zone 3 — Total catchment
- Source Protection Zone 4 — Zone of Special Interest
- Source Protection Zone 1c — Inner catchment - confined aquifer
- Source Protection Zone 2c — Outer catchment - confined aquifer
- Source Protection Zone 3c — Total catchment - confined aquifer
- Drinking water abstraction licences
- 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	11

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 54 >**

ID	Location	Details	
A	506m W	Status: Active Licence No: SO/041/0022/018 Details: Dewatering Direct Source: Southern Region Groundwater Point: POINT B UNDERGROUND DRAINAGE CHANNELS AT WORTHING STATION Data Type: Point Name: Network Rail Limited (Southern Route) Easting: 514490 Northing: 103380	Annual Volume (m^3): 18300 Max Daily Volume (m^3): 50 Original Application No: NPS/NA/001728 Original Start Date: 24/03/2022 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 24/03/2022 Version End Date: -
A	509m W	Status: Active Licence No: SO/041/0022/018 Details: Dewatering Direct Source: Southern Region Groundwater Point: POINT A UNDERGROUND DRAINAGE CHANNELS AT WORTHING STATION Data Type: Point Name: Network Rail Limited (Southern Route) Easting: 514487 Northing: 103384	Annual Volume (m^3): 18300 Max Daily Volume (m^3): 50 Original Application No: NPS/NA/001728 Original Start Date: 24/03/2022 Expiry Date: 31/03/2028 Issue No: 1 Version Start Date: 24/03/2022 Version End Date: -
-	990m N	Status: Historical Licence No: 10/41/310211 Details: General Cooling (Existing Licences Only) (Low Loss) Direct Source: Southern Region Groundwater Point: PENFOLD ROAD DAIRY Data Type: Point Name: Unigate Finance Company Ltd Easting: 515190 Northing: 104540	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: - Expiry Date: - Issue No: 102 Version Start Date: 01/01/2003 Version End Date: -
-	1102m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 1 (SUSSEX) Data Type: Point Name: Southern Water Services Ltd Easting: 515350 Northing: 104620	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -

ID	Location	Details	
-	1102m N	Status: Historical Licence No: 10/41/310210 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 1 (SUSSEX) Data Type: Point Name: Southern Water Services Plc Easting: 515350 Northing: 104620	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 114000 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 08/06/2009 Version End Date: -
-	1117m NE	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 2 (SUSSEX) Data Type: Point Name: Southern Water Services Ltd Easting: 515510 Northing: 104590	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -
-	1117m NE	Status: Historical Licence No: 10/41/310210 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 2 (SUSSEX) Data Type: Point Name: Southern Water Services Plc Easting: 515510 Northing: 104590	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 114000 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 08/06/2009 Version End Date: -
-	1964m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BROADWATER PS BOREHOLE 3 Data Type: Point Name: Southern Water Services Ltd Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -
-	1964m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BROADWATER PS WELL Data Type: Point Name: Southern Water Services Ltd Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -

ID	Location	Details	
-	1964m N	Status: Historical Licence No: 10/41/310210 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Southern Region Groundwater Point: BROADWATER PS BOREHOLE 3 Data Type: Point Name: Southern Water Services Plc Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 114000 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 08/06/2009 Version End Date: -
-	1964m N	Status: Historical Licence No: 10/41/310210 Details: General Use Relating To Secondary Category (Medium Loss) Direct Source: Southern Region Groundwater Point: BROADWATER PS WELL Data Type: Point Name: Southern Water Services Plc Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 114000 Original Application No: - Original Start Date: - Expiry Date: - Issue No: 101 Version Start Date: 08/06/2009 Version End Date: -

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

5.7 Surface water abstractions

Records within 2000m	**0**

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

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

5.8 Potable abstractions

Records within 2000m	**4**

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

Features are displayed on the Abstractions and Source Protection Zones map on **page 54 >**

ID	Location	Details	
-	1102m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 1 (SUSSEX) Data Type: Point Name: Southern Water Services Ltd Easting: 515350 Northing: 104620	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -
-	1117m NE	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: NORTHBROOK PS POINT 2 (SUSSEX) Data Type: Point Name: Southern Water Services Ltd Easting: 515510 Northing: 104590	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -
-	1964m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BROADWATER PS BOREHOLE 3 Data Type: Point Name: Southern Water Services Ltd Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -
-	1964m N	Status: Active Licence No: 10/41/310210 Details: Potable Water Supply - Direct Direct Source: Southern Region Groundwater Point: BROADWATER PS WELL Data Type: Point Name: Southern Water Services Ltd Easting: 514350 Northing: 105410	Annual Volume (m^3): 26000000 Max Daily Volume (m^3): 111000 Original Application No: WR.0611 Original Start Date: 01/04/1969 Expiry Date: - Issue No: 101 Version Start Date: 11/12/2009 Version End Date: -

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

5.9 Source Protection Zones

Records within 500m	**0**

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

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

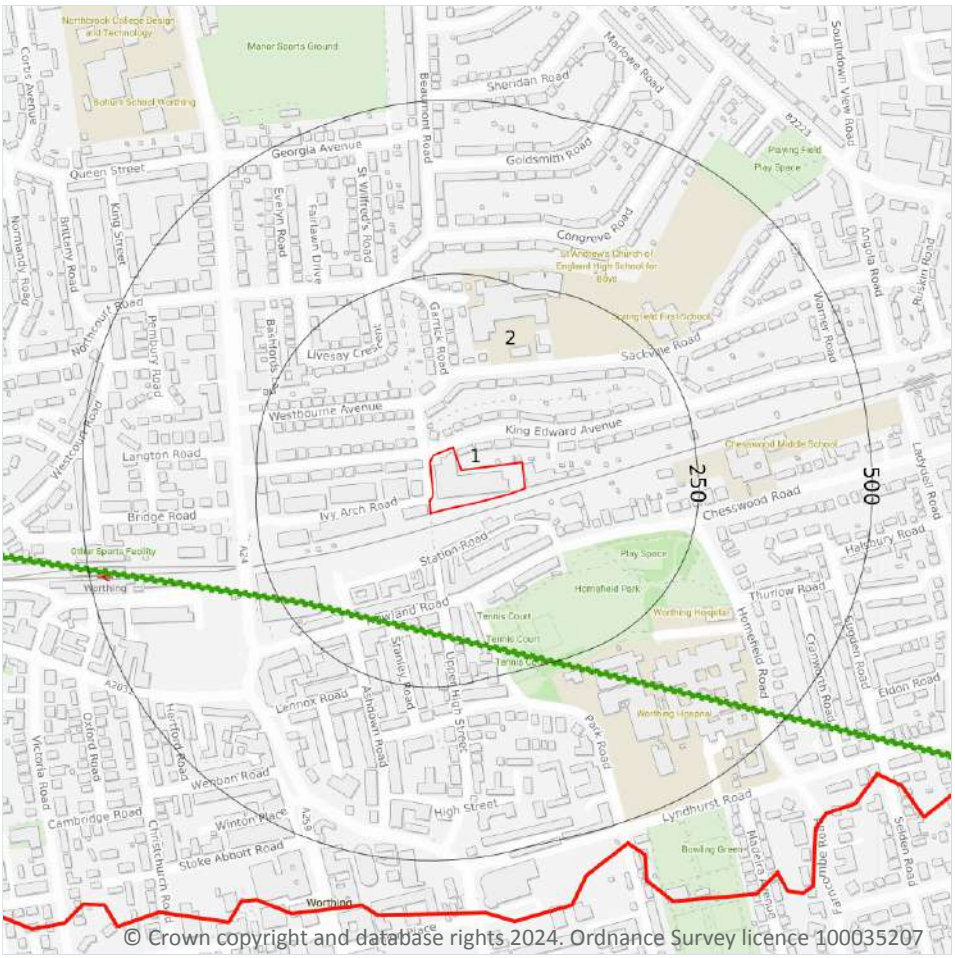
5.10 Source Protection Zones (confined aquifer)

Records within 500m	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



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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	0

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

This data is sourced from the Ordnance Survey.

6.2 Surface water features

Records within 250m	0

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.

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 60 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
1	**On site**	**River**	**Teville Stream**	**GB107041011940**	**Teville**	**Adur and Ouse**

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 60 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	921m NE	River	Teville Stream	GB107041011940 ↗	Bad	Fail	Bad	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 60 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
2	**On site**	**Sussex Lambeth Group**	**GB40701G505100** ↗	**Good**	**Good**	**Good**	**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	0

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).

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 63 >**

ID	Location	Event name	Date of flood	Flood source	Flood cause	Type of flood
1	24m SE	Worthing 1980	1980-09-20 1980-09-20	Drainage	Other	Fluvial

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

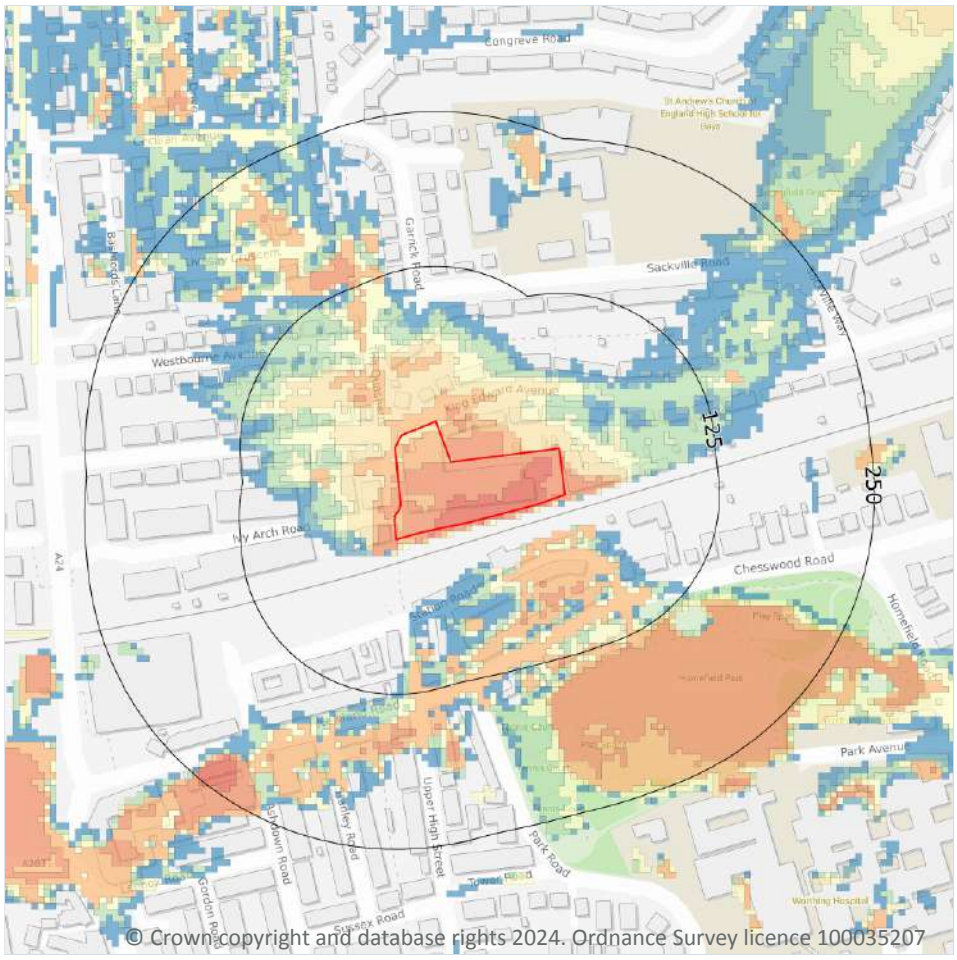
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



Site Outline

Search buffers in metres (m)

1 in 1000 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 250 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 100 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

1 in 30 return period
- Depth between 0.1m - 0.3m
- Depth between 0.3m - 1.0m
- Depth greater than 1.0m

8.1 Surface water flooding

Highest risk on site	**1 in 30 year, Greater than 1.0m**
Highest risk within 50m	**1 in 30 year, Greater than 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 66 >**

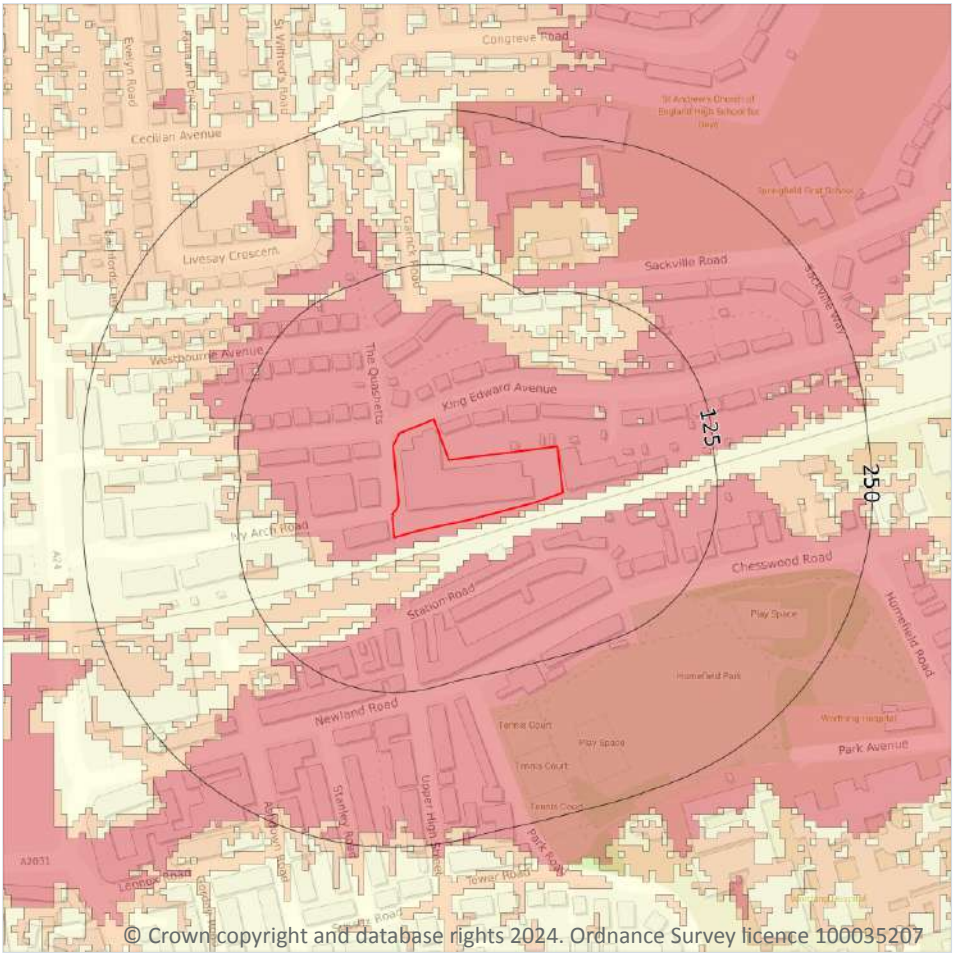
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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	Greater than 1.0m
1 in 250 year	Greater than 1.0m
1 in 100 year	Greater than 1.0m
1 in 30 year	Greater than 1.0m

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

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

9.1 Groundwater flooding

Highest risk on site	**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 68 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	0

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

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

10.7 Designated Ancient Woodland

Records within 2000m	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	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

Areas where nitrate concentrations in drinking water sources exceeded or was at risk of exceeding the limit of 50 mg/l set by the 1980 EC Drinking Water Directive. Voluntary agricultural measures as a means of reducing the levels of nitrate were introduced by DEFRA as MAFF, with payments being made to farmers who complied. The scheme was started as a pilot in 1990 in ten areas, later implemented within 32 areas. The scheme was closed to further new entrants in 1998, although existing agreements continued for their full term. All Nitrate Sensitive Areas fell within the areas designated as Nitrate Vulnerable Zones (NVZs) in 1996 under the EC Nitrate Directive (91/676/EEC).

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

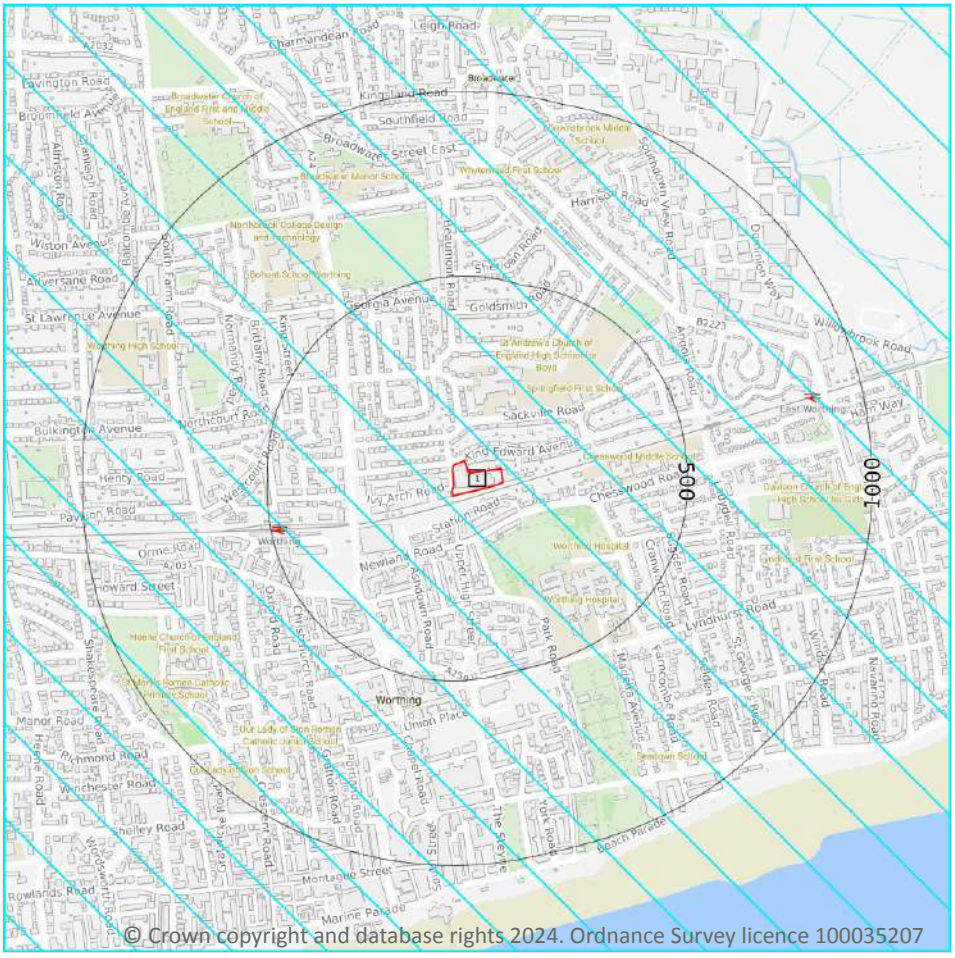
Records within 2000m	2

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
903m NE	Sussex Chalk	Groundwater	56	Existing
1677m NW	Sussex Chalk	Groundwater	56	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	1

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 73 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Minerals, Oil and Gas - Oil & gas exploration/extraction.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t.**

This data is sourced from Natural England.

10.18 SSSI Units

Records within 2000m	0

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.

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 77 >**

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



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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	5

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 79 >**

ID	Location	Main Habitat	Other habitats
1	151m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
2	215m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
3	228m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)
4	230m SE	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

ID	Location	Main Habitat	Other habitats
5	233m E	Deciduous woodland	Main habitat: DWOOD (INV > 50%)

This data is sourced from Natural England.

13.2 Habitat Networks

Records within 250m	0

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.

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.

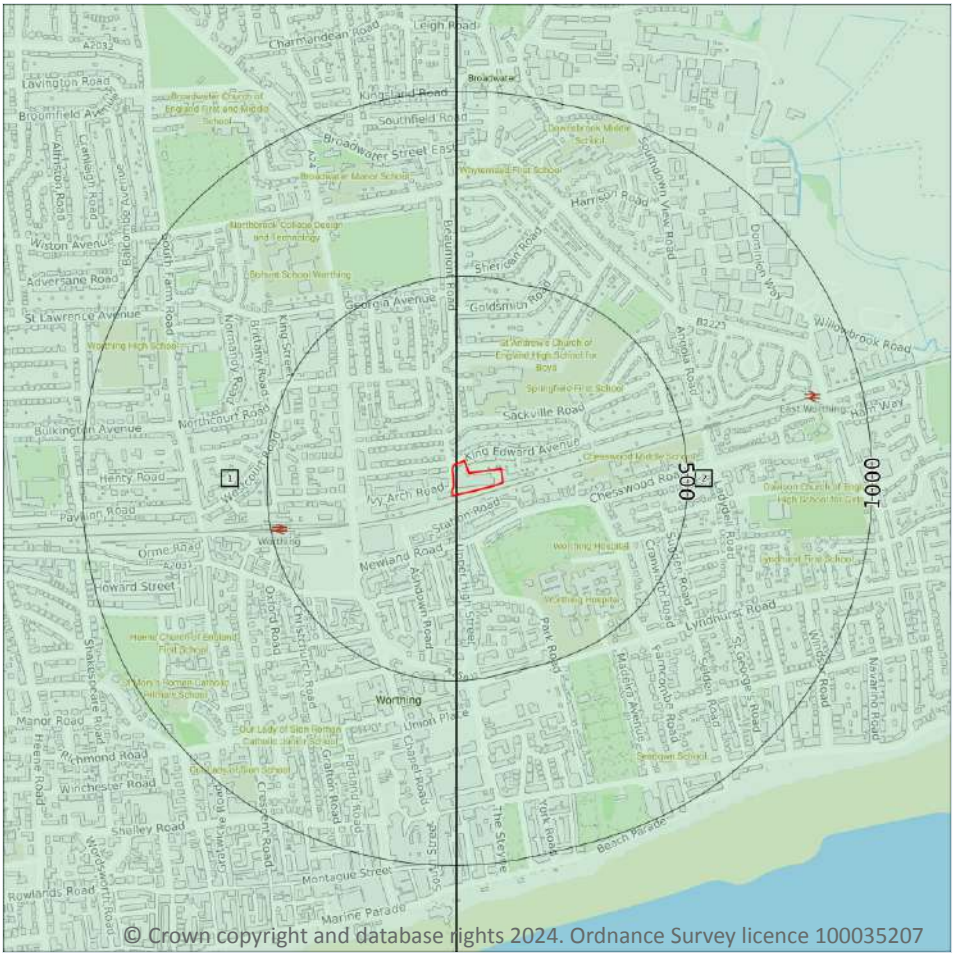
13.4 Limestone Pavement Orders

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

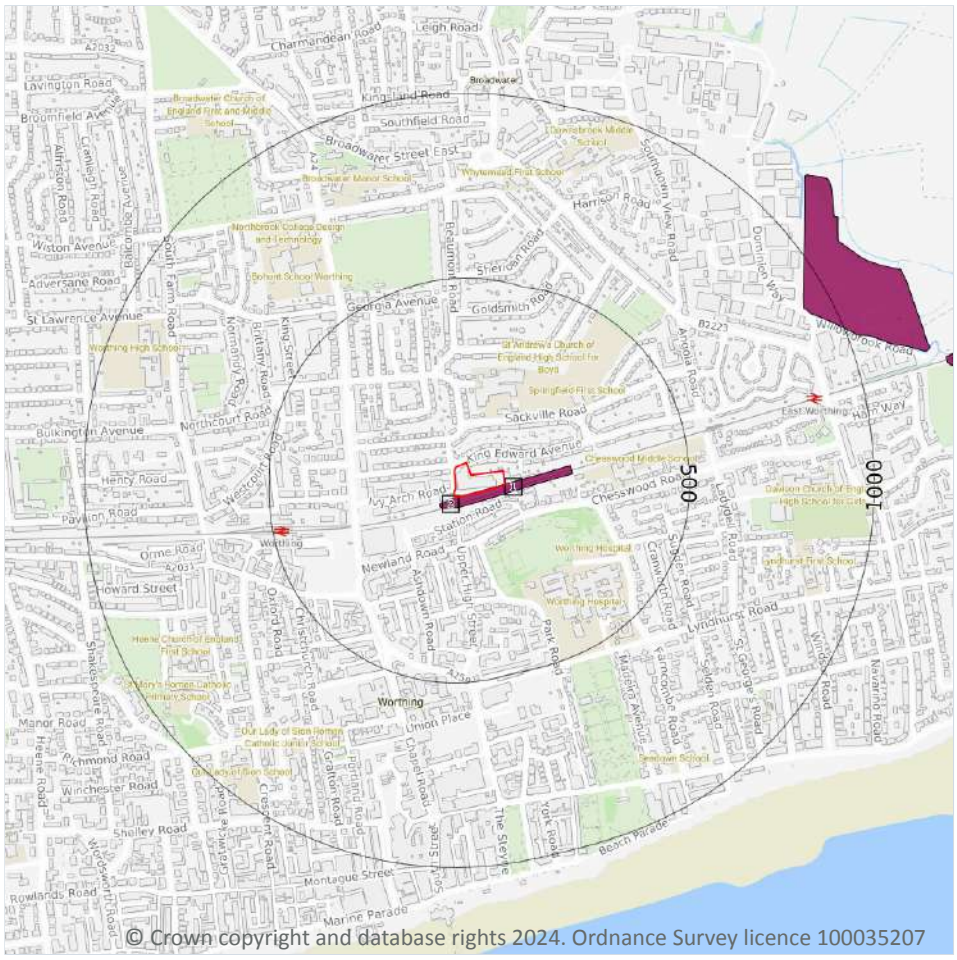
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 81 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	On site	Full	Full	Full	No coverage	TQ10SW
2	On site	Full	Full	Full	No coverage	TQ10SE

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	2

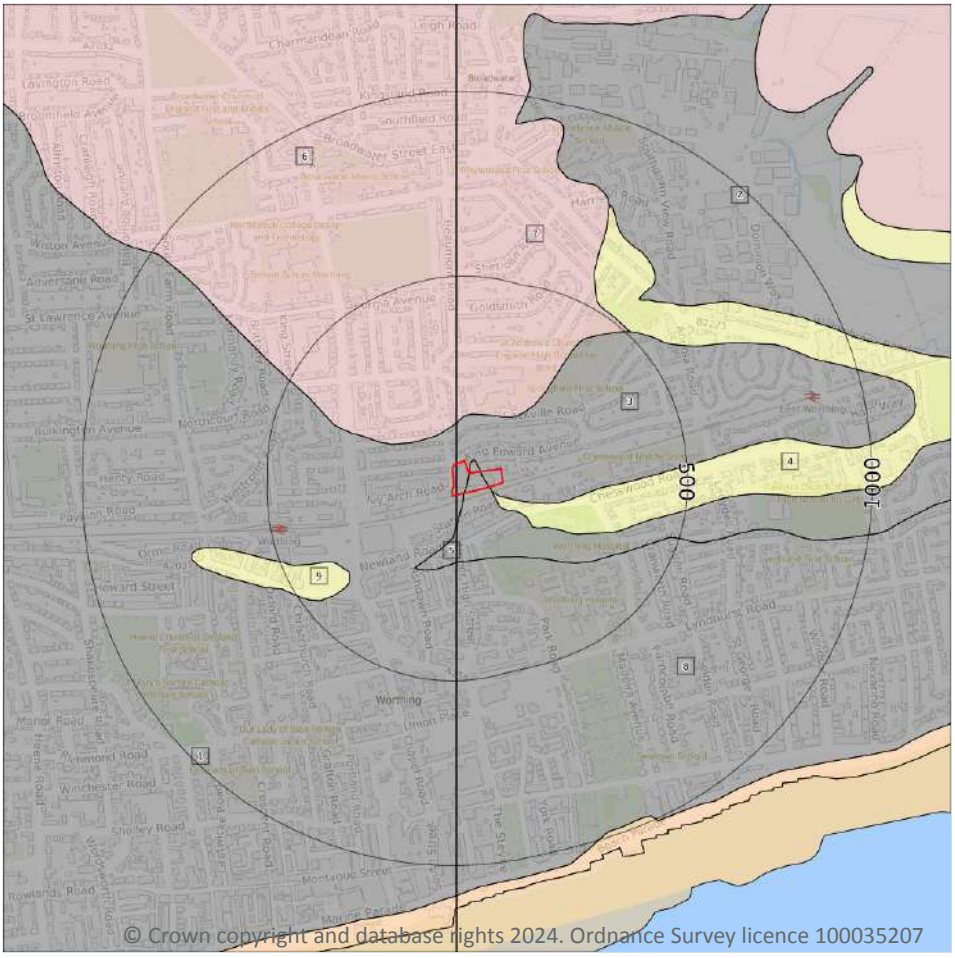
Details of made, worked, infilled, disturbed and landscaped ground at 1:10,000 scale. Artificial ground can be associated with potentially contaminated material, unpredictable engineering conditions and instability.

Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 82 >**

ID	Location	LEX Code	Description	Rock description
1	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit
2	On site	MGR-ARTDP	Made Ground (Undivided)	Artificial Deposit

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 83 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**BRK-XSZC**	**Brickearth - Sand, Silt And Clay**	**Sand, Silt And Clay**
2	**On site**	**ALV-CZ**	**Alluvium - Silty Clay**	**Clay, Silty**
3	**On site**	**BRK-XSZC**	**Brickearth - Sand, Silt And Clay**	**Sand, Silt And Clay**
4	13m SE	RBDU-XSV	Raised Beach Deposits - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
5	82m S	ALV-CZ	Alluvium - Silty Clay	Clay, Silty
6	92m NW	HEAD-DMTN	Head - Diamicton	Diamicton
7	104m N	HEAD-DMTN	Head - Diamicton	Diamicton
8	180m S	BRK-XSZC	Brickearth - Sand, Silt And Clay	Sand, Silt And Clay
9	348m SW	RBDU-XSV	Raised Beach Deposits - Sand And Gravel	Sand And Gravel

This data is sourced from the British Geological Survey.

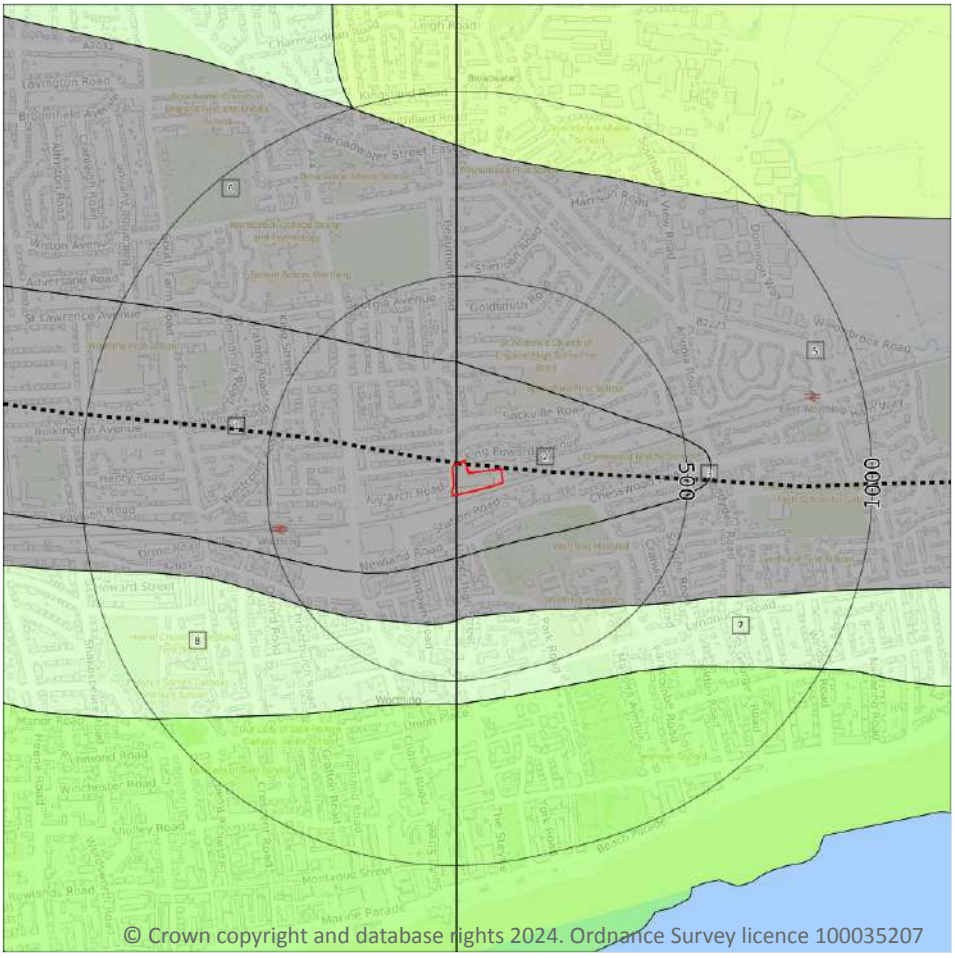
14.4 Landslip (10k)

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 **6**

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 85 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-CLSISA**	**London Clay Formation - Clay, Silt And Sand**	**Eocene Epoch**
2	**On site**	**LC-CLSISA**	**London Clay Formation - Clay, Silt And Sand**	**Eocene Epoch**
5	161m SE	WRB-CLAY	Woolwich And Reading Beds Formation - Clay	Paleocene Epoch
6	168m S	WRB-CLAY	Woolwich And Reading Beds Formation - Clay	Paleocene Epoch

ID	Location	LEX Code	Description	Rock age
7	329m S	SECK-CHLK	Seaford Chalk Formation - Chalk	Santonian Age - Coniacian Age
8	338m 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	**2**

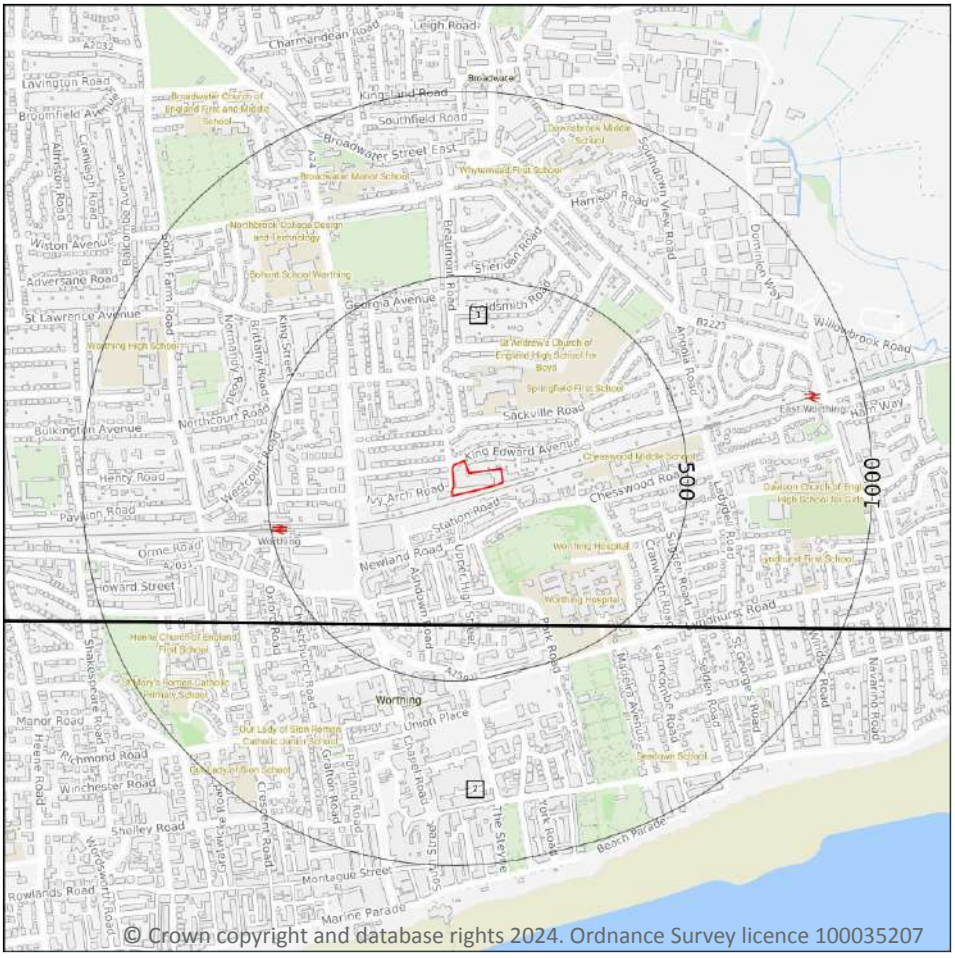
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 85 >**

ID	Location	Category	Description
3	**On site**	**FOLD_AXIS**	**Axial plane trace of major syncline**
4	2m NW	FOLD_AXIS	Axial plane trace of major syncline

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	2

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 87 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**Full**	**EW318_333_brighton_and_worthing_v4**
2	349m S	Full	Full	Full	Full	EW318_333_brighton_and_worthing_v4

This data is sourced from the British Geological Survey.

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

15.2 Artificial and made ground (50k)

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

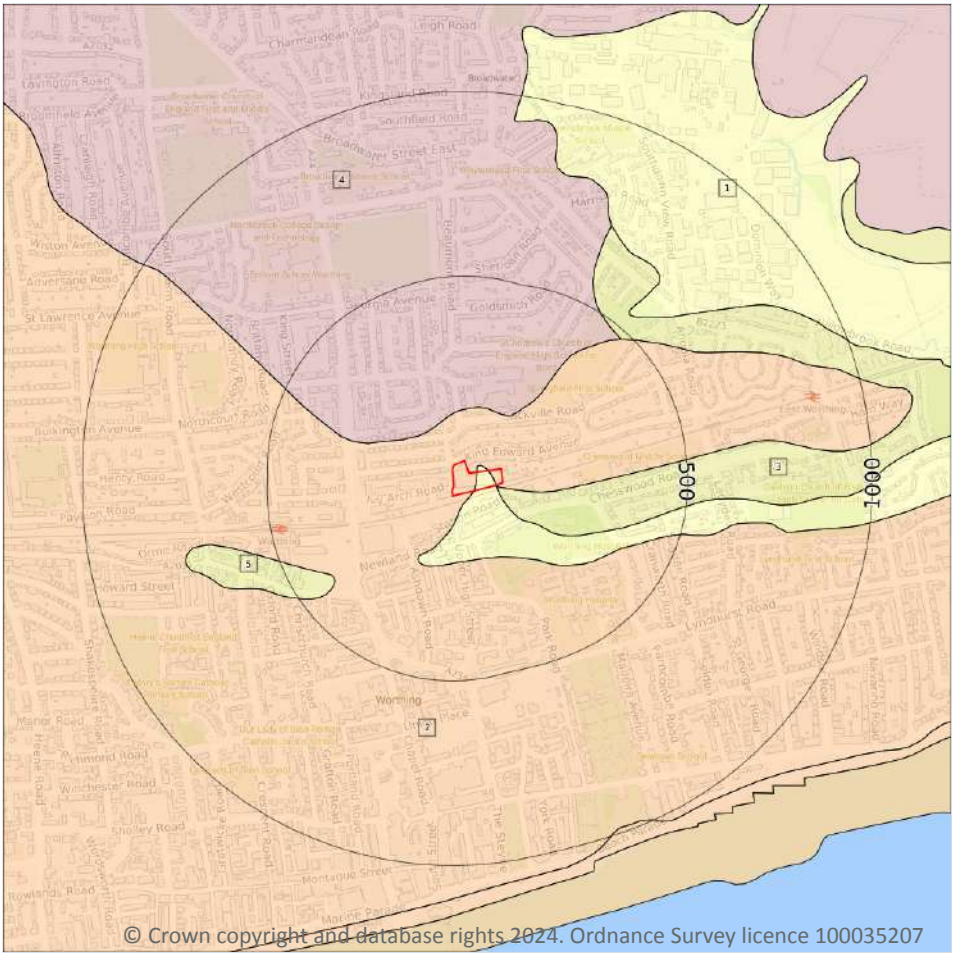
15.3 Artificial ground permeability (50k)

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 artificial 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 - 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 89 >**

ID	Location	LEX Code	Description	Rock description
1	**On site**	**ALV-XCZSP**	**ALLUVIUM**	**CLAY, SILT, SAND AND PEAT**
2	**On site**	**RTDU-XSZC**	**RIVER TERRACE DEPOSITS (UNDIFFERENTIATED)**	**SAND, SILT AND CLAY**
3	4m E	RBDU-XSV	RAISED BEACH DEPOSITS	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	115m NW	HEAD-XCZSV	HEAD	CLAY, SILT, SAND AND GRAVEL
5	390m SW	RBDU-XSV	RAISED BEACH DEPOSITS	SAND AND GRAVEL

This data is sourced from the British Geological Survey.

15.5 Superficial permeability (50k)

Records within 50m	4

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**
On site	**Intergranular**	**High**	**Low**
On site	**Intergranular**	**High**	**Low**
4m E	Intergranular	Very High	High

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.

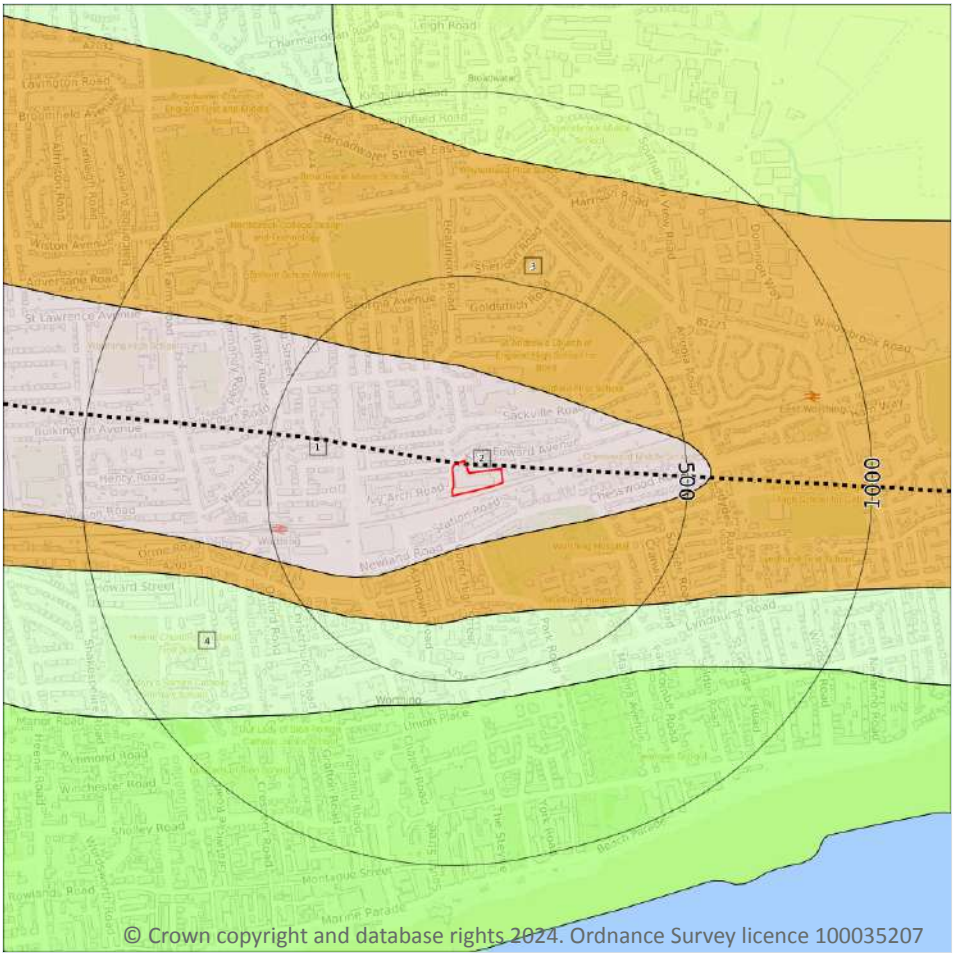
15.7 Landslip permeability (50k)

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



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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 **3**

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 91 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LC-XCZS**	**LONDON CLAY FORMATION - CLAY, SILT AND SAND**	**YPRESIAN**
3	141m S	LMBE-XCZS	LAMBETH GROUP - CLAY, SILT AND SAND	THANETIAN
4	330m S	SECK-CHLK	SEAFORD CHALK FORMATION - CHALK	CONIACIAN

This data is sourced from the British Geological Survey.

15.9 Bedrock permeability (50k)

Records within 50m	2

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	**Mixed**	**Moderate**	**Very Low**
On site	**Mixed**	**Moderate**	**Very Low**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	1

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.

Features are displayed on the Geology 1:50,000 scale - Bedrock map on **page 91 >**

ID	Location	Category	Description
2	**On site**	**FOLD_AXIS**	**Axial plane trace of major syncline**

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	5

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.

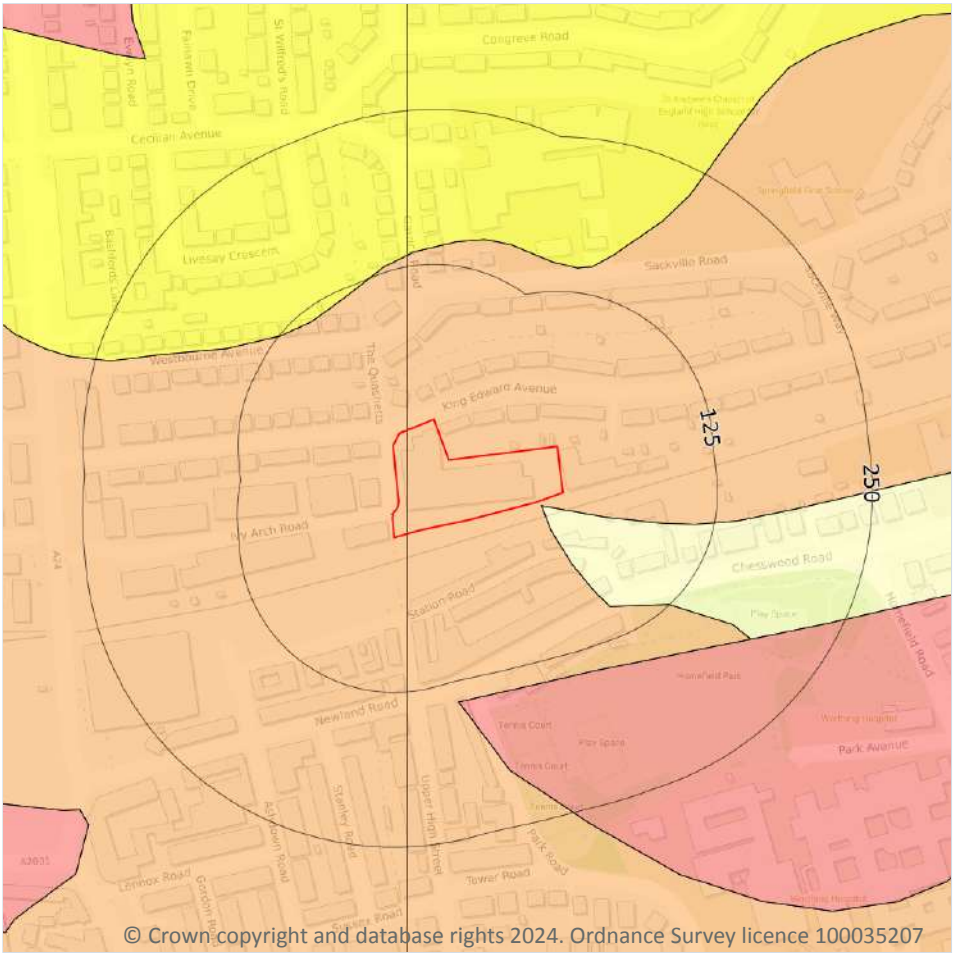
Features are displayed on the Boreholes map on **page 93 >**

ID	Location	Grid reference	Name	Length	Confidential	Web link
1	47m S	515030 103430	BROOKLANDS EAST WORTHING 2610	10.7	N	577987 ↗
2	98m NE	515180 103620	KING EDWARD AVENUE WORTHING	68.58	N	577825 ↗

ID	Location	Grid reference	Name	Length	Confidential	Web link
3	134m S	515110 103360	WORTHING & DISTRICT LAUNDRY NEWLANDS ROAD	56.69	N	577834 ↗
4	170m SE	515250 103390	BROOKLANDS EAST WORTHING 2604	16.7	N	577981 ↗
5	186m SW	514910 103300	WORTHING BOROUGH ENGINEERS 2516	9.14	N	577663 ↗

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	2

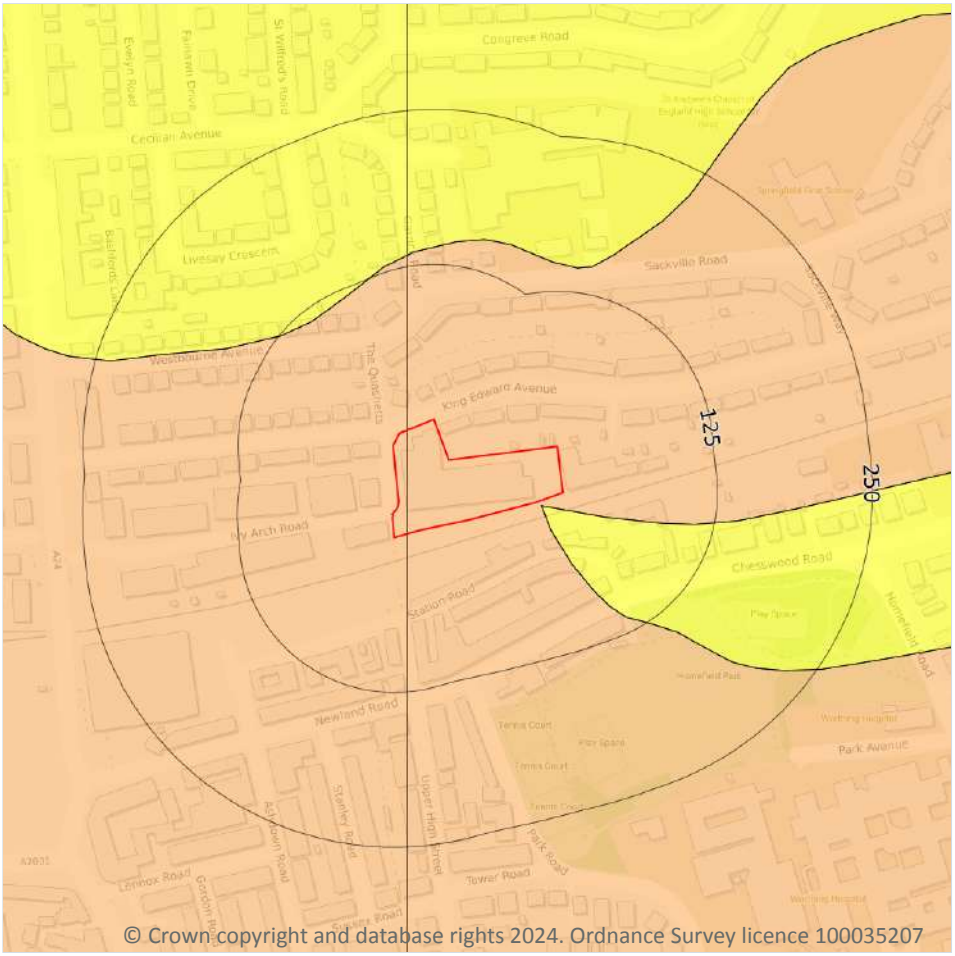
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 95 >**

Location	Hazard rating	Details
On site	**Low**	**Ground conditions predominantly medium plasticity.**
4m E	Negligible	Ground conditions predominantly non-plastic.

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	2

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.

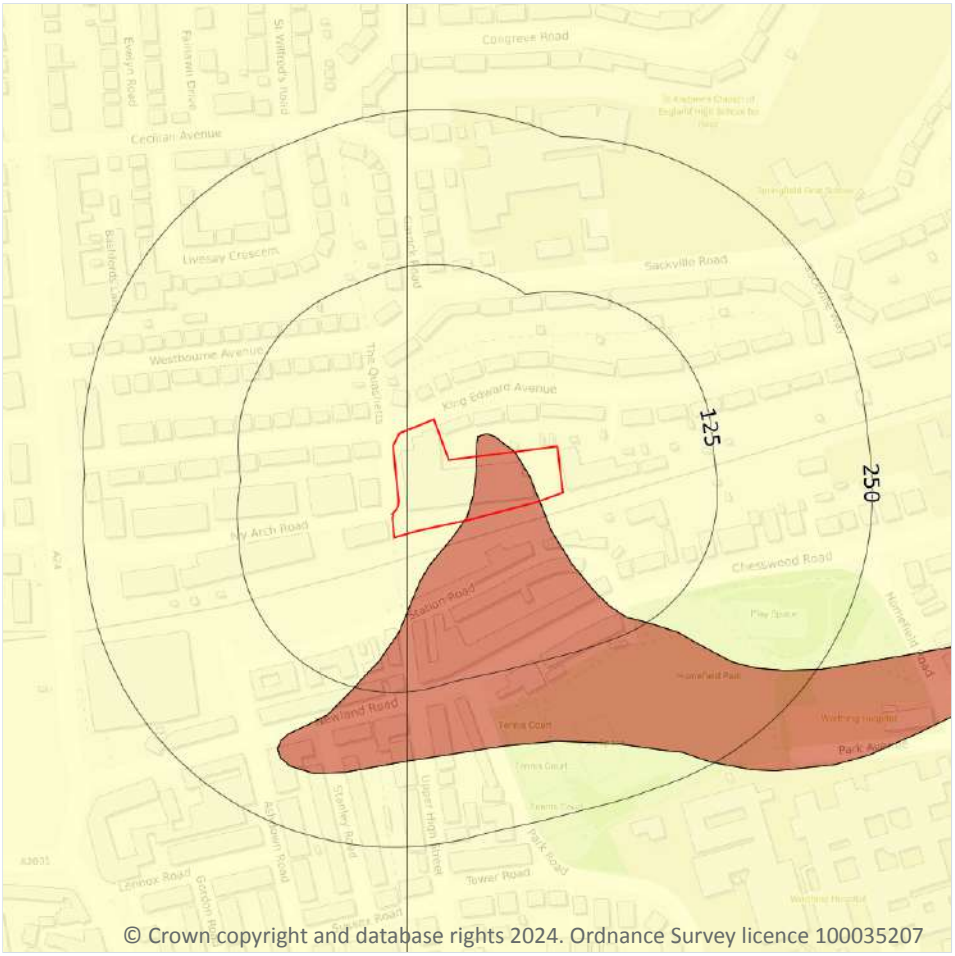
Features are displayed on the Natural ground subsidence - Running sands map on **page 96 >**

Location	Hazard rating	Details
On site	**Low**	**Running sand conditions may be present. Constraints may apply to land uses involving excavation or the addition or removal of water.**

Location	Hazard rating	Details
4m E	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	2

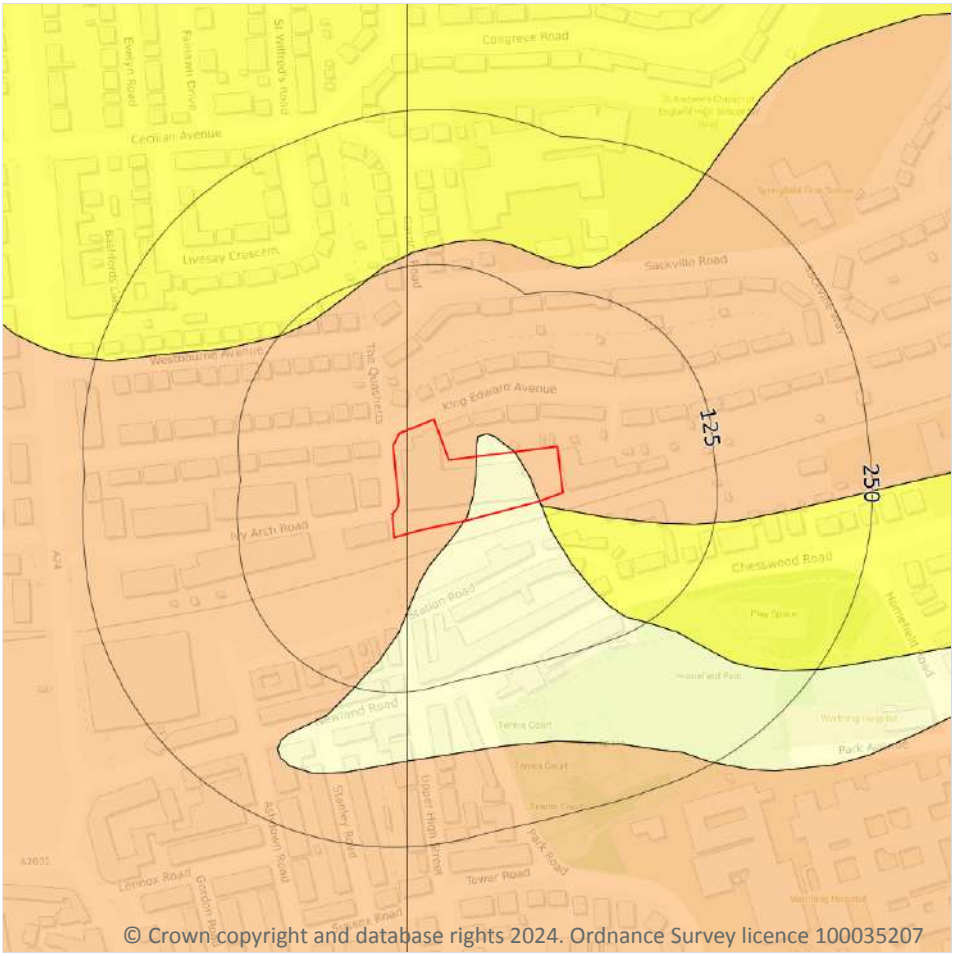
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 98 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**
On site	**High**	**Highly compressible strata present. Significant constraint on land use depending on thickness.**

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	3

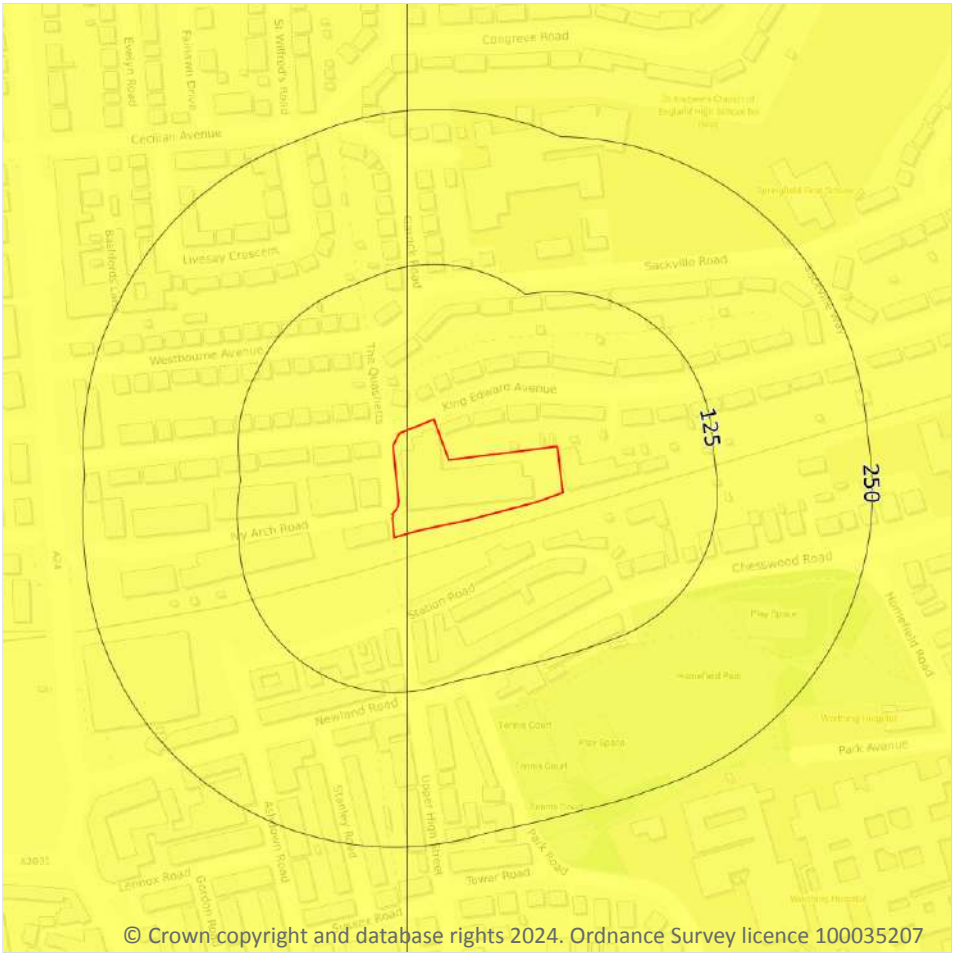
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 99 >**

Location	Hazard rating	Details
On site	**Negligible**	**Deposits with potential to collapse when loaded and saturated are believed not to be present.**
On site	**Low**	**Deposits with potential to collapse when loaded and saturated are possibly present in places.**
4m E	Very low	Deposits with potential to collapse when loaded and saturated are unlikely 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

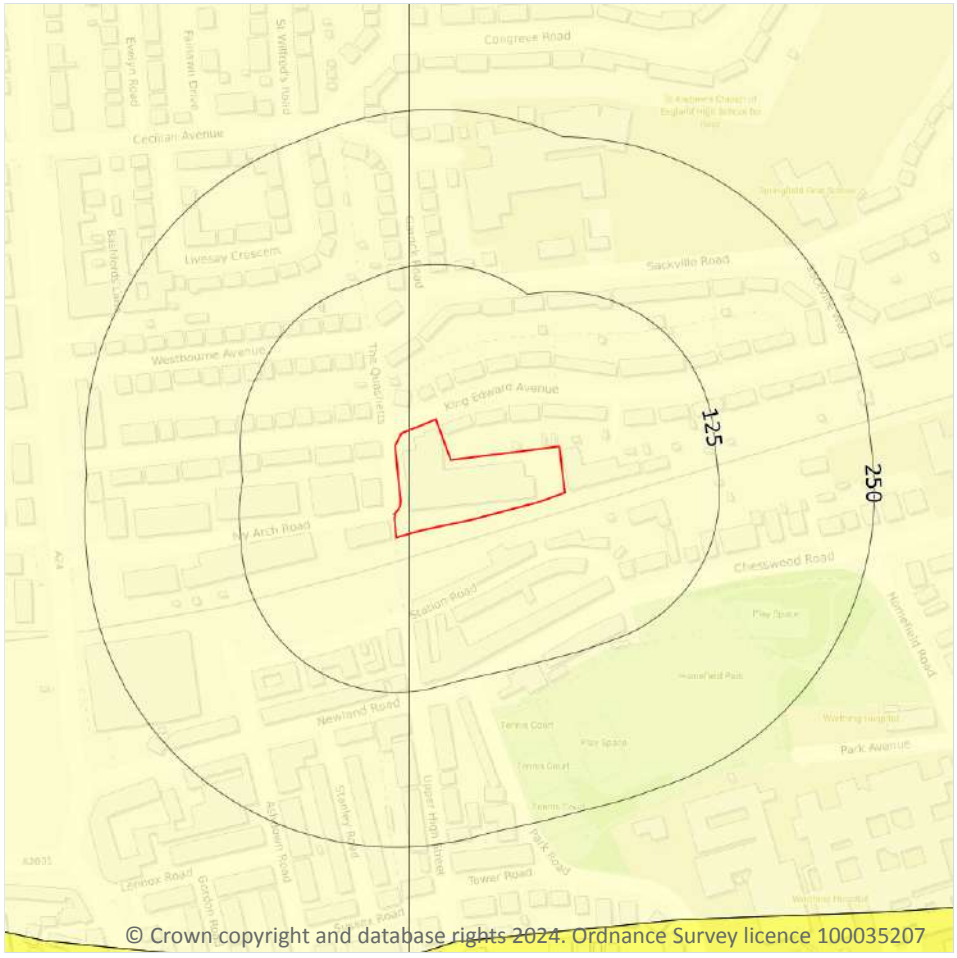
The potential for landsliding (slope instability) to be a hazard assessed using 1:50,000 scale digital maps of superficial and bedrock deposits, combined with information from the BGS National Landslide Database and scientific and engineering reports.

Features are displayed on the Natural ground subsidence - Landslides map on **page 101 >**

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

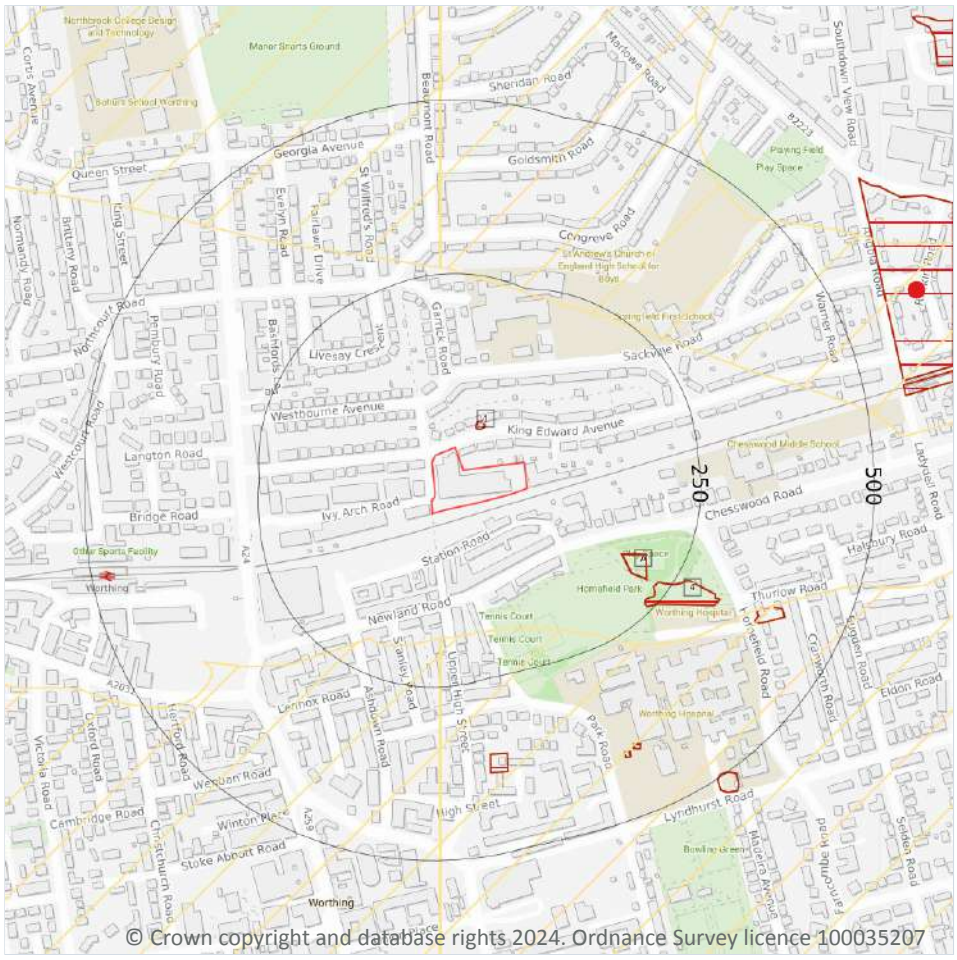
The potential hazard presented by ground dissolution, which occurs when water passing through soluble rocks produces underground cavities and cave systems. These cavities reduce support to the ground above and can cause localised collapse of the overlying rocks and deposits.

Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 102 >**

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



18.1 BritPits

Records within 500m	0

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.

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	4

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 104 >**

ID	Location	Land Use	Year of mapping	Mapping scale
1	41m N	Unspecified Heap	1909	1:10560
A	166m SE	Pond	1962	1:10560
A	166m SE	Pond	1969	1:10560
4	231m SE	Pond	1909	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	0

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

This is 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	0

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.

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 104 >**

ID	Location	Name	Commodity	Class	Likelihood
2	180m 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.
3	181m 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.
5	234m NE	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.

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	1

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.

Location	Mineral type
296m W	Unspecified

This data is sourced from Groundsure.

18.10 Mining record office plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.11 BGS mine plans

Records within 500m	0

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

This data is sourced from Groundsure.

18.12 Coal mining

Records on site	0

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

This data is sourced from the Coal Authority.

18.13 Brine areas

Records on site	0

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

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

18.14 Gypsum areas

Records on site	0

Generalised areas that may be affected by gypsum extraction.

This data is sourced from British Gypsum.

18.15 Tin mining

Records on site	0

Generalised areas that may be affected by historical tin mining.

This data is sourced from Groundsure.

18.16 Clay mining

Records on site	0

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

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

19 Ground cavities and sinkholes

19.1 Natural cavities

Records within 500m	0

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

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	0

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

This data is sourced from Stantec UK Ltd.

19.3 Reported recent incidents

Records within 500m	0

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

This data is sourced from Groundsure.

19.4 Historical incidents

Records within 500m	0

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

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

This data is sourced from Groundsure.

19.5 National karst database

Records within 500m	0

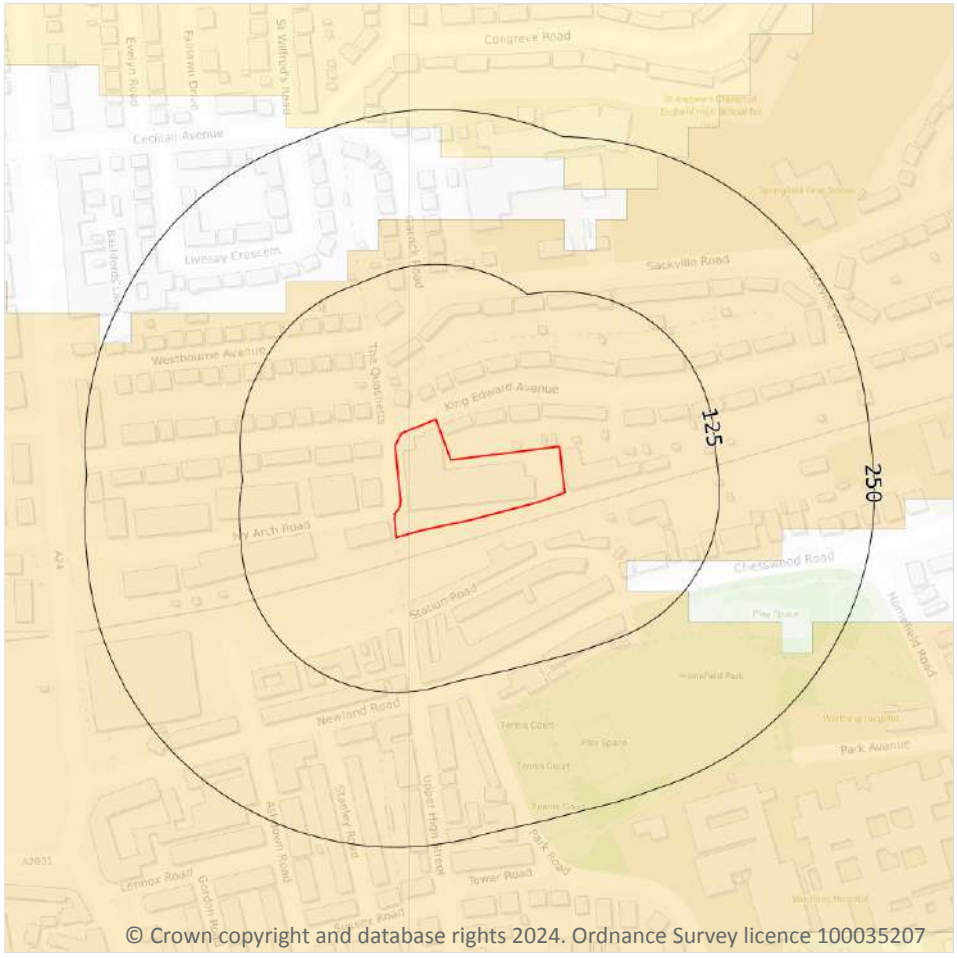
This is a comprehensive database of national karst information gathered from a wide range of sources. BGS have collected data on five main types of karst feature: Sinkholes, stream links, caves, springs, and incidences of associated damage to buildings, roads, bridges and other engineered works.

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

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

This data is sourced from the British Geological Survey.

20 Radon



Site Outline

Search buffers in metres (m)

- Greater than 30%
- Between 10% and 30%
- Between 5% and 10%
- Between 3% and 5%
- Between 1% and 3%
- Less than 1%

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 111 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 3% and 5%**	**Basic**

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	8

The estimated values provide the likely background concentration of the potentially harmful elements Arsenic, Cadmium, Chromium, Lead and Nickel in topsoil. The values are estimated primarily from rural topsoil data collected at a sample density of approximately 1 per 2 km^2. In areas where rural soil samples are not available, estimation is based on stream sediment data collected from small streams at a sampling density of 1 per 2.5 km^2; 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 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
On site	**15 mg/kg**	**No data**	**100 mg/kg**	**60 mg/kg**	**1.8 mg/kg**	**60 - 90 mg/kg**	**15 - 30 mg/kg**
4m E	15 mg/kg	No data	100 mg/kg	60 mg/kg	1.8 mg/kg	60 - 90 mg/kg	15 - 30 mg/kg

This data is sourced from the British Geological Survey.

21.2 BGS Estimated Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

21.3 BGS Measured Urban Soil Chemistry

Records within 50m	0

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

This data is sourced from the British Geological Survey.

22 Railway infrastructure and projects



Site Outline

Search buffers in metres (m)

- Crossrail 1 Stations
- Crossrail 1 Route
- 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	31

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 115 >**

Location	Land Use	Year of mapping	Mapping scale
On site	**Railway Sidings**	**1950**	**10560**
0m E	Railway Sidings	1932	10560
0m E	Railway Sidings	1909	10560
1m SW	Railway Sidings	1969	10560
1m SW	Railway Sidings	1962	10560
9m SE	Railway Sidings	1912	2500
9m SE	Railway Sidings	1932	2500
9m SE	Railway Sidings	1943	2500
9m SE	Railway Sidings	1898	2500
11m SE	Railway Sidings	1896	10560
14m SW	Tunnel	1943	2500
15m SE	Railway Sidings	1952	2500
16m SW	Railway Sidings	1875	10560
17m SW	Railway Sidings	1971	10000
17m SW	Railway Sidings	1978	10000
18m SW	Railway Sidings	1952	1250
18m SW	Railway Sidings	1971	1250

Location	Land Use	Year of mapping	Mapping scale
24m SW	Railway Sidings	1952	2500
38m SW	Railway Sidings	1875	2500
44m SW	Railway Sidings	1952	1250
50m E	Railway Sidings	1966	1250
50m E	Railway Sidings	1952	1250
156m E	Railway Sidings	1898	2500
156m E	Railway Sidings	1912	2500
156m E	Railway Sidings	1932	2500
156m E	Railway Sidings	1943	2500
190m W	Railway	1832	-
190m W	Railway	1873	-
190m W	Railway	1898	-
218m SW	Railway Sidings	1932	10560
218m SW	Railway Sidings	1909	10560

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	8

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

Features are displayed on the Railway infrastructure and projects map on **page 115 >**

Location	Name	Type
8m SE	West Coastway Line	rail
11m SE	West Coastway Line	rail
13m SE	Not given	Multi Track
19m SW	Not given	Multi Track
20m SW	Not given	Multi Track
45m SW	Not given	Multi Track
185m E	Not given	Multi Track
230m W	West Coastway Line	rail

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

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

Appendix D
SUPPORTING DOCUMENTS

British Geological Survey

TQ 10 SE/18
1518.0362

318/106 King Edward Avenue, Worthing (formerly Iris Nursery).
(Filled in)

W.S.Sx. III, p. 218. Surface +16. Lining tubes: 150 x 3 in from surface. Ck +110.
R.W.L. +9. *Dando, 1916.*

Drift	...	...	25	25
RB	...	...	101	126
UCk	...	...	99	225

Depth
Drift 25' Clay, Sand, & Gravel 25 25
RB 101' Clay 101 126
UCk 99' Chalk & flints 99 225
P.P.
D. A. Gray
1963

BGS

British Geological Survey

318/106 **King Edward Avenue, Worthing (formerly Iris Nursery).** TQ 10 SE
(Filled in)

W.S.Sx. III, p. 218. Surface +16. Lining tubes: 150 x 3 in from surface. Ck -110.
R.W.L. +9. *Dando, 1916.*

Drift	...	...	25	25
RB	...	...	101	126
UCk	...	...	99	225

TQ 1518 0362

Drift 25' Clay, Sand, & Gravel 25 25
RB 101' Clay 101 126
UCk 99' Chalk & flints 99 225
P.P.
D.A.Gray
1963

BGS

British Geological Survey

318 TQ10/86 318/106 106

WORTHING

527. IRIS NURSERY, ¾ mile E.N.E. of railway station. 1916. Ht. above O.D. 25 ft. Map 64 S.E. For Frank Cheer

	Thickness Ft.	Depth Ft.
Clay, sand and gravel	25	25
Clay	101	126
Chalk and flints	99	225

R.L.W. 7 ft. down. Bored to 225 ft. Lined 3 in. tubes to 150 ft. Information from Messrs. Duke and Ockenden, Ltd.

Nursery pulled down & well filled in. Site now covered by houses in King Edward Avenue. OD 16

Visited C Buchan 2.5.40.

DATA Bank

Record published in 'Wells & Springs of Sussex' p. 218.

British Geological Survey

TQ 10 SE | 24
1511.0336

318/156 Worthing and District Laundry Ltd., Newlands Road, Worthing
(formerly Worthing Domestic Laundry Ltd.)

Surface +12. Lining tubes: 103 x 4½ in from surface. Ck -96. Water struck at -144. Overflowed. Suction -74. Yield 1,000 g.p.h. (test). Hardness: P. 59, T. 161.
Anal. *Dando, Oct. 1935.*
Suction -13. Yield 900 g.p.h. *1935;* 1,300 g.p.h., 9 h.p.d. *Oct. 1957.*

Drift	...	9	9
WRB	...	99	108
UCk	...	78	186

Aft	Made up ground	3	3
	Gravel	6	9
LCt	Blue clay	36	45
WRB	Mottled clay	26	71
	Blue clay	4	80
	Black clay	22	102
	Pyritized lignite	6	108
UCk	Chalk & flints	78	186

JHE
21.7.56

British Geological Survey

TQ10/7

318/156 **Worthing and District Laundry Ltd., Newlands Road, Worthing**
(formerly Worthing Domestic Laundry Ltd.)

Surface +12. Lining tubes: 103 x 4½ in from surface. Ck -96. Water struck at -144. Overflowed. Suction -74. Yield 1,000 g.p.h. (test). Hardness: P. 59, T. 161.
Anal. *Dando, Oct. 1935.*
Suction -13. Yield 800 g.p.h. *1935;* 1,300 g.p.h., 9 h.p.d. *Oct. 1957.*

Drift	...	...	9	9
WRB	...	...	99	108
UCk	...	...	78	186

TQ 150 033

Quft	Made up ground	3	3
	Gravel	6	9
WRB	Blue clay	36	45
	Mottled clay	26	71
	Blue clay	9	80
	Black clay	22	102
	Pyritized lignite	6	108
UCk	Chalk & Flints	78	186

JHE
21.7.56

BGS

British Geological Survey

RECORD of WELL or BORING

TQ10 / +
Survey No. 1
1" N.S. 323
1" O.S.

315

at (house or farm) The Worthing ~~Domestic~~ and District Laundry Ltd. Newlands Road

Town, Village, &c. Worthing County Sussex LXIV. S.E.

Exact site (unless a tracing from a map is supplied, give distance and direction from parish church, cross-roads, or other object shown on maps). North-west side of Homefield Park. Sheet Square

Surface level of ground 12 ft. above Ordnance Datum. Well or Bore commenced at 0 ft. below surface level of ground.

Sunk - ft., diameter - ft. Bored 186 ft.; diameter of boring: at top 4½ in., at b

Details of lining tubes (internal diameters preferred) 4½ int.dia. Tubes to 103'0"

Water struck at depths of (feet) from 156'0"

Rest-level of water below ~~above~~ top of well or bore 0 ft. Pumping level ft. Time of recovery hours.

Suction at 86 ft. depth. Yield: (i) on test 1000 galls. per hr, (ii) normal 800 galls. per hr.

Quality (attach copy of analysis if available) suct. at 25ft.

Made by Duke & Ockenden Ltd. for ~~Mr.~~ Worthing Domestic Laundry. Date of boring Oct. 1935

Information from Duke & Ockenden, Ltd. Artesian Well Engineers, London and Littlehampton.

(For Survey use only). GEOLOGICAL CLASSIFICATION.	NATURE OF STRATA. (and any additional remarks)	THICKNESS. Feet.	Inches.	DEPTH. Feet.	Inches.
Drift	Made up ground	3	0	3	0
	Gravel	6	0	9	0
Woolwich & Reading Beds	Blue Clay	36	0	45	0
	Mottled Clay	26	0	71	0
	Blue Clay	9	0	80	0
	Black Clay	22	0	102	0
	Pyritized Lignite	6	0	108	0
U. Chalk	Chalk and Flints	78	0	186	0

7 HB 21/7/36

DOG 18/7/63

Analysis	grs. per gall.
Total solids	35.0
Chlorine	2.1
Ammonia and Alb.	Absent
N. as Nitrites	Absent
N. as Nitrates	0.29
Lead	Absent
Other Metals	Absent
Total Hardness 15.4°	Permanent 4.1°
	Temporary 11.3°

Ref. 9509/30. March 18th 1940.
Site plan obtained. O.D. + 12
Yield 800 g.p.h. Suction 25 ft. down.
RE

Published in Bestemann, Water-divining, 1938 p.29. CPC 26/5/43.
Visited. Yield 800 gph. 9 h.pd. Monday - Friday.
Enclosed borehole.
15.10.57 ASR.

Chalk 4

GEOLOGICAL SURVEY AND MUSEUM, SOUTH KENSINGTON, LONDON, S.W.7.

For Survey use only.

Date received.	G.S.M.	M. of H. notified.	Site marked on 1" map.

(66237B) Wt 28270/58 2,500 2/55 H. J. R & L, Ld Gp 616

b a3