

Hydrock

Dee Park Open Space

Drainage Strategy Report

For Reading Borough Council

Date: 20 November 2024

Doc ref: *36064-HYD-XX-XX-RP-C-7000*

Document Control Sheet

Issued by	Hydrock Consultants Limited Merchants House North Wapping Road Bristol BS1 4RW United Kingdom	T +44 (0)117 9459225 E bristolcentral@hydrock.com www.hydrock.com
Client	Reading Borough Council	
Project name	Dee Park Open Space	
Title	Drainage Strategy Report	
Doc ref	36064-HYD-XX-XX-RP-C-7000	
Project no.	36064	
Status	Suitable For Planning	
Date	20/11/2024	

Document Production Record		
Issue Number	P02	Name
Prepared by		H.Miller
Checked by		J.Magee
Approved by		J.Magee

Document Revision Record			
Issue Number	Status	Date	Revision Details
P01	Planning	19/11/24	Preliminary Issue
P02	Planning	20/11/24	Updated landscape plan

Hydrock Consultants Limited has prepared this report in accordance with the instructions of the above-named client for their sole and specific use. Any third parties who may use the information contained herein do so at their own risk.

Contents

1. Introduction 3

1.1 Scope of The Report 3

1.2 Limitations of The Report 3

1.3 References / Design Codes 3

2. Site Information 4

2.1 Site Location 4

2.2 Site Topography 4

2.3 Geology 5

2.4 Hydrology & Hydrogeology 5

2.5 Fluvial Flood Risk 5

2.6 Proposed Development 6

3. Pre-Development Surface Water Management Strategy 7

3.1 Existing Surface Water Drainage Network 7

3.2 Pre-Development Surface Water Catchment Areas 7

3.3 Pre-Development Surface Water Run-Off Rates 8

3.4 Summary of Pre-Development Flows 8

3.5 Pre-Development Flood Exceedance 8

4. Surface Water Management and SuDS Assessment 9

4.1 Run-off Destinations 9

4.2 SuDS Assessment 9

5. Post-Development Surface Water Management Strategy 14

5.1 Proposed Surface Water Drainage Strategy 14

5.2 Post-Development Surface Water Catchment Areas 15

5.3 Post-Development Surface Water Run-Off Rates 15

5.4 Post-Development Flood Exceedance 16

5.5 Summary of Post-Development Flows 16

5.6 Water Quality 17

5.7 Design Standards for Surface Water Drainage 18

6. Ownership and Maintenance 19

7. Consent / Planning 22

8. Conclusions 23

Tables

Table 2.1: Site Referencing Information 4
Table 2.2: Flood Zones Probability of Flooding 6
Table 3.1: Pre-Development Catchment Areas 7
Table 4.1: Review of the Drainage Hierarchy 9
Table 4.2: Suitability of SuDS Components 10
Table 4.3: Interception Storage Systems 13
Table 5.1: Pre vs Post-Development Catchment Areas 15
Table 5.2: Attenuation Requirements 16
Table 6.1: Proposed Schedule of Maintenance for Below Ground Drainage 19
Table 6.2: Proposed Operational Schedule for Below Ground Drainage 21

Figures

Figure 1: Site Location with Approximate Red Line Boundary 4
Figure 2: EA Flood Map for Fluvial Flooding 6

Appendices

Appendix A *Topographical Survey*

Appendix B *Proposed Site Layout*

Appendix C *Sewer Asset Map*

Appendix D *Pre/Post Development Catchments*

Appendix E *Calculations*

Appendix F *Overland Flow Routes*

Appendix G *Drainage Strategy*

Appendix H *Existing Drainage / Utilities*

Appendix I *Phase 1 Desk Study*

1. Introduction

1.1 Scope of The Report

Hydrock have been appointed to provide a Drainage Strategy report for the approval of Reading Borough Council Lead Local Flood Authority.

The proposed drainage strategy will be in accordance with national guidelines and will incorporate a 'best practise' approach in reducing the impact of the flooding caused by the new development.

The report is based upon sewer asset information provided by the sewerage undertakers Thames Water in relation to assets within the vicinity of the development site.

The report highlights the key stakeholders in terms of ownership and maintenance to ensure the drainage system is kept well maintained and reduce the risk of failure. Should the network fail at any point, clearly defined ownership liabilities will ensure that problems can quickly be rectified, thereby reducing the impact of potential damage caused by flooding.

1.2 Limitations of The Report

This report has been prepared in connection with the scope as described above and considers the instructions and requirements of the client's needs. It is not intended for and should not be relied upon by any third party.

The information received is summarised within this report. In the event that the information is relied upon and is subsequently found to be incorrect, Hydrock Consultants accepts no responsibility for any direct and/or consequential loss that may occur as a result.

This report cannot be reproduced without Hydrock Consultants written consent.

1.3 References / Design Codes

- BS EN 752 - Drain and Sewer Systems Outside Buildings.
- Building Regulations Approved Document Part H - Drainage and waste disposals.
- Sewers for Adoption (where applicable).
- Local Authority Guidance.
- CIRIA C753 - SuDS Manual.
- National Planning Policy Framework (NPPF).
- DEFRA Non-Statutory Technical Standards for Sustainable Drainage.

2. Site Information

2.1 Site Location

The site is situated on land adjacent to Glenmore Place, Reading, RG30 4EP, occupying a roughly rectangular plot of approximately 1,800m^2. The central National Grid Reference for the site is 468479, 173632.

Table 2.1: Site Referencing Information

Site Address	
Postcode	RG30 4EP
National Grid Reference	468479, 173632.

Figure 1: Site Location with Approximate Red Line Boundary



2.2 Site Topography

The site is generally level, with ground elevations ranging between approximately 50.7m and 53.0m Above Ordnance Datum (AOD. The existing surface comprises a mix of asphalt hardstanding, woodchip areas for play equipment, and soft landscaping, including grassed areas and mature vegetation along the site boundaries.

Key features of the site include a fenced-off sports court in the centre, a children's play area with woodchip surfacing in the southern section, and a temporary building located in the northern portion.

See **Appendix A** for Topographical Survey

2.3 Geology

The following information is a summary from Phase 1 Desk Study Report for the site:

The site is underlain by two distinct geological formations. The northern area is underlain by the Lambeth Group, comprising clays, silts, and sands, which is noted in the report to have poor to moderate permeability, while the southern portion features Chalk Formations (Lewes Nodular, Seaford, and Newhaven Chalk) are noted to have high permeability characteristics. Made Ground is anticipated across the site due to the site's historical development, and a fault line separates the Lambeth Group from the chalk.

See **Appendix I** for Phase 1 Desk Study Report.

2.4 Hydrology & Hydrogeology

The following information is a summary from Phase 1 Desk Study Report for the site:

The chalk in the southern portion of the site is highly permeable, allowing for effective infiltration. Groundwater flow is expected to move northwards, in line with the local topography, towards the River Thames, approximately 940m from the site.

See **Appendix I** for Phase 1 Desk Study Report.

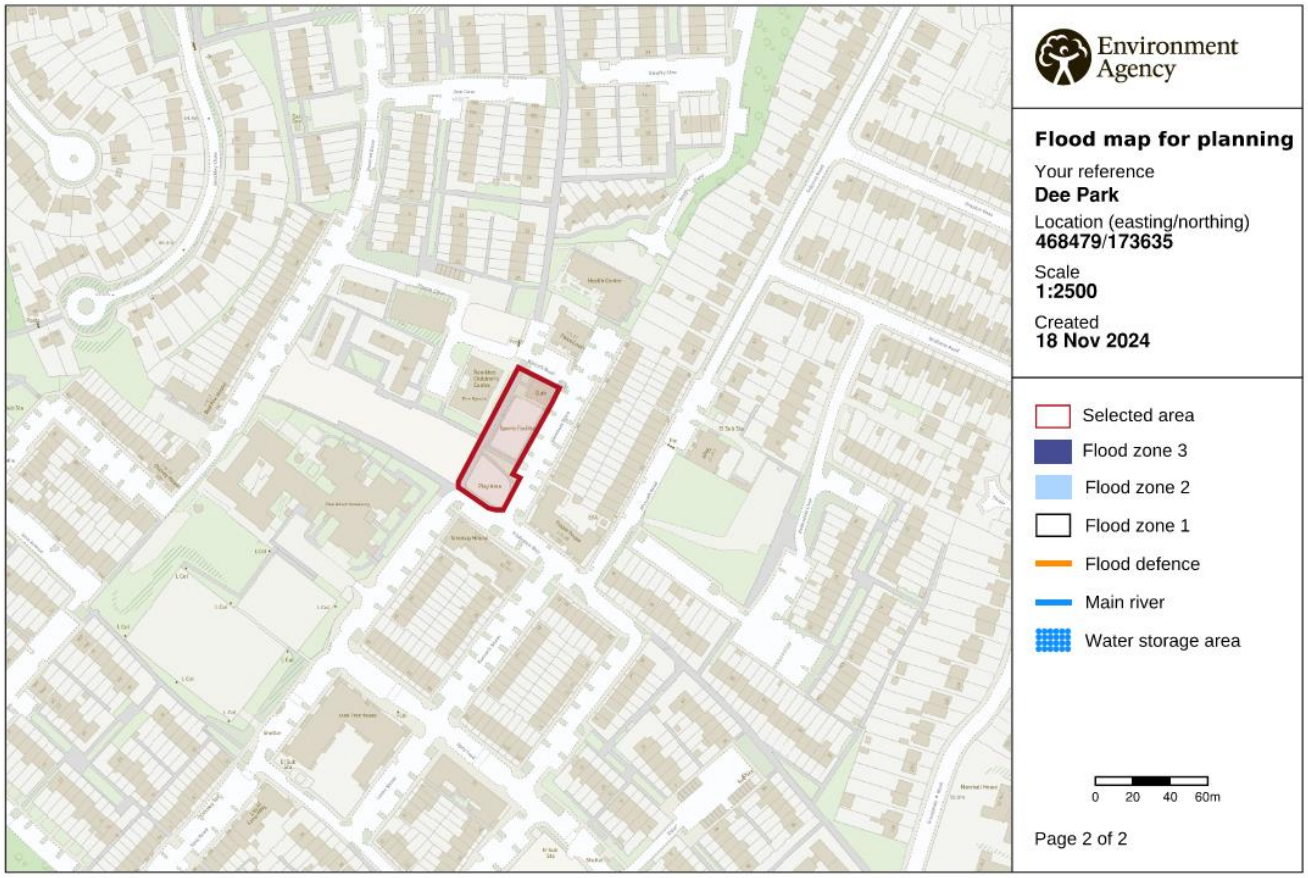
2.5 Fluvial Flood Risk

Fluvial flood risk is the risk of flooding from the overbank flow of rivers and watercourses.

Within England, the risk of fluvial flooding is defined by Flood Zones (FZs) which indicate the potential extent of flooding for a given Annual Exceedance Probability (i.e., the potential for of an occurrence within any one year (AEP)) without considering the benefits from flood defences, other manmade structures, or channel improvement works.

The EA Flood Map for Planning indicates that the site is located within Flood Zone 1 and is therefore considered to have a low probability of fluvial flooding (see figure 2).

Figure 2: EA Flood Map for Fluvial Flooding



© Environment Agency copyright and / or database rights 2024. All rights reserved. © Crown Copyright and database right 2024. Ordnance Survey licence number AC0000807064.

Table 2.2: Flood Zones Probability of Flooding

NPPF - Flood Zones		
Flood Zone 1	Low Probability	Less than 1 in 1000 (< 0.1%) chance of flooding occurring each year
Flood Zone 2	Medium Probability	Between 1 in 100 and 1 in 1000 (1% - 0.1%) chance of flooding occurring each year
Flood Zone 3a	High Probability	Greater than 1 in 100 (> 1%) chance of flooding occurring each year
Flood Zone 3b	Functional Floodplain	Land where water *has* to be stored in times of flood

2.6 Proposed Development

The proposed project involves the redevelopment of the site into a modernised playground. The plans include upgraded play equipment, resurfaced areas, and improved landscaping to create a safe and accessible recreational space. The site will retain some existing features, such as pathways and soft landscaping, while incorporating new drainage systems to manage surface water effectively.

See **Appendix B** for Architect's Proposed Site Layout.

3. Pre-Development Surface Water Management Strategy

3.1 Existing Surface Water Drainage Network

3.1.1 Existing Public Drainage

Review of Thames Water's sewer asset maps confirm that there are surface water sewers running along the southern and western edge of the site.

See **Appendix C** for the Sewer Asset Map.

3.1.2 Existing Private Drainage

Utilities and CCTV surveys of the site were undertaken in August 2022.

The survey confirmed that the private drainage infrastructure is concentrated near the temporary building and surrounding hardstanding area. The system includes a combined foul and surface water network from the building, discharging off site via a combined sewer. No formal drainage infrastructure was identified within the existing playground or MUGA area, which appear to rely on surface runoff or natural infiltration through the current surfacing.

See **Appendix H** for Existing Drainage Layout.

3.2 Pre-Development Surface Water Catchment Areas

Below is an indication of the pre-development catchment type area.

Table 3.1: Pre-Development Catchment Areas

Catchment	Area (m^2)
Impermeable	
Building / Roof	118
Roads / Hardstanding	885
Permeable	
Permeable surfacing (bark)	402
Soft Landscaping	434
Total Area	1839

See **Appendix D** for Pre-Development Catchment Plans.

3.3 Pre-Development Surface Water Run-Off Rates

In order to determine the post-development surface water flows, an assessment has been carried out on the pre-development to ensure that the run-off from the new development will not adversely affect flood risk either within the site boundary, offsite adjacent properties, or the downstream network.

Due to the southern area of the sites underlying chalk geology, as identified in the borehole logs and Phase 1 Desk Study (it is suggested that this area of the site has high infiltration characteristics. Chalk typically exhibits infiltration rates in the range of $1x10^{-5}$ m/s to $1x10^{-3}$ m/s, depending on the presence of fractures or fissures. For this assessment, an infiltration rate of $1x10^{-5}$ m/s has been assumed across the site, as it reflects conservative estimates for chalk's lower permeability range.

To verify these assumptions, in-situ infiltration testing will be required prior to construction in accordance with BRE 365 – Soakaway Design.

3.4 Summary of Pre-Development Flows

The pre-development surface water flows for the site have been assessed based on the site's geology, which is dominated by chalk bedrock. The assumed infiltration rate of $1x10^{-5}$ m/s, derived from published infiltration values for chalk, and provides a preliminary basis for the drainage design.

While this rate is suitable for initial assessments, site-specific conditions, such as variations in chalk homogeneity and the presence of fractures, must be confirmed through in-situ testing. This testing must adhere to BRE 365 – Soakaway Design standards and ensure that the actual infiltration capacity meets the development's drainage requirements

3.5 Pre-Development Flood Exceedance

Topographical survey information indicates that, should the existing drainage network fail or otherwise have its capacity exceeded, overland flows would follow the site topography and be directed towards the site's western boundary.

4. Surface Water Management and SuDS Assessment

4.1 Run-off Destinations

An appraisal should be undertaken to confirm the most suitable and sustainable method for managing surface water runoff from the development in accordance with the following hierarchy as highlighted in Part H of Building Regulations and the National Planning Policy Framework (NPPF):

1. Infiltration to the ground using a sustainable drainage system.
2. If this is not feasible, discharge to a watercourse or river; generally, at a controlled rate unless it does not affect flood risk e.g., if to the sea or an estuary.
3. Discharge at a controlled rate to a surface water sewer or drain.
4. Discharge at a controlled rate to a combined sewer system, with the approval from the Water Authority.
5. Only if the above have all been investigated and it has been proved that none of these options are suitable will discharge at a controlled rate to a foul sewer system, with the approval from the Water Authority.

The discharge of surface water run-off has been considered in accordance with the hierarchical approach:

Table 4.1: Review of the Drainage Hierarchy

Method	Reasoning	Suitability
Interception / Reuse	Considered unsuitable due to safety and maintenance requirements	X
Infiltration	As the site has potentially viable infiltration characteristics, it is of a safe assumption that the site would offer soakaway drainage.	✓
Surface Water Body	As infiltration to ground is viable this method has not been explored.	X
Surface Water Sewer	As infiltration to ground is viable this method has not been explored.	X
Combined Sewer	As infiltration to ground is viable this method has not been explored.	X
Foul Water Sewer	As infiltration to ground is viable this method has not been explored.	X

4.2 SuDS Assessment

4.2.1 Overview of SuDS

The design of the surface water drainage system should seek to implement and maximise the use of Sustainable Drainage Systems (SuDS) where possible.

The primary purpose of a SuDS system is to manage surface water run-off within a development via mimicking natural methods, attenuating additional water volume generated by the introduction of impermeable areas whilst providing a degree of water treatment to run-off alongside amenity and biodiversity benefits to the local community.

The suitability and benefits of the various potential SuDS systems for the proposed development should be considered, which will aim to maximise the 4 pillars of SuDS:

- Water Quantity (Controlling runoff);
- Water Quality (Managing quality of runoff);
- Amenity (Create and sustain better places for people);
- Biodiversity (Create and sustain better places for nature).

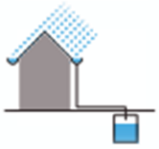
The implementation of SuDS can be divided into the management of sources and of the wider site and even region, with preference given to source control.

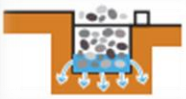
4.2.2 Suitability of SuDS Elements

The drainage design should adopt the principles of SuDS where appropriate taking into consideration the site context and location. The principals of SuDS are that they should be designed to maximise the opportunities and benefits that can be secured surface water run-off management in terms of quality, quantity, flood risk, and amenity. The implementation and selection of SuDS techniques is largely dependent on the site layout and context. Some SuDS techniques may be more appropriate than others.

The suitability of SuDS components has been assessed as follows:

Table 4.2: Suitability of SuDS Components

Hierarchy	System	Description	Suitability
Source Control	Green Roofs 	A planted soil layer on the roof of a building: stores water in the soil layer to be absorbed by vegetation. Reduces runoff and treats pollutants.	No. Considered unsuitable due to maintenance requirements
	Rainwater Harvesting 	Rainwater is collected from the roof of a building or from other paved surfaces and stored in an over ground or underground tank for treatment and reuse locally.	No. Considered unsuitable due to maintenance requirements
	Permeable Surfaces 	Surfaces that allow water to penetrate into underlying layers to be stored, collected or made to infiltrate to groundwater.	Yes Permeable surfacing will be used across the site
	Bioretention Area 	A vegetated area with gravel and sand layers below designated to channel, filter and cleanse water vertically, to then be stored, collected or made to infiltrate to groundwater.	No. Not deemed suitable for this site due to space constraints and potential conflicts with

			its primary recreational use.
Hierarchy	**System**	**Description**	**Suitability**
Site and Regional Control	Filter Strip 	Grassed or planted areas that runoff is allowed to run across to promote infiltration and cleansing.	No. Not deemed suitable for this site due to space constraints and potential conflicts with its primary recreational use.
	Soakaway 	A soakaway is designed to allow water to quickly soak into permeable layers of soil. Constructed like a dry well, an underground pit is dug filled with gravel or rubble. Water can be piped to a soakaway where it will be stored and allowed to gradually seep into the ground.	Yes. As the site has potential viable infiltration characteristics, soakaways have been utilised
	Swale 	Shallow depressions to convey and filter water. May be 'wet' with above ground attenuation or 'dry' with a gravel layer. Can be made to infiltrate to groundwater.	No. Not deemed suitable for this site due to space constraints in the playground and potential conflicts with its primary recreational use.
	Hardscape Storage 	Hardscape water features can be used to store run-off above ground within a constructed container. Storage features can be integrated into public realm areas with a more urban character.	No. Not deemed suitable
	Pond / Basin 	Store and treat water. Ponds have a level of standing water whereas basins are generally dry. Can be made to infiltrate to groundwater.	No. Not deemed suitable for this site due

		to space constraints
Wetland 	Wetlands are shallow vegetated water bodies with a varying water level. Specially selected plant species are used to filter water. Water flows horizontally and is gradually treated before being discharged. Wetlands can be integrated with a natural or hardscape environment.	No. Not deemed suitable for this site due to space constraints in the playground and potential conflicts with its primary recreational use.
Underground Storage 	Water can be stored in tanks, gravel or plastic crates beneath the ground to provide attenuation.	No. Not required due to use of attenuating sub-base and soakaway.

4.2.3 Interception Storage

Interception can be defined as the capture and retention on site of the first 5mm of the majority of all rainfall events. Interception mechanisms have been assessed to show the site is compliant for zero run-off from the first 5mm for 80% of events during the summer and 50% in winter. (Ciria)

Table 4.3: Interception Storage Systems

System	Reasoning	
Green Roofs	All surfaces that have green / blue roofs	X
Rainwater Harvesting	All surfaces drained to RWH systems designed whether for surface water management or just water supply, provided the RWH system design is based on regular daily demand for non-potable water	X
Soakaways / Infiltration	Areas of the site drained to systems that are designed to infiltrate run-off for events greater than a 1 month return period.	✓
Permeable Pavements	All permeable pavements, whether lined or not, can be assumed to comply, provided there is no extra area drained to the permeable pavement.	✓
Filter Strips / Swales	Roads drained by filters strips / swales, where the longitudinal gradient of the vegetated area is less than 1:100, are suitable for interception delivery for impermeable areas up to 5 times the base of the vegetated surface area receiving the runoff.	X
Infiltration Trenches	Roads drained by infiltration trenches can be considered to provide interception	X
Detention Basins	Areas of the site drainage to detention basin with a flat base can be assumed to comply. The area of the basin that is assumed to contribute to interception of run-off should be below the outlet of the basin.	X
Bioretention / Rain Gardens	Areas of the site drainage to unlined bioretention components can be assume to comply where the impermeable area is less than 5 times the vegetated surface area receiving run-off/ They can be designed to deliver interception for larger areas, where suitable infiltration capacity is available.	X
Ponds	Areas drained by ponds (with a permanent water pool that is effectively maintained by the outlet structure) are not assumed to deliver interception	X

5. Post-Development Surface Water Management Strategy

5.1 Proposed Surface Water Drainage Strategy

The proposed surface water drainage system has been designed to manage rainfall across all hard landscaped areas of the site, collecting and then directing water to a strategically located soakaway in the southern area of the site. The design incorporates a combination of permeable surfacing across the playground and path areas to reduce surface water runoff and filter out pollutants before it is discharged to ground.

Northern Areas: Tanked System (System C)

In the northern areas of the site, it has been determined that infiltration is less viable due to the presence of clay-rich soils (Lambeth Group), which have significantly lower permeability than chalk. To address this, a tanked attenuating sub-base (System C) has been implemented. This system provides temporary storage for surface water runoff within open-graded crushed rock (OGCR) layers while preventing infiltration into the impermeable or low-permeability ground beneath. The tanked system ensures water is collected, stored, and conveyed via strategically positioned permeable pipes towards the southern infiltration systems.

Thames Water Easement: Restrictions and Alternative Solutions

Within the Thames Water sewer easement, located along the western boundary of the site, tanked permeable paving sub-base systems are not permitted. This restriction exists to avoid any risk of damage to the public sewer infrastructure or potential conflicts with maintenance access requirements. Instead, these areas are managed through the use of surface drainage channels and permeable surfacing, which convey water towards adjacent areas outside the easement.

Southern Areas: Stone Soakaway (SS-01)

Surface water from both the northern and southern areas of the site is ultimately directed to a stone soakaway (SS-01) located in the southern portion of the site. This soakaway is strategically positioned within the highly permeable chalk geology, with an assumed infiltration rate of $1x10^{-5}$ m/s, as referenced in published data. This rate will be validated through in-situ testing in accordance with BRE 365 – Soakaway Design. The base of the soakaway has been designed to sit on the chalk geology using depths taken from the closest borehole log to the site

The soakaway, with a capacity of $22m^3$, is designed to accommodate a 1 in 100-year storm event plus 40% climate change, ensuring sustainable infiltration into the chalk while preventing surface water runoff or flooding.

Where applicable, the surface water management strategy has incorporated the recommendations of the 'Non-Technical Standards for Sustainable Drainage' and general 'good practice' in terms of providing a Sustainable Drainage System (SuDS) that does not adversely impact flood risk either within the site or beyond the development boundary.

See **Appendix G** for Drainage Strategy.

See **Appendix E** for Calculations

5.2 Post-Development Surface Water Catchment Areas

Below is an indication of the post-development catchment type area.

Table 5.1: Pre vs Post-Development Catchment Areas

Catchment	Area (m^2)
Impermeable	
Building / Roof	0
Roads / Hardstanding	371
Permeable	
Soft Landscaping	745
Permeable surfacing (wetpour/ Permeable paving)	723
Total Area	1839

5.3 Post-Development Surface Water Run-Off Rates

In order to determine the post-development surface water flows an assessment has been carried out to ensure that the flows from the new development will not adversely affect flood risk either within the site boundary, offsite adjacent properties, or the downstream network:

The drainage strategy has been designed based on an assumed infiltration rate of $1x10^{-5}$ m/s, which is within the typical range for chalk geology, as identified in the Phase 1 Desk Study and supported by borehole logs. This assumed rate reflects a conservative estimate to account for variations in chalk permeability. The rate will be confirmed through in-situ infiltration testing prior to construction in accordance with BRE 365 – Soakaway Design.

5.3.1 Allowance for Climate Change and Urban Creep

In accordance with EA guidance, an allowance for climate change has been incorporated into the design to ensure that the proposed surface water network has a suitable degree of resilience. These allowances vary with the expected lifetime of the development.

Urban Creep Factor (UCF) is defined as any increase in the impervious area that is drained to an existing drainage system without planning permission being required, such as the construction of patios, small extensions, etc.

As the footprint of the site will remain majority impervious, this factor is not applied.

5.3.2 Post-Development Surface Water Storage

In line with the Non-Statutory Technical Standard for Sustainable Drainage S7 & S8 (Flood Risk), all storm events up to and including the 1 in 30 AEP storm event will be retained within the proposed surface water drainage network and exceedance volumes from all other storm events up to and including the 1 in 100 AEP plus 40% allowance for climate change will be retained within the site and managed to minimise the risk to people and property.

Attenuation flood storage will be distributed across the development with the use of attenuating sub-base systems and a stone soakaway, all attenuating at source. In the event that one part of the system fails through blockage the remainder of the system will still be able to function effectively.

Expected attenuation requirements are shown below:

Table 5.2: Attenuation Requirements

Type of Storage Structure	Dimensions	Void Ratio	Total Attenuation Volume
Attenuating Sub-Base (System C) -AS-01	95m² x 0.2m deep	30%	**6m³**
Attenuating Sub-Base (System C) -AS-02	189m² x 0.2m deep	30%	**11m³**
Attenuating Sub-Base (System C) -AS-03	69m² x 0.2m deep	30%	**5m³**
Infiltrating Sub-Base (System A) -IS-01	370m² x 0.2m deep	30%	**19m³**
Stone Soakaway - SS-01	11m x 4m x 1.79m	30%	**22m³**

5.4 Post-Development Flood Exceedance

In line with the Non-Statutory Technical Standard for Sustainable Drainage S9 (Flood Risk), in the event that there is a failure of the surface water drainage network beyond the design storm or through other circumstances, exceedance flows will be directed away from buildings and critical infrastructure.

See **Appendix F** for Overland Flow Routes

5.5 Summary of Post-Development Flows

It has been determined that the post-development surface water flow rates are in accordance with national guidelines and non-statutory technical standards to not adversely impact downstream flooding of the site as a result of the new development.

See **Appendix G** for the Drainage Strategy Layout.

5.6 Water Quality

Consideration must be given both during construction and post-development to ensure that water quality is not negatively impacted.

Playgrounds typically represent a low-pollution hazard environment, as defined in CIRIA C753 – The SuDS Manual, due to the absence of hydrocarbons and limited risks of heavy metals or high sediment loads.

The proposed drainage design incorporates different permeable surfacing types across the site. These SuDS components provide an effective first stage of treatment by allowing water to infiltrate and naturally filter through the surfacing and sub-base, removing suspended solids and pollutants.

The pollution mitigation provided by these SuDS elements exceeds the required levels for low-pollution land uses, ensuring compliance with water quality criteria outlined in CIRIA C753. The system is designed to provide sustainable and effective water treatment appropriate for the low-risk nature of the site.

5.6.1 Quality of Surface Water Run-off: Post-Development

In line with the SuDS suitability, the design should seek to provide an appropriate level of water treatment to effectively mitigate the pollution risk associated with the site and not affect the quality of water downstream.

To achieve this, gullies and drainage channels will be fitted with silt traps and catch pits to prevent sediments and pollutants, such as silts and salts, from infiltrating to ground. The permeable surfacing across the site, will also act as a pre-treatment mechanism, allowing for initial filtration of surface water before it enters the drainage system.

In addition, the attenuating sub-base systems will help further filter and slow water flow, reducing the risk of pollutants being transported into the underlying chalk or downstream areas. These measures collectively ensure the water quality is maintained while supporting the functionality and sustainability of the drainage system.

5.6.2 Quality of Surface Water Run-off: During Construction

It is anticipated that the during construction adequate provisions will be put in place to ensure the existing drainage is protected to prevent material which could have a negative impact on water quality entering the system.

Some pollution mitigation techniques that are to be considered include:

- Monitoring and managing disposal of site waste. Make sure all waste is correctly dealt with to stop it from spreading.
- Keeping materials such as sand and cement secure. Materials should be located where there isn't risk of them being washed into the drainage system.
- Covering up all drains to prevent waste from ending up in the system.
- Keep the road and paths to the site clean at all times. This will prevent silt and other pollutants from running off into any bodies of water.
- Properly collect and treat any wastewater that is produced.
- Temporary installation of screens within manholes to capture any debris.

5.7 Design Standards for Surface Water Drainage

The surface water drainage strategy for the new development should aim to deliver a safe, functional, cost effective and, as far as possible, sustainable drainage system (SuDS) which considers the following design principles to ensure:

- That natural drainage features are protected;
- That public health and safety risks are taken into account and managed;
- The constructability of the surface water system;
- The maintainability of the surface water system;
- The long-term economic viability of the system;
- That sustainability issues are taken into account;
- That the information requirements of stakeholders are adequately addressed;
- That the potential value of the surface water system, in enhancing the rural and urban environment is recognized and optimized.

The surface water below ground gravity drainage system is to provide connections from all new rainwater pipes, channels, gullies and road gullies at ground floor level. The locations of the drainage components are to be fully coordinated with all relevant architectural, landscaping and services drawings. All materials and products relating to the below ground drainage system shall be specified in accordance with their intended use and meet all relevant British Standards and BBA accreditations.

In accordance with best practice storm drainage will be designed to the following performance criteria:

1 in 2-year storm return period:	Pipes running under full conditions with no surcharge.
1 in 30-year storm return period:	No flooding.
1 in 100-year storm:	Extreme flooding to be retained on site.

6. Ownership and Maintenance

The key elements of the surface water drainage system will require periodic maintenance to prevent failure of the system and/or a reduction in capacity of the networks as a whole and the following matrix therefore sets out the various drainage items to be maintained, identifies who is responsible and the frequency of maintenance.

The proposed SuDS features will require maintenance including litter and debris removal, sediment removal, vegetation maintenance and remediation to any damaged structures.

The maintenance requirements will be the responsibility of a private maintenance company. All inspection and maintenance works should take into consideration the implications of 'lone working'. An assessment should be carried out and the risks mitigated accordingly.

Table 6.1: Proposed Schedule of Maintenance for Below Ground Drainage

Permeable Paving - Operation and maintenance requirements in accordance with CIRIA C753 - The SuDS Manual		
Maintenance Schedule	**Required Action**	**Frequency**
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface).	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surfaces from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas.	As required.
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying.	As required – once per year on less frequently used pavements.
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving.	As required.
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material.	As required.
	Rehabilitation of surface and upper substructure by remedial sweeping.	Every 10 to 15 years or as required (if infiltration performance is reduced

		due to significant clogging).
Monitoring	Initial inspection.	Monthly for three months after installation.
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action.	Three-monthly, 48 h after large storms in first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies.	Annually.
	Monitor inspection chambers.	Annually.

Reference should be made to the manufacturer recommendations where applicable

Soakaways - Operation and maintenance requirements in accordance with CIRIA C753 - The SuDS Manual		
Maintenance Schedule	**Required Action**	**Frequency**
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings.	Annually.
	Trimming any roots that may be causing blockages.	Annually (or as required).
Occasional maintenance	Remove sediment and debris	As required, based on inspections.
Remedial actions	Reconstruct soakaway and / or replace or clean void fill, if performance deteriorates or failure occurs.	As required.
	Replacements of clogged geotextile (will require reconstruction of soakaway).	As required.
	Inspect silt traps and note rate of sediment accumulation.	Monthly in the first year and then annually.
	Check soakaway to ensure emptying is occurring.	Annually.

The following information should be passed to the development operator to ensure that future maintenance is carried out in a safe and proper manner.

A formal review of the risks should be undertaken on an annual basis:

Table 6.2: Proposed Operational Schedule for Below Ground Drainage

Operation	Risks	Mitigating Measures
Access to manholes for Inspection and Maintenance.	1. Confined spaces	1. Entry to confined space to be minimised and, where unavoidable, to be carried out by appropriately trained personnel
Removal of silt from outfall	1. Risk to members of the public 2. Open Water	1. Access to hazardous areas by members of the public to be prohibited. 2. To be carried out by appropriately trained personnel
Removal of silt from drainage channel	1. Risk to members of the public	1. Access to hazardous areas by members of the public to be prohibited

Provided that the surface water strategies as set out in this report, are implemented, it is expected that the primary residual failure would be as a result of some form of failure of the site drainage system during the life of the development. Therefore, regular, ongoing maintenance as set out in the Operations and Maintenance Manual, will be required to ensure that the capacity of the system is maintained as designed.

7. Consent / Planning

Summary of expected consents required:

- Ordinary Watercourse Consent – No
- Sewerage Undertaker Consent – No
- Section 104 / 106 Drainage Adoption - No
- Build Over / Build Near - No

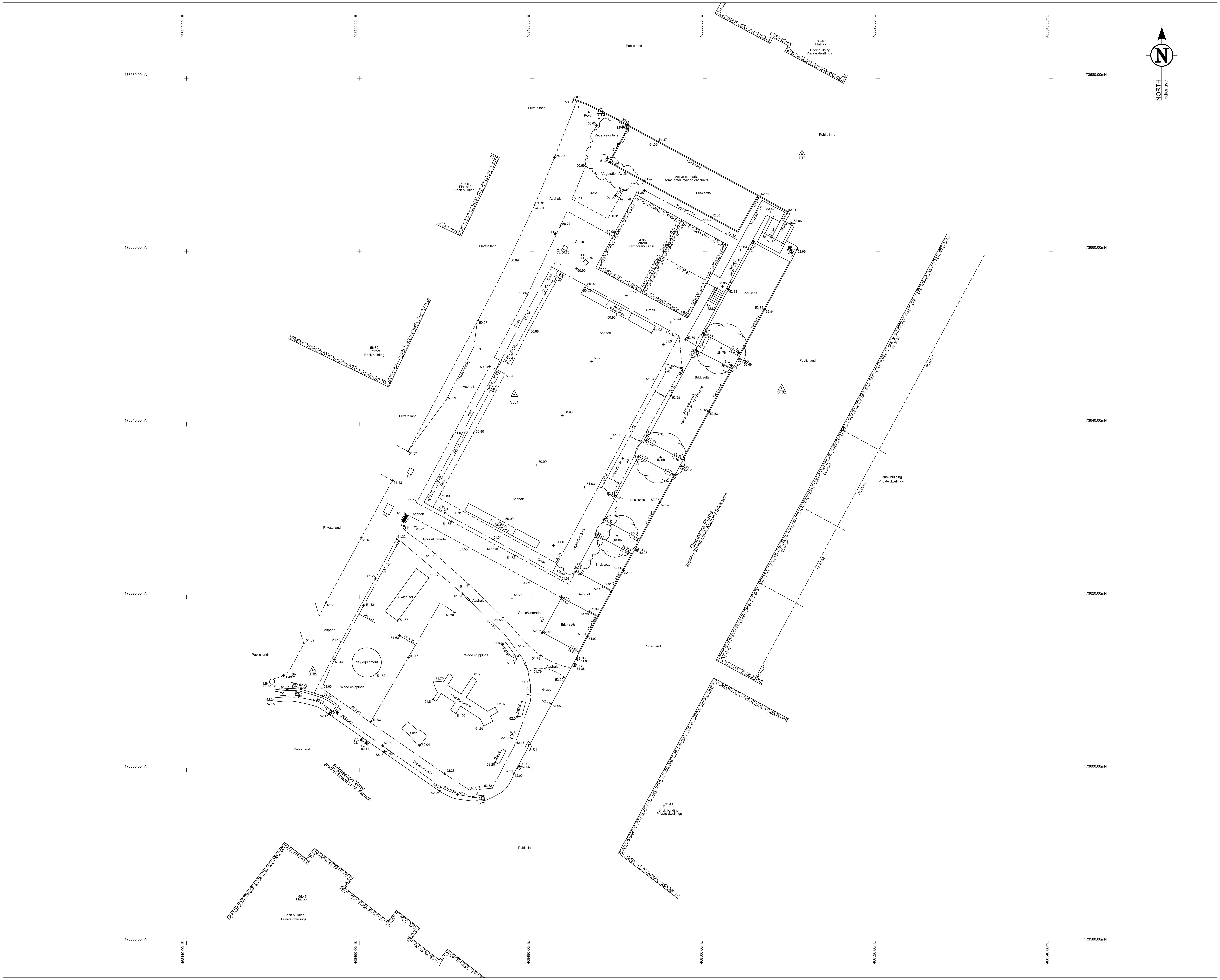
In addition to the above it is anticipated that details of the drainage scheme will need to be approved by Reading Borough Council Lead Local Flood Authority (LLFA) through a formal planning application.

8. Conclusions

This report concludes that the surface water drainage strategy for the development will be designed in accordance with both national and local standards and best practice. The following key items have been summarised below:

- The surface water drainage systems for the new development will be designed to accommodate the required flows for the lifetime of the development, utilising permeable surfacing to promote infiltration.
- It has been determined that the post-development surface water flow rates can be effectively managed using a conservative infiltration rate of $1x10^{-5}$ m/s for the chalk strata in the southern portion of the site, in accordance with national guidelines and technical standards, ensuring no adverse impact on downstream flooding.
- All surface water run-off from storm events up to and including the 100-year plus 40% climate change will be retained within the overall site.
- Attenuation is provided "at source" through the use of tanked systems in areas with low permeability (e.g., northern areas of the site), with surface water conveyed to a stone soakaway in the southern area for final discharge into the permeable chalk.
- In the event that flows from rainfall exceed the 1 in 100-year rainfall event or system failure through lack of maintenance, surface water run-off will be directed via exceedance routes away buildings and/or critical infrastructure.
- The use of permeable surfacing and silt traps ensures that water quality meets the criteria outlined in CIRIA C753 – The SuDS Manual, minimising pollution risks.
- Ownership and maintenance liabilities for the surface water drainage system will be clearly defined so that in the event of failure the drainage system appropriate action can be taken to ensure that the drainage system continues to work efficiently.

Appendix A Topographical Survey



©Land Survey Solutions Limited 01/01/2010

Original Sheet Size A1H

TOPOGRAPHICAL & MEASURED BUILDING SURVEYS

ABBREVIATIONS & SYMBOLS

AH	Arch Head Height	ER	Earth Rod	RSD	Roller Shutter Door
A/B	Air Brick	ET	EP+Transformer	RSJ	Rolled Steel Joist
AR	Assumed Route	FB	Flower Bed	SI	Sign Post
AV	Air Valve	FBD	Floor Board Direction	SP	Arch Spring Point Height
BB	Belisha Beacon	FH	Fire Hydrant	SV	Stop Valve
BH	Bore Hole	FL	Floor Level	SW	Surface Water
BL	Bed Level	FP	Flag Pole	SY	Cable Stay
BO	Bollard	FW	Foul Water	Tac	Tactile Paving
BrP	Brace Post	GG	Gully Grate	TC	Telecom Cover
BS	Bus Stop	GV	Gas Valve	TH	Trial Pit
BU	Bush	HH	Head Height	THL	Threshold Level
B/W	Barbed Wire Fence	IC	Inspection Cover	TL	Traffic Light
BX	Box (Utilities)	IL	Invert Level	ToW	Top of Wall
C/B	Close Board Fence	I/R	Iron Railings	TP	Telegraph Pole
CH	Cill Height	KO	Kerb Outlet	TS	Traffic Signal Cover
CL	Cover Level	LP	Lamp Post	TV	Cable TV Cover
C/L	Chain Link Fence	MH	Manhole	UB	Universal Beam
C-Lev	Ceiling Level	MP	Marker Post	UC	Unknown Cover
Col	Column	NB	Name Board	UK	Unknown Tree
C/P	Chestnut Paling Fence	OHL	Overhead Line (approx)	UMG	Unmade Ground
CR	Cable Riser	Pan	Panel Fence	USB	Under Side Beam
C/W	Chicken Wire	PB	Post Box	UTL	Unable To Lift
DC	Drainage Channel	PM	Parking Meter	UTS	Unable To Survey
DH	Door Head Height	PO	Post	VP	Vent Pipe
Dil.	Dilapidated	P/R	Post & Rail Fence	WB	Waste Bin
DP	Down Pipe	P/W	Post & Wire Fence	WH	Weep Hole
DR	Drain	P/Wall	Partition Wall	WL	Water Level
EBx	Electric Box	RE	Rodding Eye	WM	Water Meter
EC	Electric Supply Cover	RL	Ridge Level	WO	Wash Out
EL	Eaves Level	RP	Reflector Post	(X.XX)	Floor to Ceiling Height
EP	Electric Pole	RS	Road Sign	(X.XX)F/C	Floor to False Ceiling Ht
				△	Survey Control Station

DRAWING NOTES

Topographical Surveys

Trees are drawn to scale showing the average canopy spread. Descriptions and heights should be used as a guide only.

All building names, descriptions, number of storeys, construction type including roof line details are indicative only and taken externally from ground level.

All below ground details including drainage, voids and services have been identified from above ground and therefore all details relating to these features including; sizes, depth, description etc will be approximate only. All critical dimensions and connections should be checked and verified prior to starting work.

Detail, services and features may not have been surveyed if obstructed or not reasonably visible at the time of the survey.

Surveyed physical features may not necessarily represent the legal boundary line.

Measured Building Surveys

Measurements to internal walls are taken to the wall finishes at approx 1m above the floor level and the wall assumed to be vertical.

Cill heights are measured as floor to the cill and head heights are measured from cill to the top of window.

General

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work. Any errors or discrepancies must be notified to Survey Solutions immediately.

The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The survey control listed is only to be used for topographical surveys at the stated scale. All control must be checked and verified prior to use.

© Land Survey Solutions Limited holds the copyright to all the information contained within this document and their written consent must be obtained before copying or using the data other than for the purpose it was originally supplied.

Do not scale from this drawing.

SURVEY CONTROL CO-ORDINATES

STATIONS	EASTINGS	NORTHINGS	LEVEL	DESCRIPTION
S501	468477.933	173643.433	50.936	PK Nail
ST01	468479.581	173602.881	52.143	PK Nail
ST02	468508.853	173644.154	52.998	PK Nail
ST03	468511.207	173671.220	52.810	PK Nail
ST04	468487.952	173676.171	50.781	PK Nail
ST05	468454.621	173611.548	51.476	PK Nail

SURVEY GRID AND LEVEL DATUM

The coordinate system established for this survey is related to Ordnance Survey (OS) national grid at a single point using Smartnet, then orientated to grid north with a scale factor of 1.000.

The level datum established for this survey is related to Ordnance Survey (OS) using GPS Smartnet.

To avoid discrepancies any coordinated data used in conjunction with this survey must be derived directly from this control data.

REV	DESCRIPTION	DRAWN	APPR	DATE

SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

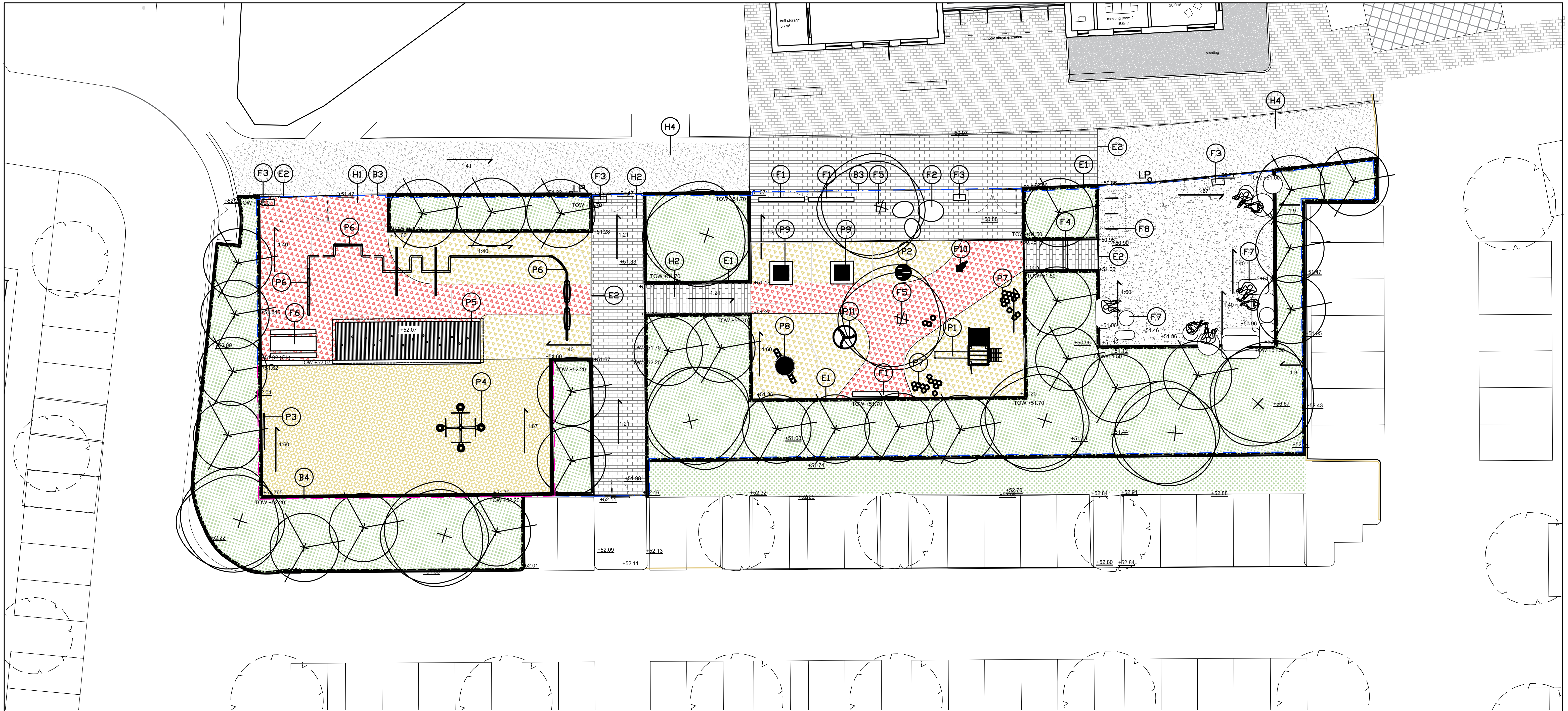
0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE RANNOCH STREET, READING, BERKSHIRE, RG30 4FU				
DRAWING DETAIL TOPOGRAPHICAL SURVEY Sheet 1 of 1				
CLIENT GLEEDS MANAGEMENT SERVICES LTD				SCALE 1:200
SURVEYOR JK	SURVEY DATE 07/07/22	CHECKED BY JPH	APPROVED BY RG	DWG STATUS FINAL
DRAWING NUMBER 43004CVLS-01			REVISION	ISSUE DATE 14/07/22

RICS · chartered ices · THE SURVEY ASSOCIATION · ISO 9001 REGISTERED FIRM · QMS ISO 14001 : 2015 REGISTERED

Appendix B Proposed Site Layout



Legend

Levels

Existing level retained

Proposed level

Proposed fall/ gradient

Surface Finishes & Edges

H1 A/B wetpour/ tigermulch surfacing (porous)

H2 Porous pre-cast concrete block paving (brick style)

H3 Polymeric surfacing to ball sports area (porous)

H4 Ashpalt surfacing

H5 Porous tar and chip surface

E1 Timber sleeper retaining wall

E2 Flat Top edging 50mm wide

Boundary Treatments

B1 Double metal gate (gate to open inwards into park)

B2 Single metal gate (gate to open inwards into park)

B3 Metal fence to playground 1.1m high

B4 Rebound fence to ball sports area 2m high

Play

P1 Cantilever Play Frame

P2 Spring discs

P3 Target wall by Numuga. Ref: NM008

P4 4-way basketball net by Numuga. Ref: NM203

P5 Playground Stage with shelter

P6 Bespoke play structure with double seesaw, swings and climbing elements

P7 Hexagon stumps

P8 Nursery swing

P9 Playground trampoline

P10 Bike rocker

P11 Roundabout

All playground equipment supplied by Playequip unless stated otherwise. Refer to hardworks schedule for details.

Furniture

F1 Timber bench

F2 Pebble seat

F3 Litter bin

F4 Reclaimed metal arch

F5 Tree grille

F6 Picnic table and bench

F7 'Biscuit tin' seats

F8 Bicycle stands

Refer to hardworks schedule for details.

Planting

Shade mix- groundcover structure planting with bulbs

Specimen tree - (SF) standard form, clear stem 2m minimum.

Specimen tree - (ms) multi-stem form, height 3m minimum with raised stems.

Refer to softworks schedule for details.

Existing trees to be retained.

NOTE: All play equipment and materials are as described 'or similar'. The final design and material specification could be subject to minor changes as a result of stage 4 coordination, subject to client approval.

Rev	Date	Drawn	Description
-	03.05.23	KRA	For information
A	22.05.23	RBL	For information
B	25.05.23	RBL	For information
C	04.09.24	RBL	For information
D	12.09.24	RBL	For information
E	08.10.24	RBL	For planning
F	14.10.24	RBL	Note added to legend. For planning
G	20.11.24	RBL	Permeable paving annotated. For planning

Notes:
Do not scale from drawings unless by agreement with HTA. Use figured dimensions only. Check all dimensions on site prior to commencing the works. Drawing to be read in conjunction with other relevant consultant information.

This drawing is the copyright of HTA Design LLP and must not be copied or reproduced in part, or in whole, without the express permission of HTA Design LLP. Drawing to be read in conjunction with specification.

Legend

1:250

5m 0 5m

NORTH

Hardworks General Arrangement
drawing title

RBC-DPR_HTA-L_DR_0901
drawing number

G
revision

Reading Borough Council
Dee Park Open Space
client / project

1:250
scale @ A3

RBC-DPR
project number

KRA
originated by

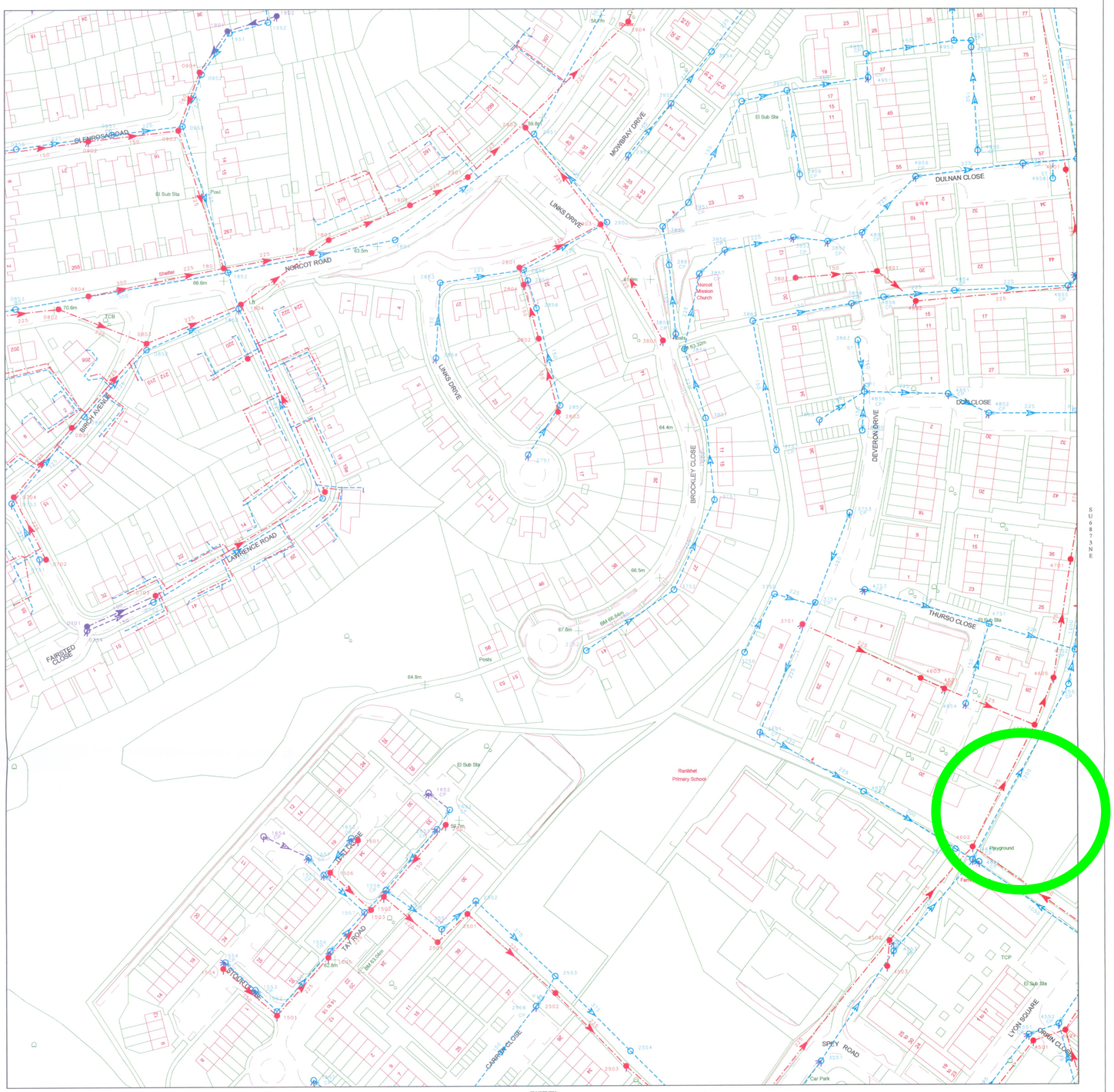
PLANNING
status

HTA Design LLP
www.hta.co.uk
London | Edinburgh | Manchester | Bristol

Appendix C Sewer Asset Map

SU6873NW

SU6874SW



SEWERAGE ASSET ABBREVIATIONS AND SYMBOLS

MANHOLES: COMBINED, FOUL, SURFACE, PROPOSED, JOINT, BACKDROP, OTHER / UNKNOWN MANHOLE, ABANDONED, PRIVATE

SEWERS: PRIVATE COMBINED, PRIVATE FOUL, PRIVATE SURFACE, PUBLIC COMBINED, PUBLIC FOUL, PUBLIC SURFACE, TRUNK COMBINED, TRUNK FOUL, TRUNK SURFACE; RISING COMBINED, RISING FOUL, RISING SURFACE, RISING SLUDGE, STORM OVERFLOW, HIGHWAY DRAIN / GULLEY / GALLERY, TRADE EFFLUENT, BIO-SOLIDS (SLUDGE); CULVERTED WATERCOURSE / VENT PIPE, ABANDONED, PROPOSED, UNKNOWN / OTHER SEWER

AREAS: BUILDING OVER CASE, CHAMBER, DRAWING AREA, LICENSE AREA, LOW LYING LAND, SEWER SUBWAY, SURVEY AREA, TUNNEL, UNKNOWN AREA, SEWERAGE TREATMENT WORKS OR PUMPING STATION

FITTINGS: AV AIR VALVE, BS BLIND SHAFT, CP CATCH PIT, DC DAM CHASE, DF DOUBLE FLUSHING TANK / CHAMBER, SF SINGLE FLUSHING TANK / CHAMBER, GP GAUGING POINT, GU GULLEY, HB HATCH BOX, LH LAMP HOLE, LS LIFTING SHAFT, ME METER, RE RODDING EYE, PT TEST POINT / ANODE, VC VENT COLUMN, VT VENT, XX OTHER / UNKNOWN FITTING

END ITEMS: STW EFFLUENT DISCHARGE, SOAKAWAY, OUTFALL, U/S/D UNDEFINED END, FLUSHING INLET, OTHER / UNKNOWN OUTFALL

OPERATIONAL CONTROLS: BB BAFFLE BOARD, BV BUTTERFLY VALVE, CL CLOUGH, DB DAM BOARD, FV FLAP VALVE, HW HEAD WALL, HY HYDROBRAKE, PI PETROL INTERCEPTOR, SV SLUICE VALVE, SY SYPHON, TA TANK, WB WEIR BOARD

OTHER: SEWERAGE TREATMENT WORKS, SEWERAGE PUMPING STATION, IL100.35 INVERT LEVEL

NOTE: 1. ALL LEVELS ARE TO ORDNANCE DATUM NEWLYN. 2. ALL MEASUREMENTS ARE METRIC.

Comments:
ALS/ALS/24/2008_999224

inspace Regeneration & New Homes — REVIEWED — PRELIMINARY / FOR COMMENT / FOR CONSTRUCTION — STATUS A B C — SIGNED — DATE 13/1/08

Thames Water

Thames Water Utilities
Nugent House
Vastern Road
Reading Berks RG1 8DB

REGISTERED IN ENGLAND AND WALES NO 2366661

IN CASE OF QUERIES PLEASE CONTACT:

Rose Kiln Court
Rose Kiln Lane
Reading
Berkshire
RG2 0HP

THE POSITION OF APPARATUS SHOWN ON THIS PLAN IS BELIEVED TO BE CORRECT AT THE DATE OF PRODUCTION. BUT ALL WARRANTIES EXPRESSED OR IMPLIED ARE EXCLUDED. THE ACTUAL POSITIONS OF APPARATUS, SERVICE AND PRIVATE CONNECTIONS WHICH ARE NOT SHOWN MUST BE ESTABLISHED ON SITE.

BASED ON THE ORDNANCE SURVEY MAP WITH THE SANCTION OF THE CONTROLLER OF HM STATIONERY OFFICE. LICENCE NUMBER WU298557

(C) COPYRIGHT: UNAUTHORISED REPRODUCTION PROHIBITED

THAMES WATER EAGLE GIS PLOTTING SYSTEM VERSION 4.0.3

ORIGIN
EAST 468250°
NORTH 173750°

SCALE 1:1250
ISSUE DATE 24.1.2008

SU6774SE	SU6874SW	SU6874SE
SU6773NE	This Map	SU6873NE
SU6773SE	SU6873SW	SU6873SE

SU6873NW

REFERENCE	COVER LEVEL	INVERT LEVEL
SU67739801	71.78	68.71
SU67739901	70.11	68.49
SU68730701	75.29	73.64
SU68730702	76.46	-9999.0
SU68730703	73.05	71.29
SU68730704	76.70	73.73
SU68730751	76.45	74.87
SU68730752	73.02	71.54
SU68730753	76.75	74.21
SU68730754	75.22	73.96
SU68730801	0.0	-9999.0
SU68730802	70.41	67.14
SU68730803	68.80	64.88
SU68730804	69.68	66.40
SU68730851	70.63	69.06
SU68730852	68.79	66.76
SU68730853	71.32	68.31
SU68730901	67.23	65.08
SU68730902	67.41	65.50
SU68730903	65.90	63.77
SU68730951	67.06	65.44
SU68730952	0.0	-9999.0
SU68730953	65.97	64.09
SU68730955	-9999.0	-9999.0
SU68731501	64.01	62.17
SU68731502	61.43	59.02
SU68731503	61.59	59.36
SU68731504	64.09	62.82
SU68731505	62.93	61.18
SU68731506	62.09	60.11
SU68731551	62.14	59.56
SU68731552	63.97	61.94
SU68731553	64.16	62.31
SU68731554	64.05	62.69
SU68731555	63.55	62.85
SU68731556	62.85	60.22
SU68731557	61.70	59.09
SU68731558	61.37	58.35
SU68731601	61.63	60.41
SU68731651	61.89	60.02
SU68731652	60.02	59.08
SU68731653	61.64	60.07
SU68731654	62.48	61.68
SU68731701	69.74	67.10
SU68731751	69.75	67.56
SU68731801	66.67	63.46
SU68731802	64.70	61.94
SU68731803	64.06	61.56
SU68731804	66.57	63.25
SU68731851	62.80	61.0
SU68731852	66.59	63.71
SU68731853	66.58	64.55
SU68731854	-9999.0	-9999.0
SU68731901	0.0	-9999.0
SU68731902	67.50	65.37
SU68731903	62.34	60.34
SU68731951	0.0	-9999.0
SU68731952	0.0	-9999.0
SU68732452	60.62	58.95
SU68732501	59.03	57.45
SU68732502	58.46	56.08
SU68732503	60.03	55.46
SU68732504	59.42	57.76
SU68732551	59.46	57.38
SU68732552	59.03	57.09
SU68732553	0.0	-9999.0
SU68732554	0.0	-9999.0
SU68732556	58.57	57.37
SU68732601	59.96	59.21
SU68732651	59.96	58.92
SU68732652	59.68	58.99
SU68732751	69.38	67.83
SU68732752	67.14	-9999.0
SU68732801	64.54	62.92
SU68732802	0.0	-9999.0
SU68732803	0.0	-9999.0
SU68732804	64.93	63.66
SU68732851	0.0	-9999.0
SU68732852	64.46	63.15
SU68732853	66.73	65.13
SU68732854	68.81	67.62
SU68732855	64.82	63.98
SU68732856	0.0	-9999.0
SU68732901	61.30	59.41
SU68732902	60.04	58.57
SU68732903	61.93	59.88
SU68732904	58.68	56.69
SU68732951	60.05	57.75
SU68732952	61.89	59.48
SU68732953	59.25	56.70
SU68733551	56.69	51.78
SU68733651	56.90	54.79
SU68733701	57.55	54.81
SU68733751	65.69	-9999.0
SU68733752	66.51	-9999.0
SU68733753	58.87	56.72
SU68733754	57.28	56.04
SU68733755	0.0	-9999.0
SU68733756	0.0	-9999.0
SU68733757	61.60	59.84
SU68733801	62.69	60.22
SU68733802	0.0	-9999.0
SU68733851	63.58	-9999.0
SU68733852	59.18	57.40
SU68733853	59.64	57.88
SU68733854	55.17	53.85
SU68733855	59.72	58.48
SU68733856	60.65	58.94
SU68733857	61.54	59.84
SU68733858	62.56	60.66
SU68733859	62.85	-9999.0
SU68733860	57.77	56.55
SU68733861	58.25	56.83
SU68733862	60.24	58.06
SU68733863	58.61	56.88
SU68733951	57.78	55.56
SU68733952	57.11	55.50
SU68733953	56.21	55.27
SU68733954	56.39	-9999.0
SU68733955	57.67	55.52
SU68733956	58.53	57.05
SU68734501	53.23	50.22
SU68734502	54.88	50.83
SU68734503	55.37	50.99
SU68734504	53.46	49.79
SU68734551	53.39	50.96
SU68734552	53.35	48.98
SU68734553	54.97	49.75
SU68734601	52.67	49.56
SU68734602	51.53	48.28
SU68734603	0.0	-9999.0
SU68734604	50.74	48.15
SU68734605	50.45	47.90
SU68734651	51.88	50.66
SU68734652	51.95	46.84
SU68734653	53.06	50.41
SU68734654	50.99	48.75
SU68734655	50.67	46.27
SU68734656	0.0	-9999.0
SU68734701	50.25	47.49
SU68734751	52.35	48.42
SU68734752	50.35	46.14
SU68734753	56.72	53.61
SU68734801	58.69	55.96
SU68734802	55.54	53.15
SU68734851	55.09	53.44
SU68734852	52.50	50.33
SU68734854	54.30	52.69
SU68734855	50.69	48.62
SU68734856	55.06	53.23
SU68734857	58.60	56.43
SU68734859	58.58	56.18
SU68734860	58.47	56.57
SU68734901	51.38	46.83
SU68734951	52.98	51.69
SU68734952	52.94	51.31
SU68734953	50.94	48.77
SU68734954	50.67	49.43
SU68734955	52.21	51.22
SU68734956	55.14	54.35
SU68734957	52.09	50.58
SU68734958	52.23	-9999.0
SU68734959	50.75	-9999.0
SU68735954	50.76	-9999.0

NOTE:
1. THE INVERT LEVEL SHOWN MAY EITHER BE THE INVERT LEVEL OF THE MANHOLE OR OF THE PRINCIPAL OUTGOING PIPE.
2. DUE TO THE PRESENCE OF BACKDROPS AND GRADIENT CHANGES A STRAIGHT LINE INTERPOLATION OF GRADIENT BETWEEN THE INVERT LEVELS QUOTED ABOVE MAY NOT BE VALID.

Appendix D Pre/Post Development Catchments

KEY PLAN

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWF, Adobe PDF files and/or hard copies and their associated information issue sheets.
3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. All levels are shown in metres above Ordnance Datum (m AOD).

LEGEND

	BUILDING / ROOF	= 118m²
	HARDSTANDING	= 885m²
	SOFT LANDSCAPING	= 434m²
	PERMEABLE SURFACING	= 402m²
	TOTAL	= 1839m²

REV						
P01	PRELIMINARY ISSUE					
	H.MILLER	18/11/24	A.TODD	18/11/24	A.TODD	18/11/24
	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Merchants' House North
Wapping Road
Bristol
BS1 4RW
t: +44 (0)117 945 9225
e: bristolcentral@hydrock.com

CLIENT

READING BOROUGH COUNCIL

PROJECT

DEE PARK OPEN SPACE

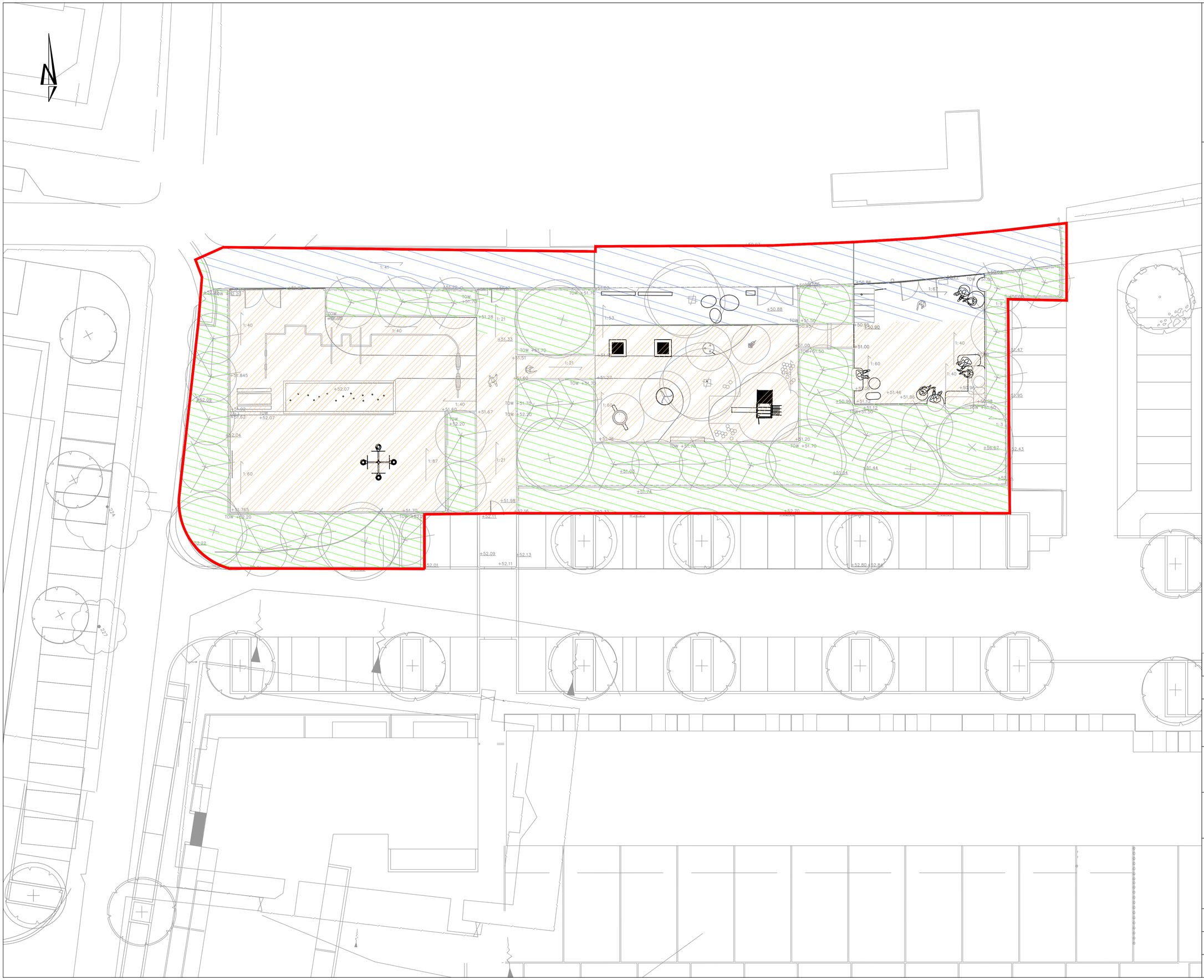
TITLE

PRE-DEVELOPMENT
CACTHCMENT PLAN

HYDROCK PROJECT NO.	SCALE @ A1
C-36064-C	1:150

STATUS DESCRIPTION	STATUS
PLANNING	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
36064-HYD-00-ZZ-SK-C-7710	P01



KEY PLAN

NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWF, Adobe PDF files and/or hard copies and their associated information issue sheets.
3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. All levels are shown in metres above Ordnance Datum (m AOD).

LEGEND

BUILDING / ROOF	= 0m^2
HARDSTANDING	= 371m^2
SOFT LANDSCAPING	= 745m^2
PERMEABLE SURFACING	= 723m^2
TOTAL	= 1839m^2

REV						
P01	PRELIMINARY ISSUE					
	H.MILLER	18/11/24	A.TODD	18/11/24	A.TODD	18/11/24
REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

Hydrock
Merchants' House North
Wapping Road
Bristol
BS1 4RW
t: +44 (0)117 945 9225
e: bristolcentral@hydrock.com

CLIENT

READING BOROUGH COUNCIL

PROJECT

DEE PARK OPEN SPACE

TITLE

POST DEVELOPMENT
CATCHMENT PLAN

HYDROCK PROJECT NO.	SCALE @ A1
C-36064-C	1:150

STATUS DESCRIPTION	STATUS
PLANNING	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
36064-HYD-00-ZZ-SK-C-7720	P01

Appendix E Calculations

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Company Address:		



Catchment Area

Type : Catchment Area

Area (ha)	0.011

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (2)

Type : Catchment Area

Area (ha)	0.01

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (3)

Type : Catchment Area

Area (ha)	0.014

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (4)

Type : Catchment Area

Area (ha)	0.018

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Company Address:		

Catchment Area (5) Type : Catchment Area

Area (ha)	0.008

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (6) Type : Catchment Area

Area (ha)	0.031

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Catchment Area (7) Type : Catchment Area

Area (ha)	0.016

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.950
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



STONE SOAKAWAY - SS-01

Type : Soakaway

Dimensions

Exceedance Level (m)	51.189
Depth (m)	1.789
Base Level (m)	49.400
Freeboard (mm)	100
Soakaway Shape	Rectangular
Diameter / Width (m)	11.000
Length (m)	4.000
Porosity (%)	30
Ineffective Storage Depth (m)	0.000
Number of Soakaways	1
Base Infiltration Rate (m/hr)	0.36
Safety Factor	2.0
Total Volume (m³)	22.295

Inlets

Inlet

Incoming Item(s)	Pipe (3) Pipe (7)
Bypass Destination	(None)
Capacity Type	No Restriction

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



ATTENUATING SUB-BASE (SYSTEM C) -AS-03

Type : Porous Paving

Dimensions

Exceedance Level (m)	51.300
Depth (m)	0.310
Base Level (m)	50.990
Paving Layer Depth (mm)	110
Membrane Percolation (m/hr)	50.0
Porosity (%)	30
Length (m)	20.217
Long. Slope (1:X)	200.00
Width (m)	4.220
Total Volume (m³)	5.118

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (5)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (2)
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	216.0

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



ATTENUATING SUB-BASE (SYSTEM C) -AS-02

Type : Porous Paving

Dimensions

Exceedance Level (m)	51.000
Depth (m)	0.310
Base Level (m)	50.690
Paving Layer Depth (mm)	110
Membrane Percolation (m/hr)	50.0
Porosity (%)	30
Length (m)	17.992
Long. Slope (1:X)	200.00
Width (m)	10.441
Total Volume (m³)	11.272

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (4)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (5)
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	216.0

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



ATTENUATING SUB-BASE (SYSTEM C) -AS-01

Type : Porous Paving

Dimensions

Exceedance Level (m)	51.000
Depth (m)	0.310
Base Level (m)	50.690
Paving Layer Depth (mm)	110
Membrane Percolation (m/hr)	50.0
Porosity (%)	30
Length (m)	17.943
Long. Slope (1:X)	200.00
Width (m)	5.280
Total Volume (m^3)	5.684

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (2)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (4)
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	216.0

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Company Address:		



INFILTRATING SUB-BASE (SYSTEM A) -IS-01

Type : Porous Paving

Dimensions

Exceedance Level (m)	51.500
Depth (m)	0.311
Base Level (m)	51.189
Paving Layer Depth (mm)	110
Membrane Percolation (m/hr)	50.0
Porosity (%)	30
Length (m)	26.945
Long. Slope (1:X)	200.00
Width (m)	11.636
Total Volume (m^3)	18.906

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Catchment Area (6)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (7)
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	216.0

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
ATTENUATING SUB-BASE (SYSTEM C) -AS-03	FSR: 1 years: +0 %: 720 mins: Summer	51.134	50.993	0.043	0.003	0.2	1.006	0.000	0.000	0.1	1.749	80.352	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-02	FSR: 1 years: +0 %: 720 mins: Summer	50.823	50.697	0.043	0.007	0.4	1.961	0.000	0.000	0.2	3.868	82.602	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-01	FSR: 1 years: +0 %: 720 mins: Summer	50.824	50.695	0.044	0.005	0.2	0.996	0.000	0.000	0.1	2.012	82.473	OK
STONE SOAKAWAY - SS-01	FSR: 1 years: +0 %: 30 mins: Summer	49.552	49.552	0.152	0.152	6.1	2.011	0.000	5.389	0.0	0.000	90.981	OK
INFILTRATING SUB-BASE (SYSTEM A) -IS-01	FSR: 1 years: +0 %: 960 mins: Summer	51.369	51.195	0.045	0.006	0.5	4.119	0.000	0.000	0.2	6.866	78.212	OK

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
ATTENUATING SUB-BASE (SYSTEM C) -AS-03	FSR: 30 years: +35 %: 480 mins: Summer	51.225	50.995	0.134	0.005	0.7	2.644	0.000	0.000	0.2	4.373	48.343	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-02	FSR: 30 years: +35 %: 360 mins: Summer	50.911	50.703	0.131	0.013	1.9	5.154	0.000	0.000	0.8	8.693	54.272	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-01	FSR: 30 years: +35 %: 480 mins: Summer	50.913	50.701	0.133	0.011	0.8	2.632	0.000	0.000	0.3	5.132	53.692	OK
STONE SOAKAWAY - SS-01	FSR: 30 years: +35 %: 60 mins: Summer	50.449	50.449	1.049	1.049	16.1	13.853	0.000	15.096	0.0	0.000	37.866	OK
INFILTRATING SUB-BASE (SYSTEM A) -IS-01	FSR: 30 years: +35 %: 600 mins: Summer	51.467	51.198	0.143	0.009	2.2	10.722	0.000	0.000	0.7	16.365	43.288	OK

Project:	Date: 15/11/2024		
	Designed by: HenryMiller	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address:		

FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
ATTENUATING SUB-BASE (SYSTEM C) -AS-03	FSR: 100 years: +40 %: 360 mins: Summer	51.270	50.997	0.179	0.007	1.2	3.438	0.000	0.000	0.4	5.293	32.828	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-02	FSR: 100 years: +40 %: 180 mins: Summer	50.952	50.818	0.172	0.128	4.2	8.858	0.000	0.000	1.6	8.942	21.412	OK
ATTENUATING SUB-BASE (SYSTEM C) -AS-01	FSR: 100 years: +40 %: 180 mins: Summer	50.955	50.819	0.176	0.129	2.2	4.533	0.000	0.000	0.8	4.739	20.255	OK
STONE SOAKAWAY - SS-01	FSR: 100 years: +40 %: 120 mins: Summer	50.819	50.819	1.419	1.419	15.0	18.728	0.000	30.432	0.0	0.000	15.999	OK
INFILTRATING SUB-BASE (SYSTEM A) -IS-01	FSR: 100 years: +40 %: 480 mins: Summer	51.515	51.200	0.191	0.011	3.5	13.926	0.122	0.000	1.2	20.253	26.342	OK

Appendix F Overland Flow Routes



NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWF, Adobe PDF files and/or hard copies and their associated information issue sheets.
3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. All levels are shown in metres above Ordnance Datum (m AOD).

LEGEND

OVERLAND FLOW ROUTE

REV	REVISION NOTES/COMMENTS	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	PRELIMINARY ISSUE	H.MILLER	18/11/24	A.TODD	18/11/24	A.TODD	18/11/24

Hydrock
Merchants' House North
Wapping Road
Bristol
BS1 4RW
t: +44 (0)117 945 9225
e: bristolcentral@hydrock.com

CLIENT

READING BOROUGH COUNCIL

PROJECT

DEE PARK OPEN SPACE

TITLE

OVERLAND FLOW ROUTES

HYDROCK PROJECT NO.	SCALE @ A1
C-36064-C	1:150

STATUS DESCRIPTION	STATUS
PLANNING	S2

DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER)	REVISION
36064-HYD-00-ZZ-SK-C-7730	P01

Appendix G Drainage Strategy

STONE SOAKAWAY - SS-01
TO BE LOCATED BENEATH INFILTRATING SUB-BASE
SRP = 1 IN 100 YR + 40% CLIMATE CHANGE.
22m³ STORAGE PROVIDED IN OPEN GRADED CRUSHED ROCK (OGCR) TYPE 3 OR SIMILAR WITH MIN 30% VOIDS.
11m x 4m x 1.79m DEEP.
CL = 51.500
IL(IN) = 49.400
TOP OF SOAKAWAY = 51.189
BASE OF TANK = 49.400
ASSUMED CHALK INFILTRATION RATE = $1x10^{-5}$
SUBJECT TO IN-SITU INFILTRATION TESTING

6m EASEMENT ASSUMED AROUND PUBLIC THAMES WATER SURFACE WATER SEWER

ADDITIONAL SURFACE WATER RUN-OFF TO BE COLLECTED BY CHANNEL DRAINS

TANKED ATTENUATING SUB-BASE SYSTEM NOT PERMITTED INSIDE PUBLIC SEWER EASEMENT

WATER TO FLOW THROUGH ATTEUNATING SUBBASE AND BE COLLECTED BY PERFORATED PIPE

INFILTRATING SUBBASE TO DIRECT WATER TOWARDS STONE SOAKAWAY

SOAKAWAY MINIMUM 10m FROM SITE BOUNDARY

ATTENUATING SUB-BASE (SYSTEM C) -AS-01
DRAINED AREA = 95m²
SRP = 1 IN 100 YR + 40% CLIMATE CHANGE.
6m³ STORAGE PROVIDED IN OPEN GRADED CRUSHED ROCK (OGCR) TYPE 3 OR SIMILAR WITH MIN 30% VOIDS.
0.2m DEEP.

ATTENUATING SUB-BASE (SYSTEM C) -AS-02
DRAINED AREA = 189m²
SRP = 1 IN 100 YR + 40% CLIMATE CHANGE.
11m³ STORAGE PROVIDED IN OPEN GRADED CRUSHED ROCK (OGCR) TYPE 3 OR SIMILAR WITH MIN 30% VOIDS.
0.2m DEEP.

PLEASE NOTE:
REFER TO CALCULATIONS SHEETS:
36064-HYD-XX-XX-CA-C-0001
FOR STORMWATER CONTROLS DETAILS

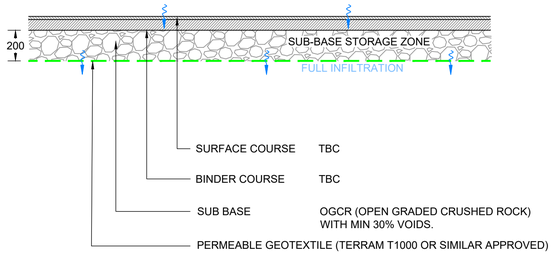
INFILTRATING SUB-BASE (SYSTEM A) -IS-01
DRAINED AREA = 370m²
SRP = 1 IN 100 YR + 40% CLIMATE CHANGE.
19m³ STORAGE PROVIDED IN OPEN GRADED CRUSHED ROCK (OGCR) TYPE 3 OR SIMILAR WITH MIN 30% VOIDS.
0.2m DEEP.

ATTENUATING SUB-BASE (SYSTEM C) -AS-03
DRAINED AREA = 69m²
SRP = 1 IN 100 YR + 40% CLIMATE CHANGE.
5m³ STORAGE PROVIDED IN OPEN GRADED CRUSHED ROCK (OGCR) TYPE 3 OR SIMILAR WITH MIN 30% VOIDS.
0.2m DEEP.

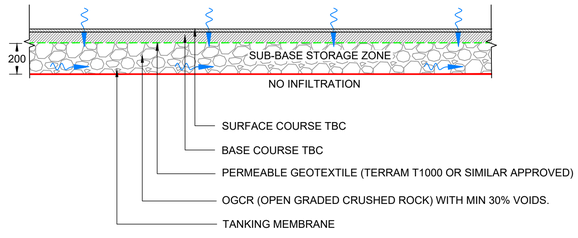
PROPOSED DRAINAGE - STORM

- STORM WATER DRAIN
- STORM WATER MANHOLE
- STORM WATER INSPECTION CHAMBER
- STORM RODDING EYE (RE)
- DRAINAGE CHANNEL (DC)
- 150Ø@1:100 EXISTING PUBLIC FOUL SEWER
- 150Ø@1:100 EXISTING PUBLIC STORM SEWER
- PUBLIC STORM WATER SEWER EASEMENT

NOTE: DRAINAGE HAS ONLY BEEN SHOWN INDICATIVELY TO DEMONSTRATE THE PRINCIPLES OF THE DRAINAGE STRATEGY AND SHOULD NOT BE USED FOR PRICING



TYPICAL INFILTRATING SUB-BASE (SYSTEM A)
POROUS SURFACING CONSTRUCTION
(Pedestrian loading only)
SCALE 1:20



CBR of subgrade %	Additional thickness of course graded material (mm)
1%	300
2%	175
3%	125
4%	100
5%	0

NOTE:
- DETAIL ABOVE MAKES NO ALLOWANCE FOR ADDITIONAL REQUIREMENTS SHOULD THE PERMEABLE CONSTRUCTION BE USED FOR SITE TRAFFIC. REFER TO PARAGRAPH 5.6.4 OF BS7533-13:2009 FOR MORE INFORMATION.
- MATERIALS TO MARSHALLS SPECIFICATION

TYPICAL ATTENUATING SUB-BASE (SYSTEM C)
POROUS SURFACING CONSTRUCTION
(Pedestrian loading only)
SCALE 1:20

KEY PLAN



NOTES

1. All dimensions are to be checked on site before the commencement of works. Any discrepancies are to be reported to the Architect & Engineer for verification. Figured dimensions only are to be taken from this drawing.
2. The DWG file is issued for the purposes of coordination only and do not represent formal drawing issue and are not to be reprinted in any form. Formal issue of drawings is via DWF, Adobe PDF files and/or hard copies and their associated information issue sheets.
3. Note that all care has been taken with the export of DWG files and their content, but we recommend that you make due dimensional checks before using any DWG file information. Any errors found are to be reported to Hydrock immediately.
4. All levels are shown in metres above Ordnance Datum (m AOD).
5. All private drainage to comply with current Building Regulations, BS EN-752 Drain and Sewer systems outside Buildings and other relevant British Standards and Codes of Practices.
6. Drainage pipework routes under building footprint will require Co-ordination with foundations.
7. Final foul pipe connection routes and manholes are subject to confirmation of above ground drainage design discharge points at ground level by others to allow final pipe sizes, configuration and connections.
8. Door threshold drainage channel requirements to be advised by others.
9. Surface water drainage RWP locations to be confirmed by Architect.
10. External levels shown on this drawing relating to the civils, drainage works etc are to be confirmed on receipt of final external levels drawing (by others).
11. Foul drainage shown indicative subject to detailed design.

REV	REVISION NOTES/COMMENTS					
	DRAWN BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE
P01	PRELIMINARY ISSUE					
	H.MILLER	18/11/24	A.TODD	18/11/24	A.TODD	18/11/24

Hydrock
Merchants' House North
Wapping Road
Bristol
BS1 4RW
t: +44 (0)117 945 9225
e: bristolcentral@hydrock.com

CLIENT
READING BOROUGH COUNCIL

PROJECT
DEE PARK OPEN SPACE

TITLE
DRAINAGE STRATEGY

HYDROCK PROJECT NO.	SCALE @ A1
C-36064-C	1:150
STATUS DESCRIPTION: PLANNING	STATUS: S2
DRAWING NO. (PROJECT CODE-ORGINATOR-ZONE-LEVEL-TYPE-ROLE-NUMBER): 36064-HYD-00-ZZ-DR-C-7000	REVISION: P01

Appendix H Existing Drainage / Utilities

PAS 128: 2014 QUALITY LEVEL GUIDE

Q-LEVEL	DESCRIPTION	ACC.	Q-LEVEL	DESCRIPTION
QL-D	Service positions taken from records.	Undefined	QL-B2	Horizontal & vertical location using only one geophysical technique.
QL-C	Visual evidence of service existence but undetectable by geophysical technology.	Undefined	QL-B1	Horizontal & vertical location using multiple geophysical techniques.
QL-B4	Undetectable service present shown as an assumed route. (AR).	H: +/- 500mm V: N/A	QL-A	Horizontal & vertical position verification by open excavation, manholes and/or inspection chambers.
QL-B3	Horizontal location by one geophysical technique but with none or poor depth information.			

DETECTION METHOD

IN ACCORDANCE WITH PAS 128: 2014 SURVEY TYPE B

DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/types and service data recorded from ground level. All connections from DPs, Gullies, Drains, VP's, RE's and lampholes have been proven wherever possible using audible connections (AC) and/or sonde instrumentation where applicable. Where these methods have proved unsuccessful then assumed (AR) straight line connections will be shown.

CCTV DRAINAGE SURVEY
All accessible Manholes and Inspection chambers have had their respective covers lifted with pipe sizes, inverts, chamber sizes/type and service data recorded from ground level. Pipework has been traced, accessed and collected for post processing. Drainage layout, including manhole covers not located by topographical survey, may be taken from CCTV chainage and will be shown as indicative only.

Electricity
Elec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

British Telecoms
BT cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Due to current laws and legislation protecting all BT apparatus, cabling can only be located remotely. We therefore compare all our telecom findings against record information to produce the final service layout. In some instances, where high amount of cable ducts are present, we may only be able to identify a linear centre peak signal rather than identifying all the individual duct positions. For further information regarding Telecoms apparatus, please contact Openreach directly.

Cable TV & Communications
CTV and/or Com cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Fibre Optic
FO cables will have been predominantly located using GPR methodology. This is due to the materials used within fibre optic cabling. In some rare instances, tracer cabling or conductible non fibre optic cabling will be present within some or all ducting. When this is the case, both EML and GPR methodology will be combined to identify service network and achieve greater quality levels.

Lighting, Traffic Signal & Security Cables
LC, TS and/or Sec cables will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required.

Gas & Water Inc. Fuel Pipes and Hot Water Pipes
GM/GS and/or WM/WS pipe work will have been attempted and located using both EML & GPR methodology with electronically derived depths shown for the former and depths to crown levels shown for the latter.
When the Gas/Water pipe work is constructed using conductible materials, then we are able to to employ multiple geophysical techniques to identify service network and achieve greater quality levels. When a non conductible material is used, GPR methodology will be employed to locate and plot the final service layout.

Ground Penetrating Radar
GPR methodology is used to identify and locate all non metallic, non conductible piping and cabling. We also employ GPR to obtain a greater accuracy levels on EML located services. The GPR has a greater success rate on pipe or service diameter upward of Ø63mm,C63mm, as size increments increase, so does the chance of detection. The GPR can produces varying results and as such, wouldn't be used as an independent utility surveying instrument.

Unidentified Traces
All UITs will have been predominantly located using EML methodology with electronically derived depths shown. GPR techniques will be employed to achieve greater quality levels as required. Every effort has been made to identify the service but in this instance, is not achievable. We recommend excavation work to determine identity and depth where applicable.

Scarring (QL-C)
Scarring has been identified on site with a potential of an undetectable service present.

Assumed Routes & Taken from Records (QL-B4/D)
Assumed routes (AR) are shown if there is evidence that a service exists but we are unable to trace it whilst on site. The surveyor will attempt to locate various risers/ics/valves/meters (service evidence) etc. around site area to successfully determine an assumed route between these points. If there is little evidence on site but they believe a service is still present, then a common sense approach to an assumed route shall be employed.

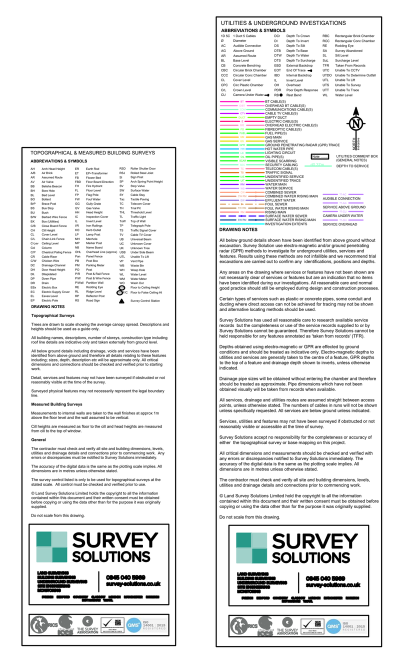
Taken from records (TFR) are service routes that are taken from STAT record plans or previous survey information and overlaid onto our drawings.

SURVEY RECOMMENDATIONS

To undertake a CCTV drainage survey of the entire site area to establish a more comprehensive drainage network, and asset condition of the pipework.

Due to the geophysical nature of subsurface technology, we always recommend excavation works to be carried out within critical areas for verification and to eliminate the possibility of undetectable services present.





UTILITIES & UNDERGROUND INVESTIGATIONS

ABBREVIATIONS & SYMBOLS

1D 5C	1 Duct 5 Cables	DCr	Depth To Crown	RBC	Rectangular Brick Chamber
Ø	Diameter	DI	Depth To Invert	RCC	Rectangular Conc Chamber
AC	Audible Connection	DS	Depth To Silt	RE	Rodding Eye
AG	Above Ground	DTB	Depth To Base	SA	Survey Abandoned
AR	Assumed Route	DTW	Depth To Water	SL	Silt Level
BL	Base Level	DTS	Depth To Surcharge	SuL	Surcharge Level
CB	Concrete Benching	EBD	External Backdrop	TFR	Taken From Records
CBC	Circular Brick Chamber	EOT	End Of Trace	UTC	Unable To CCTV
CCC	Circular Conc Chamber	IBD	Internal Backdrop	UTDO	Unable To Determine Outfall
CL	Cover Level	IL	Invert Level	UTL	Unable To Lift
CPC	Circ Plastic Chamber	OH	Overhead	UTS	Unable To Survey
CrL	Crown Level	PDR	Poor Depth Response	UTT	Unable To Trace
CU	Camera Under Water	RB ●	Rest Bend	WL	Water Level

BT — BT CABLE(S)
O/BT — OVERHEAD BT CABLE(S)
COM — COMMUNICATIONS CABLE(S)
CTV — CABLE TV CABLE(S)
DUCT — EMPTY DUCT
E — ELECTRIC CABLE(S)
O/E — OVERHEAD ELECTRIC CABLE(S)
FO — FIBREOPTIC CABLE(S)
FUEL — FUEL PIPE(S)
GM — GAS MAIN
GS — GAS SERVICE
GPR — GROUND PENETRATING RADAR (GPR) TRACE
HW — HOT WATER PIPE
LC — LIGHTING CIRCUIT
OIL — OIL PIPE(S)
SCAR — VISIBLE SCARRING
SEC — SECURITY CABLING
TC — TELECOM CABLE(S)
TS — TRAFFIC SIGNAL
UIS — UNIDENTIFIED SERVICE
UIT — UNIDENTIFIED TRACE
WM — WATER MAIN
WS — WATER SERVICE
CW — COMBINED SEWER
CW RM — COMBINED WATER RISING MAIN
EW — EFFLUENT WATER
FOUL SEWER
FW RM — FOUL WATER RISING MAIN
RM — RISING MAIN
SURFACE WATER SEWER
SW RM — SURFACE WATER RISING MAIN
INVESTIGATION EXTENTS

NORTH Indicative

Note: .... — UTILITIES COMMENT BOX (GENERAL NOTES)
d0.37m — DEPTH TO SERVICE
??-AC — AUDIBLE CONNECTION
??-AG — SERVICE ABOVE GROUND
??-CU — CAMERA UNDER WATER
??-OH — SERVICE OVERHEAD

DRAWING NOTES

All below ground details shown have been identified from above ground without excavation. Survey Solution use electro-magnetic and/or ground penetrating radar (GPR) methods to investigate for underground utilities, services and features. Results using these methods are not infallible and we recommend trial excavations are carried out for verification of positions, depths and identification.

Any areas on the drawing where services or features have not been shown are not necessarily clear of services or features but are an indication that no items have been identified during our investigations. All reasonable care and normal good practice should still be employed during design and construction processes.

Certain types of services such as plastic or concrete pipes, some conduit and ducting where direct access can not be achieved for tracing may not be shown and alternative locating methods should be used.

Survey Solutions has used all reasonable care to research available service records but the completeness or use of the service records supplied to or by Survey Solutions cannot be guaranteed. Therefore Survey Solutions cannot be held responsible for any features annotated as 'taken from records' (TFR).

Depths obtained using electro-magnetic or GPR are effected by ground conditions and should be treated as indicative only. Electro-magnetic depths to utilities and services are generally taken to the centre of a feature, GPR depths to the top of a feature and drainage depth shown to inverts, unless otherwise indicated.

Drainage pipe sizes will be obtained without entering the chamber and therefore should be treated as approximate. Pipe dimensions which have not been obtained visually will be taken from records when available.

All services, drainage and utilities routes are assumed straight between access points, unless otherwise stated. The numbers of cables in runs will not be shown unless specifically requested. All services are below ground unless indicated.

Services, utilities and features may not have been surveyed if obstructed or not reasonably visible or accessible at the time of survey.

Survey Solutions accept no responsibility for the completeness or accuracy of either the topographical survey or base mapping on this project.

All critical dimensions and measurements should be checked and verified with any errors or discrepancies notified to Survey Solutions immediately. The accuracy of the digital data is the same as the plotting scale implies. All dimensions are in metres unless otherwise stated.

The contractor must check and verify all site and building dimensions, levels, utilities and drainage details and connections prior to commencing work.

© Land Survey Solutions Limited hold the copyright to all the information contained within this document and their written consent must be obtained before copying or using the data other than for the purpose it was originally supplied.

Do not scale from this drawing.

GENERAL SYNOPSIS

This survey has been carried out in accordance with PAS 128: 2014 & our version of the Royal Institution of Chartered Surveyors (RICS) specification for Measured Surveys of Land, Buildings and Utilities. Our survey extents have been agreed and confirmed with formal acceptance of 43004BWUG from Gleeds Management Services LTD. If you have any queries regarding the final services layout, please may we ask you to carefully read all the information within this title block in its entirety before continuing to do so.

TOPOGRAPHICAL/.DWG DRAWING INFORMATION

TOPOGRAPHICAL SURVEY DATE 14/07/2022

SURVEY TYPE	DESCRIPTION	EFFECT ON SURVEY RESULTS
TOPO	SURVEY SOLUTIONS	NONE
OUTDATED		
OS		
NTS		

GENERAL SITE CONDITIONS

AVERAGE

ADDITIONAL INFORMATION	EFFECT ON SURVEY RESULTS

DESKTOP UTILITY RECORDS (PAS 128: 2014 SURVEY TYPE D)
PREREQUISITE FOR PAS 128: 2014 SURVEY TYPE B
COMMISSIONED: YES

UTILITY	AVAILABILITY	UTILITY COMPANY PROVIDER
SEWER	PUBLIC	THAMES WATER
WATER MAIN	PUBLIC	THAMES WATER
GAS MAIN	PUBLIC	SGN
TELECOM	PUBLIC	BRITISH TELECOMS
CABLE TV	PUBLIC	VIRGIN MEDIA
ELECTRICITY	PUBLIC	SSE ELECTRICITY
OIL PIPES	NO	N/A
OTHER	NO	N/A

REV	DESCRIPTION	DRAWN	APPR	DATE

SURVEY SOLUTIONS

LAND SURVEYING
BUILDING SURVEYING
UNDERGROUND SURVEYING
SITE ENGINEERING
MONITORING

0845 040 5969
survey-solutions.co.uk

IPSWICH BEDFORD COVENTRY GLASGOW LONDON MANCHESTER NORWICH NOTTINGHAM YEOVIL

PROJECT TITLE: RANNOCH STREET, READING, BERKSHIRE, RG30 4FU.				
DRAWING DETAIL: UTILITIES AND DRAINAGE SURVEY. SHEET 1 OF 1				
CLIENT: GLEEDS MANAGEMENT SERVICES LTD.				SCALE: 1:200
SURVEYOR: RJB	SURVEY DATE: 26/07/2022	CHECKED BY: AJM	APPROVED BY: GSB	DWG STATUS: FINAL
DRAWING NUMBER: 43004BWUG-01			REVISION:	ISSUE DATE: 03/08/2022

RICS chartered ices THE SURVEY ASSOCIATION ISO 9001 REGISTERED FIRM QMS ISO 14001 : 2015 REGISTERED

©Land Survey Solutions Limited 01/01/2020

Original Sheet Size A0H

Appendix I Phase 1 Desk Study

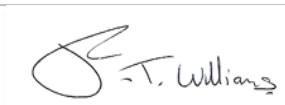
geotechnical and environmental consultants

ground&water

Phase I Desk Study

Dee Park Sports, Reading, RG30 4EP

Reading Borough Council

Report Reference: GWPR6235/DS/October 2024			Status: Final
Issue	Prepared By	Checked By	Verified By
v.1.01			
	Libby Bennett BSc (Hons) Geotechnical and Geoenvironmental Engineer	Miltiadis Mellios MSc(Eng) CGeol FGS MIEnvSc GMICE Principal Engineer	Francis Williams MGeol (Hons) FGS CEnv CGeol Director

Site Investigations | Environmental Consultants | Geotechnical Engineers

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Table of Contents

..... 0

Table of Contents i

1. INTRODUCTION 1

1.1. General 1

1.2. Aims of the Investigation 1

1.3. Conditions and Limitations 1

1.4. Technical Glossary 1

2. SITE SETTING 2

2.1. Site Location 2

2.2. Site Description 2

2.3. Proposed Development 2

2.4. Geology 2

2.5. Hydrogeology and Hydrology 3

2.6. Radon 4

2.7. Internet Search (Site Setting) 4

2.7.1. Available Unexploded Ordnance (UXO) Map Review 4

2.7.2. Historical Landfill Tool Review 4

3. HISTORICAL REVIEW 5

3.1. Historical Map Review 5

3.2. Historical Aerial Photography Review 5

4. ENVIRONMENTAL AND GEOLOGICAL INSIGHT 7

4.1. Groundsure Datasheets 7

5. ONLINE REVIEW AND HISTORICAL INVESTIGATIONS 10

5.1. Online Council Planning Database 10

5.2. Internet Search 10

6. PRELIMINARY RISK ASSESSMENT 11

6.1. Contaminant Source-Pathway-Receptor Model 11

6.2. Potential On-site Sources of Contaminants 11

6.3. Potential Off-site Sources of Contaminants 12

6.4. Potential Receptors 13

6.5. Contaminant Absorption Pathways 13

6.6. Tabulated Conceptual Site Model 14

7. RECOMMENDATIONS AND PHASE II OBJECTIVES 18

7.1. Soils 18
7.2. Services 19
7.3. Groundwater 19
7.4. Ground-gas 19
7.5. Vapours 19
7.6. Geotechnical Review 19
7.6.1. General 19
7.6.2. Chalk Dissolution Risk Assessment 20
FIGURES 1
APPENDIX A: Conditions and Limitations 2
APPENDIX B: Technical Glossary 5
APPENDIX C: Site Photographs 6
APPENDIX D: Historical Maps 7
APPENDIX E: GroundSure EnviroInsight and GeoInsight Datasheets 8

EXECUTIVE SUMMARY	
PROPOSED DEVELOPMENT	At the time of reporting, October 2024, the proposed development was understood to comprise redevelopment of the site into an updated play area.
GEOLOGY AND HYDROGEOLOGY	The British Geological Survey Solid and Drift Geology Map for the Reading area (Reading Sheet No. 268) revealed that the northern section of the site was underlain by the Lambeth Group (clay,silt and sand) whilst the southern section was underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated). Areas of Worked Ground were recorded 1m northeast and 224m south of the site. A study of the aquifer maps on the DEFRA website revealed the northern section of the site was underlain by a Secondary A Aquifer comprising bedrock deposits of the Lambeth Group whilst the southern section of the site was underlain by a Principal Aquifer comprising bedrock deposits of the Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated). Examination of the Environment Agency records showed that the site **did not** fall within a Groundwater Source Protection Zone (SPZ) as classified in the Policy and Practice for the Protection of Groundwater. No surface water features were present within a 250m radius of the site. The nearest surface water feature was identified to be the River Thames ~940m north of the site flowing in an easterly direction. From analysis of hydrogeological and topographical maps the actual groundwater table was anticipated to be encountered at depth within the Chalk Formation. Some amounts of groundwater however may be present at shallower depths within the Lambeth Group or within Made ground. It was considered that groundwater was flowing in a northern direction toward the River Thames and in line with local topography.
POTENTIAL SOURCES OF CONTAMINATION	Full details can be seen in sections 6.3 and 6.4 of this report. Onsite - The Desk study has revealed the following potential sources of contamination onsite: • Potential for Made Ground (associated with historical construction/demolition onsite) • Infilled historical pit Offsite - The Desk study has revealed the following potential sources of contamination within the site's environs: • Infilled pits • Fire station • Allotments • Electrical substations • Tanks
RECOMMENDATIONS / PHASE II OBJECTIVES	It is recommended that an intrusive ground investigation is undertaken at the site to evaluate the risk that contaminants of concern within the soils and groundwater may affect end-users. This should determine the underlying ground and groundwater conditions and include an assessment of the level of contamination to enable the quantification of the ground-related risks associated with the proposed redevelopment. If analytical results show elevated concentrations of contaminants of concern in the soil samples then there might be a requirement to assess the potential risks of leachability of contaminants migrating into the Principal Aquifer groundwater underlying the site. This might mean leachate testing on soils samples is required or groundwater sampling and testing. The CSM has identified a negligible risk from ground gases and vapours at the site as a result of the proposed development not anticipated to include buildings or confined spaces. Analysis of soil samples should include Total Organic Carbon (TOC) testing in order

	to enable a pragmatic ground gas risk assessment to be undertaken at the site. This approach will only quantify the risk associated with on-site sources.

1. INTRODUCTION

1.1. General

Ground and Water Limited were instructed by Reading Borough Council on the 24th September 2024 to conduct a Phase I Desk Study on the site at Dee Park Sports, Reading, RG30 4EP. The scope of the investigation was detailed within the email fee proposal, dated the 9th September 2024.

1.2. Aims of the Investigation

This Phase 1 Desk Study was undertaken to advise the client on risk factors pertaining to the site with special reference to former and present day potential contaminative uses and their impact on sensitive receptors, these being human health, controlled waters, buildings, building materials and services.

This Phase I Desk Study comprises a Tier 1 Preliminary Risk Assessment, under Land Contamination Risk Management (LCRM), with the intention of discharging planning conditions.

1.3. Conditions and Limitations

This report has been prepared based on the terms, conditions and limitations outlined within Appendix A.

1.4. Technical Glossary

Generic technical terms and their description can be viewed within the glossary provided within Appendix B.

2. SITE SETTING

2.1. Site Location

The site comprised a ~1,600m^2 rectangular-shaped plot of land, along the north-western side of Glenmore Place. The site was located in the north-western portion of Reading, Berkshire.

The national grid reference for the centre of the site was approximately 468479 173632. A site location plan is given within Figure 1.

2.2. Site Description

A Site Walkover was undertaken on the 3rd October 2024. A description of the site, as noted during the Site Walkover, is tabulated below. Photographs can be seen in Appendix C.

Site Description Sheet	
Use of site	At the time of the site walkover, 3rd October 2024, the site comprised a children's park, sports court and temporary building.
Site topography	The site was noted to be generally flat.
Area topography	The surrounding area was noted to be generally flat.
Structures onsite	The site is occupied by a singular temporary building/portakabin within the northern portion of the site with a fenced off sports court within the centre of the site and children's play area within the southern section.
Structures off-site	The site was surrounded by residential developments.
Use of surrounding ground	The surrounding ground comprised predominantly residential housing, gardens and parking.
Boundary features	Northern Boundary: An open boundary to residential development Eastern Boundary: An open boundary to residential development Southern Boundary: An open boundary to residential development Western Boundary: An open boundary to community centre
Site covering	The sports court was laid to tarmac hardstanding whilst the children's play area laid to wood chips. The remainder of the site generally comprised soft-landscaping with some tarmac pathways.
Contamination sources onsite	None noted.
Contamination sources off-site	None noted.
Vegetation onsite	Some 3 – 7m mature to semi-mature trees along the perimeters of the site.
Vegetation off-site	Some small shrubs/bushes and 3-5m trees.
Services	Drainage and lampposts along the eastern and western edges of the site.

2.3. Proposed Development

At the time of reporting, October 2024, the proposed development was understood to comprise redevelopment of the site into an updated play area.

The proposed development plan can be seen within Figure 4.

2.4. Geology

The British Geological Survey Solid and Drift Geology Map for the Reading area (Reading Sheet No. 268) revealed that the northern section of the site was underlain by the Lambeth Group (clay,silt and sand) whilst the southern section was underlain by Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated). Areas of Worked Ground were

recorded 1m northeast and 224m south of the site. An inferred bedrock fault was running through the middle of the site, separating the two areas.

Superficial deposits (Drift) are the youngest geological deposits formed during the most recent period of geological time. They rest on older deposits or rocks referred to as bedrock (Solid), which are the main mass forming the Earth. Bedrock is present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

Lambeth Group
The Lambeth Group (formerly known as the Woolwich and Reading Beds) is a sedimentary complex comprising a basal bed (the Upnor Formation also known as the Bottom Bed) composed of glauconitic sand, sandy clay and gravel (well-rounded flint pebbles), with laterally variable sand and clay above. In the eastern part of the area the basal bed is mostly overlain by a shelly grey sandy clay or silty sand and laminated beds (Woolwich Formation). At the top of the sedimentary complex is the Reading Formation, which is made up of multi-coloured mottled clays and silty clays.

Undifferentiated Lewes Nodular Chalk, Seaford Chalk and Newhaven Chalk
The Undifferentiated Lewes Nodular Chalk, Seaford Chalk and Newhaven Chalk is a soft white friable microporous limestone composed of coccolith biomicrites with a varying proportion of larger shell fragments. Flint characterises the Undifferentiated Lewes Nodular Chalk, Seaford Chalk and Newhaven Chalk, occurring as nodular courses, tabular beds and linings to fractures.

At various levels clay sized material occurs as marl seams and partings. Close to the surface the upper few metres are invariably discoloured brown, due to leaching from the overlying strata. The interface with any overlying stratum is invariably extremely irregular as a result of localised weathering and dissolution. Weathering by frost action may extend to a depth of several metres.

Occasional erosional features, such as pipes, swallow holes and solution cavities, usually in-filled with drift deposits; can be found in the chalk deposits. These features sometimes manifest themselves at the surface as shallow circular depressions. Solution features may be reactivated by the concentrated ingress of water from leaking drains or soakaways. Reactivation may lead to surface collapse.

A BGS borehole (SU67SE718) located ~290m northeast of the site revealed a 0.10m capping of Topsoil over chalk and clayey chalk fill to 1.20m bgl followed by a brown flinty clay to 1.60m bgl. From here up to 2.20m bgl a remoulded chalk with lumps of intact chalk, clay and flints was identified over remoulded chalk with some intact chalk up to 3.10m bgl. A rubbly chalk with some remoulded chalk and flints was then recorded to the base of the borehole at a depth of 6.0m bgl. No groundwater was recorded.

2.5. Hydrogeology and Hydrology

A study of the aquifer maps on the DEFRA website revealed the northern section of the site was underlain by a Secondary A Aquifer comprising bedrock deposits of the Lambeth Group whilst the southern section of the site was underlain by a Principal Aquifer comprising bedrock deposits of the Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (undifferentiated).

Examination of the Environment Agency records showed that the site **did not** fall within a Groundwater Source Protection Zone (SPZ) as classified in the Policy and Practice for the Protection of Groundwater.

No surface water features were present within a 250m radius of the site. The nearest surface water feature was identified to be the River Thames ~940m north of the site flowing in an easterly direction.

From analysis of hydrogeological and topographical maps the actual groundwater table was anticipated to be encountered at depth within the Chalk Formation. Some amounts of groundwater however may be present at shallower depths within the Lambeth Group or within Made ground. It was considered that groundwater was flowing in a northern direction toward the River Thames and in line with local topography.

Examination of the Environment Agency records showed that the site was located within a Flood Zone 1, i.e. an area with a very low probability of flooding.

The Groundsure Datasheets revealed the site was at a low risk of flooding from rivers and the sea. The datasheets also revealed the site was at low risk of groundwater flooding. The risk of surface water flooding at the site ranged from low to high.

2.6. Radon

A review of the freely available UK Health Security Agency radon database, UK Radon, indicated that majority of the site was located within a 1km grid square, where the maximum radon potential of 1 – 3% was recorded for above ground structures. A small section of the site within the northeastern corner of the site and extending offsite to the east was within an area of where the maximum radon potential of less than 1% for above ground structures. Basic radon protection measures are required in areas where more than 3% of houses are at or above the Action Level.

The site was in an area where a risk assessment was not required.

2.7. Internet Search (Site Setting)

2.7.1. Available Unexploded Ordnance (UXO) Map Review

A review of the data available on www.zeticauxo.com/ revealed the site was located within a low -risk area associated with unexploded ordnance (UXO), as indicated by having <15 bombs dropped per 1000 acres.

2.7.2. Historical Landfill Tool Review

A review of the data available on www.groundsure.io/ revealed no records of historical landfilling within a 250m radius of the site. The nearest record was noted ~925m northwest of the site.

3. HISTORICAL REVIEW

3.1. Historical Map Review

The object of this search was to report on the history of the site and its environs from available County Series and Ordnance Survey Maps dating from the mid to late 19th Century to the present day and downloaded from Groundsure. In the following sections dealing with individual maps, only features considered to have a potential contaminative impact on the site and usually within a notional 250 metre radius of the site boundaries are discussed. Any distances quoted for features remote from the site have been scaled from the maps and are only approximate. The north point and approximate extent of the site are indicated on each figure. The historical maps referred to are given within Appendix D. The implications of the map search are discussed later within this report.

Environmental Significance of Data from Historical Maps		
Maps Dated Between	**Site**	**Environs**
1881 – 1899	The site comprised a part of an undeveloped open plot of land, likely agricultural land/fields. An Old gravel pit adjacent to the east of the site encroaches slightly along the eastern border of the site.	The site environs generally comprised undeveloped agricultural land/fields. Two old gravel pits were identified adjacent to the east and northeast of the site. An additional old gravel pit was identified ~175m north of the site within a woodland.
1899 – 1911	No significant change recorded.	The old gravel pit adjacent to the east of the site appeared to have been infilled slightly.
1911 – 1932	No significant change recorded.	Allotment gardens were identified ~240m north of the site.
1932 – 1962	No significant change recorded.	Allotment gardens were identified ~50m east of the site and ~30m southwest of the site.
1962 – 1971	No significant change recorded.	The previously identified allotment gardens to the north and east of the site were no longer detailed on mapping. Additional allotments are noted ~75m north and ~110m northeast of the site. Residential development has occurred to the northeast as close as ~75m from site.
1971 – 1991	A playground was identified within the southwestern corner of the site. The area of pit previously identified to encroach over the eastern boundary of the site appears to have been infilled.	The aforementioned pits adjacent to the site and to the north were no longer detailed on mapping and presumably been infilled. Residential development has occurred in all directions surrounding the site with electricity substations noted ~160m north, ~90m east, ~50m south and ~55m northwest of the site.
1991 - 2024	No significant change recorded.	Continued development surrounding the site.

3.2. Historical Aerial Photography Review

The object of this search was to report on the history of the site and its immediate environs from available Aerial Photography dating from the late-20th Century to the present day and downloaded from Google Earth and Groundsure. Any distances quoted for features remote from the site have been scaled from the photography and are only approximate.

At the time of the earliest aerial photography, 1999, majority of the site appears to comprise part of an undeveloped playing field with a small playground within the southwestern corner of the site. The playing field extends to the north and east of the site with residential development noted adjacent to the west of the site and as close as ~40m to the north and east. A school and other development is

noted adjacent to the south of the site. Within the aerial photography from 2010 shows a sports court to have been constructed within the centre of the site whilst the playing field to the east/northeast appears to be under development with groundworks in progress. The remaining surrounding area and site itself remain unchanged. The photography from 2013 shows the development to the east/northeast to have been completed and comprises 2no. parallel rows of terraced properties.

From the 2019 photography a single structure is noted within the northern section of the site. Throughout the remaining photographs up to 2020 the site remains unchanged however off-site demolition and construction appears to have occurred to the west and further afield to the east.

4. ENVIRONMENTAL AND GEOLOGICAL INSIGHT

4.1. Groundsure Datasheets

Groundsure Environmental and Geological Datasheets were obtained for the site. Unless the data indicates a significant risk, only information within a 250m buffer zone has been included. The GroundSure Datasheets are also presented in Appendix E and a summary is given below and overleaf(s).

Environmental Insight	
Source	Nearest Distance from Site/Dated/Type
Past Land Use	
Historical industrial land uses	5x on-site and 18 off-site records within a 250m radius: 2x record of an unspecified pit on-site (1932-1961), 3x records of old gravel pits on-site (1900 – 1910). 4x records of unspecified pits 2m northeast (1961), 141m northeast, 145m northeast and 148m northeast (1931-1961). 2x records of unspecified ground workings 6m northeast (1938) and 198m south (1961). 3x records of old gravel pits 136-141m northeast (1900-1910), 2x records of a fire station 188m south (1976-1991), 2x records of a clay pit 198m south (1932-1938), 2x records of unspecified tanks 237-240m south (1932-1961), 1x record of an unspecified heap 243m south (1961), 2x records of an unspecified depot 249m northeast (1976-1982).
Historical Tank Database	1x record within a 250m radius: 1x record 244m south of the site relating to an unspecified tank.
Historical Energy Features Database	12x off-site records within a 250m radius: 12x records of electricity substations 44m north (1993), 46m south (1971-1987), 51m north (1971-1987), 61m south (1993), 84m east (1990-1994), 85m east (1970), 160m north (1970-1994), 169m south (1971-1993), 173m southwest (1971-1993), 194m southeast (1981-1993), 239m west (1993) and 242m west (1971-1987).
Waste and Landfill	
Waste exemptions	1x record within a 250m radius: 1x record 100m east relating to non-agricultural waste and the use of waste in construction.
Current Industrial Land Use	
Recent Industrial Land Uses	8x record within a 250m radius: 7x records of electricity sub-stations 50m south-east, 89m east, 171m south-west, 172m south, 197m southeast and 246m west. 1x record of a Gas Governor 181m northwest.
Current or recent petrol stations	1x record within a 250m radius: 1x record 229m southeast relating to an obsolete petrol station located on Spey Road, Reading.
Hydrogeology	
Superficial Aquifer	No records on-site. 1x record 173m north relating to a Secondary A Aquifer.
Bedrock Aquifer	2x record onsite: 1x Principal Aquifer

	1x Secondary A Aquifer.
Groundwater Vulnerability – Soluble Rock Risk	2.0% of grid square covered by maximum risk Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.
Hydrology	
WFD Surface Water Body Catchments	1 record within a 250m radius: 1x River Catchment (Thames Wallingford to Caversham) on-site.
WFD Groundwater Bodies	1 record within a 250m radius: 1x Berkshire Downs Chalk on-site.
Environmental Designations	
Visual and Cultural Designations	
Agricultural Designations	
Agricultural Land Classification	1x record within a 250m radius: 1x Urban on-site.
Habitat Designation	

Geological Insight	
Source	Nearest Distance from Site/ Type
Artificial and Made Ground (1:10,000 Scale)	2x records within a 250m radius: 1x record of worked ground 1m northeast 1x record of worker ground 224m south.
Superficial Geology (1:10,000 Scale)	1x record within a 250m radius: 1x record 172m north – Head Deposits (Clay, Silt, Sand and Gravel).
Bedrock Geology (1:10,000 Scale)	2 on-site records: 1x Undifferentiated Lews Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation (Chalk), 1x Lambeth Group (Clay, Silt and Sand).
Bedrock Faults and Other Linear Features (1:10,000 Scale)	1 record within a 250m radius: 1x record of a fault on site. Recorded as a normal fault.
Superficial Geology and Permeability (1:50,000 scale)	1x record within a 250m radius: 1x record 172m north – Head Deposits (Clay, Silt, Sand and Gravel).
Bedrock Geology and Permeability (1:50,000 scale)	2 records onsite: 1x Newhaven Chalk Formation and Seaford Chalk Formation (Undifferentiated). Flow Type – Fracture, Maximum Permeability – Very High, Minimum Permeability – Very High. 1x Lambeth Group. Flow Type – Mixed, Maximum Permeability – Moderate, Minimum Permeability – Very Low.
Bedrock faults and other linear features (60k)	1 record within a 250m radius: 1x record of a fault on site. Recorded as a normal fault.
Natural Hazard Findings	
Shrink-Swell Clay	Negligible to Moderate hazard onsite.
Running Sands	Negligible to Very Low hazard onsite.
Compressible Deposits	Negligible hazard onsite.
Collapsible Deposits	Very Low hazard onsite.
Landslides	Negligible to Very Low hazard onsite.
Ground Dissolution of Soluble Rocks	Low to Moderate hazard onsite.
Mining, Ground Working and Natural Cavities	
Records of BritPits	4x records within a 250m radius: 3x records relating to Penham's Shaw Gravel Pit 21m southeast, 27m northeast and 164m northeast. All recorded as a Type A Surface mineral working. Recorded as ceased. 1x record 241m south relating to Grovelands Brick, Tile and Pottery Works. Recorded as ceased.

Records of Surface Ground Workings	20x records within a 250m radius: 7x records on site relating to Unspecified pits (1932-1961) and Old gravel pits (1900-1910) 5x records of unspecified pits – 2m northeast (1961), 141m northeast (1938), 145-148m northeast (1932-1961). 2x records of Unspecified ground workings 6m northeast (1938) and 198m south (1961) 3x records of an old gravel pit 136-141m northeast (1900-1910) 2x records of a clay pit 198m south (1932-1938) 1x record of an unspecified heap 243m south (1961).
Records of Historical Mineral Planning Areas	1x record with a 250m radius: 1x record 157m southwest relating to Groveland Tile and Pottery Works recorded as a surface mineral working for loam with sand.
Researched mining	1x record on site relating to stone mining.
Radon	
Is the property in a Radon Affected Area as defined by the Health Protection Agency (HPA) and if so what percentage of homes are above the Action Level?	The majority of the site was located within a 1km grid square, where the maximum radon potential of 1 – 3% was recorded for above ground structures. A small section of the site within the northeastern corner of the site and extending offsite to the east was within an area of where the maximum radon potential of less than 1% for above ground structures.
Is the property in an area where Radon Protection are required for new properties or extensions to existing ones as described in publication BR211 by the Building Research Establishment?	No radon protective measures are necessary.
Estimated Background Soil Chemistry	
Records of BGS estimated background soil chemistry	4 records within a 250m radius: On-site (x3) and 20m southeast: Arsenic: 15mg/kg Lead 100mg/kg (60mg/kg bioaccessible) Cadmium: 1.8mg/kg Chromium: 60 – 90mg/kg Nickel: 15 – 30mg/kg
Railway Infrastructure and Projects	

5. ONLINE REVIEW AND HISTORICAL INVESTIGATIONS

5.1. Online Council Planning Database

A review of the Reading Borough Council Planning Database revealed that no planning applications had been filed for the site.

5.2. Internet Search

An internet search did not identify any other information pertinent to this report.

6. PRELIMINARY RISK ASSESSMENT

6.1. Contaminant Source-Pathway-Receptor Model

In the UK, the assessment of risk from contamination follows the source-pathway-receptor (SPR) approach. For a risk to be present there must be a source of contamination, a receptor or receptors, and a pathway for contaminants to migrate or be absorbed. If one of these three elements are absent, it is considered that there is no risk of harm. If, however, there is a linkage between any given source and any given receptor, then a risk-based approach is used to assess the significance or impact of the pollutant linkage.

This Phase 1 Desk Study has been used to identify potential on-site and off-site sources of contamination, which are summarised in this section of the report. Additional potential sources of contamination identified within the Desk Study have been discounted based on the absence of a realistic SPR linkage (i.e. the distance from the site or the nature or age of any potential contamination sources).

In line with the requirements of BS 21365:2020, *Soil Quality – Conceptual site models for potentially contaminated sites*, the Conceptual Site Model (CSM) can be described in text, tabulated or presented as a figure. A tabulated CSM is provided in Section 6.6 of this report, where each component is discussed in the following sections.

6.2. Potential On-site Sources of Contaminants

This Desk Study revealed that at the time of the earliest historical mapping (1881) the site comprised an undeveloped plot with a small section of an off-site pit noted to encroach onto the eastern boundary of the site. Within the 1971 mapping the pit was noted to have been infilled and a playground was then noted within the southwestern corner of the site. The aerial photography from 2010 identified a sports court to be constructed within the centre of the site whilst a single structure identified as a temporary building within the site walkover was noted on site from 2019.

The Phase 1 Desk Study revealed the following on-site sources of contamination:

- The site has undergone some phases of construction/demolition and as a result various thicknesses of Made Ground resulting from these activities are likely to be encountered.

  Contaminants of concern associated with Made Ground deposits include; metals, Petroleum Hydrocarbons (TPHs), Polycyclic aromatic hydrocarbons (PAHs), asbestos, sulphates, volatile organic compounds (VOCs) and ground gases.

- The historical maps and Groundsure datasheets identified a portion of an off-site pit to be present on the eastern side of the site which is understood to have been backfilled ~1971.

  Decomposition of the organic matter and waste material potentially used to infill the pit is likely to occur which could generate harmful ground gases such as methane and carbon dioxide. Contaminants of concern associated with the infill material may also include metals, Petroleum Hydrocarbons (TPHs), Polycyclic aromatic hydrocarbons (PAHs), asbestos, sulphates and volatile organic compounds (VOCs).

In this instance as the proposed development not anticipated to include buildings or confined spaces the ground gas risk is considered to be negligible but the risk of contamination from infilled material should be investigated further.

6.3. Potential Off-site Sources of Contaminants

The Phase 1 Desk Study revealed the following potential off-site sources of contamination:

Infilled Pits

The historical maps and Groundsure datasheet identify a number of pits and ground workings within a 250m radius of the site with the closest being adjacent to the east of the site which appears to become infilled around 1971. Putrescible material may have been used to backfill the feature which in turn could be decaying to produce ground gases. Due to the proposed development not anticipated to include buildings or confined spaces the ground gas risk is considered to be negligible.

Allotment Gardens

The historical mapping identified several allotment gardens within a 250m radius of the site, the closest of which being ~30m southwest of the site. Pesticides/herbicides may have been used on a regular basis across the allotment gardens. Heavy metals and semi-metals may also have been used. Isolated leaks from farm machinery and storage containers may have resulted in fuel/lubrication oil contamination. Therefore, it was considered likely that there may be remnants of these chemicals left in the near surface soils. Given the distance of the allotment gardens from site and time passed since their active use the risk to site is considered negligible.

Electricity Substations

The Groundsure datasheet identified 12no. records of electricity substations within a 250m radius of the site with the closest being 44m north (1993) followed by 46m south (1971-1987) and 51m north. PCB oils and other cable/transformer oils, together with a series of waxes are commonly used in mainly high voltage applications. PCBs are generally toxic; however, newer forms of non-toxic oils and waxes have replaced the use of PCBs. All cable oils are extremely viscous and adhere strongly to soil particles and do not tend to migrate far from the point of leakage or spillage. Therefore, the potential risk of encountering PCBs on the site was negligible.

Fire Station

A fire station was recorded within the Groundsure Datasheets 188m south of the site between 1976 and 1991. Contaminants of concern associated with Fire Stations include; metals, Petroleum Hydrocarbons (TPHs), Polycyclic aromatic hydrocarbons (PAHs), asbestos, volatile organic compounds (VOCs) and Per- and Polyfluoroalkyl Substances (PFAS). The risk to site was however considered to be negligible given the distance from site and time elapsed since the station was in use.

Tanks

The Groundsure Datasheet identified unspecified tanks 237-240m south of the site (1932-1961). The use of the tanks was unknown but may have contained oil/fuel hydrocarbons. Spillages/leakages may have occurred over time and affected the soils and groundwater underlying the site. The risk from the tanks was considered to be low given the distance from site and the time elapsed since they were

recorded which will have allowed time for any hydrocarbons to have steadily attenuated over time therefore reducing risk.

6.4. Potential Receptors

At the time of reporting, October 2024, the proposed development was understood to comprise redevelopment of the site into an updated play area. The proposed development plan can be seen within Figure 4.

Based on the proposed development, the potential receptors are presented below and comprise:

Human Health

- End users of the site (Residents/Future site visitors);
- Construction workers during redevelopment;
- Site operatives during maintenance works; and
- Neighbours and members of the public.

Flora and Fauna

- Vegetation within soft landscaped areas;

Building Materials and Services

- Buried concrete;and
- Underground services (Water Pipes) (if to be included in the proposed development).

Controlled Waters

- Secondary A Aquifer (Lambeth Group); and
- Principal Aquifer (Lewes Nodular, Seaford and Newhaven Chalk Formation (undifferentiated)).

6.5. Contaminant Absorption Pathways

The potential pathways for contaminant absorption between the identified sources and the identified receptors are as follows:

Human Health:

- Direct ingestion of soil and soil derived dust;
- Dermal contact of soil and soil derived dust;
- Inhalation of dust (indoors and outdoors) with elevated concentration of determinands;
- Ingestion of home-grown produce, and soil attached;
- Direct ingestion of groundwater;
- Inhalation of volatile vapour (indoors and outdoors);
- Inhalation of ground gases.; and
- Explosion.

Flora and Fauna

- Direct uptake of groundwater; and
- Direct uptake of contaminants in the soil.

Controlled Waters

- Vertical and lateral migration in permeable strata horizons;
- Via anthropogenic pathways (infilled ground and service runs);
- Surface water Runoff.

6.6. Tabulated Conceptual Site Model

The tabulated Conceptual Site Model developed as part of this Desk Study is outlined overleaf. For ease of reference and understanding, the risks have been classified within this risk assessment against four possible levels / categories, summarised in the table below.

Risk Categories used in the Tabulated CSM	
Negligible	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is no plausible risk. Therefore, there is no need to further assess this potential source of contamination.
Low Risk	Regarding this potential SPR linkage, the site is considered suitable for the proposed end-use and there is not considered to be an unacceptable risk to receptors. However, it is considered that further investigation to confirm this is recommended.
Moderate Risk	Regarding this potential SPR linkage, the site may not be suitable for the proposed end-use in its current condition and there may be an unacceptable risk to receptors. Further investigation is required to confirm this.
High Risk	Regarding this potential SPR linkage, the site is probably or certainly not suitable for proposed end-use and there is likely to be an unacceptable risk to receptors. Contaminants probably or certainly present and urgent action required in the short term.

Tabulated Conceptual Site Model – Pollutant Linkage Summary (On-Site Sources)			
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk Classification
Made Ground from construction/ demolition activities and infill of pit: • Asbestos, • PAHs, • TPHs, • VOCs,-negligible • Sulphates, and • Metals.	• Direct ingestion of soil and soil derived dust • Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Ingestion of home-grown produce, and soils attached • Direct ingestion of groundwater • Inhalation of volatile vapour (indoors and outdoors)	**Human Health** • End Users (Site workers/Future site visitors) • Construction workers during development • Site operatives during maintenance works • Neighbours and public	**Moderate**
	• Direct uptake of groundwater • Direct uptake of determinands in the soil	**Flora and Fauna** • Vegetation within soft landscaped areas	**Moderate**
	• Anthropogenic (man-made) pathways • Vertical and lateral migration in permeable strata • Surface water runoff	**Controlled Waters** • Principal Aquifer (Lewes Nodular, Seaford and Newhaven Chalk Formation (undifferentiated)) • Secondary A Aquifer (Lambeth Group).	**Low**
Aggressive ground conditions with Made Ground and natural ground, including groundwater: • Sulphates, • PAH/TPH.	• Direct contact with aggressive ground conditions	**Building Materials and Services** • Buried Concrete • Underground services (water pipes)	**Low**
Ground gases generated by Made Ground: • Methane, • Carbon Dioxide, • Hydrogen Sulphide, and • Carbon Monoxide.	• Migration through anthropogenic & natural pathways • Inhalation of Asphyxiating gases • Explosion (methane only)	**Human Health** • End Users (Residents/Future site visitors) • Construction workers during development (especially in confined spaces) • Site operatives during maintenance works in confined spaces • Neighbours and public	**Negligible**
	• Migration through anthropogenic & natural pathways • Explosion (methane only)	**Building Materials and Services** • Buildings • Confined spaces • Underground services	**Negligible**

Tabulated Conceptual Site Model – Pollutant Linkage Summary (Off-Site Sources)			
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk Classification
Made Ground from nearby works/development: • Asbestos, • PAHs, • TPHs, • VOCs,-negligible • Sulphates, and • Metals.	• Direct ingestion of soil and soil derived dust • Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Direct ingestion of groundwater • Inhalation of volatile vapour (indoors and outdoors)	**Human Health** • End Users (Residents/Future site visitors) • Construction workers during development • Site operatives during maintenance works	**Low**
	• Direct uptake of groundwater	**Flora and Fauna** • Vegetation within soft landscaped areas	**Low**
Aggressive ground conditions associated with impacted groundwater; • Sulphates, • PAH/TPH.	• Direct contact with aggressive ground conditions	**Building Materials and Services** • Buried Concrete • Underground services (water pipes)	**Low**
Ground gases generated by infilled pits/Made Ground: • Methane, • Carbon Dioxide, • Hydrogen Sulphide, and • Carbon Monoxide.	• Migration through anthropogenic & natural pathways • Inhalation of Asphyxiating gases • Explosion (methane only)	**Human Health** • End Users (Residents/Future site visitors) • Construction workers during development (especially in confined spaces) • Site operatives during maintenance works in confined spaces	**Negligible**
	• Migration through anthropogenic & natural pathways • Explosion (methane only)	**Building Materials and Services** • Buildings • Confined spaces • Underground services	**Negligible**
Electricity Sub-station: • PCBs	• Migration through anthropogenic & natural pathways	**Human Health** End Users (Residents/Future site visitors)	**Negligible**
Nearby Allotments: • Pesticides/herbicides, • Metals, • PAHs, • TPHs, • Sulphates and • VOCs.	• Direct ingestion of soil and soil derived dust • Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Direct ingestion of groundwater • Inhalation of volatile vapour (indoors and outdoors)	**Human Health** • End Users (Residents/Future site visitors) • Construction workers during development Site operatives during maintenance works	**Negligible**
	• Direct uptake of groundwater	**Flora and Fauna** Vegetation within soft landscaped areas	**Negligible**

Tabulated Conceptual Site Model – Pollutant Linkage Summary (Off-Site Sources)			
Potential Sources	Potential Absorption Pathways	Potential Receptors	Risk Classification
Leaks/spills associated with tank ~240m south: • Metals and Semi-Metals, • Asbestos and ACMs, • PAHs, • TPHs, • BTEX, • Sulphates, • Phenol, • Harmful pH, VOCs and SVOCs	• • Direct ingestion of soil and soil derived dust • Dermal contact of soil and soil derived dust • Inhalation of dust (indoors and outdoors) with elevated concentration of determinands • Direct ingestion of groundwater • Inhalation of volatile vapour (indoors and outdoors)	**Human Health** • End Users (Residents/Future site visitors) • Construction workers during development Site operatives during maintenance works	**Negligible**
	• Direct uptake of groundwater	**Flora and Fauna** • Vegetation within soft landscaped areas; Ecological receptors and habitat networks.	**Negligible**

7. RECOMMENDATIONS AND PHASE II OBJECTIVES

This section of the report will present recommendations for the further investigation of each plausible pollutant linkage identified by the Conceptual Site Model.

It is recommended that an intrusive ground investigation is undertaken at the site to evaluate the risk that contaminants of concern within the soils and groundwater may affect end-users. This should determine the underlying ground and groundwater conditions and include an assessment of the level of contamination to enable the quantification of the ground-related risks associated with the proposed redevelopment.

Consideration should be given to the testing of soil samples recovered from exploratory holes for chemical laboratory testing. The testing should be for a broad range of contaminants in accordance with DEFRA / CLEA methodologies and include the contaminants of concern identified within the Conceptual Site Model.

7.1. Soils

It is possible that asbestos and asbestos containing materials will be incorporated within any Made Ground. An asbestos management strategy should be implemented to ensure that any asbestos uncovered during the investigation does not pose a risk to members of the public that use the site.

On the basis of the Phase 1 Site Assessment the following contaminants of concern have been identified and should be included in the chemical analysis suite for the ground investigation:

- Asbestos.
- Semi-metals and heavy metals;
- Poly-cyclic aromatic hydrocarbons (PAHs);
- Speciated TPH including full aliphatic/aromatic split;
- Volatile/semi-volatile organic compounds – BTEX Used as marker compounds; and
- Sulphates.

The list above does not imply that these determinands are present on-site or that they are likely to cause contamination issues at the site. The ground investigation will be used to prove the presence or absence of these contaminants. The sampling and testing strategy must be in line with current standards. Given the site has undergone various phases of building and demolition, random sampling should be adopted across the site. Sampling should be undertaken on the eastern side of the site with the aim of targeting the infilled pit. Targeted sampling of proposed soft landscaped areas may be deemed appropriate. Results should be assessed against suitable assessment criteria to be protective of human health as well as vegetation.

Sub-surface concrete may be damaged due to being in contact with aggressive ground conditions. Sampling should be undertaken where the proposed foundations will be in contact with Made Ground and/or natural ground and tested for aggressive ground conditions (sulphates/pH). Classification should then be undertaken of the ground conditions in accordance with Building Research Establishment Special Digest 1, 2005, ‘Concrete in Aggressive Ground’.

7.2. Services

The CSM has identified a low/moderate risk for aggressive ground conditions that may affect water supply pipes as part of the development (if they are to be included). Consideration should be given to the targeted sampling (0.75 – 1.50m bfgl) and scheduling for contaminants of concern: TPH, Naphthalene, Phenols, BTEX, VOCs and SVOCs.

7.3. Groundwater

If analytical results show elevated concentrations of contaminants of concern in the soil samples then there might be a requirement to assess the potential risks of leachability of contaminants migrating into the Principal Aquifer groundwater underlying the site. This might mean leachate testing on soils samples is required or groundwater sampling and testing.

7.4. Ground-gas

The CSM has identified a negligible risk from ground gases at the site as a result of the proposed development not anticipated to include buildings or confined spaces. Analysis of soil samples should include Total Organic Carbon (TOC) testing in order to enable a pragmatic ground gas risk assessment to be undertaken at the site. This approach will only quantify the risk associated with on-site sources.

7.5. Vapours

As the proposed developed is not set to contain buildings or confined spaces the vapour risk is considered to be negligible to future site users.

7.6. Geotechnical Review

7.6.1. General

The BGS have identified the following natural hazards on-site and within a 50m buffer.

Natural Hazards	
Shrink-Swell Clay	Negligible to Moderate hazard onsite.
Running Sands	Negligible to Very Low hazard onsite.
Compressible Deposits	Negligible hazard onsite.
Collapsible Deposits	Very Low hazard onsite.
Landslides	Negligible to Very Low hazard onsite.
Ground Dissolution of Soluble Rocks	Low to Moderate hazard onsite.

Based on the above, it was considered that further investigation in the form of a chalk dissolution risk assessment is carried out for the site.

From review of the historical mapping two old gravel pits were identified adjacent to the east of the site with a small portion of the pit encroaching onto the eastern boundary of the site. An additional gravel pit was also noted ~175m north of the site whilst the Groundsure datasheet recorded additional records of pits and groundworks to the south and northeast of the site. The main commodity is understood to be gravel.

When designing foundations, the potential presence of aggressive ground conditions should be taken into consideration. Further investigation may be required in accordance with the guidance established in BRE Special Digest 1 (SD1) (2005) 'Concrete in aggressive ground'. The BGS do not record any details regarding the potential for aggressive ground conditions within shallow units identified at the site.

It is recommended that as part of the site-specific ground investigation on-site, geotechnical testing is undertaken to determine the underlying ground conditions and to evaluate any geotechnical related risks associated with the proposed redevelopment of the site.

The Groundsure datasheets have indicated that bedrock deposits of the Lambeth Group (north) is likely to have very low to moderate permeability and so may not be suitable for surface water disposal. The Chalk bedrock within the southern area of the site was recorded to have a very high permeability and therefore would be suitable for surface water disposal. These will be subject to on-site testing. The water discharge into chalk may worsen/create dissolution features and therefore soakaways should be remote from structures and undertaken in accordance with the current guidance.

7.6.2. Chalk Dissolution Risk Assessment

The presence of dissolution features on-site can prove problematic, as they often provide inconsistency within the underlying geology. Often formed during glacial and periglacial conditions, the depth and width of these features can vary substantially, often providing inconsistency in geological strength data.

If a dissolution feature is suspected, a geotechnical engineer and structural engineer should be contacted for suitable engineering designs, based on further works identifying and classifying the area the feature occupies.

The Groundsure Geoinsight datasheets, presented Appendix C of this report, revealed the following information which may be pertinent to this risk assessment.

- Ground Dissolution of Soluble Rocks – The northern section of the site was classified as a Low risk of ground dissolution of soluble rocks whilst the southern section of the site was classified as Moderate risk.
    - *Low Risk was described as "Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not to be considered except in exceptional circumstances".*
    - Moderate risk was described as *"Soluble rocks are present within the ground. Many dissolution features may be present. Potential for difficult ground conditions are at a level where they should be considered. Potential for subsidence is at a level where it may need to be considered".*
- An on-site Class B Non-coal Mining area was identified on-site. A Class B area was described as *"Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. Potential for difficult ground conditions are unlikely and are at a level where they need not be considered."*. However, this is generally a precautionary statement attributed to all areas associated with chalk within the ground profile.
- 1no. record of researched mining on site relating to stone.
- 1No. Natural cavity, solution pipe and sinkhole, was identified 355m southeast of the site.
- 4No. Britpits were noted within 250m radius of the site, 21m south-east, 27m northeast, 164m northeast relating to gravel pits and 241m south relating to a brick, tile and pottery works.

- 7No. on-site and 13No. records of surface ground workings were noted. The on-site records correspond to old gravel and unspecified pits (1900-1961), with the off-site features comprising pits and ground workings.
- 1no. record of underground workings was noted within a 500m radius of the site located 396m south and relating to unspecified workings.
- 2no. records of Mining Cavities within 500m of the site relating to chalk located 305m south and 403m northwest.
- No records of JPB Mining Areas were noted within a 500m radius of the site.
- The Edmonds Procedure (Edmonds, C.N., 2001. Predicting natural cavities in chalk. Geological Society, London, Engineering Geology Special Publications, 18(1), pp.29-38.); highlighted a moderate subsidence hazard classification.

The historical mapping review undertaken in section 3.1 of this report confirmed the findings of the Groundsure datasheets discussed above. Pits were identified adjacent to the east of the site (also noted to overlap into eastern section of the site) and ~175m north of the site.

From a review of LiDAR data for the site and surrounding area a feature assumed to be a pit is noted ~440m northwest of the site.

This risk assessment indicates that there is a moderate risk from the dissolution of soluble rocks at the site. Furthermore, along the eastern boundary and extending off-site to the east a pit has been identified from historical mapping. The presence of potential dissolution features and former infilled pits should not be discounted and it is recommended a site investigation is undertaken to investigate further.

FIGURES

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

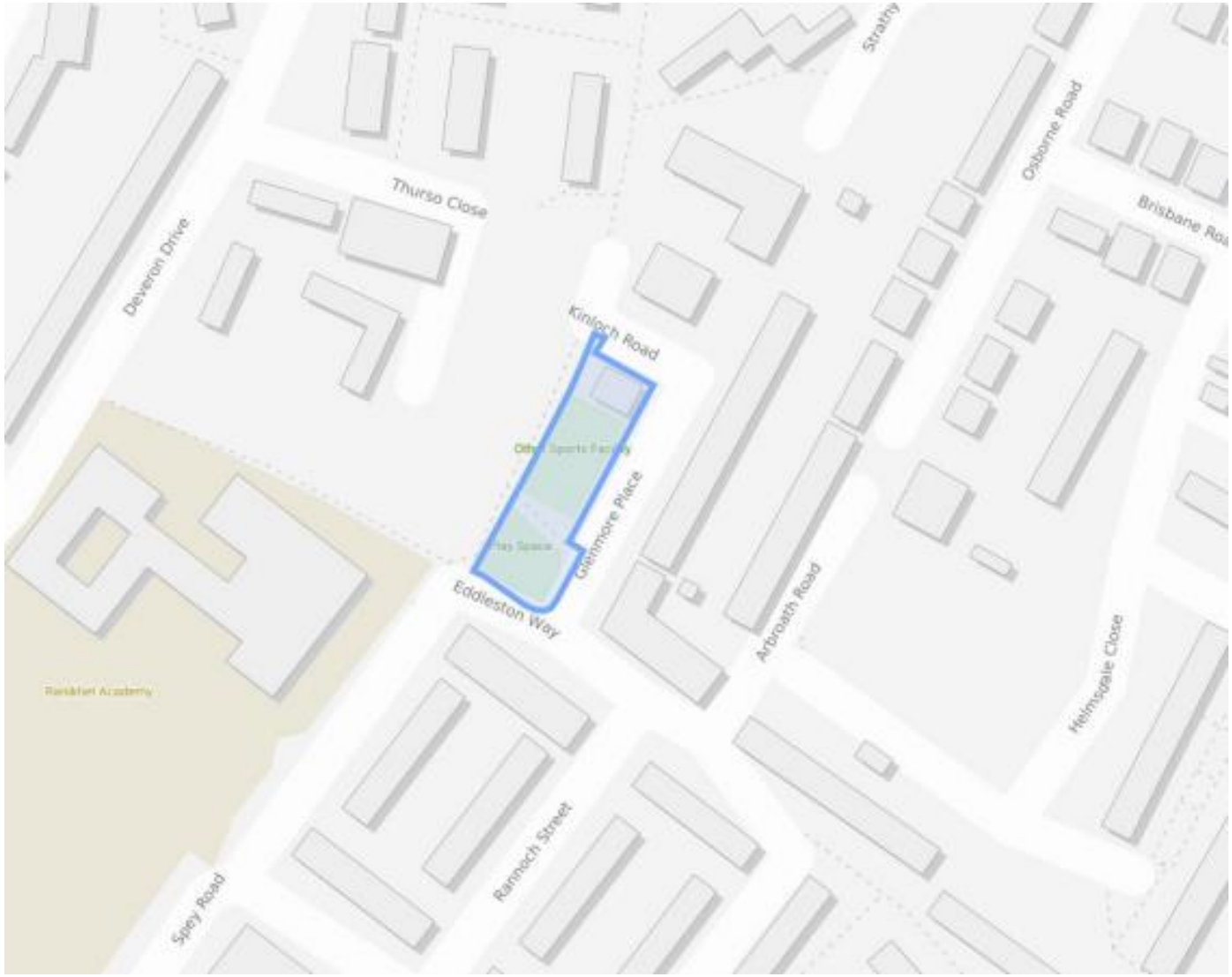


Site boundary

Not to Scale

Dee Park Sports, Reading, RG30 4EP	
Reading Borough Council c/o Gleeds	**October 2024**
Figure 1: Site Location Plan	**GWPR6235**

ground&water



Site boundary

Not to Scale

Dee Park Sports, Reading, RG30 4EP	
Reading Borough Council c/o Gleeds	**October 2024**
Figure 2: Site Development Area	**GWPR6235**

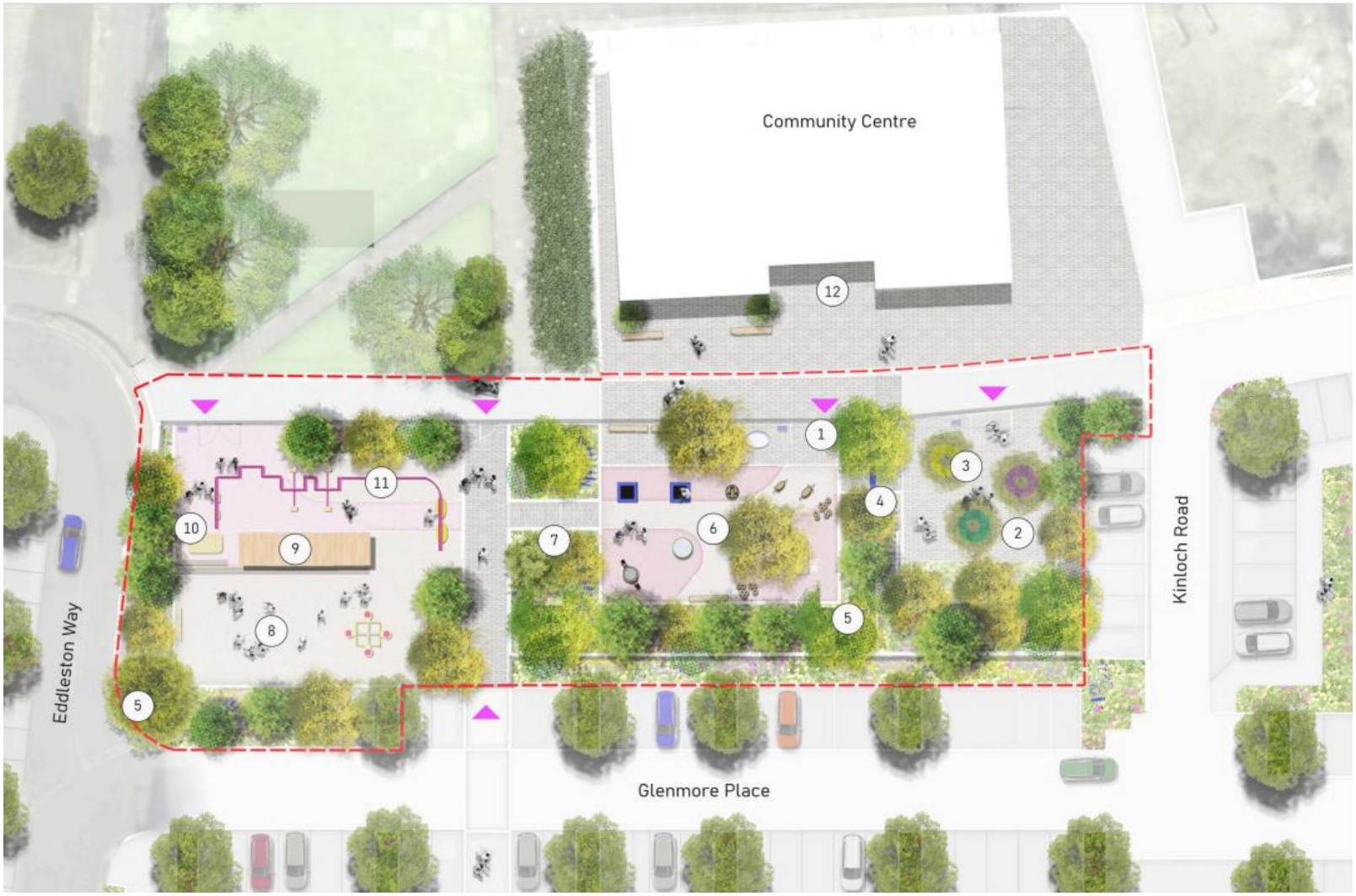
ground&water



Site boundary

Not to Scale

Dee Park Sports, Reading, RG30 4EP	
Reading Borough Council c/o Gleeds	**October 2024**
Figure 3: Aerial View of the Site	**GWPR6235**



Site boundary

Key

1. Paved space to link to community centre
2. Flexible space for events
3. Circular tree seats
4. Arch from Lyons square
5. Proposed tree planting
6. Proposed play area for under 5's with in-ground trampolines, basket swing, roundabout and play frame
7. Proposed planting between play areas with link path
8. Proposed ball sports area with target wall and 4-way basketball hoops
9. Proposed stage with shelter
10. Proposed seating area
11. Proposed multi-element play structure with swings, see-saws, balance beam, up-and-over bars and monkey bars
12. Community Centre entrance

Entrance to park

Not to Scale

Dee Park Sports, Reading, RG30 4EP	
Reading Borough Council c/o Gleeds	**October 2024**
Figure 4: Proposed Development	**GWPR6235**

ground&water

APPENDIX A: Conditions and Limitations

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

The ground is a product of continuing natural and artificial processes. As a result, the ground will exhibit a variety of characteristics that vary from place to place across a site, and also with time. Whilst a ground investigation will mitigate to a greater or lesser degree against the resulting risk from variation, the risks cannot be eliminated.

The report has been prepared on the basis of information, data and materials which were available at the time of writing. Accordingly, any conclusions, opinions or judgements made in the report should not be regarded as definitive or relied upon to the exclusion of other information, opinions and judgements.

The investigation, interpretations, and recommendations given in this report were prepared for the sole benefit of the client in accordance with their brief; as such these do not necessarily address all aspects of ground behaviour at the site. No liability is accepted for any reliance placed on it by others unless specifically agreed in writing.

Any decisions made by you, or by any organisation, agency or person who has read, received or been provided with information contained in the report ("you" or "the Recipient") are decisions of the Recipient and we will not make, or be deemed to make, any decisions on behalf of any Recipient. We will not be liable for the consequences of any such decisions.

Current regulations and good practice were used in the preparation of this report. An appropriately qualified person must review the recommendations given in this report at the time of preparation of the scheme design to ensure that any recommendations given remain valid in light of changes in regulation and practice, or additional information obtained regarding the site.

Any Recipient must take into account any other factors apart from the Report of which they and their experts and advisers are or should be aware. The information, data, conclusions, opinions and judgements set out in the report may relate to certain contexts and may not be suitable in other contexts. It is your responsibility to ensure that you do not use the information we provide in the wrong context.

This report is based on readily available geological records, the recorded physical investigation, the strata observed in the works, together with the results of completed site and laboratory tests. Whilst skill and care has been taken to interpret these conditions likely between or below investigation points, the possibility of other characteristics not revealed cannot be discounted, for which no liability can be accepted. The impact of our assessment on other aspects of the development required evaluation by other involved parties.

The opinions expressed cannot be absolute due to the limitations of time and resources within the context of the agreed brief and the possibility of unrecorded previous in ground activities. The ground

conditions have been sampled or monitored in recorded locations and tests for some of the more common chemicals generally expected. Other concentrations of types of chemicals may exist.

The conclusions and recommendations relate to Dee Park, Glenmore Place, Reading, RG30 4EP.

Trial hole is a generic term used to describe a method of direct investigation. The term trial pit, borehole or window sampler borehole implies the specific technique used to produce a trial hole.

The depth to roots and/or of desiccation may vary from that found during the investigation. The client is responsible for establishing the depth to roots and/or of desiccation on a plot-by-plot basis prior to the construction of foundations. Where trees are mentioned in the text this means existing trees, recently removed trees (approximately 15 years to full recovery on cohesive soils) and those planned as part of the site landscaping.

Ownership of copyright of all printed material including reports, laboratory test results, trial pit and borehole log sheets, including drillers log sheets, remain with Ground and Water Limited. Licence is for the sole use of the client and may not be assigned, transferred or given to a third party.

Only our client may rely on this report and should this report or any information contained in it be provided to any third party we accept no responsibility to the third party for the contents of this report save to the extent expressly outlined by us in writing in a reliance letter addressed from us to the third party.

Recipients are not permitted to publish this report outside of their organisation without our express written consent.

APPENDIX B: Technical Glossary

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

TECHNICAL GLOSSARY

The list of possible definitions within the report may be seen below. Please note that some definitions may not be relevant to this report.

HYDROGEOLOGY:

A **Principal Aquifer** is a layer of rock or drift deposits that have high intergranular and/or fracture permeability - meaning they usually provide a high level of water storage. They may support water supply and/or river base flow on a strategic scale. In most cases, principal aquifers are aquifers previously designated as major aquifer.

Secondary (A) Aquifers consist of deposits with 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.

Secondary (B) Aquifers consist of deposits with predominantly lower permeability layers with may stoke and yield limited amounts of groundwater due to localised features such as fissures, think permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

Secondary Aquifers (Undifferentiated) are assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases, this means that the layer in question has previously been designated as both a minor aquifer and non-aquifer in different locations due to the variable characteristics of the rock type.

Unproductive Strata are rock layers with low permeability that have negligible significance for water supply or river base flow. These were formerly classified as non-aquifers.

FLOOD ZONES:

Environment Agency Flood Zone 2, defined as; land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Environment Agency Flood Zone 3 shows the extent of a river flood with a 1 in 100 (1%0 or greater chance of occurring in any year or a sea flood with a 1 in 200 (0.5%) or greater chance of occurring in any year.

Environment Agency Flood Zone 3 area that benefits from flood defences, defined as; land and property in this flood zone would have a high probability of flooding without the local flood defences. These protect the area against a river flood with a 1% chance of happening each year, or a flood from the sea with a 0.5% chance of happening each year.

GROUNDWATER SOURCE PROTECTION ZONES (SPZS):

Inner Zone (SPZ1): This zone is 50 day travel time of pollutant to source with a 50 metres default minimum radius.

Outer Zone (SPZ2): This zone is 400 day travel time of pollutant to source. This has a 250 or 500 metres minimum radius around the source depending on the amount of water taken.

Total Catchment (SPZ3): This is the area around a supply source within which all the groundwater ends up at the abstraction point. This is the point from where the water is taken. This could extend some distance from the source point.

Zone of Special Interest (SPZ4): This zone is where local conditions require additional protection.

IN-SITU STRENGTH GEOTECHNICAL TESTING:

Windowless Sample and/or Cable Percussion and/or Rotary Boreholes provide samples of the ground for assessment but they do not give any engineering data. The standard penetration test (SPT) is an in-situ dynamic penetration test designed to provide information on the geotechnical engineering properties of soil. The test uses a thick-walled sample tube, with an outside diameter of 50mm and an inside diameter of 35mm, and a length of around 650mm. This is driven into the ground at the bottom of a borehole by blows from a slide hammer with a weight of 63.5kg falling through a distance of 760mm. The sample tube is driven 150mm into the ground and then the number of blows needed for the tube to penetrate each 75mm up to a depth of 450mm is recorded. The sum of the number of blows is termed the "standard penetration resistance" or the "N-value".

Dynamic Probing involves the driving of a metal cone into the ground via a series of steel rods. These rods are driven from the surface by a hammer system that lifts and drops a 63.5kg (SHDP) hammer onto the top of the rods through a set height, thus ensuring a consistent energy input. The number of hammer blows that are required to drive the cone down by each 100mm increment are recorded. These blow counts then provide a comparative assessment from which correlations have been published, based on dynamic energy, which permits engineering parameters to be generated. (The Dynamic Probe 'Super Heavy' (SHDP) Tests were conducted in accordance with BS 1377; 1990; Part 9, Clause 3.2).

APPENDIX C: Site Photographs

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Photograph 1. Portacabin/temporary building and sports court. View looking northeast.



Photograph 2. Sports court and children's play area. Viewing looking north.



Photograph 3. Children's play area and pathways. View looking southeast



Photograph 4. Residential housing and parking to the east of the site.

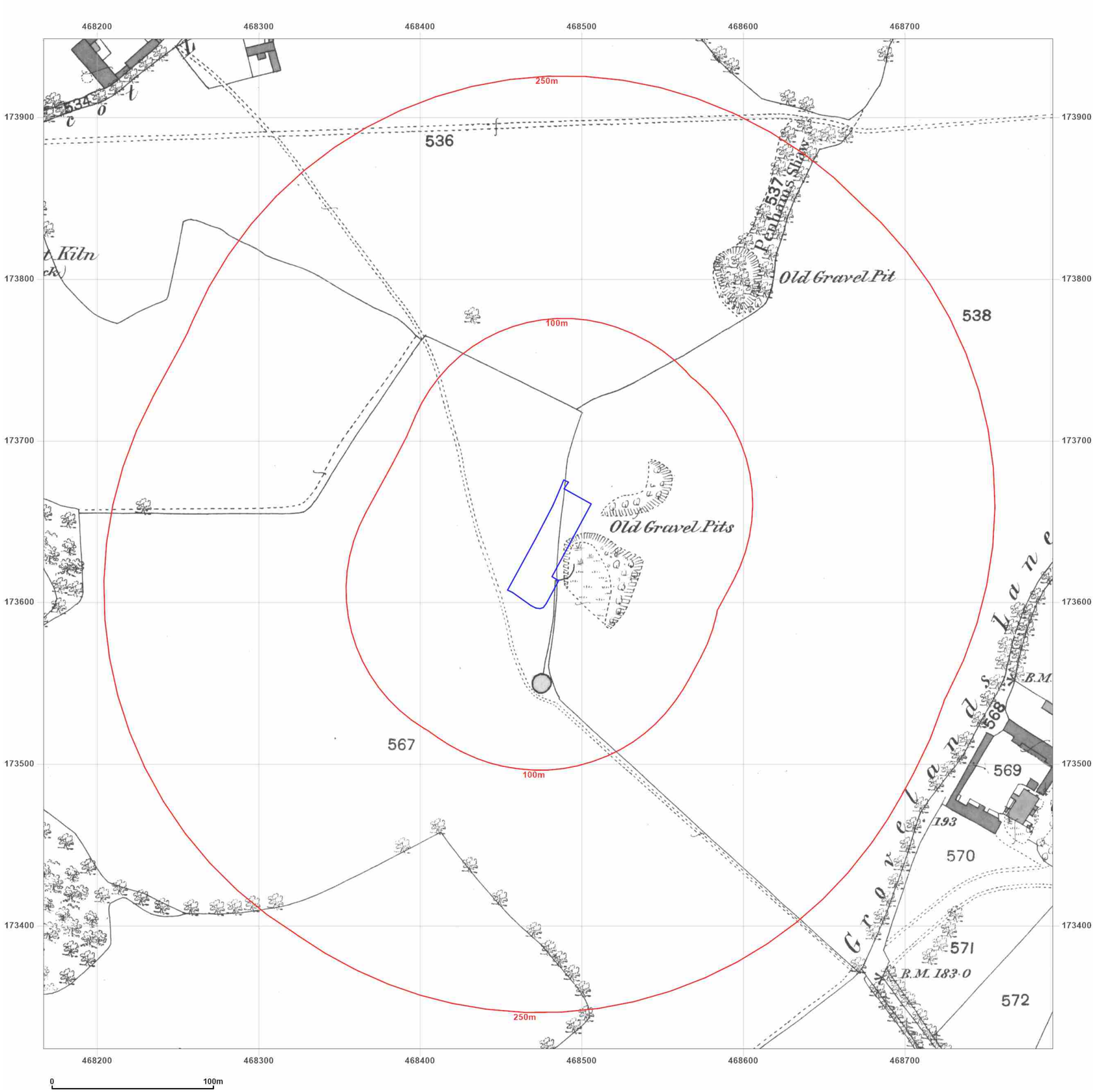


Dee Park Sports, Reading, RG30 4EP	
Reading Borough Council c/o Gleeds	**October 2024**
Appendix C: Photoplates	**GWPR6235**

APPENDIX D:
Historical Maps

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: County Series

Map date: **1881**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1881
Revised 1881
Edition N/A
Copyright N/A
Levelled N/A

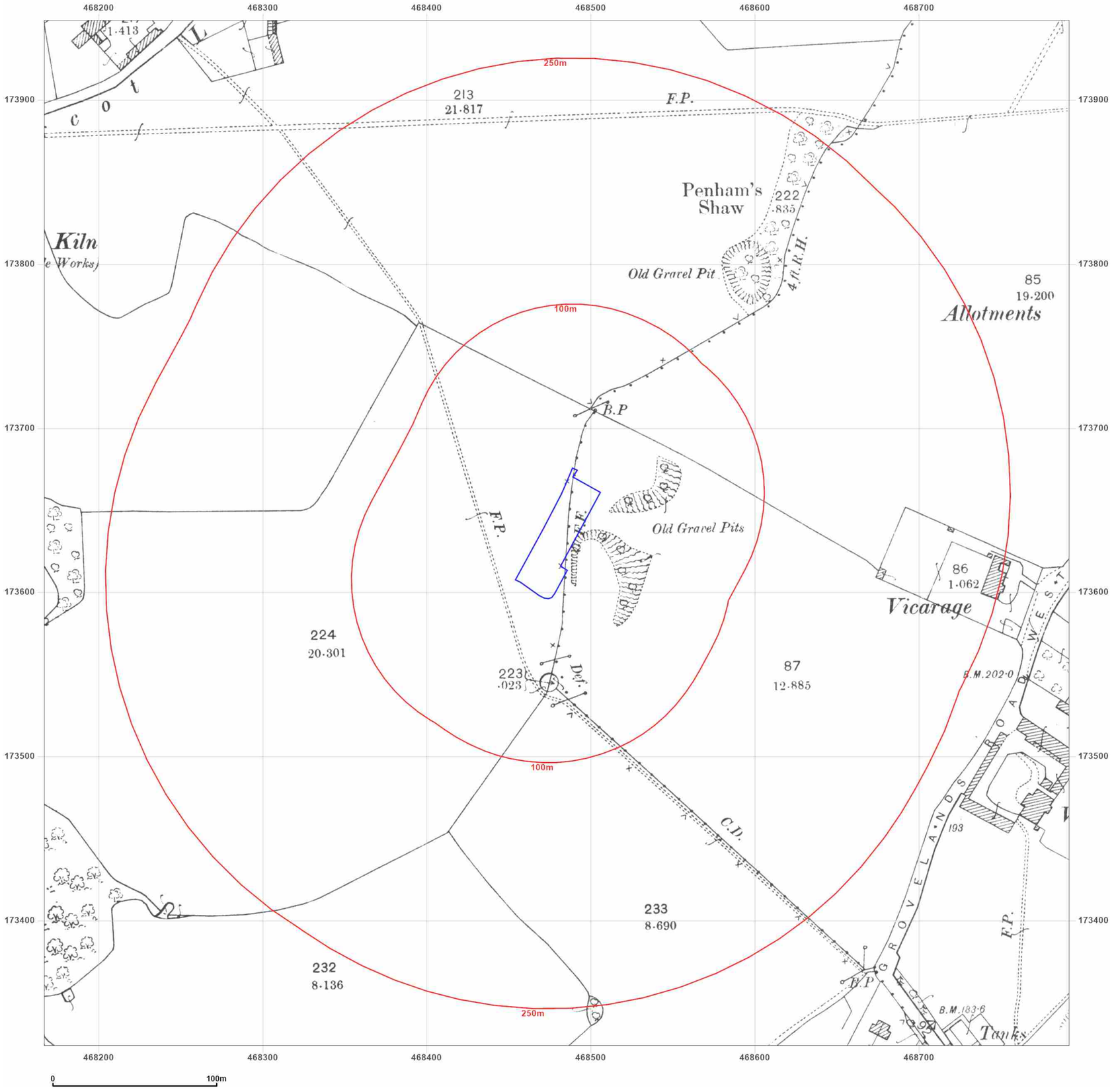
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: County Series

Map date: **1899**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

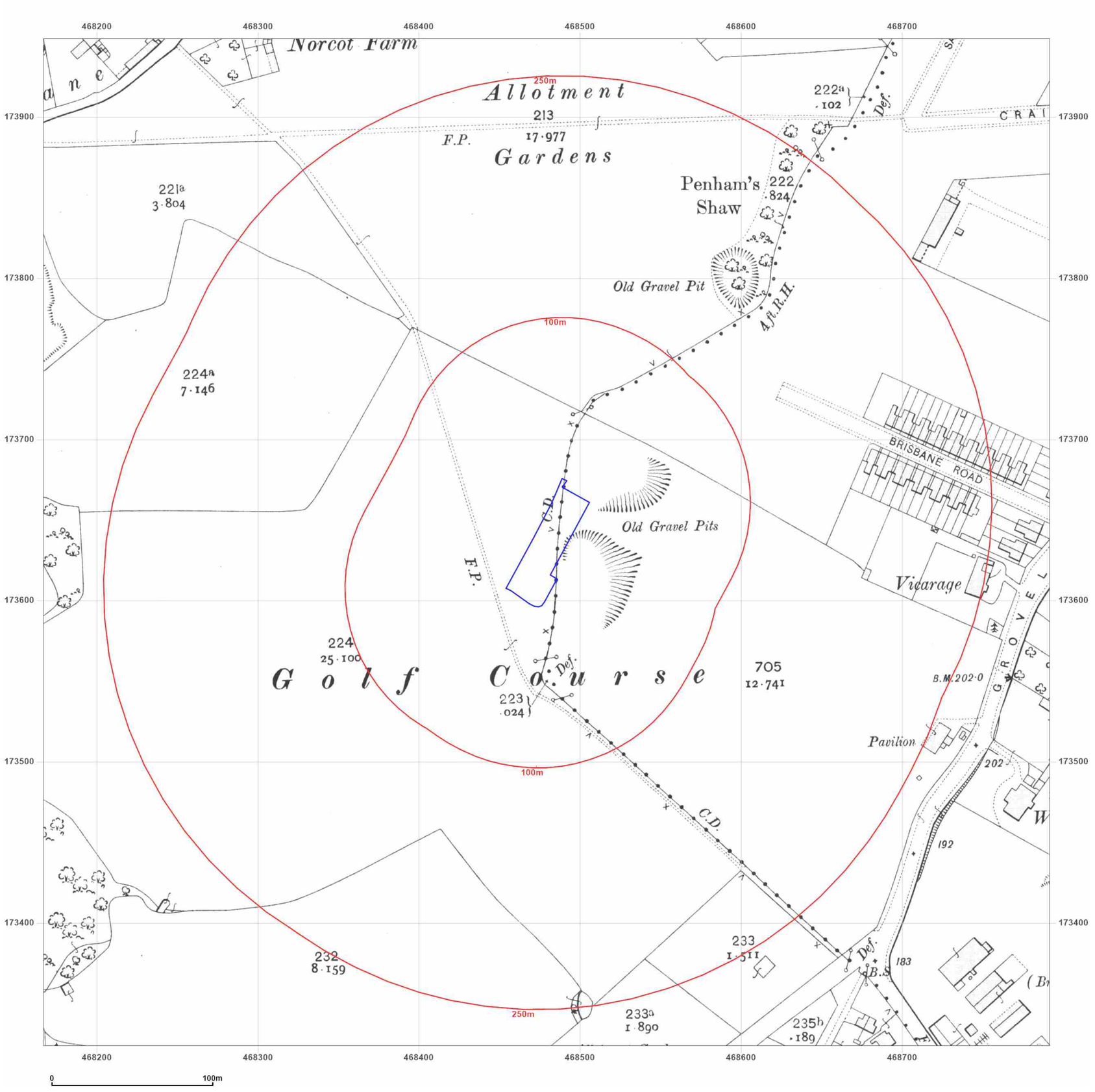
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: County Series

Map date: **1911**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1911
Revised 1911
Edition N/A
Copyright N/A
Levelled N/A

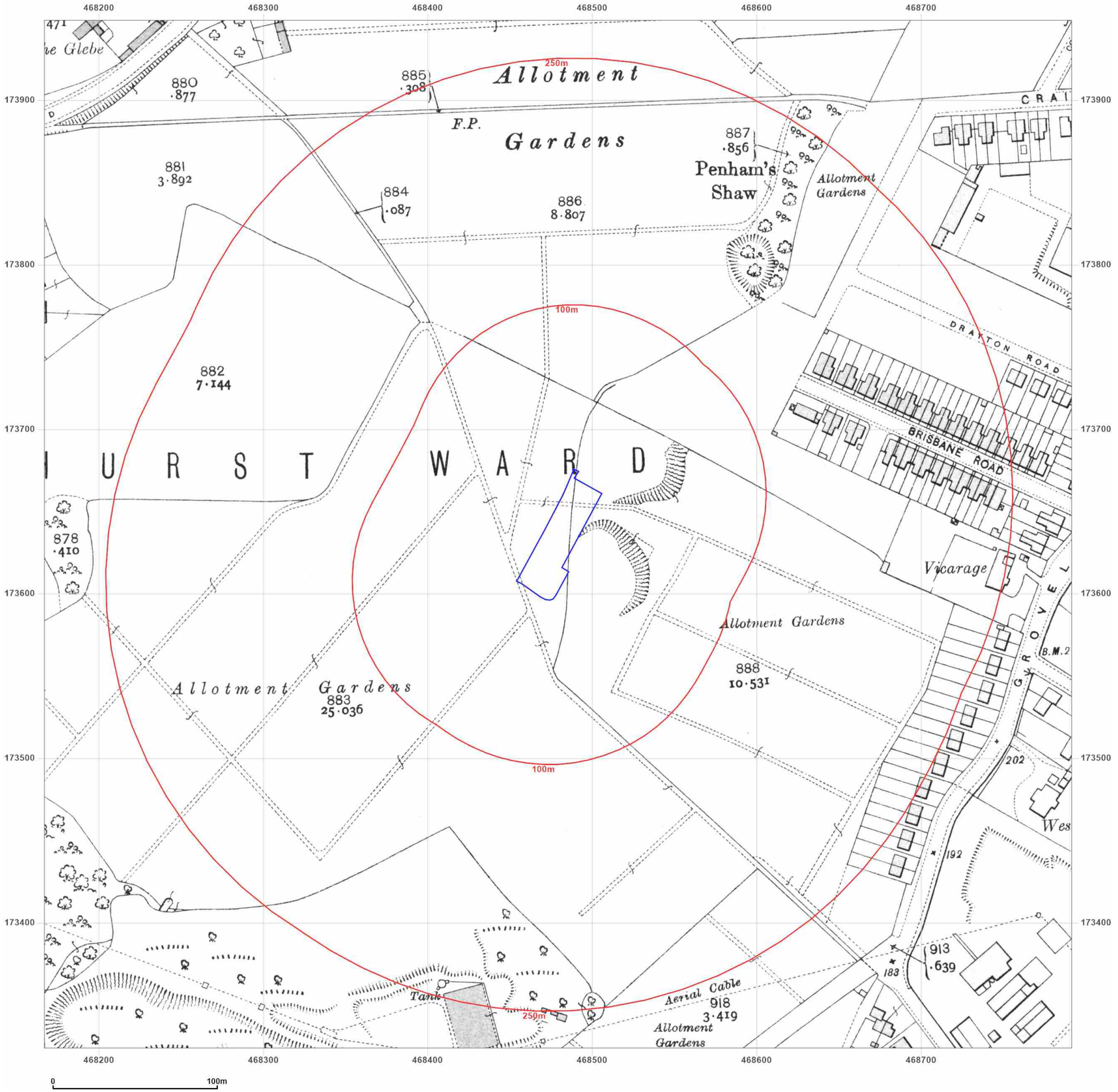
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: County Series

Map date: **1932**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

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

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1961**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1951

Surveyed 1961
Revised 1961
Edition N/A
Copyright N/A
Levelled N/A

Surveyed 1960
Revised 1960
Edition N/A
Copyright 1961
Levelled 1951

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1962**

Scale: 1:2,500

Printed at: 1:2,500

N
W E
S

Surveyed 1960
Revised 1960
Edition 1962
Copyright 1962
Levelled 1951

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1967-1971**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1960 Revised 1967 Edition N/A Copyright 1967 Levelled 1951	Surveyed 1960 Revised 1970 Edition N/A Copyright 1970 Levelled 1951
Surveyed 1960 Revised 1970 Edition N/A Copyright 1971 Levelled 1951	Surveyed 1960 Revised 1970 Edition N/A Copyright 1971 Levelled 1951

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1971**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1960		Surveyed N/A
Revised 1970		Revised N/A
Edition N/A		Edition N/A
Copyright 1971		Copyright 1971
Levelled 1951		Levelled N/A

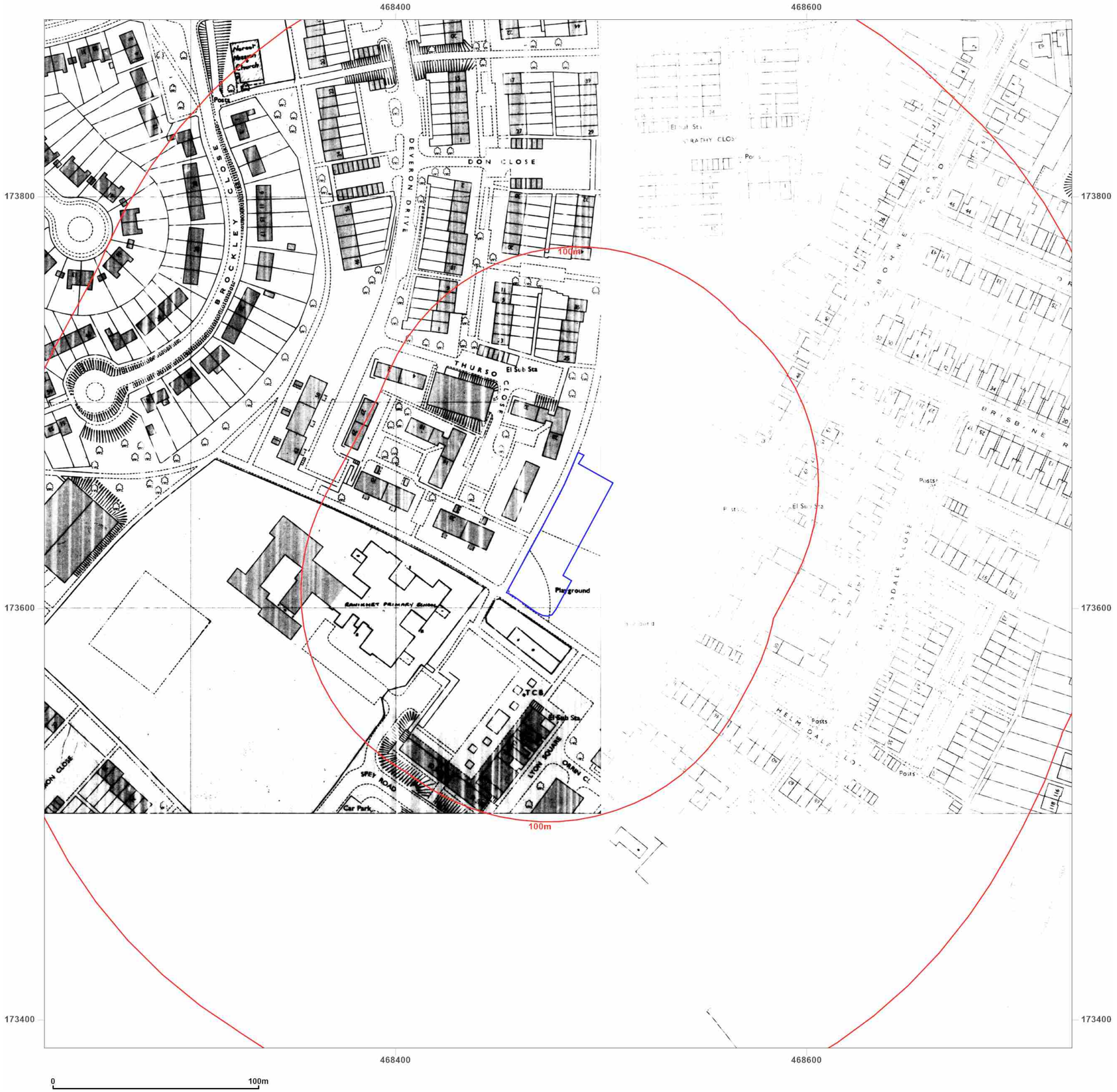
Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1974-1977**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed N/A Revised N/A Edition N/A Copyright 1974 Levelled N/A	Surveyed N/A Revised N/A Edition N/A Copyright 1974 Levelled N/A
	Surveyed N/A Revised N/A Edition N/A Copyright N/A Levelled N/A

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

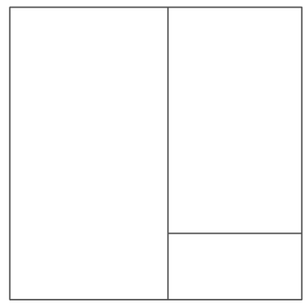
Map Name: National Grid

Map date: **1978-1981**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Surveyed N/A
Revised N/A
Edition N/A
Copyright 1978
Levelled 1972

Surveyed 1960
Revised 1980
Edition N/A
Copyright 1981
Levelled 1972

Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1987-1990**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1972		Surveyed 1972
Revised 1987		Revised 1990
Edition N/A		Edition N/A
Copyright 1987		Copyright 1990
Levelled 1972		Levelled 1972

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: National Grid

Map date: **1991-1993**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S

Surveyed 1993 Revised 1993 Edition N/A Copyright N/A Levelled N/A	Surveyed 1972 Revised 1991 Edition N/A Copyright 1991 Levelled 1972
Surveyed 1993 Revised 1993 Edition N/A Copyright N/A Levelled N/A	Surveyed 1993 Revised 1993 Edition N/A Copyright N/A Levelled N/A

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

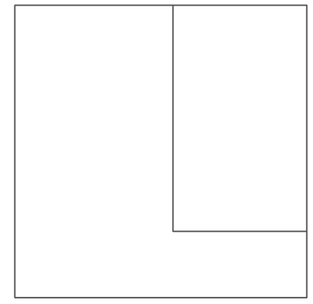
Map Name: National Grid

Map date: **1993**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



Powered by

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

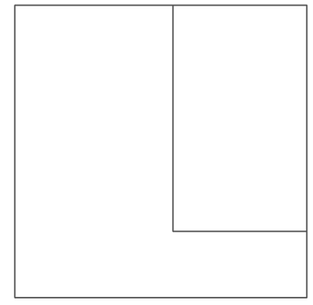
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



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

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

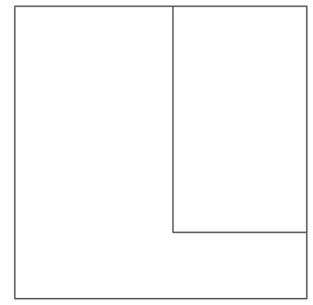
Map Name: National Grid

Map date: **1994**

Scale: 1:1,250

Printed at: 1:2,000

N
W E
S



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

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf



Groundsure INSIGHTS

Site Details:

Dee Park, Glenmore Place,
Reading, RG30 4EP

Client Ref: GWPR6235
Report Ref: GS-YK9-WWZ-FM6-QEQ
Grid Ref: 468479, 173636

Map Name: LandLine
Map date: **2003**
Scale: 1:1,250
Printed at: 1:1,250

N
W E
S

2003

Powered by OS

Produced by
Groundsure Insights
T: 08444 159000
E: info@groundsure.com
W: www.groundsure.com

© Crown copyright and database rights 2024 Ordnance Survey 100035207

Production date: 24 September 2024

Map legend available at:
www.groundsure.com/sites/default/files/groundsure_legend.pdf

APPENDIX E: GroundSure EnviroInsight and GeoInsight Datasheets

2 The Long Barn, Norton Farm, Selborne Road, Alton, Hampshire GU34 3NB
0333 600 1221 enquiries@groundandwater.co.uk **groundandwater.co.uk**

Registered Office: Kineton House, 31 Horse Fair, Banbury, Oxfordshire OX16 0AE Registered in England No. 07032001

Groundsure
LOCATION INTELLIGENCE

Enviro+Geo Insight

Dee Park, Glenmore Place, Reading, RG30 4EP

Order Details

Date: 24/09/2024

Your ref: GWPR6235

Our Ref: GS-6A6-MJ7-6PQ-V7K

Site Details

Location: 468479 173632

Area: 0.16 ha

Authority: Reading Borough Council ↗



Summary of findings p. 2 >

Aerial image p. 9 >

OS MasterMap site plan p.14 >

Insight User Guide ↗

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 >	5	2	16	69	-
19 >	1.2 >	Historical tanks >	0	0	1	18	-
20 >	1.3 >	Historical energy features >	0	2	10	15	-
21	1.4	Historical petrol stations	0	0	0	0	-
22 >	1.5 >	Historical garages >	0	0	0	3	-
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 >	7	2	19	87	-
28 >	2.2 >	Historical tanks >	0	0	1	24	-
29 >	2.3 >	Historical energy features >	0	3	20	23	-
31	2.4	Historical petrol stations	0	0	0	0	-
31 >	2.5 >	Historical garages >	0	0	0	6	-
Page	Section	Waste and landfill >	On site	0-50m	50-250m	250-500m	500-2000m
32	3.1	Active or recent landfill	0	0	0	0	-
32	3.2	Historical landfill (BGS records)	0	0	0	0	-
33	3.3	Historical landfill (LA/mapping records)	0	0	0	0	-
33	3.4	Historical landfill (EA/NRW records)	0	0	0	0	-
33	3.5	Historical waste sites	0	0	0	0	-
33	3.6	Licensed waste sites	0	0	0	0	-
33 >	3.7 >	Waste exemptions >	0	0	1	27	-
Page	Section	Current industrial land use >	On site	0-50m	50-250m	250-500m	500-2000m
36 >	4.1 >	Recent industrial land uses >	0	0	8	-	-
37 >	4.2 >	Current or recent petrol stations >	0	0	1	0	-
37	4.3	Electricity cables	0	0	0	0	-
37	4.4	Gas pipelines	0	0	0	0	-
38	4.5	Sites determined as Contaminated Land	0	0	0	0	-

38	4.6	Control of Major Accident Hazards (COMAH)	0	0	0	0	-
38	4.7	Regulated explosive sites	0	0	0	0	-
38	4.8	Hazardous substance storage/usage	0	0	0	0	-
38	4.9	Historical licensed industrial activities (IPC)	0	0	0	0	-
39	4.10	Licensed industrial activities (Part A(1))	0	0	0	0	-
39 >	**4.11 >**	**Licensed pollutant release (Part A(2)/B) >**	0	0	0	2	-
39	4.12	Radioactive Substance Authorisations	0	0	0	0	-
39	4.13	Licensed Discharges to controlled waters	0	0	0	0	-
40	4.14	Pollutant release to surface waters (Red List)	0	0	0	0	-
40	4.15	Pollutant release to public sewer	0	0	0	0	-
40	4.16	List 1 Dangerous Substances	0	0	0	0	-
40	4.17	List 2 Dangerous Substances	0	0	0	0	-
40 >	**4.18 >**	**Pollution Incidents (EA/NRW) >**	0	0	0	4	-
41	4.19	Pollution inventory substances	0	0	0	0	-
41	4.20	Pollution inventory waste transfers	0	0	0	0	-
42	4.21	Pollution inventory radioactive waste	0	0	0	0	-

Page	Section	**Hydrogeology >**	On site	0-50m	50-250m	250-500m	500-2000m
43 >	**5.1 >**	**Superficial aquifer >**	Identified (within 500m)				
45 >	**5.2 >**	**Bedrock aquifer >**	Identified (within 500m)				
47 >	**5.3 >**	**Groundwater vulnerability >**	Identified (within 50m)				
48 >	**5.4 >**	**Groundwater vulnerability- soluble rock risk >**	Identified (within 0m)				
48	5.5	Groundwater vulnerability- local information	None (within 0m)				
49 >	**5.6 >**	**Groundwater abstractions >**	0	0	0	0	15
53	5.7	Surface water abstractions	0	0	0	0	0
53 >	**5.8 >**	**Potable abstractions >**	0	0	0	0	3
54	5.9	Source Protection Zones	0	0	0	0	-
54	5.10	Source Protection Zones (confined aquifer)	0	0	0	0	-

Page	Section	**Hydrology >**	On site	0-50m	50-250m	250-500m	500-2000m
55	6.1	Water Network (OS MasterMap)	0	0	0	-	-

55	6.2	Surface water features	0	0	0	-	-
56 >	6.3 >	WFD Surface water body catchments >	1	-	-	-	-
56 >	6.4 >	WFD Surface water bodies >	0	0	0	-	-
57 >	6.5 >	WFD Groundwater bodies >	1	-	-	-	-
Page	Section	River and coastal flooding	On site	0-50m	50-250m	250-500m	500-2000m
58	7.1	Risk of flooding from rivers and the sea	None (within 50m)				
58	7.2	Historical Flood Events	0	0	0	-	-
58	7.3	Flood Defences	0	0	0	-	-
59	7.4	Areas Benefiting from Flood Defences	0	0	0	-	-
59	7.5	Flood Storage Areas	0	0	0	-	-
60	7.6	Flood Zone 2	None (within 50m)				
60	7.7	Flood Zone 3	None (within 50m)				
Page	Section	Surface water flooding >					
61 >	8.1 >	Surface water flooding >	1 in 30 year, 0.3m - 1.0m (within 50m)				
Page	Section	Groundwater flooding >					
63 >	9.1 >	Groundwater flooding >	Moderate (within 50m)				
Page	Section	Environmental designations >	On site	0-50m	50-250m	250-500m	500-2000m
64	10.1	Sites of Special Scientific Interest (SSSI)	0	0	0	0	0
65	10.2	Conserved wetland sites (Ramsar sites)	0	0	0	0	0
65	10.3	Special Areas of Conservation (SAC)	0	0	0	0	0
65	10.4	Special Protection Areas (SPA)	0	0	0	0	0
65	10.5	National Nature Reserves (NNR)	0	0	0	0	0
66 >	10.6 >	Local Nature Reserves (LNR) >	0	0	0	2	4
66 >	10.7 >	Designated Ancient Woodland >	0	0	0	0	3
67	10.8	Biosphere Reserves	0	0	0	0	0
67	10.9	Forest Parks	0	0	0	0	0
67	10.10	Marine Conservation Zones	0	0	0	0	0
67	10.11	Green Belt	0	0	0	0	0
67	10.12	Proposed Ramsar sites	0	0	0	0	0

68	10.13	Possible Special Areas of Conservation (pSAC)	0	0	0	0	0
68	10.14	Potential Special Protection Areas (pSPA)	0	0	0	0	0
68	10.15	Nitrate Sensitive Areas	0	0	0	0	0
68 >	10.16 >	Nitrate Vulnerable Zones >	1	0	0	0	0
70 >	10.17 >	SSSI Impact Risk Zones >	1	-	-	-	-
71	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
72	11.1	World Heritage Sites	0	0	0	-	-
72	11.2	Area of Outstanding Natural Beauty	0	0	0	-	-
72	11.3	National Parks	0	0	0	-	-
72	11.4	Listed Buildings	0	0	0	-	-
73	11.5	Conservation Areas	0	0	0	-	-
73	11.6	Scheduled Ancient Monuments	0	0	0	-	-
73	11.7	Registered Parks and Gardens	0	0	0	-	-
Page	Section	Agricultural designations >	On site	0-50m	50-250m	250-500m	500-2000m
74 >	12.1 >	Agricultural Land Classification >	Urban (within 250m)				
75	12.2	Open Access Land	0	0	0	-	-
75	12.3	Tree Felling Licences	0	0	0	-	-
75	12.4	Environmental Stewardship Schemes	0	0	0	-	-
75	12.5	Countryside Stewardship Schemes	0	0	0	-	-
Page	Section	Habitat designations	On site	0-50m	50-250m	250-500m	500-2000m
76	13.1	Priority Habitat Inventory	0	0	0	-	-
76	13.2	Habitat Networks	0	0	0	-	-
76	13.3	Open Mosaic Habitat	0	0	0	-	-
76	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
77 >	14.1 >	10k Availability >	Identified (within 500m)				
78 >	14.2 >	Artificial and made ground (10k) >	0	1	1	4	-
80 >	14.3 >	Superficial geology (10k) >	0	0	1	6	-

81	14.4	Landslip (10k)	0	0	0	0	-
82 >	14.5 >	Bedrock geology (10k) >	2	0	1	1	-
83 >	14.6 >	Bedrock faults and other linear features (10k) >	1	0	0	0	-
Page	Section	Geology 1:50,000 scale >	On site	0-50m	50-250m	250-500m	500-2000m
84 >	15.1 >	50k Availability >	Identified (within 500m)				
85 >	15.2 >	Artificial and made ground (50k) >	0	0	1	3	-
86	15.3	Artificial ground permeability (50k)	0	0	-	-	-
87 >	15.4 >	Superficial geology (50k) >	0	0	1	6	-
88	15.5	Superficial permeability (50k)	None (within 50m)				
88	15.6	Landslip (50k)	0	0	0	0	-
88	15.7	Landslip permeability (50k)	None (within 50m)				
89 >	15.8 >	Bedrock geology (50k) >	2	0	0	1	-
90 >	15.9 >	Bedrock permeability (50k) >	Identified (within 50m)				
90 >	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
91	16.1	BGS Boreholes	0	0	0	-	-
Page	Section	Natural ground subsidence >					
92 >	17.1 >	Shrink swell clays >	Moderate (within 50m)				
93 >	17.2 >	Running sands >	Very low (within 50m)				
95 >	17.3 >	Compressible deposits >	Negligible (within 50m)				
96 >	17.4 >	Collapsible deposits >	Very low (within 50m)				
97 >	17.5 >	Landslides >	Very low (within 50m)				
99 >	17.6 >	Ground dissolution of soluble rocks >	Moderate (within 50m)				
Page	Section	Mining and ground workings >	On site	0-50m	50-250m	250-500m	500-2000m
101 >	18.1 >	BritPits >	0	2	2	10	-
104 >	18.2 >	Surface ground workings >	7	2	11	-	-
105 >	18.3 >	Underground workings >	0	0	0	1	0
105	18.4	Underground mining extents	0	0	0	0	-
106 >	18.5 >	Historical Mineral Planning Areas >	0	0	1	2	-

106 >	18.6 >	Non-coal mining >	1	0	0	0	0
107	18.7	JPB mining areas	None (within 0m)				
107	18.8	The Coal Authority non-coal mining	0	0	0	0	-
107 >	18.9 >	Researched mining >	1	0	0	2	-
107	18.10	Mining record office plans	0	0	0	0	-
108	18.11	BGS mine plans	0	0	0	0	-
108	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)				
109	18.16	Clay mining	None (within 0m)				
Page	Section	Ground cavities and sinkholes >	On site	0-50m	50-250m	250-500m	500-2000m
110 >	19.1 >	Natural cavities >	0	0	0	1	-
111 >	19.2 >	Mining cavities >	0	0	0	2	7
112	19.3	Reported recent incidents	0	0	0	0	-
112	19.4	Historical incidents	0	0	0	0	-
112 >	19.5 >	National karst database >	0	0	0	1	-
Page	Section	Radon >					
113 >	20.1 >	Radon >	Between 1% and 3% (within 0m)				
Page	Section	Soil chemistry >	On site	0-50m	50-250m	250-500m	500-2000m
115 >	21.1 >	BGS Estimated Background Soil Chemistry >	3	1	-	-	-
115	21.2	BGS Estimated Urban Soil Chemistry	0	0	-	-	-
115	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
116	22.1	Underground railways (London)	0	0	0	-	-
116	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	0	0	0	-	-
116	22.5	Royal Mail tunnels	0	0	0	-	-

117	22.6	Historical railways	0	0	0	-	-
117	22.7	Railways	0	0	0	-	-
117	22.8	Crossrail 1	0	0	0	0	-
117	22.9	Crossrail 2	0	0	0	0	-
117	22.10	HS2	0	0	0	0	-

Recent aerial photograph



Capture Date: 02/06/2020

Site Area: 0.16ha

Recent site history - 2019 aerial photograph



Capture Date: 25/08/2019

Site Area: 0.16ha

Recent site history - 2013 aerial photograph



Capture Date: 08/07/2013

Site Area: 0.16ha

Recent site history - 2010 aerial photograph



Capture Date: 22/09/2010

Site Area: 0.16ha

Recent site history - 1999 aerial photograph



Capture Date: 04/09/1999

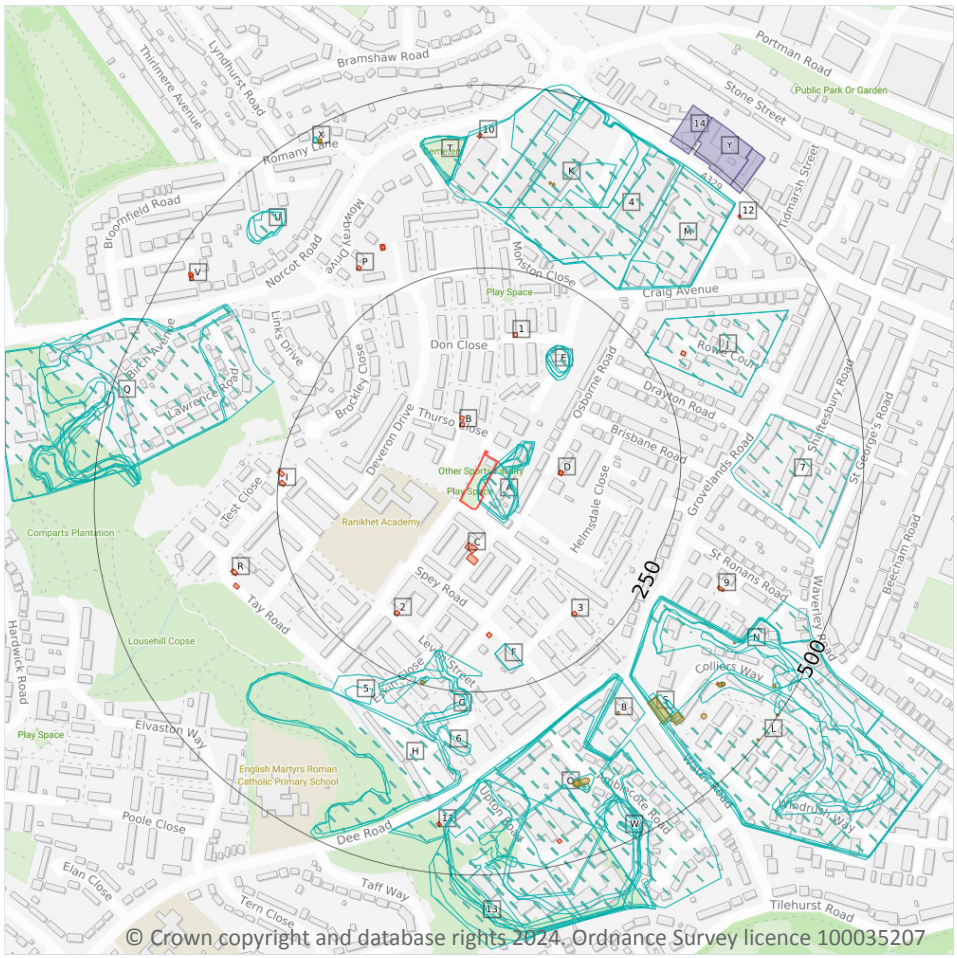
Site Area: 0.16ha

OS MasterMap site plan



Site Area: 0.16ha

1 Past land use



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

1.1 Historical industrial land uses

Records within 500m	92

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

Features are displayed on the Past land use map on **page 15 >**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Pit**	**1938 - 1961**	**1925519**

ID	Location	Land use	Dates present	Group ID
A	**On site**	**Unspecified Pits**	**1932**	**1945597**
A	**On site**	**Old Gravel Pits**	**1900**	**1958226**
A	**On site**	**Old Gravel Pits**	**1910**	**1982487**
A	**On site**	**Old Gravel Pits**	**1900**	**1999364**
A	2m NE	Unspecified Pit	1961	1904345
A	6m NE	Unspecified Ground Workings	1938	1880712
E	136m NE	Old Gravel Pit	1900	1942565
E	141m NE	Old Gravel Pit	1900	1915573
E	141m NE	Old Gravel Pit	1910	1919150
E	141m NE	Unspecified Pit	1938	1930855
E	145m NE	Unspecified Pit	1961	1920335
E	148m NE	Unspecified Pit	1932	1950817
F	188m S	Fire Station	1982 - 1991	1946274
F	188m S	Fire Station	1976	1996998
G	198m S	Unspecified Ground Workings	1961	1880207
H	198m S	Clay Pit	1938	1945329
H	198m S	Clay Pit	1932	1929281
G	237m S	Unspecified Tank	1932 - 1938	1951467
G	240m S	Unspecified Tank	1961	1923069
G	243m S	Unspecified Heap	1961	1895527
J	249m NE	Unspecified Depot	1976	1917430
J	249m NE	Unspecified Depot	1982	1986353
K	273m N	Unspecified Works	1961	1971974
L	276m SE	Unspecified Works	1961	1891222
K	276m N	Unspecified Works	1982	1986041
L	277m SE	Brick Tile and Pottery Works	1932	1924068
L	277m SE	Brick Tile and Pottery Works	1938	1918985
4	277m N	Unspecified Works	1991	1971418

ID	Location	Land use	Dates present	Group ID
K	278m N	Unspecified Works	1976	1988912
L	281m SE	Brick Tile and Pottery Works	1910	1958038
5	282m SW	Unspecified Pit	1961	1904346
M	286m NE	Unspecified Works	1982	1958004
N	290m SE	Unspecified Ground Workings	1961	1964793
L	292m SE	Clay Pits	1932 - 1938	1955587
O	294m SE	Brick and Tile Works	1900	1955231
O	296m SE	Brick and Tile Kiln Works	1900	1900763
O	297m SE	Brick and Tile Works	1932	1980535
O	298m SE	Unspecified Works	1961	1891221
O	299m SE	Brick and Tile Works	1938	1931667
Q	301m NW	Brick and Tile Works	1910	1945913
6	301m S	Unspecified Heap	1938 - 1961	1927746
O	303m SE	Brick and Tile Works	1910	1998694
H	309m SW	Clay Pit	1961	1964418
M	318m NE	Unspecified Works	1976	1928678
7	318m E	Cycle Works	1900	1986648
K	333m N	Pulsometer Works	1932	1944261
K	333m N	Pulsometer Works	1938	1946061
Q	338m W	Brick and Tile Works	1900	1957688
Q	340m W	Brick and Tile Kiln Works	1900	1900762
S	349m SE	Unspecified Tanks	1900	1987916
L	352m SE	Unspecified Ground Workings	1910	1925651
S	354m SE	Tanks	1900	1892030
S	355m SE	Unspecified Tanks	1932	1947891
K	356m N	Iron Works	1910	1889518
K	366m NE	Burial Ground	1901	1913155
T	367m N	Burial Ground	1900	1957456

ID	Location	Land use	Dates present	Group ID
O	370m S	Unspecified Pit	1961	1964213
T	370m N	Burial Ground	1961	1968522
S	370m SE	Unspecified Tanks	1910	1945872
S	370m SE	Unspecified Tanks	1938	1960461
O	371m S	Unspecified Pits	1938	1908594
O	371m S	Unspecified Ground Workings	1932	1973904
T	372m N	Burial Ground	1900	1973676
T	373m N	Burial Ground	1910 - 1938	1993794
L	386m SE	Brick Tile and Pottery Works	1900	1999605
O	393m S	Unspecified Tank	1961	1996631
O	393m S	Unspecified Tanks	1932 - 1938	1918455
O	396m S	Unspecified Workings	1991	1891963
O	396m S	Unspecified Tank	1910	1987747
L	396m SE	Unspecified Ground Workings	1900	1953295
O	398m S	Unspecified Depot	1982 - 1991	1935421
O	404m S	Unspecified Tank	1961	1893263
S	409m SE	Unspecified Tank	1938	1893264
U	411m NW	Unspecified Pit	1932	1920664
U	414m NW	Old Gravel Pit	1900	1918552
U	415m NW	Unspecified Pit	1938	1949521
U	415m NW	Old Gravel Pit	1910	1952129
O	436m SE	Unspecified Pit	1910	1983623
Q	437m W	Unspecified Pits	1932	1919789
Q	438m W	Unspecified Ground Workings	1900	1992826
Q	438m W	Unspecified Ground Workings	1938	1956355
Q	440m W	Unspecified Ground Workings	1910	1930370
Q	441m W	Unspecified Pit	1900	1903157
Q	446m W	Unspecified Ground Workings	1961	1994969

ID	Location	Land use	Dates present	Group ID
L	467m SE	Unspecified Heap	1961	1895528
W	471m S	Miniature Rifle Range	1938 - 1961	1972675
W	472m SE	Miniature Rifle Range	1932	1921116
L	473m SE	Unspecified Tank	1938	1893265
13	475m S	Unspecified Ground Workings	1982 - 1991	1939232
X	481m NW	Unspecified Tank	1961	1977455
X	481m NW	Unspecified Tank	1932 - 1938	1938513

This data is sourced from Ordnance Survey / Groundsure.

1.2 Historical tanks

Records within 500m	**19**

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
G	244m S	Unspecified Tank	1932	322366
8	338m SE	Unspecified Tank	1932	322367
S	354m SE	Tanks	1899 - 1911	334688
K	374m N	Unspecified Tank	1913	322358
K	375m N	Unspecified Tank	1969 - 1982	331675
S	390m SE	Tanks	1932	317400
O	395m S	Unspecified Tank	1899 - 1911	334214
O	396m S	Tanks	1932	317401
N	396m SE	Unspecified Tank	1911	322364
S	408m SE	Unspecified Tank	1932	341354
S	411m SE	Unspecified Tank	1961	343587

ID	Location	Land use	Dates present	Group ID
S	412m SE	Unspecified Tank	1962	344136
S	417m SE	Unspecified Tank	1911	322359
L	471m SE	Unspecified Tank	1911 - 1932	335726
X	476m NW	Unspecified Tank	1897	343492
X	478m NW	Unspecified Tank	1934 - 1936	329573
X	478m NW	Unspecified Tank	1897	343159
L	496m SE	Unspecified Tank	1911	322360
L	497m SE	Unspecified Tank	1911	322363

This data is sourced from Ordnance Survey / Groundsure.

1.3 Historical energy features

Records within 500m	**27**

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
B	44m N	Electricity Substation	1993	207583
C	46m S	Electricity Substation	1971 - 1987	222936
B	51m N	Electricity Substation	1971 - 1987	213047
C	61m S	Electricity Substation	1993	207586
D	84m E	Electricity Substation	1990 - 1994	220168
D	85m E	Electricity Substation	1970	233407
1	160m N	Electricity Substation	1970 - 1994	225070
F	169m S	Electricity Substation	1971 - 1993	232137
2	173m SW	Electricity Substation	1971 - 1993	225049
3	194m SE	Electricity Substation	1981 - 1993	211441

ID	Location	Land use	Dates present	Group ID
I	239m W	Electricity Substation	1993	207584
I	242m W	Electricity Substation	1971 - 1987	221308
J	290m NE	Electricity Substation	1994	207562
P	300m NW	Electricity Substation	1967	207573
P	307m N	Electricity Substation	1987 - 1993	226164
P	309m N	Electricity Substation	1971	226622
R	319m W	Electricity Substation	1971 - 1987	213260
R	323m SW	Electricity Substation	1993	207585
9	343m SE	Electricity Substation	1981 - 1993	232225
S	406m SE	Electricity Substation	1981 - 1993	225672
10	428m N	Electricity Substation	1982 - 1993	213079
11	430m S	Electricity Substation	1971 - 1993	214479
V	462m NW	Electricity Substation	1993	223788
V	464m NW	Electricity Substation	1967 - 1971	218202
O	465m S	Electricity Substation	1971 - 1981	231797
V	467m NW	Electricity Substation	1987	219421
12	469m NE	Electricity Substation	1994	207561

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	3

Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale, intelligently grouped into contiguous features. To prevent misrepresentation of the size of historical features at any given time, features are only grouped if they have similar geometries within immediately preceding or succeeding map editions. See section 2 for a breakdown of grouping if required. Grouped and the original 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
14	491m NE	Garage	1973	72323
Y	492m NE	Garage	1960 - 1973	71317
Y	493m NE	Garage	1973	68490

This data is sourced from Ordnance Survey / Groundsure.

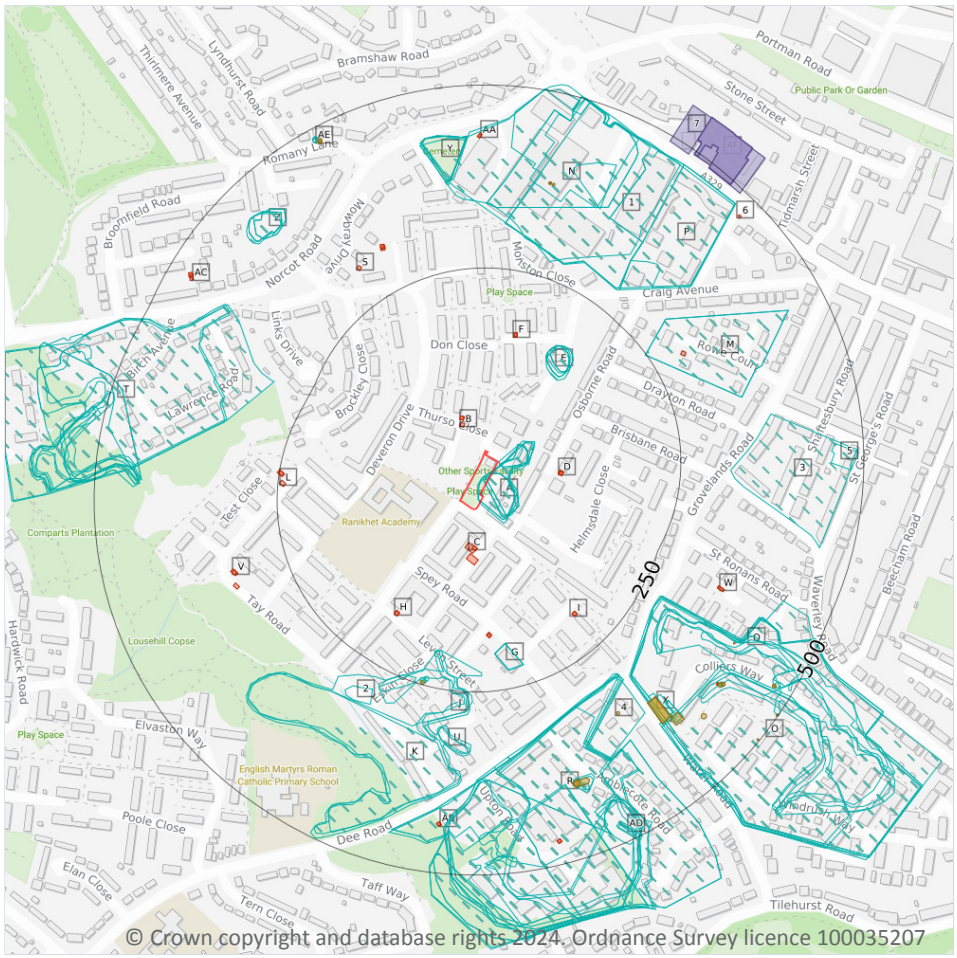
1.6 Historical military land

Records within 500m	0

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

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

2 Past land use - un-grouped



Site Outline

Search buffers in metres (m)

Historical industrial land uses

Historical tanks

Historical energy features

Historical garages

2.1 Historical industrial land uses

Records within 500m	115

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

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Pit**	**1938**	**1925519**
A	**On site**	**Old Gravel Pits**	**1900**	**1999364**
A	**On site**	**Unspecified Pit**	**1961**	**1925519**

ID	Location	Land Use	Date	Group ID
A	**On site**	**Unspecified Pits**	**1932**	**1945597**
A	**On site**	**Old Gravel Pits**	**1910**	**1982487**
A	**On site**	**Old Gravel Pits**	**1900**	**1958226**
A	**On site**	**Unspecified Pits**	**1932**	**1945597**
A	2m NE	Unspecified Pit	1961	1904345
A	6m NE	Unspecified Ground Workings	1938	1880712
E	136m NE	Old Gravel Pit	1900	1942565
E	141m NE	Unspecified Pit	1938	1930855
E	141m NE	Old Gravel Pit	1910	1919150
E	141m NE	Old Gravel Pit	1900	1915573
E	145m NE	Unspecified Pit	1961	1920335
E	148m NE	Unspecified Pit	1932	1950817
E	148m NE	Unspecified Pit	1932	1950817
G	188m S	Fire Station	1991	1946274
G	188m S	Fire Station	1982	1946274
G	188m S	Fire Station	1976	1996998
J	198m S	Unspecified Ground Workings	1961	1880207
K	198m S	Clay Pit	1938	1945329
K	198m S	Clay Pit	1932	1929281
J	237m S	Unspecified Tank	1932	1951467
J	240m S	Unspecified Tank	1961	1923069
J	241m S	Unspecified Tank	1938	1951467
J	243m S	Unspecified Heap	1961	1895527
M	249m NE	Unspecified Depot	1982	1986353
M	249m NE	Unspecified Depot	1976	1917430
N	273m N	Unspecified Works	1961	1971974
O	276m SE	Unspecified Works	1961	1891222
N	276m N	Unspecified Works	1982	1986041

ID	Location	Land Use	Date	Group ID
O	277m SE	Brick Tile and Pottery Works	1932	1924068
O	277m SE	Brick Tile and Pottery Works	1932	1924068
O	277m SE	Brick Tile and Pottery Works	1938	1918985
1	277m N	Unspecified Works	1991	1971418
N	278m N	Unspecified Works	1976	1988912
O	281m SE	Brick Tile and Pottery Works	1910	1958038
2	282m SW	Unspecified Pit	1961	1904346
P	286m NE	Unspecified Works	1982	1958004
Q	290m SE	Unspecified Ground Workings	1961	1964793
O	292m SE	Clay Pits	1938	1955587
R	294m SE	Brick and Tile Works	1900	1955231
O	294m SE	Clay Pits	1932	1955587
R	296m SE	Brick and Tile Kiln Works	1900	1900763
R	297m SE	Brick and Tile Works	1932	1980535
R	297m SE	Brick and Tile Works	1932	1980535
R	298m SE	Unspecified Works	1961	1891221
R	299m SE	Brick and Tile Works	1938	1931667
T	301m NW	Brick and Tile Works	1910	1945913
U	301m S	Unspecified Heap	1961	1927746
U	302m S	Unspecified Heap	1938	1927746
R	303m SE	Brick and Tile Works	1910	1998694
K	309m SW	Clay Pit	1961	1964418
P	318m NE	Unspecified Works	1976	1928678
3	318m E	Cycle Works	1900	1986648
N	333m N	Pulsometer Works	1938	1946061
N	333m N	Pulsometer Works	1932	1944261
T	338m W	Brick and Tile Works	1900	1957688
T	340m W	Brick and Tile Kiln Works	1900	1900762

ID	Location	Land Use	Date	Group ID
X	349m SE	Unspecified Tanks	1900	1987916
O	352m SE	Unspecified Ground Workings	1910	1925651
X	354m SE	Tanks	1900	1892030
X	355m SE	Unspecified Tanks	1932	1947891
N	356m N	Iron Works	1910	1889518
N	366m NE	Burial Ground	1901	1913155
Y	367m N	Burial Ground	1900	1957456
R	370m S	Unspecified Pit	1961	1964213
Y	370m N	Burial Ground	1961	1968522
X	370m SE	Unspecified Tanks	1938	1960461
X	370m SE	Unspecified Tanks	1910	1945872
R	371m S	Unspecified Pits	1938	1908594
R	371m S	Unspecified Ground Workings	1932	1973904
R	371m S	Unspecified Ground Workings	1932	1973904
Y	372m N	Burial Ground	1900	1973676
Y	373m N	Burial Ground	1938	1993794
Y	373m N	Burial Ground	1932	1993794
Y	373m N	Burial Ground	1910	1993794
O	386m SE	Brick Tile and Pottery Works	1900	1999605
O	391m SE	Brick Tile and Pottery Works	1900	1999605
R	393m S	Unspecified Tank	1961	1996631
R	393m S	Unspecified Tanks	1932	1918455
R	396m S	Unspecified Workings	1991	1891963
R	396m S	Unspecified Tank	1910	1987747
R	396m S	Unspecified Tanks	1938	1918455
O	396m SE	Unspecified Ground Workings	1900	1953295
R	398m S	Unspecified Depot	1982	1935421
O	401m SE	Unspecified Ground Workings	1900	1953295

ID	Location	Land Use	Date	Group ID
R	404m S	Unspecified Tank	1961	1893263
X	409m SE	Unspecified Tank	1938	1893264
Z	411m NW	Unspecified Pit	1932	1920664
Z	411m NW	Unspecified Pit	1932	1920664
Z	414m NW	Old Gravel Pit	1900	1918552
Z	415m NW	Unspecified Pit	1938	1949521
Z	415m NW	Old Gravel Pit	1910	1952129
Z	415m NW	Old Gravel Pit	1900	1918552
R	428m S	Unspecified Depot	1991	1935421
R	436m SE	Unspecified Pit	1910	1983623
T	437m W	Unspecified Pits	1932	1919789
T	437m W	Unspecified Pits	1932	1919789
T	438m W	Unspecified Ground Workings	1900	1992826
T	438m W	Unspecified Ground Workings	1938	1956355
T	440m W	Unspecified Ground Workings	1910	1930370
T	441m W	Unspecified Pit	1900	1903157
T	446m W	Unspecified Ground Workings	1961	1994969
5	455m E	Cycle Works	1900	1986648
O	467m SE	Unspecified Heap	1961	1895528
AD	471m S	Miniature Rifle Range	1961	1972675
AD	472m SE	Miniature Rifle Range	1932	1921116
O	473m SE	Unspecified Tank	1938	1893265
AD	473m S	Miniature Rifle Range	1938	1972675
R	475m S	Unspecified Ground Workings	1991	1939232
R	475m S	Unspecified Ground Workings	1982	1939232
AE	481m NW	Unspecified Tank	1961	1977455
AE	481m NW	Unspecified Tank	1938	1938513
AE	481m NW	Unspecified Tank	1932	1938513

This data is sourced from Ordnance Survey / Groundsure.

2.2 Historical tanks

Records within 500m	**25**

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
J	244m S	Unspecified Tank	1932	322366
4	338m SE	Unspecified Tank	1932	322367
X	354m SE	Tanks	1899	334688
X	354m SE	Tanks	1911	334688
N	374m N	Unspecified Tank	1913	322358
N	375m N	Unspecified Tank	1973	331675
N	375m N	Unspecified Tank	1982	331675
N	375m N	Unspecified Tank	1969	331675
X	390m SE	Tanks	1932	317400
R	395m S	Unspecified Tank	1899	334214
R	395m S	Unspecified Tank	1911	334214
R	396m S	Tanks	1932	317401
Q	396m SE	Unspecified Tank	1911	322364
X	408m SE	Unspecified Tank	1932	341354
X	411m SE	Unspecified Tank	1961	343587
X	412m SE	Unspecified Tank	1962	344136
X	417m SE	Unspecified Tank	1911	322359
O	471m SE	Unspecified Tank	1911	335726
O	471m SE	Unspecified Tank	1932	335726
AE	476m NW	Unspecified Tank	1897	343492
AE	478m NW	Unspecified Tank	1934	329573
AE	478m NW	Unspecified Tank	1936	329573
AE	478m NW	Unspecified Tank	1897	343159

ID	Location	Land Use	Date	Group ID
O	496m SE	Unspecified Tank	1911	322360
O	497m SE	Unspecified Tank	1911	322363

This data is sourced from Ordnance Survey / Groundsure.

2.3 Historical energy features

Records within 500m	**46**

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	44m N	Electricity Substation	1993	207583
C	46m S	Electricity Substation	1987	222936
C	50m S	Electricity Substation	1971	222936
B	51m N	Electricity Substation	1971	213047
B	53m N	Electricity Substation	1987	213047
C	61m S	Electricity Substation	1993	207586
D	84m E	Electricity Substation	1990	220168
D	84m E	Electricity Substation	1991	220168
D	85m E	Electricity Substation	1970	233407
D	85m E	Electricity Substation	1994	220168
F	160m N	Electricity Substation	1970	225070
F	161m N	Electricity Substation	1990	225070
F	161m N	Electricity Substation	1991	225070
F	162m N	Electricity Substation	1994	225070
G	169m S	Electricity Substation	1971	232137
G	170m S	Electricity Substation	1993	232137
H	173m SW	Electricity Substation	1971	225049
H	173m SW	Electricity Substation	1993	225049

ID	Location	Land Use	Date	Group ID
I	194m SE	Electricity Substation	1993	211441
I	194m SE	Electricity Substation	1981	211441
L	239m W	Electricity Substation	1993	207584
L	242m W	Electricity Substation	1971	221308
L	244m W	Electricity Substation	1987	221308
M	290m NE	Electricity Substation	1994	207562
S	300m NW	Electricity Substation	1967	207573
S	307m N	Electricity Substation	1993	226164
S	309m N	Electricity Substation	1971	226622
S	311m N	Electricity Substation	1987	226164
V	319m W	Electricity Substation	1971	213260
V	321m W	Electricity Substation	1987	213260
V	323m SW	Electricity Substation	1993	207585
W	343m SE	Electricity Substation	1993	232225
W	344m SE	Electricity Substation	1981	232225
X	406m SE	Electricity Substation	1993	225672
X	407m SE	Electricity Substation	1981	225672
AA	428m N	Electricity Substation	1993	213079
AA	428m N	Electricity Substation	1982	213079
AB	430m S	Electricity Substation	1971	214479
AB	430m S	Electricity Substation	1993	214479
AC	462m NW	Electricity Substation	1993	223788
AC	464m NW	Electricity Substation	1967	218202
AC	464m NW	Electricity Substation	1971	218202
R	465m S	Electricity Substation	1981	231797
R	465m S	Electricity Substation	1971	231797
AC	467m NW	Electricity Substation	1987	219421
6	469m NE	Electricity Substation	1994	207561

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	6

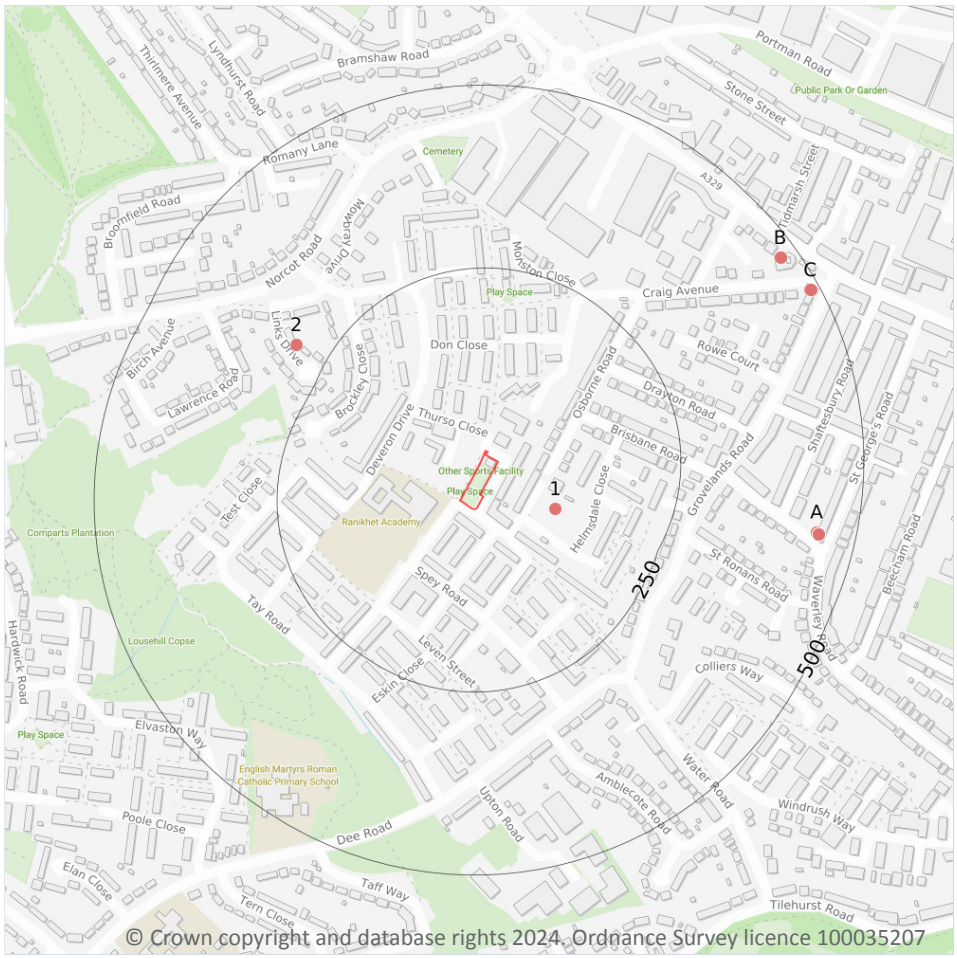
Garages digitised from historical Ordnance Survey mapping at high-detail 1:1,250 and 1:2,500 scale. Any records shown are available intelligently grouped in section 1. Grouped and the original un-grouped features can be cross-referenced across sections 1 and 2 using the 'Group ID'.

Features are displayed on the Past land use - un-grouped map on **page 23 >**

ID	Location	Land Use	Date	Group ID
7	491m NE	Garage	1973	72323
AF	492m NE	Garage	1973	71317
AF	492m NE	Garage	1960	71317
AF	493m NE	Garage	1961	71317
AF	493m NE	Garage	1969	71317
AF	493m NE	Garage	1973	68490

This data is sourced from Ordnance Survey / Groundsure.

3 Waste and landfill



Site Outline

Search buffers in metres (m)

Waste exemptions

3.1 Active or recent landfill

Records within 500m	0

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

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

3.2 Historical landfill (BGS records)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

3.3 Historical landfill (LA/mapping records)

Records within 500m	0

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

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

3.4 Historical landfill (EA/NRW records)

Records within 500m	0

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

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

3.5 Historical waste sites

Records within 500m	0

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

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

3.6 Licensed waste sites

Records within 500m	0

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

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

3.7 Waste exemptions

Records within 500m	28

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.

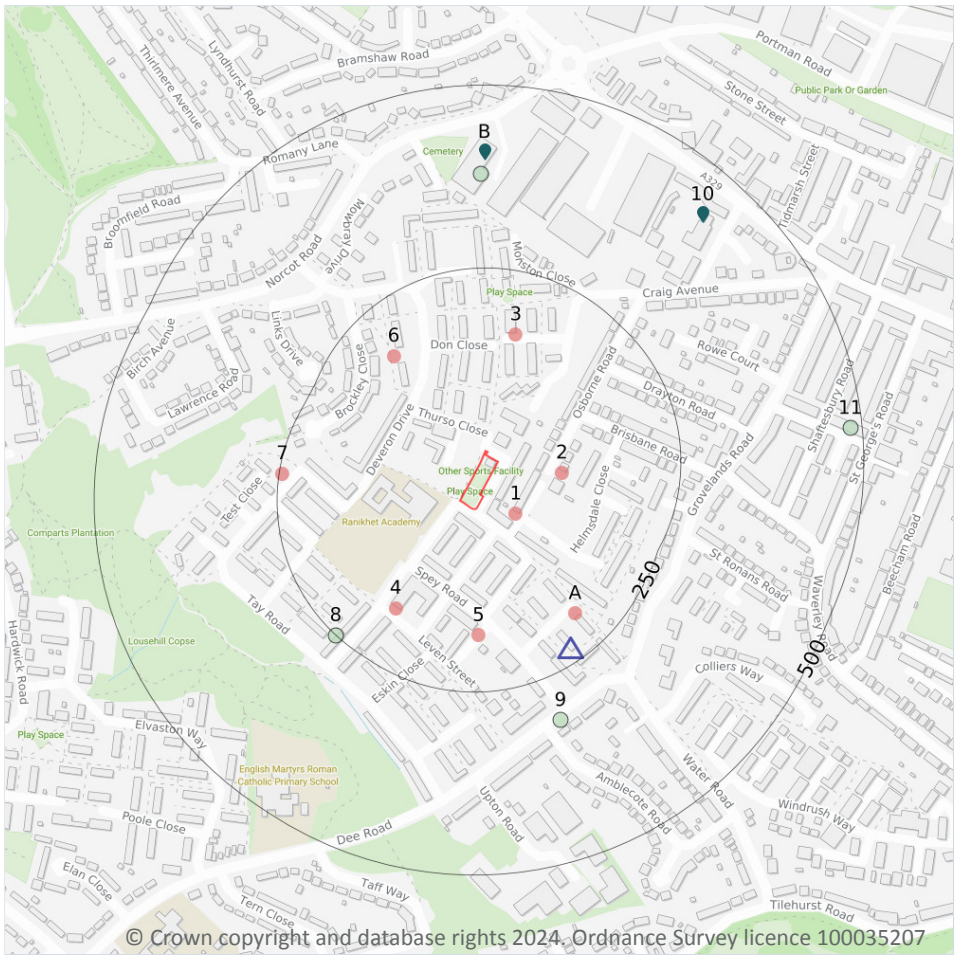
Features are displayed on the Waste and landfill map on **page 32 >**

ID	Location	Site	Reference	Category	Sub-Category	Description
1	100m E	Willmott Dixon Site Office Arbroath Road Reading Rg30 4ef	EPR/XF0804HC/A001	Using waste exemption	Non-agricultural waste only	Use of waste in construction
2	296m NW	Open Space (Grassland), Links Drive, Reading, Rg30 4yt	WEX171056	Using waste exemption	Not on a farm	Use of waste in construction
A	446m E	128 St. Georges Road Reading Rg30 2rh	EPR/GH0371BK/A001	Disposing of waste exemption	Non-agricultural waste only	Burning waste in the open
A	446m E	128 St. Georges Road Reading Rg30 2rh	EPR/GH0371BK/A001	Disposing of waste exemption	Non-agricultural waste only	Disposal by incineration
A	446m E	128 St. Georges Road Reading Rg30 2rh	EPR/GH0371BK/A001	Storing waste exemption	Non-agricultural waste only	Storage of waste in a secure place
A	446m E	128 St. Georges Road Reading Rg30 2rh	EPR/GH0371BK/A001	Treating waste exemption	Non-agricultural waste only	Aerobic composting and associated prior treatment
A	446m E	128 St. Georges Road Reading Rg30 2rh	EPR/GH0371BK/A001	Using waste exemption	Non-agricultural waste only	Use of waste in construction
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Using waste exemption	Not on a farm	Use of waste in construction
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Using waste exemption	Not on a farm	Spreading of plant matter to confer benefit
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Using waste exemption	Not on a farm	Incorporation of ash into soil
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment

ID	Location	Site	Reference	Category	Sub-Category	Description
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Using waste exemption	Not on a farm	Use of mulch
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX197454	Disposing of waste exemption	Not on a farm	Burning waste in the open
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Disposing of waste exemption	Not on a farm	Burning waste in the open
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Using waste exemption	Not on a farm	Use of mulch
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Storing waste exemption	Not on a farm	Storage of waste in a secure place
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Treating waste exemption	Not on a farm	Aerobic composting and associated prior treatment
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Treating waste exemption	Not on a farm	Treatment of waste wood and waste plant matter by chipping, shredding, cutting or pulverising
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Using waste exemption	Not on a farm	Use of waste in construction
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Using waste exemption	Not on a farm	Spreading of plant matter to confer benefit
A	449m E	128, St. Georges Road, Reading, Rg30 2rh	WEX023576	Using waste exemption	Not on a farm	Incorporation of ash into soil
B	475m NE	701, Oxford Road, Reading, Rg30 1hg	WEX233815	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	475m NE	-	WEX359117	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
B	475m NE	701, Oxford Road, Reading, Rg30 1hg	WEX090352	Treating waste exemption	Not on a farm	Sorting and de-naturing of controlled drugs for disposal
C	486m NE	2 Grovelands Road Reading Berkshire Rg30 2ny	EPR/JE5280PY/A001	Treating waste exemption	Non-agricultural waste only	Sorting and de-naturing of controlled drugs for disposal
C	487m NE	2, Grovelands Road, Reading, Rg30 2ny	WEX018359	Treating waste exemption	Not on a farm	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



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

Recent industrial land uses

Current or recent petrol stations

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

Pollution Incidents (EA/NRW)

4.1 Recent industrial land uses

Records within 250m	8

Current potentially contaminative industrial sites.

Features are displayed on the Current industrial land use map on **page 36 >**

ID	Location	Company	Address	Activity	Category
1	50m SE	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities
2	89m E	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities
3	165m N	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities

ID	Location	Company	Address	Activity	Category
4	171m SW	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities
5	172m S	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities
6	181m NW	Gas Governor	Berkshire, RG30	Gas Features	Infrastructure and Facilities
A	197m SE	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities
7	246m W	Electricity Sub Station	Berkshire, RG30	Electrical Features	Infrastructure and Facilities

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 36 >**

ID	Location	Company	Address	LPG	Status
A	229m SE	OBSOLETE	Spey Road, Tilehurst, Reading, Reading, RG30 4DQ	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 36 >**

ID	Location	Address	Details	
B	408m N	Autotech Reading Ltd, Unit 1, Sterling Way, Norcot Way Industrial Estate, Reading, RG30 6HW	Process: Respraying of Road Vehicles Status: Current Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified
10	438m NE	The Berkshire Printing Co Ltd, Oxford Road, RG3 1JB	Process: Printing Status: Historical Permit Permit Type: Part B	Enforcement: No Enforcements Notified Date of enforcement: No Enforcements Notified Comment: No Enforcements Notified

This data is sourced from Local Authority records.

4.12 Radioactive Substance Authorisations

Records within 500m	0

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

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

4.13 Licensed Discharges to controlled waters

Records within 500m	0

Discharges of treated or untreated effluent to controlled waters under the Water Resources Act 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 36 >**

ID	Location	Details	
8	250m SW	Incident Date: 15/07/2002 Incident Identification: 91552 Pollutant: Oils and Fuel Pollutant Description: Gas and Fuel Oils	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
9	311m S	Incident Date: 13/09/2001 Incident Identification: 30573 Pollutant: Pollutant Not Identified Pollutant Description: Not Identified	Water Impact: Category 4 (No Impact) Land Impact: Category 4 (No Impact) Air Impact: Category 4 (No Impact)
B	379m N	Incident Date: 13/11/2001 Incident Identification: 42723 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)
11	484m E	Incident Date: 07/06/2002 Incident Identification: 83482 Pollutant: Specific Waste Materials Pollutant Description: Household Waste	Water Impact: Category 4 (No Impact) Land Impact: Category 3 (Minor) Air Impact: Category 4 (No Impact)

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

4.19 Pollution inventory substances

Records within 500m	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.

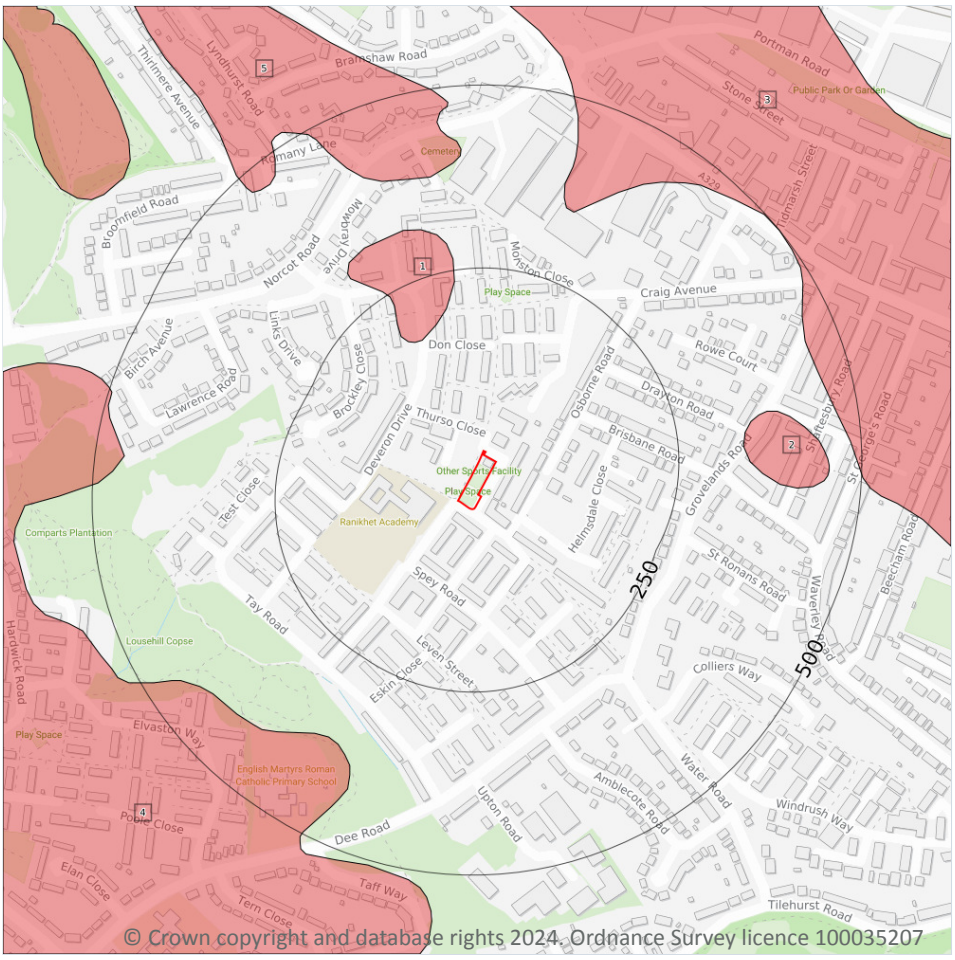
4.21 Pollution inventory radioactive waste

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



5.1 Superficial aquifer

Records within 500m	5

Aquifer status of groundwater held within superficial geology.

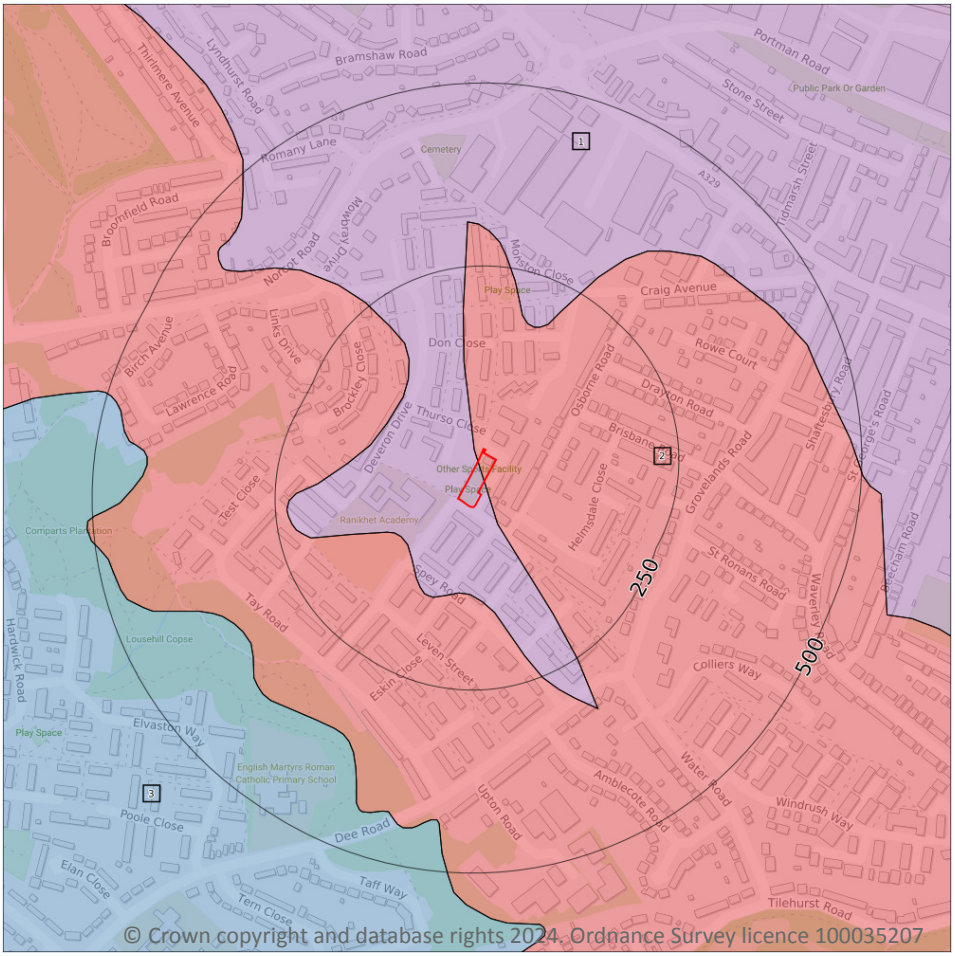
Features are displayed on the Hydrogeology map on **page 43 >**

ID	Location	Designation	Description
1	173m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
2	339m 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

ID	Location	Designation	Description
3	349m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers
4	367m 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
5	381m N	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

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

Bedrock aquifer



Site Outline

Search buffers in metres (m)

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

5.2 Bedrock aquifer

Records within 500m	3

Aquifer status of groundwater held within bedrock geology.

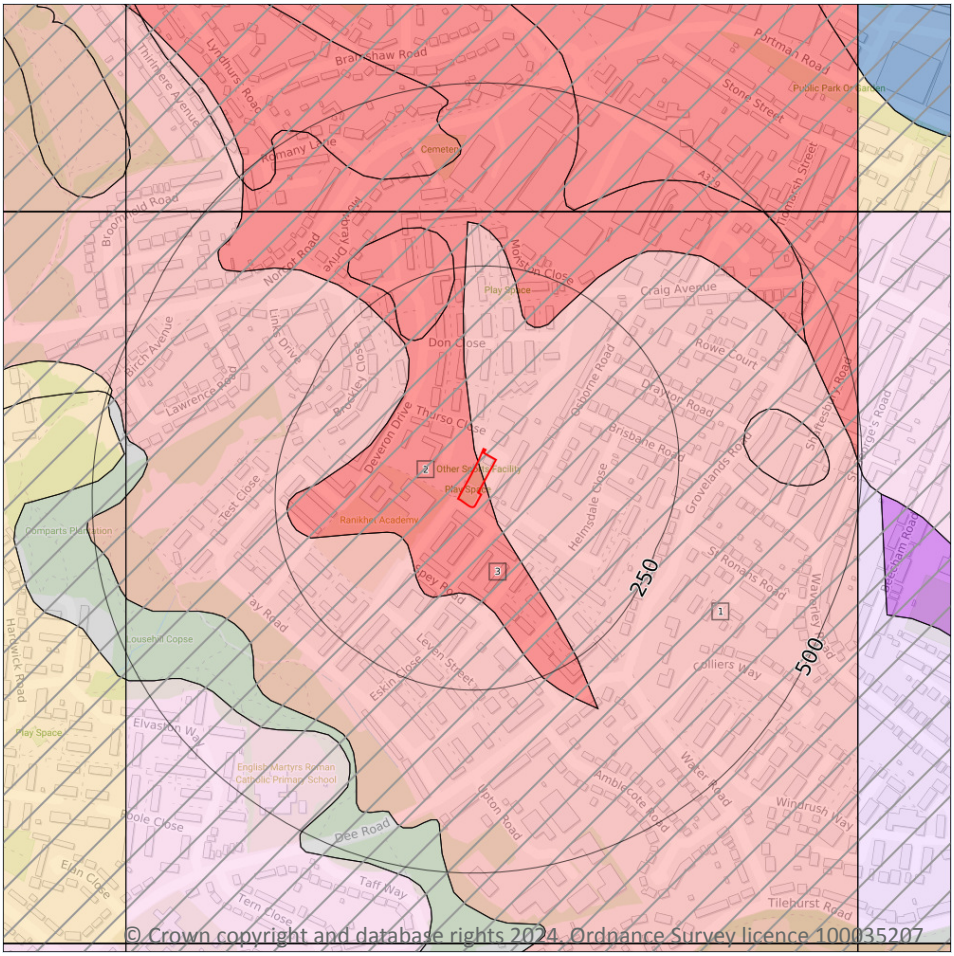
Features are displayed on the Bedrock aquifer map on **page 45 >**

ID	Location	Designation	Description
1	On site	Principal	Geology of high intergranular and/or fracture permeability, usually providing a high level of water storage and may support water supply/river base flow on a strategic scale. Generally principal aquifers were previously major aquifers
2	On site	Secondary A	Permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. These are generally aquifers formerly classified as minor aquifers

ID	Location	Designation	Description
3	345m SW	Unproductive	These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow

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

Groundwater vulnerability



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	2

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 47 >**

ID	Location	Summary	Soil / surface	Superficial geology	Bedrock geology
1	On site	Summary Classification: Secondary bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Secondary Flow mechanism: Well connected fractures
2	On site	Summary Classification: Principal bedrock aquifer - High Vulnerability Combined classification: Productive Bedrock Aquifer, No Superficial Aquifer	Leaching class: Low Infiltration value: >70% Dilution value: <300mm/year	Vulnerability: - Aquifer type: - Thickness: <3m Patchiness value: <90% Recharge potential: No Data	Vulnerability: High Aquifer type: Principal Flow mechanism: Well connected fractures

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

5.4 Groundwater vulnerability- soluble rock risk

Records on site	1

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

ID	Maximum soluble risk category	Percentage of grid square covered by maximum risk
3	**Very significant soluble rocks are likely to be present with a high possibility of localised subsidence or dissolution-related degradation of bedrock occurring naturally, especially in adverse conditions such as concentrated surface or subsurface water flow.**	**2.0%**

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

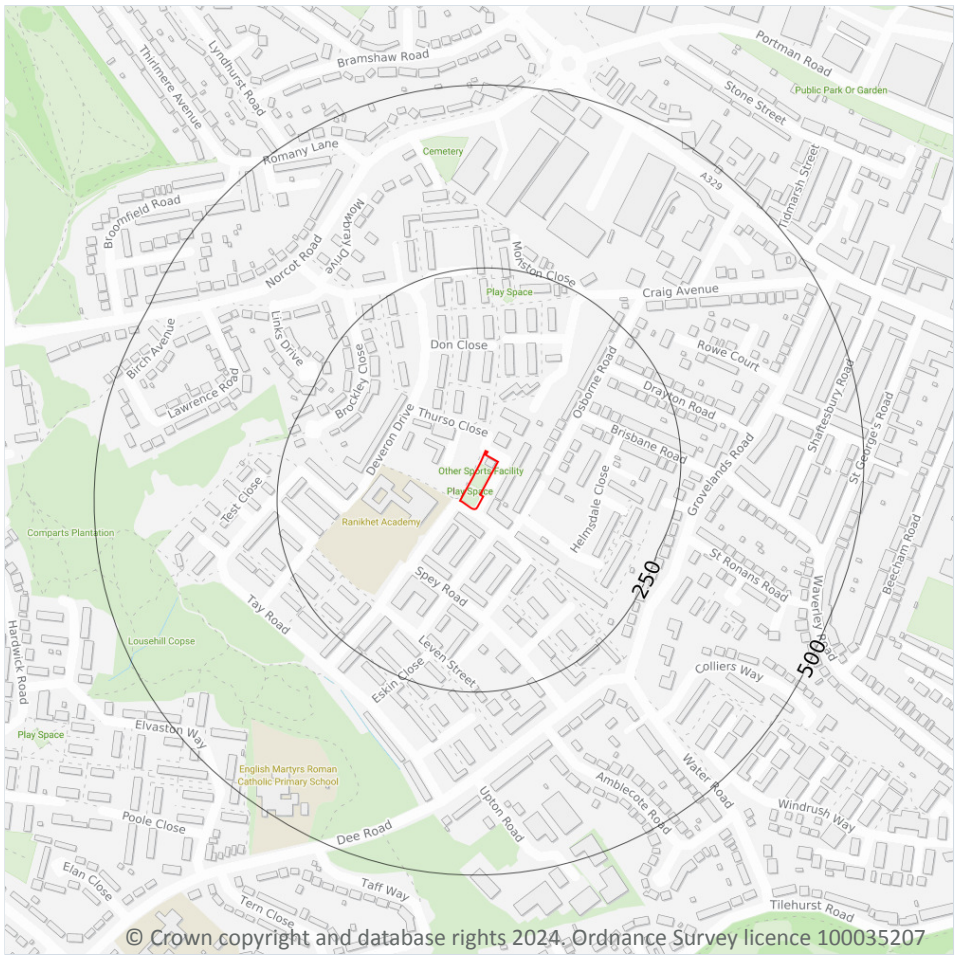
5.5 Groundwater vulnerability- local information

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	15

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 49 >**

ID	Location	Details	
-	851m N	Status: Historical Licence No: 28/39/23/0176 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING TOWN F.C, READING Data Type: Point Name: READING TOWN FOOTBALL CLUB Easting: 468700 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 30/09/1994 Expiry Date: - Issue No: 100 Version Start Date: 30/09/1994 Version End Date: -
-	851m N	Status: Historical Licence No: 28/39/23/0176 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING TOWN F.C, READING Data Type: Point Name: READING TOWN FOOTBALL CLUB Easting: 468700 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 30/09/1994 Expiry Date: - Issue No: 100 Version Start Date: 30/09/1994 Version End Date: -
-	921m NE	Status: Historical Licence No: 28/39/23/0131 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING Data Type: Point Name: PRUDENTIAL IBIS CLUB Easting: 468900 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1992 Version End Date: -
-	921m NE	Status: Historical Licence No: 28/39/23/0131 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING Data Type: Point Name: PRUDENTIAL IBIS CLUB Easting: 468900 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1992 Version End Date: -
-	1108m NE	Status: Historical Licence No: 28/39/23/0137 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING (A - R) Data Type: Point Name: READING BOROUGH COUNCIL Easting: 469100 Northing: 174600	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 17/11/1976 Expiry Date: - Issue No: 100 Version Start Date: 17/11/1976 Version End Date: -

ID	Location	Details	
-	1131m NE	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (A) Data Type: Point Name: DRAYTON Easting: 469500 Northing: 174200	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: WR.A/3088 Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1316m E	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY Easting: 469800 Northing: 173900	Annual Volume (m^3): 136875 Max Daily Volume (m^3): 400 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 07/01/1999 Version End Date: -
-	1405m NE	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHM'S FARM, READING (B) Data Type: Point Name: DRAYTON Easting: 469700 Northing: 174400	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: WR.A/3088 Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1405m NE	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (C) Data Type: Point Name: DRAYTON Easting: 469700 Northing: 174400	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: WR.A/3088 Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1646m N	Status: Historical Licence No: 28/39/23/0139 Details: General use relating to Secondary Category (Medium Loss) Direct Source: THAMES GROUNDWATER Point: CHAZEY COURT FARM, MAPLEDURHAM, - TUBEWELL 'A' Data Type: Point Name: EYSTON Easting: 469110 Northing: 175200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1977 Expiry Date: - Issue No: 101 Version Start Date: 09/09/1999 Version End Date: -

ID	Location	Details	
-	1658m NE	Status: Historical Licence No: 28/39/23/0139 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: CHAZEY COURT FARM, MAPLEDURHAM Data Type: Point Name: EYSTON Easting: 469140 Northing: 175200	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 23/03/1977 Expiry Date: - Issue No: 101 Version Start Date: 09/09/1999 Version End Date: -
-	1670m SW	Status: Active Licence No: 28/39/22/0127 Details: Spray Irrigation - Direct Direct Source: THAMES GROUNDWATER Point: CALCOT PARK, READING Data Type: Point Name: CALCOT PARK GOLF CLUB LTD Easting: 467300 Northing: 172400	Annual Volume (m^3): 8500 Max Daily Volume (m^3): 55 Original Application No: NPS/WR/036724 Original Start Date: 13/06/1966 Expiry Date: - Issue No: 103 Version Start Date: 21/02/2023 Version End Date: -
-	1718m E	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (E) Data Type: Point Name: DRAYTON Easting: 470100 Northing: 174300	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: WR.A/3088 Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1850m NE	Status: Active Licence No: 28/39/23/0070 Details: General Farming & Domestic Direct Source: THAMES GROUNDWATER Point: LITTLE JOHN'S FARM, READING (D) Data Type: Point Name: DRAYTON Easting: 470100 Northing: 174600	Annual Volume (m^3): 9819 Max Daily Volume (m^3): 26.82 Original Application No: WR.A/3088 Original Start Date: 09/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 09/01/1967 Version End Date: -
-	1945m E	Status: Active Licence No: 28/39/23/0128 Details: Process Water Direct Source: THAMES GROUNDWATER Point: CARDIFF ROAD, READING POINT A Data Type: Point Name: HILLIER GROUP OF COMPANIES Easting: 470400 Northing: 174100	Annual Volume (m^3): 6682 Max Daily Volume (m^3): 27.28 Original Application No: WR.A/4547 Original Start Date: 22/01/1975 Expiry Date: - Issue No: 100 Version Start Date: 01/04/2008 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	3

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 49 >**

ID	Location	Details	
-	851m N	Status: Historical Licence No: 28/39/23/0176 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING TOWN F.C, READING Data Type: Point Name: READING TOWN FOOTBALL CLUB Easting: 468700 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 30/09/1994 Expiry Date: - Issue No: 100 Version Start Date: 30/09/1994 Version End Date: -
-	921m NE	Status: Historical Licence No: 28/39/23/0131 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: SCOURS LANE, READING Data Type: Point Name: PRUDENTIAL IBIS CLUB Easting: 468900 Northing: 174500	Annual Volume (m^3): - Max Daily Volume (m^3): - Original Application No: - Original Start Date: 14/01/1967 Expiry Date: - Issue No: 100 Version Start Date: 01/05/1992 Version End Date: -

ID	Location	Details	
-	1316m E	Status: Historical Licence No: 28/39/23/0181 Details: Drinking, Cooking, Sanitary, Washing, (Small Garden) - Commercial/Industrial/Public Services Direct Source: THAMES GROUNDWATER Point: BATTLE HOSPITAL, OXFORD ROAD, READING Data Type: Point Name: WEST BERKSHIRE HEALTH AUTHORITY Easting: 469800 Northing: 173900	Annual Volume (m^3): 136875 Max Daily Volume (m^3): 400 Original Application No: - Original Start Date: 17/01/1992 Expiry Date: - Issue No: 100 Version Start Date: 07/01/1999 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.

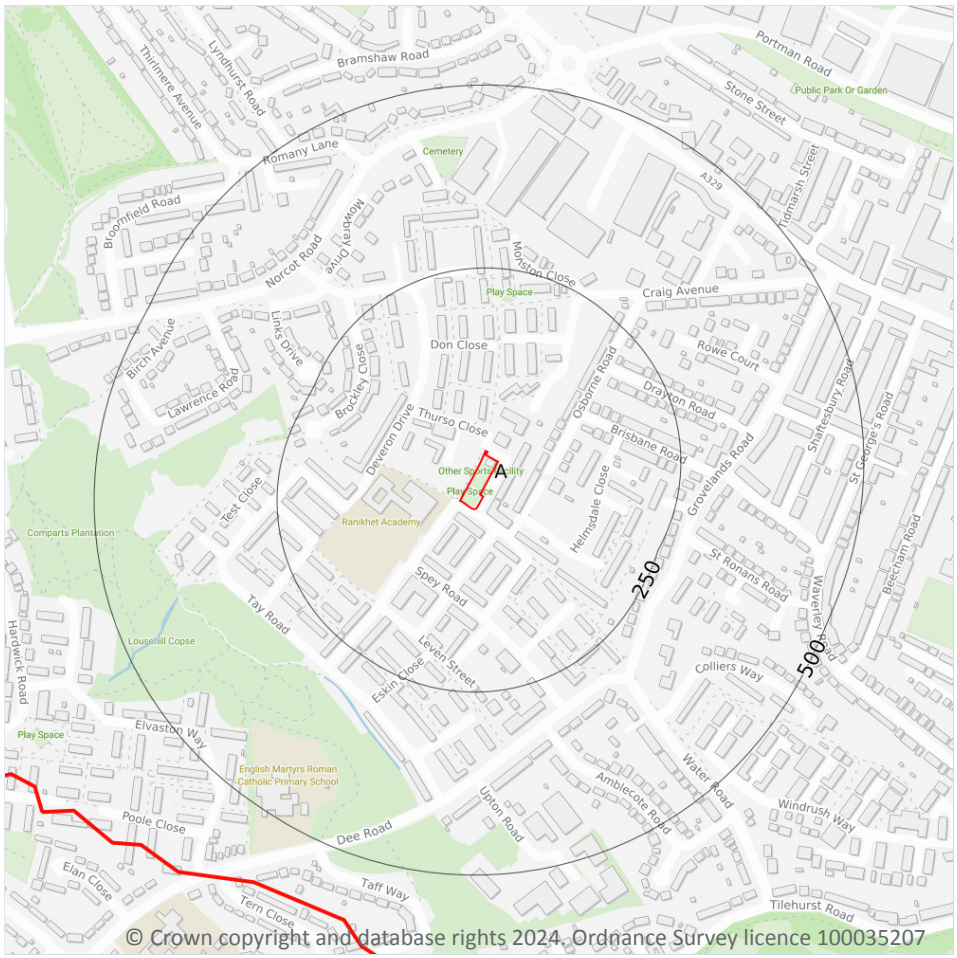
5.10 Source Protection Zones (confined aquifer)

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



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 55 >**

ID	Location	Type	Water body catchment	Water body ID	Operational catchment	Management catchment
A	**On site**	**River**	**Thames Wallingford to Caversham**	**GB106039030331**	**Chilterns South**	**Thames and Chilterns South**

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 55 >**

ID	Location	Type	Name	Water body ID	Overall rating	Chemical rating	Ecological rating	Year
-	969m N	River	Thames Wallingford to Caversham	GB106039030331 ↗	Moderate	Fail	Moderate	2019

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

6.5 WFD Groundwater bodies

Records on site	1

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

Features are displayed on the Hydrology map on **page 55 >**

ID	Location	Name	Water body ID	Overall rating	Chemical rating	Quantitative	Year
A	**On site**	**Berkshire Downs Chalk**	**GB40601G600900** ↗	**Poor**	**Poor**	**Poor**	**2019**

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

7 River and coastal flooding

7.1 Risk of flooding from rivers and 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	0

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

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

7.3 Flood Defences

Records within 250m	0

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

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

7.4 Areas Benefiting from Flood Defences

Records within 250m	0

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

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

7.5 Flood Storage Areas

Records within 250m	0

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

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

River and coastal flooding - Flood Zones

7.6 Flood Zone 2

Records within 50m	0

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

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

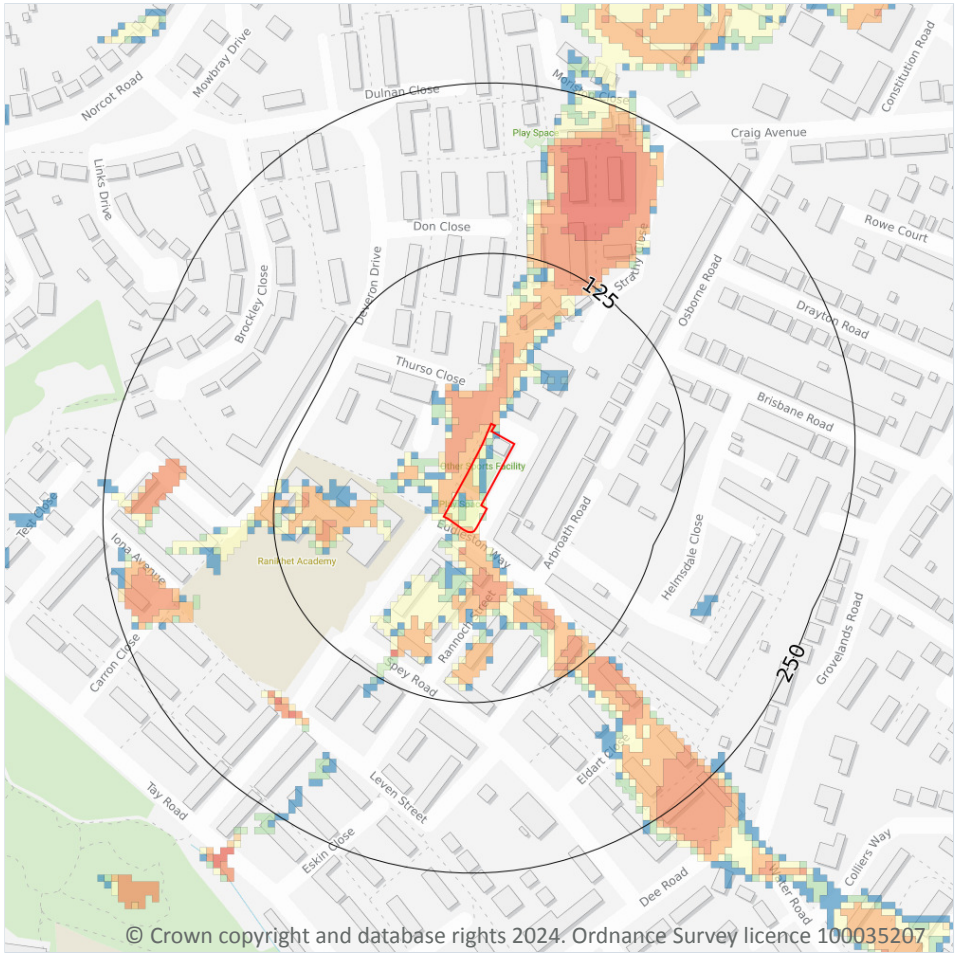
7.7 Flood Zone 3

Records within 50m	0

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

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

8 Surface water flooding



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, 0.3m - 1.0m**
Highest risk within 50m	**1 in 30 year, 0.3m - 1.0m**

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

Features are displayed on the Surface water flooding map on **page 61 >**

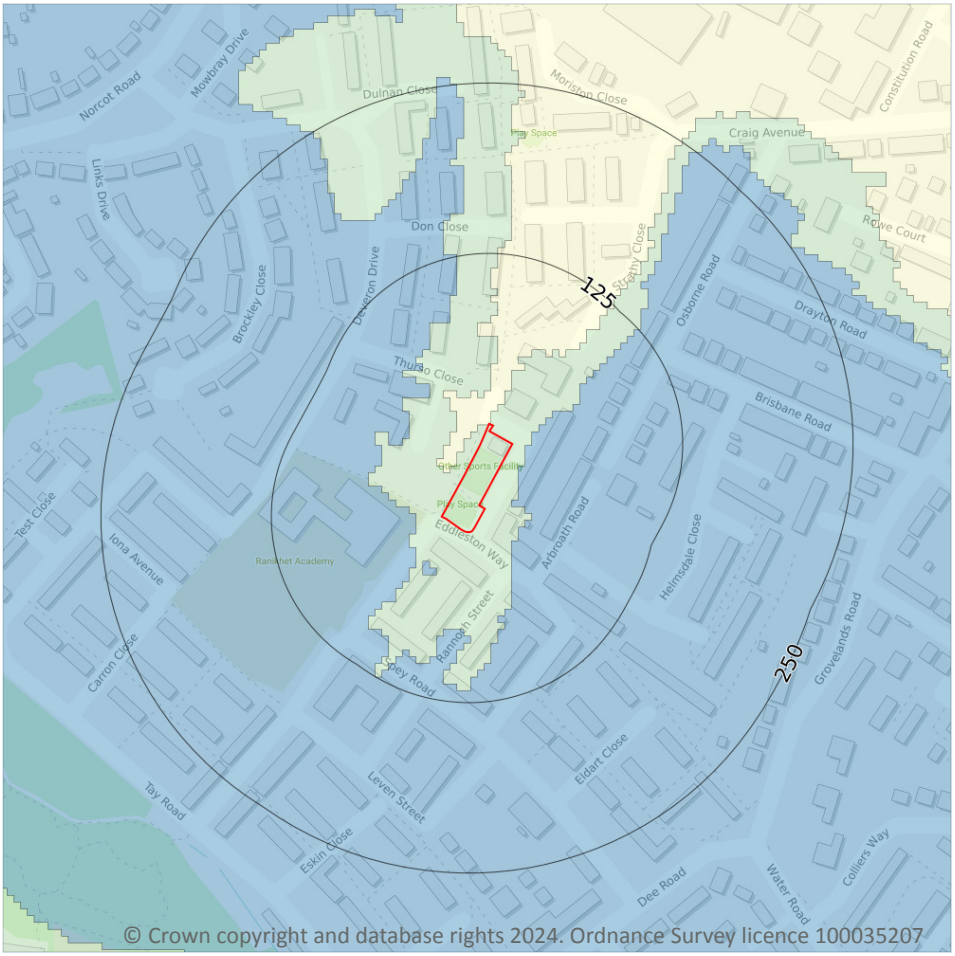
The data shown on the map and in the table above shows the highest likelihood of flood events happening at the site. Lower likelihood events may have greater flood depths and hence a greater potential impact on a site.

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

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

This data is sourced from Ambiental Risk Analytics.

9 Groundwater flooding



Site Outline

Search buffers in metres (m)

High

Moderate - High

Moderate

Low

Negligible

9.1 Groundwater flooding

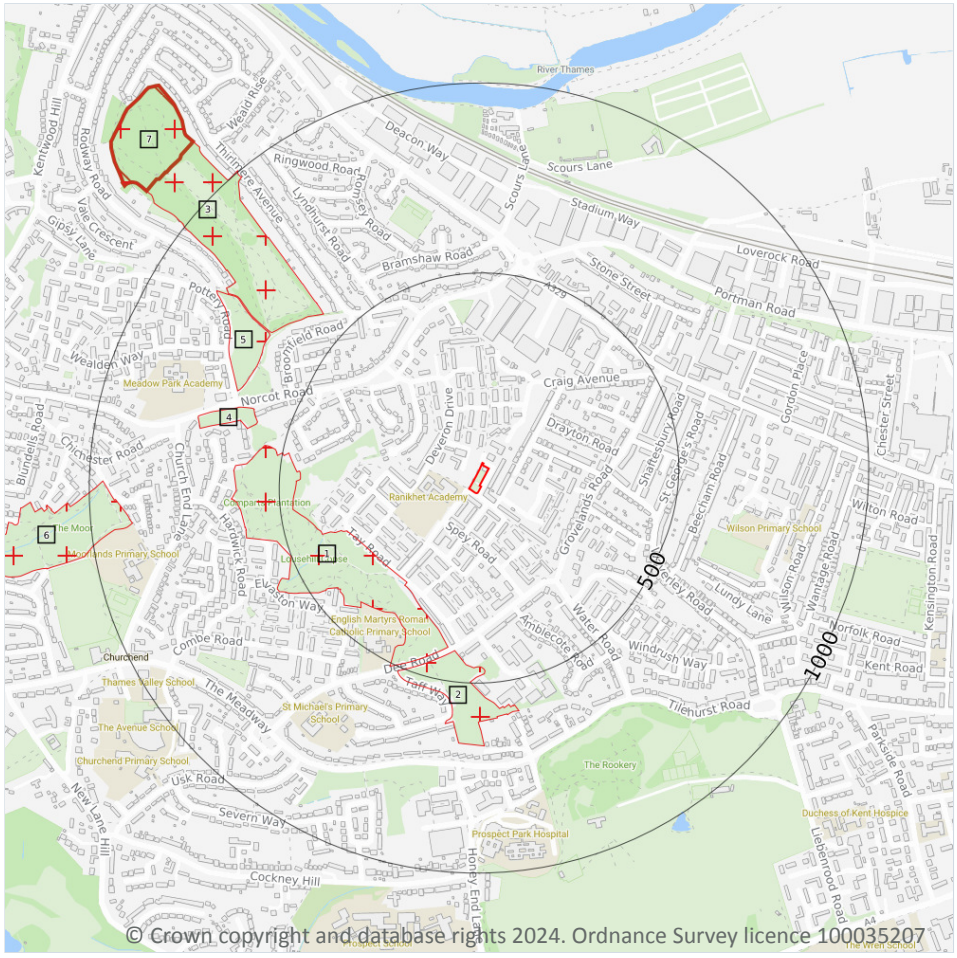
Highest risk on site	**Moderate**
Highest risk within 50m	**Moderate**

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 63 >**

This data is sourced from Ambiental Risk Analytics.

10 Environmental designations



Site Outline

Search buffers in metres (m)

Local Nature Reserves (LNR)

Designated Ancient Woodland

10.1 Sites of Special Scientific Interest (SSSI)

Records within 2000m	0

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

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

10.2 Conserved wetland sites (Ramsar sites)

Records within 2000m	0

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

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

10.3 Special Areas of Conservation (SAC)

Records within 2000m	0

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

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

10.4 Special Protection Areas (SPA)

Records within 2000m	0

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

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

10.5 National Nature Reserves (NNR)

Records within 2000m	0

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

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

10.6 Local Nature Reserves (LNR)

Records within 2000m	6

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.

Features are displayed on the Environmental designations map on **page 64 >**

ID	Location	Name	Data source
1	294m SW	Lousehill Copse	Natural England
2	419m S	Lousehill Copse	Natural England
3	573m NW	McIlroy Park	Natural England
4	584m W	Lousehill Copse	Natural England
5	645m NW	Round Copse	Natural England
6	891m W	Blundells Copse	Natural England

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

10.7 Designated Ancient Woodland

Records within 2000m	3

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

Features are displayed on the Environmental designations map on **page 64 >**

ID	Location	Name	Woodland Type
7	1129m NW	Kentwood Grove	Ancient & Semi-Natural Woodland
-	1493m SW	Church End Copse	Ancient & Semi-Natural Woodland
-	1902m N	Chazey Wood	Ancient Replanted Woodland

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

10.8 Biosphere Reserves

Records within 2000m	0

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

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

10.9 Forest Parks

Records within 2000m	0

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

This data is sourced from the Forestry Commission.

10.10 Marine Conservation Zones

Records within 2000m	0

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

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

10.11 Green Belt

Records within 2000m	0

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

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

10.12 Proposed Ramsar sites

Records within 2000m	0

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

This data is sourced from Natural England.

10.13 Possible Special Areas of Conservation (pSAC)

Records within 2000m	0

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

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

10.14 Potential Special Protection Areas (pSPA)

Records within 2000m	0

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

This data is sourced from Natural England.

10.15 Nitrate Sensitive Areas

Records within 2000m	0

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

This data is sourced from Natural England.

10.16 Nitrate Vulnerable Zones

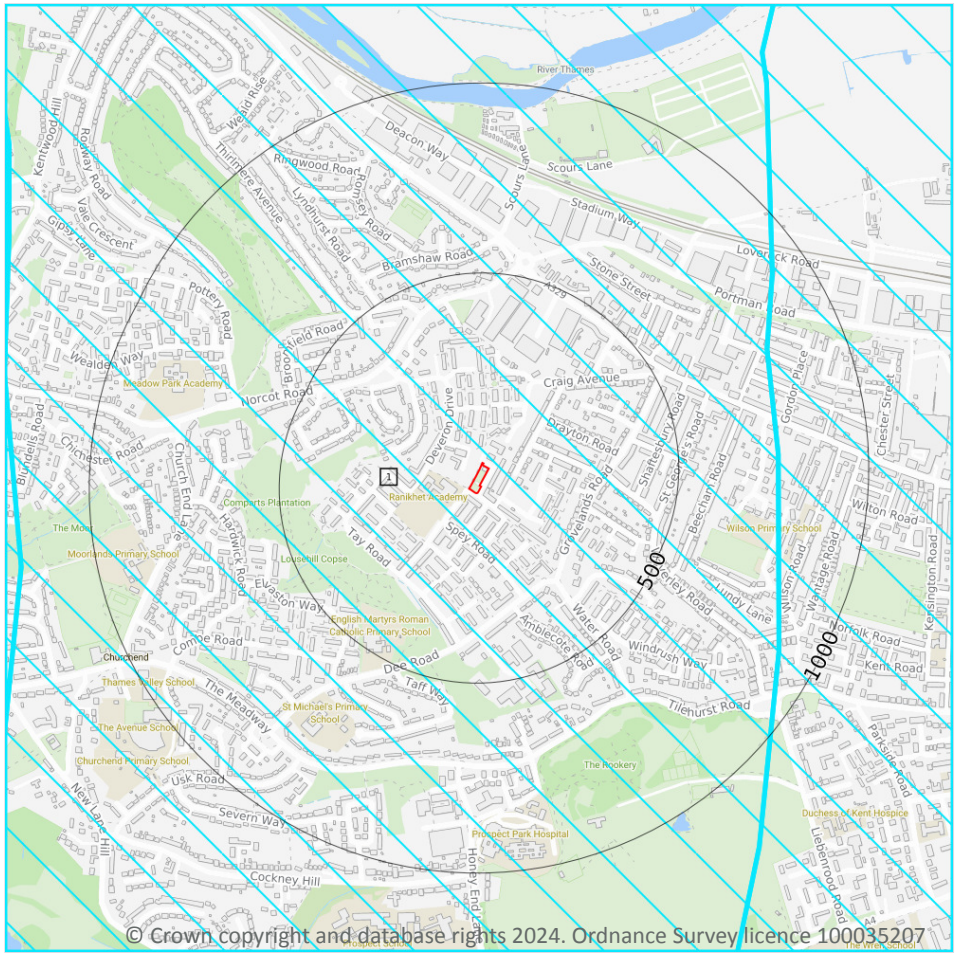
Records within 2000m	1

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

Location	Name	Type	NVZ ID	Status
On site	**Thames Wallingford to Caversham NVZ**	**Surface Water**	**481**	**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 70 >**

ID	Location	Type of developments requiring consultation
1	**On site**	**Infrastructure - Airports, helipads and other aviation proposals.** **Air pollution - Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 750m², manure stores > 3500t.** **Combustion - General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.**

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.

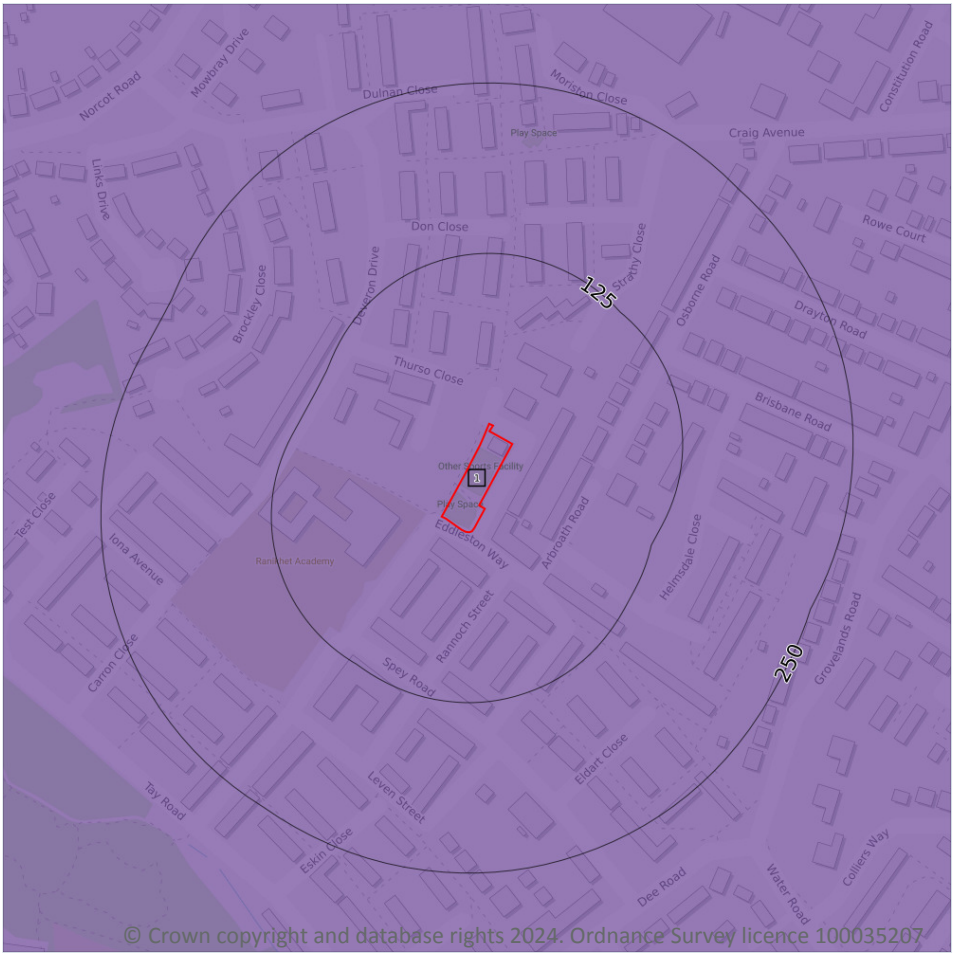
11.7 Registered Parks and Gardens

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 74 >**

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

13.1 Priority Habitat Inventory

Records within 250m	0

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

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.

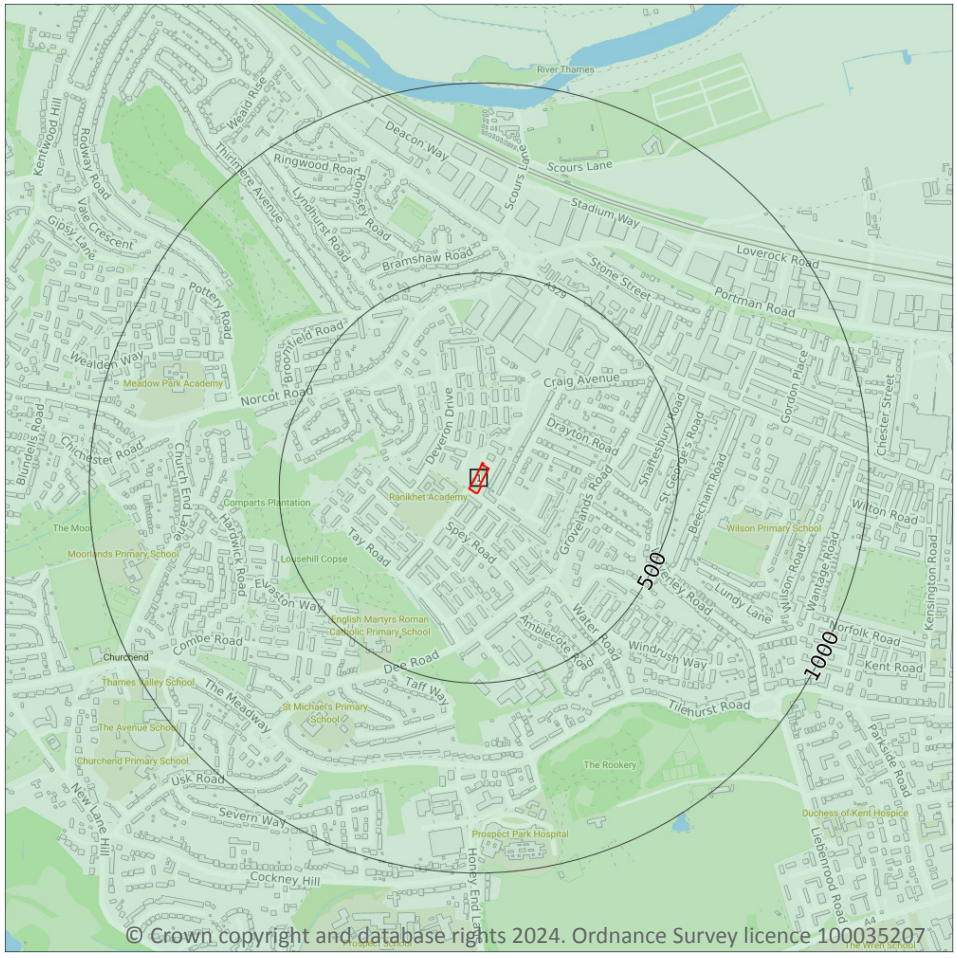
13.4 Limestone Pavement Orders

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	1

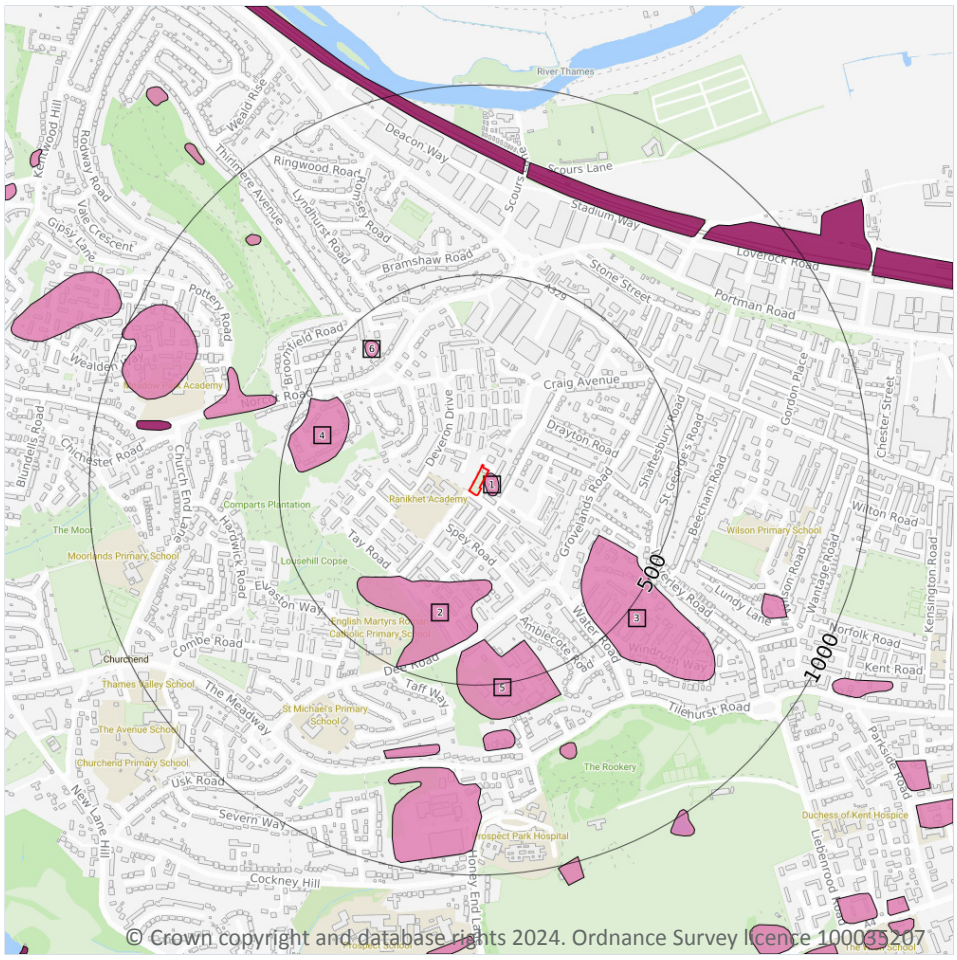
An indication on the coverage of 1:10,000 scale geology data for the site, the most detailed dataset provided by the British Geological Survey. Either 'Full', 'Partial' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:10,000 scale - Availability map on **page 77 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**SU67SE**

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	6

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.

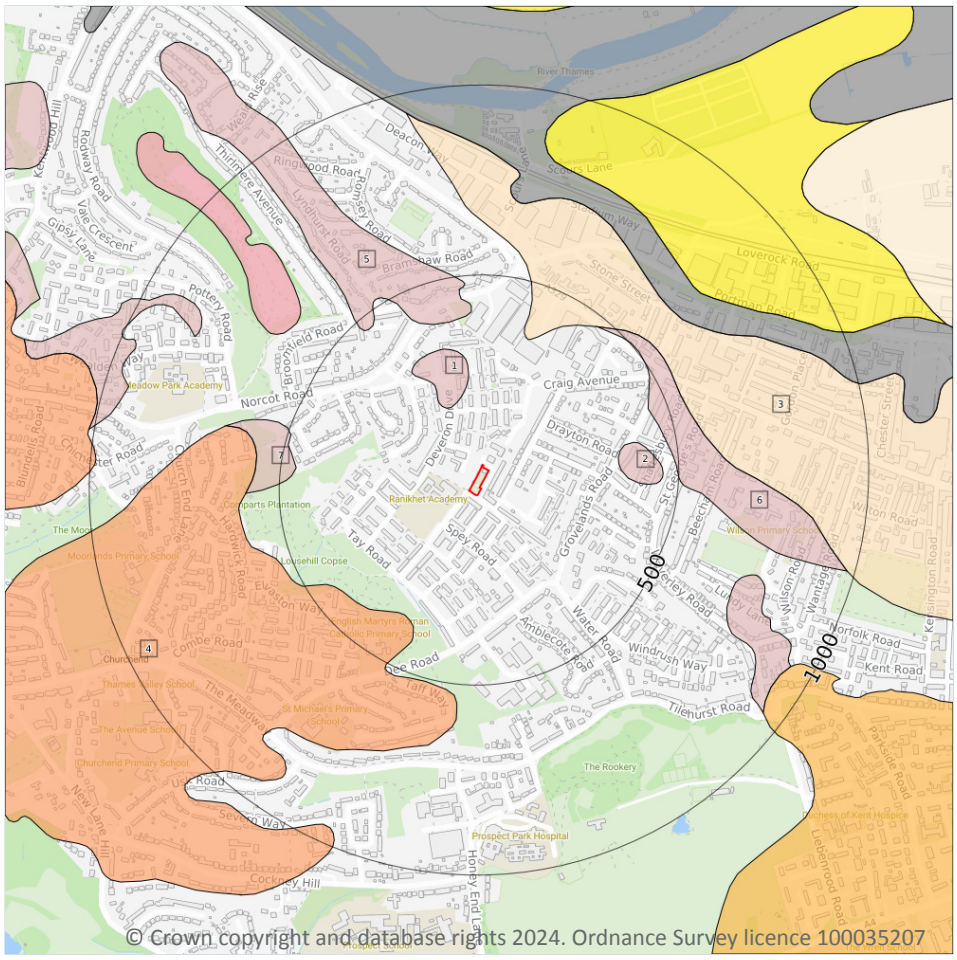
Features are displayed on the Geology 1:10,000 scale - Artificial and made ground map on **page 78 >**

ID	Location	LEX Code	Description	Rock description
1	1m NE	WGR-VOID	Worked Ground (Undivided)	Void
2	224m S	WGR-VOID	Worked Ground (Undivided)	Void
3	329m SE	WGR-VOID	Worked Ground (Undivided)	Void
4	352m W	WGR-VOID	Worked Ground (Undivided)	Void

ID	Location	LEX Code	Description	Rock description
5	381m S	WGR-VOID	Worked Ground (Undivided)	Void
6	403m NW	WGR-VOID	Worked Ground (Undivided)	Void

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Superficial



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

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 **7**

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 80 >**

ID	Location	LEX Code	Description	Rock description
1	172m N	HEAD-XVSZC	Head - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay
2	342m E	HEAD-XVSZC	Head - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay
3	351m N	TPGR-XSV	Taplow Gravel Formation - Sand And Gravel	Sand And Gravel

ID	Location	LEX Code	Description	Rock description
4	367m SW	WIHG-XSV	Winter Hill Gravel - Sand And Gravel	Sand And Gravel
5	386m N	HEAD-XVSZC	Head - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay
6	450m NE	HEAD-XVSZC	Head - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay
7	459m W	HEAD-XVSZC	Head - Gravel, Sand, Silt And Clay	Gravel, Sand, Silt And Clay

This data is sourced from the British Geological Survey.

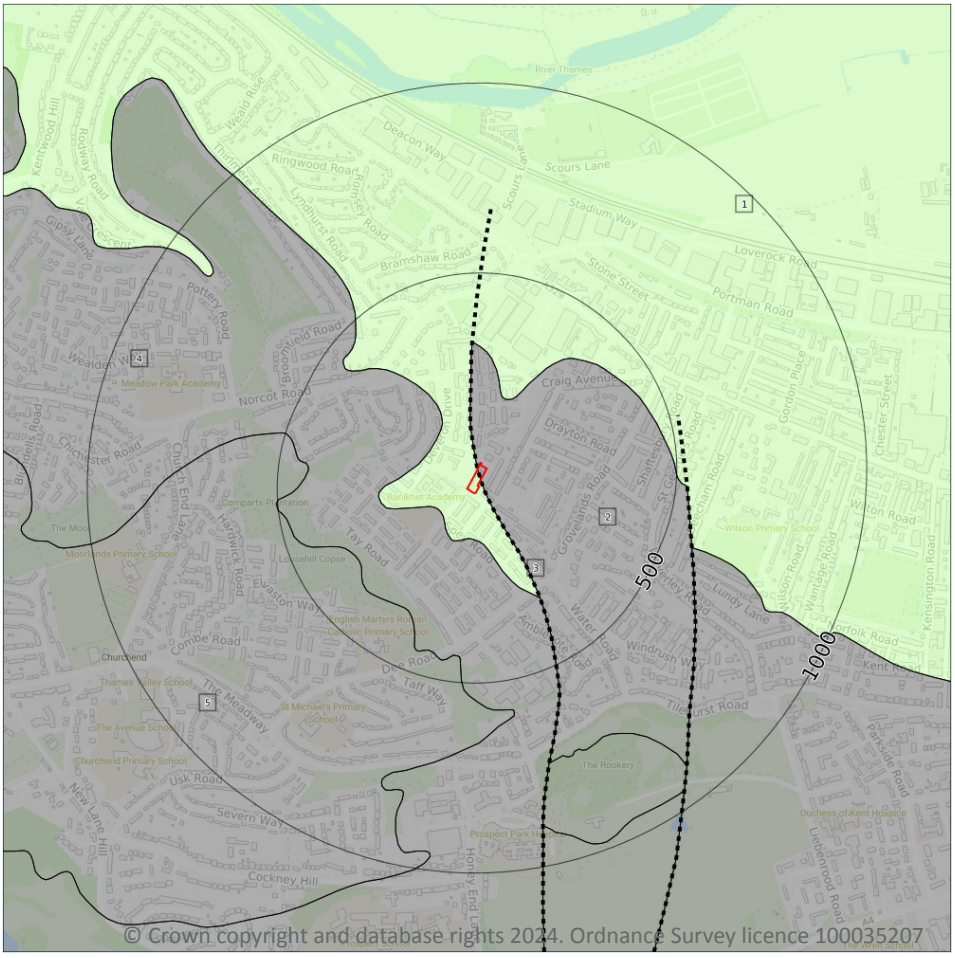
14.4 Landslip (10k)

Records within 500m	**0**

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

This data is sourced from the British Geological Survey.

Geology 1:10,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (10k)

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

14.5 Bedrock geology (10k)

Records within 500m	4

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 82 >**

ID	Location	LEX Code	Description	Rock age
1	On site	LSNCK-CHLK	Lewes Nodular Chalk Formation, Seaford Chalk Formation And Newhaven Chalk Formation (undifferentiated) - Chalk	Campanian Age - Turonian Age
2	On site	LMBE-CLSISA	Lambeth Group - Clay, Silt And Sand	Paleocene Epoch

ID	Location	LEX Code	Description	Rock age
4	92m SW	LMBE-CLSISA	Lambeth Group - Clay, Silt And Sand	Paleocene Epoch
5	342m SW	LC-CLSISA	London Clay Formation - Clay, Silt And Sand	Eocene Epoch

This data is sourced from the British Geological Survey.

14.6 Bedrock faults and other linear features (10k)

Records within 500m	**1**

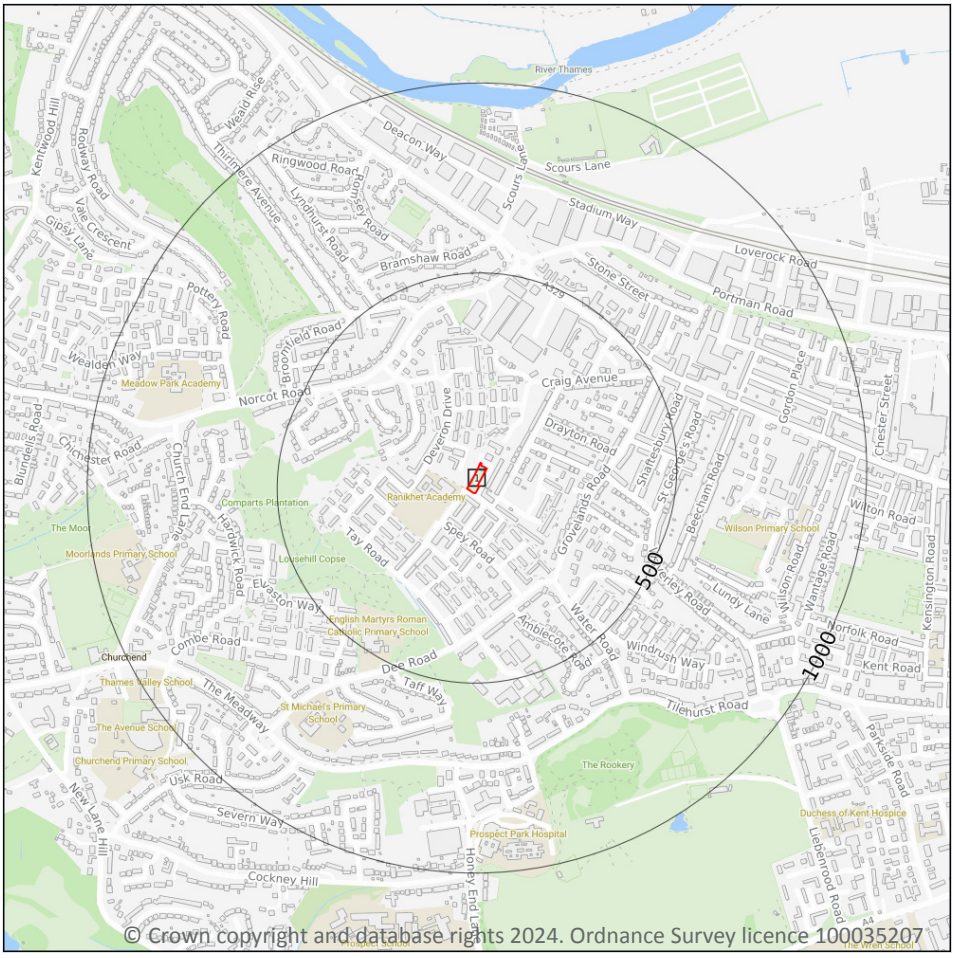
Linear features at the ground or bedrock surface at 1:10,000 scale of six main types; rock, fault, fold axis, mineral vein, alteration area or landform. Features are either observed or inferred, and relate primarily to bedrock.

Features are displayed on the Geology 1:10,000 scale - Bedrock map on **page 82 >**

ID	Location	Category	Description
3	**On site**	**FAULT**	**Normal fault, inferred**

This data is sourced from the British Geological Survey.

15 Geology 1:50,000 scale - Availability



Site Outline

Search buffers in metres (m)

Geological map tile

15.1 50k Availability

Records within 500m	1

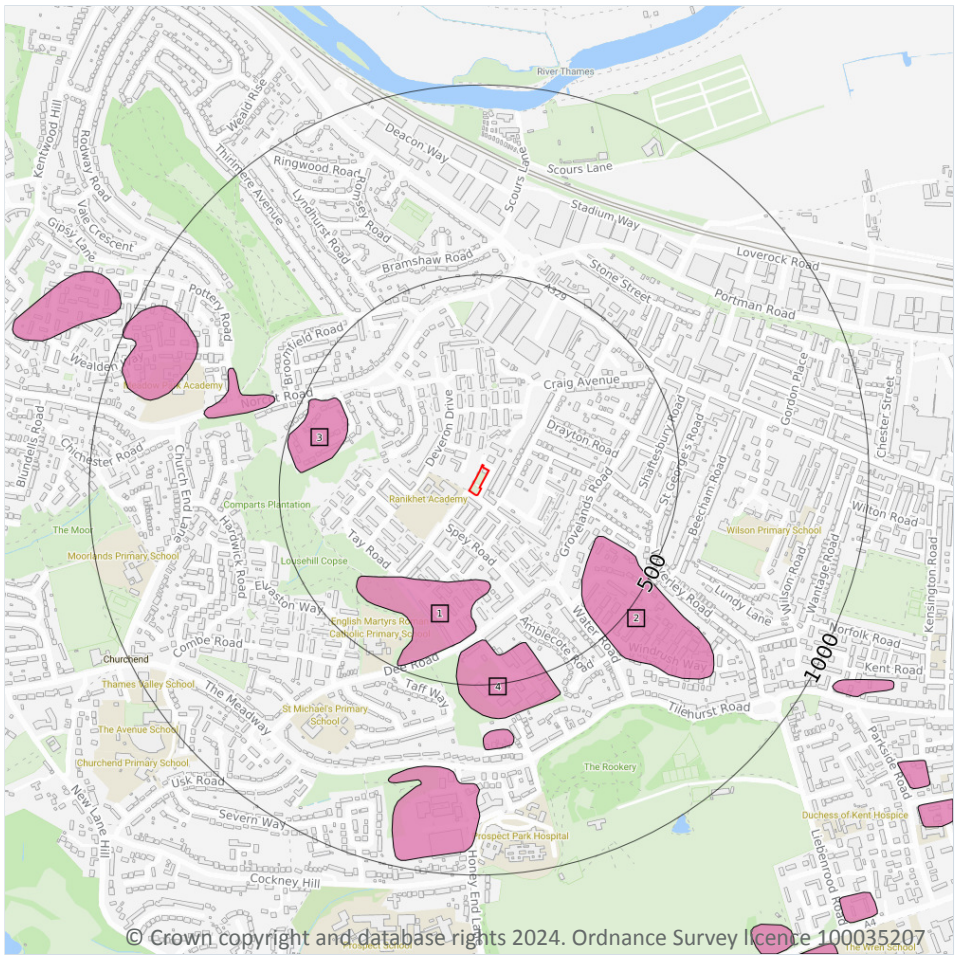
An indication on the coverage of 1:50,000 scale geology data for the site. Either 'Full' or 'No coverage' for each geological theme.

Features are displayed on the Geology 1:50,000 scale - Availability map on **page 84 >**

ID	Location	Artificial	Superficial	Bedrock	Mass movement	Sheet No.
1	**On site**	**Full**	**Full**	**Full**	**No coverage**	**EW268_reading_v4**

This data is sourced from the British Geological Survey.

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



Site Outline

Search buffers in metres (m)

- Made ground
- Worked ground
- Infilled ground
- Disturbed ground
- Landscaped ground

15.2 Artificial and made ground (50k)

Records within 500m	4

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

Features are displayed on the Geology 1:50,000 scale - Artificial and made ground map on **page 85 >**

ID	Location	LEX Code	Description	Rock description
1	222m S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
2	328m SE	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
3	353m W	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID
4	382m S	WGR-VOID	WORKED GROUND (UNDIVIDED)	VOID

This data is sourced from the British Geological Survey.

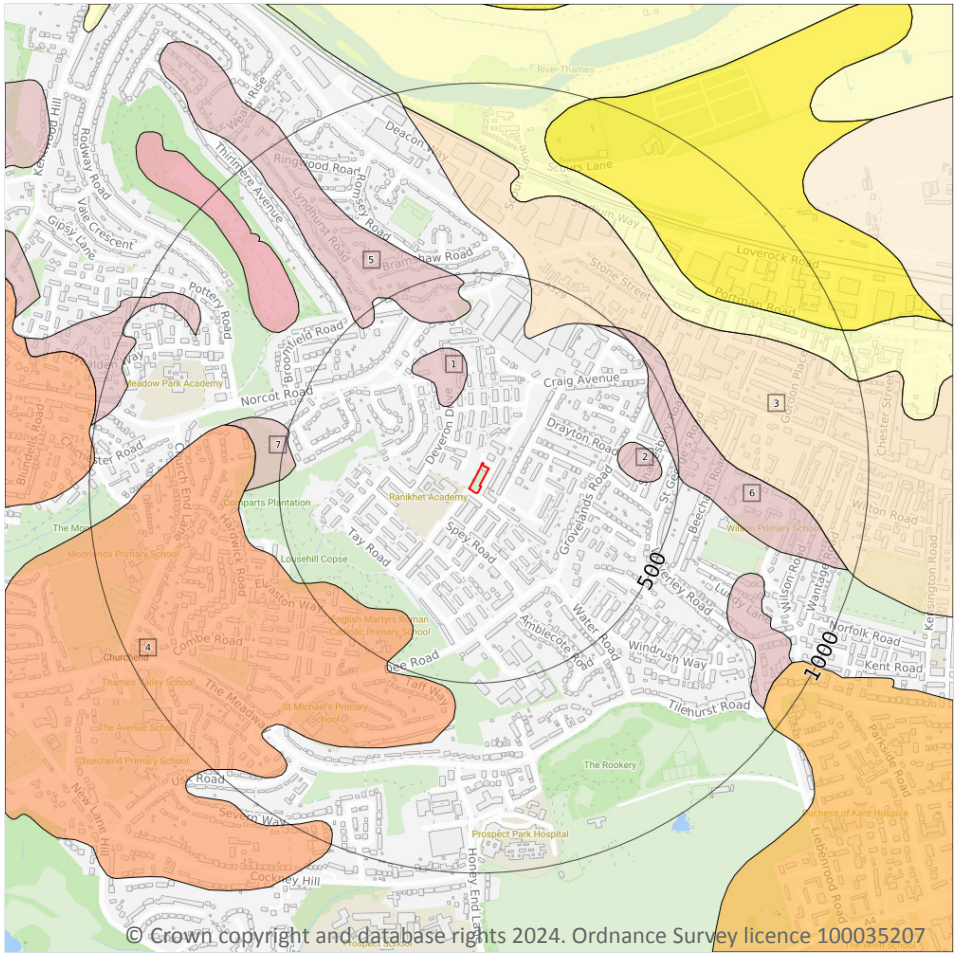
15.3 Artificial ground permeability (50k)

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 **7**

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 87 >**

ID	Location	LEX Code	Description	Rock description
1	173m N	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
2	339m E	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
3	349m N	TPGR-XSV	TAPLOW GRAVEL MEMBER	SAND AND GRAVEL

ID	Location	LEX Code	Description	Rock description
4	367m SW	WIHG-XSV	WINTER HILL GRAVEL	SAND AND GRAVEL
5	381m N	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
6	453m NE	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY
7	460m W	HEAD-XVSZC	HEAD	GRAVEL, SAND, SILT AND CLAY

This data is sourced from the British Geological Survey.

15.5 Superficial 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 superficial deposits (the zone between the land surface and the water table).

This data is sourced from the British Geological Survey.

15.6 Landslip (50k)

Records within 500m	0

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

This data is sourced from the British Geological Survey.

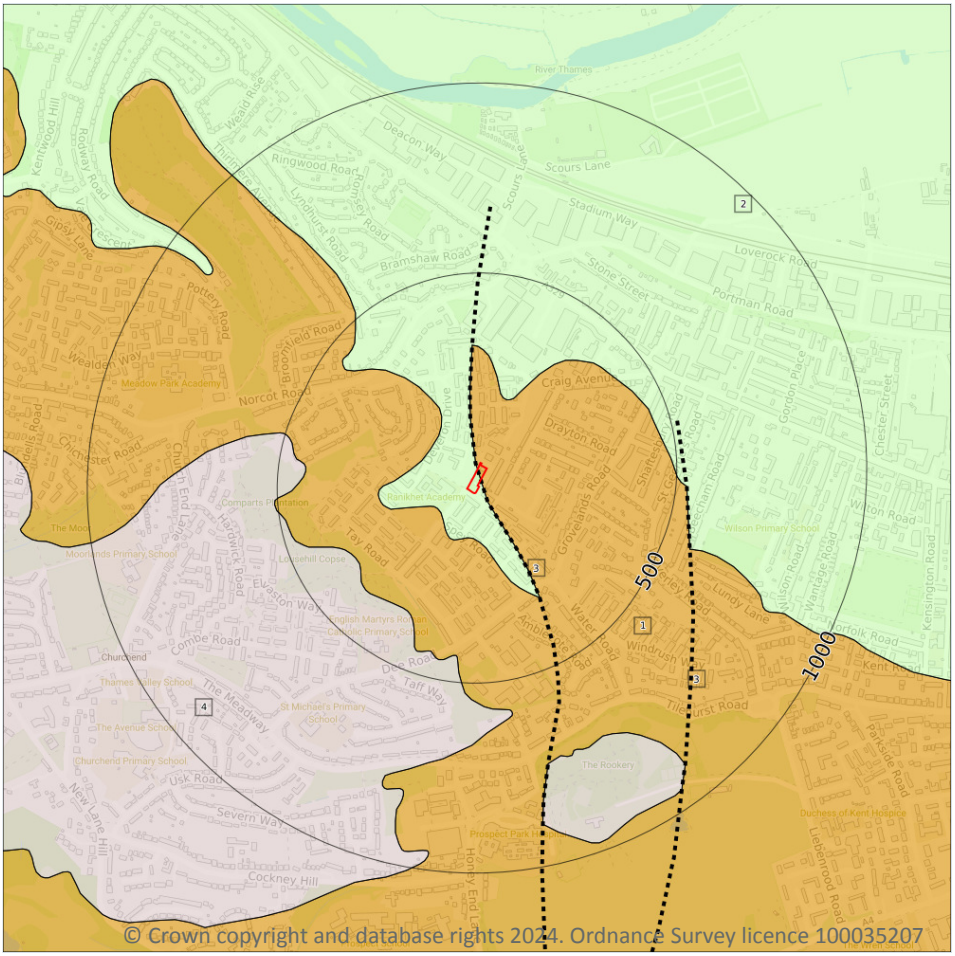
15.7 Landslip permeability (50k)

Records within 50m	0

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

This data is sourced from the British Geological Survey.

Geology 1:50,000 scale - Bedrock



Site Outline

Search buffers in metres (m)

Bedrock faults and other linear features (50k)

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

15.8 Bedrock geology (50k)

Records within 500m **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 89 >**

ID	Location	LEX Code	Description	Rock age
1	**On site**	**LMBE-XCZS**	**LAMBETH GROUP - CLAY, SILT AND SAND**	**THANETIAN**
2	**On site**	**SNCK-CHLK**	**SEAFORD CHALK FORMATION AND NEWHAVEN CHALK FORMATION (UNDIFFERENTIATED) - CHALK**	**CONIACIAN**
4	345m SW	LC-XCZS	LONDON CLAY FORMATION - CLAY, SILT AND SAND	YPRESIAN

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	**Fracture**	**Very High**	**Very High**

This data is sourced from the British Geological Survey.

15.10 Bedrock faults and other linear features (50k)

Records within 500m	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 89 >**

ID	Location	Category	Description
3	**On site**	**FAULT**	**Fault, inferred**

This data is sourced from the British Geological Survey.

16 Boreholes

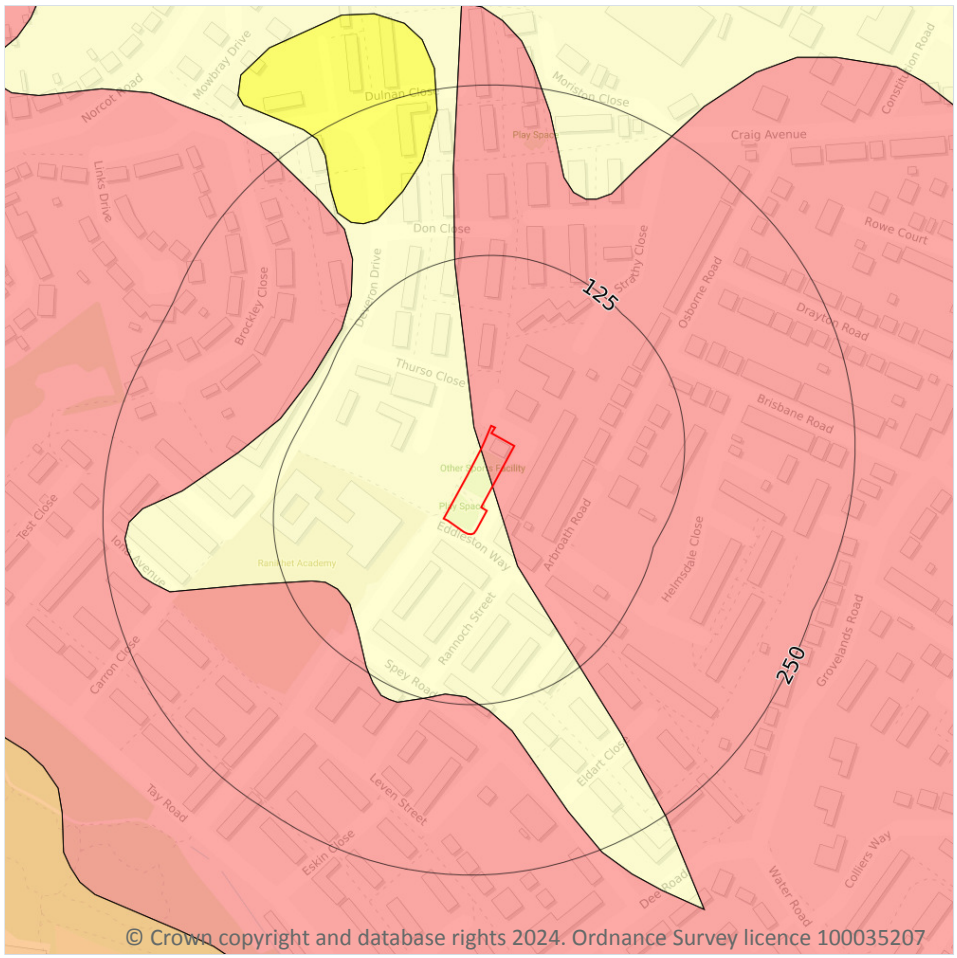
16.1 BGS Boreholes

Records within 250m	0

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.

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

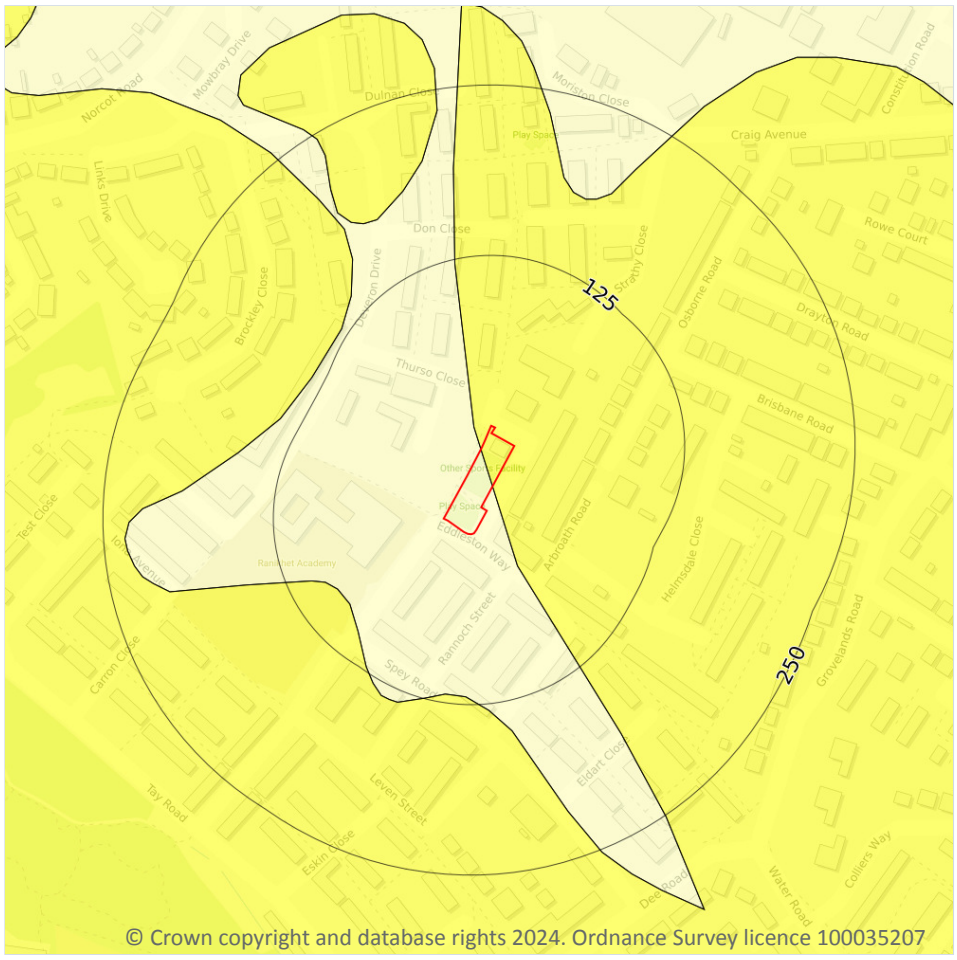
The potential hazard presented by soils that absorb water when wet (making them swell), and lose water as they dry (making them shrink). This shrink-swell behaviour is controlled by the type and amount of clay in the soil, and by seasonal changes in the soil moisture content (related to rainfall and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

Features are displayed on the Natural ground subsidence - Shrink swell clays map on **page 92 >**

Location	Hazard rating	Details
On site	**Negligible**	**Ground conditions predominantly non-plastic.**
On site	**Moderate**	**Ground conditions predominantly high plasticity.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Running sands



Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.2 Running sands

Records within 50m	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.

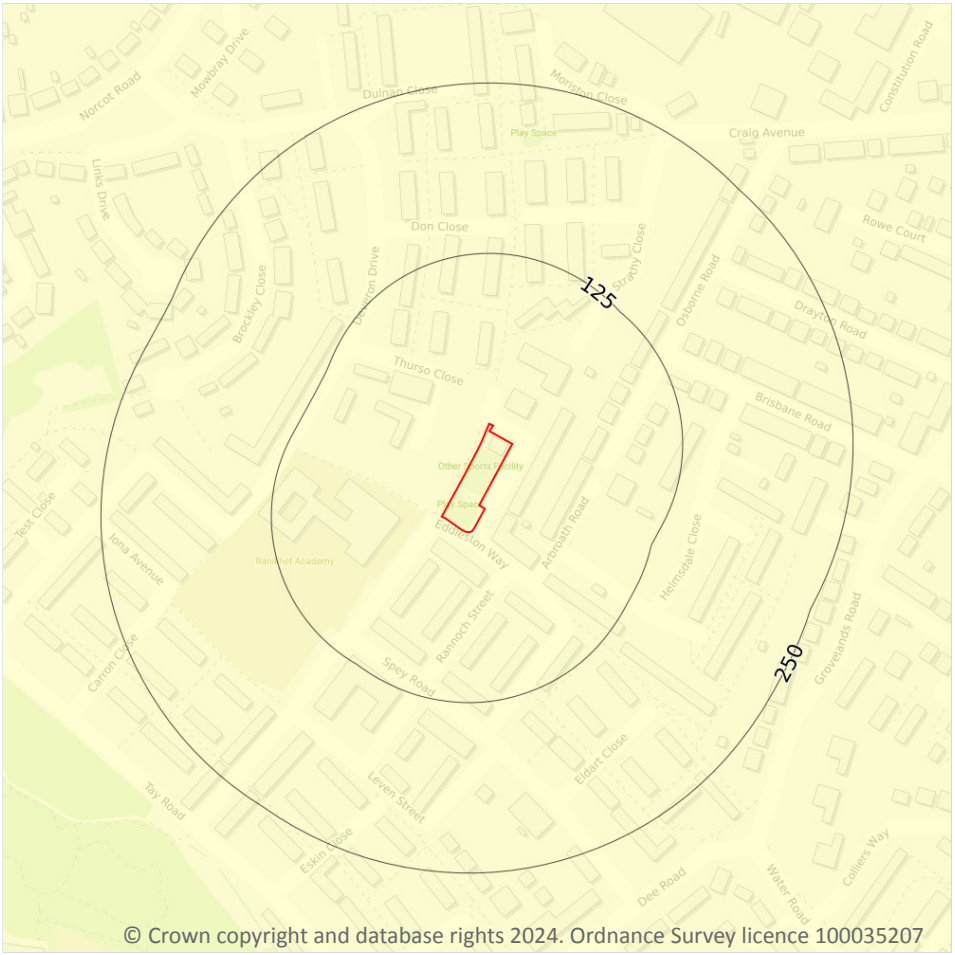
Features are displayed on the Natural ground subsidence - Running sands map on **page 93 >**

Location	Hazard rating	Details
On site	**Negligible**	**Running sand conditions are not thought to occur whatever the position of the water table. No identified constraints on lands use due to running conditions.**

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

This data is sourced from the British Geological Survey.

Natural ground subsidence - Compressible deposits



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.3 Compressible deposits

Records within 50m	1

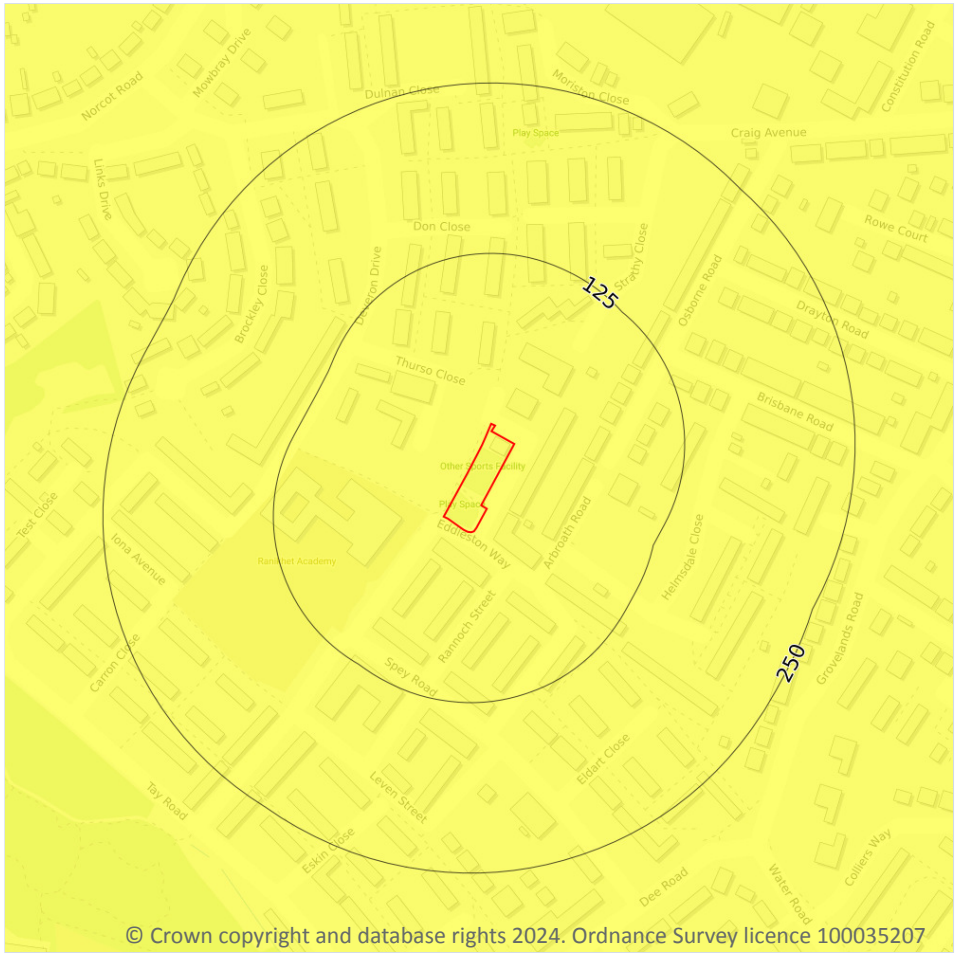
The potential hazard presented by types of ground that may contain layers of very soft materials like clay or peat and may compress if loaded by overlying structures, or if the groundwater level changes, potentially resulting in depression of the ground and disturbance of foundations.

Features are displayed on the Natural ground subsidence - Compressible deposits map on **page 95 >**

Location	Hazard rating	Details
On site	**Negligible**	**Compressible strata are not thought to occur.**

This data is sourced from the British Geological Survey.

Natural ground subsidence - Collapsible deposits



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.4 Collapsible deposits

Records within 50m	1

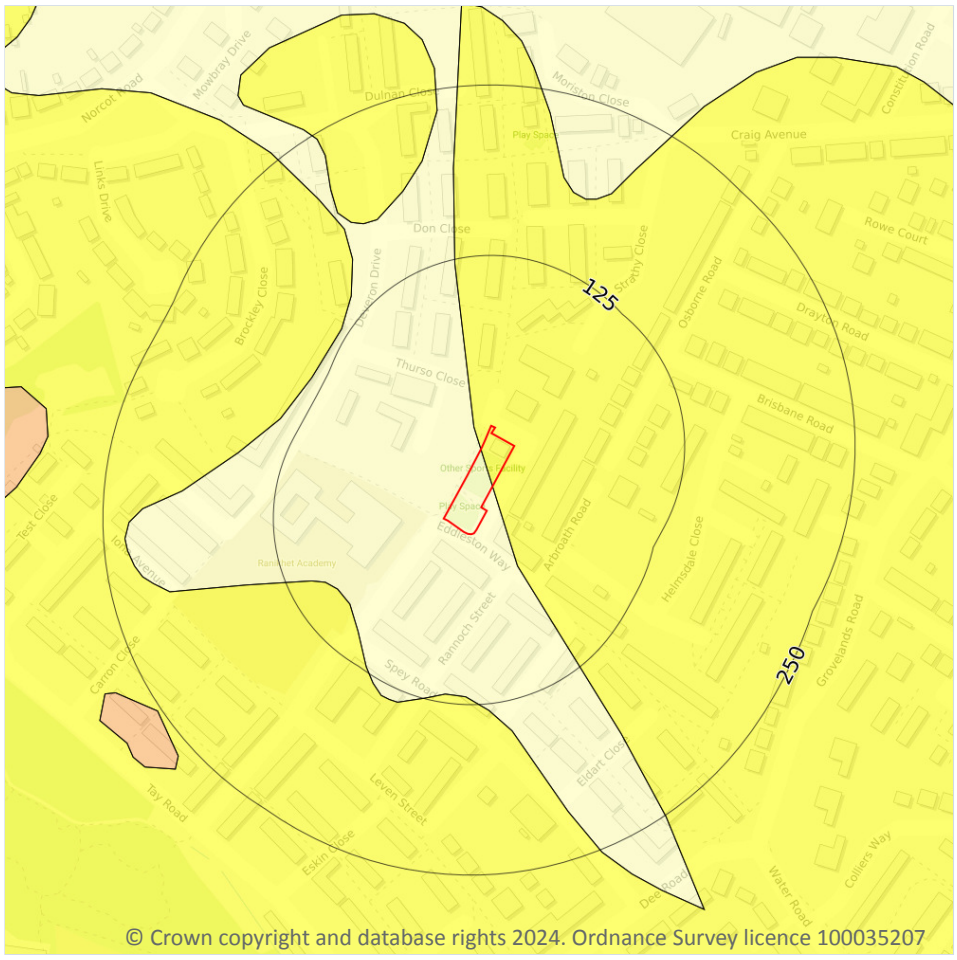
The potential hazard presented by natural deposits that could collapse when a load (such as a building) is placed on them or they become saturated with water.

Features are displayed on the Natural ground subsidence - Collapsible deposits map on **page 96 >**

Location	Hazard rating	Details
On site	**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



© Crown copyright and database rights 2024. Ordnance Survey licence 100035207

Site Outline

Search buffers in metres (m)

- No data
- Negligible
- Very low
- Low
- Moderate
- High

17.5 Landslides

Records within 50m	2

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.

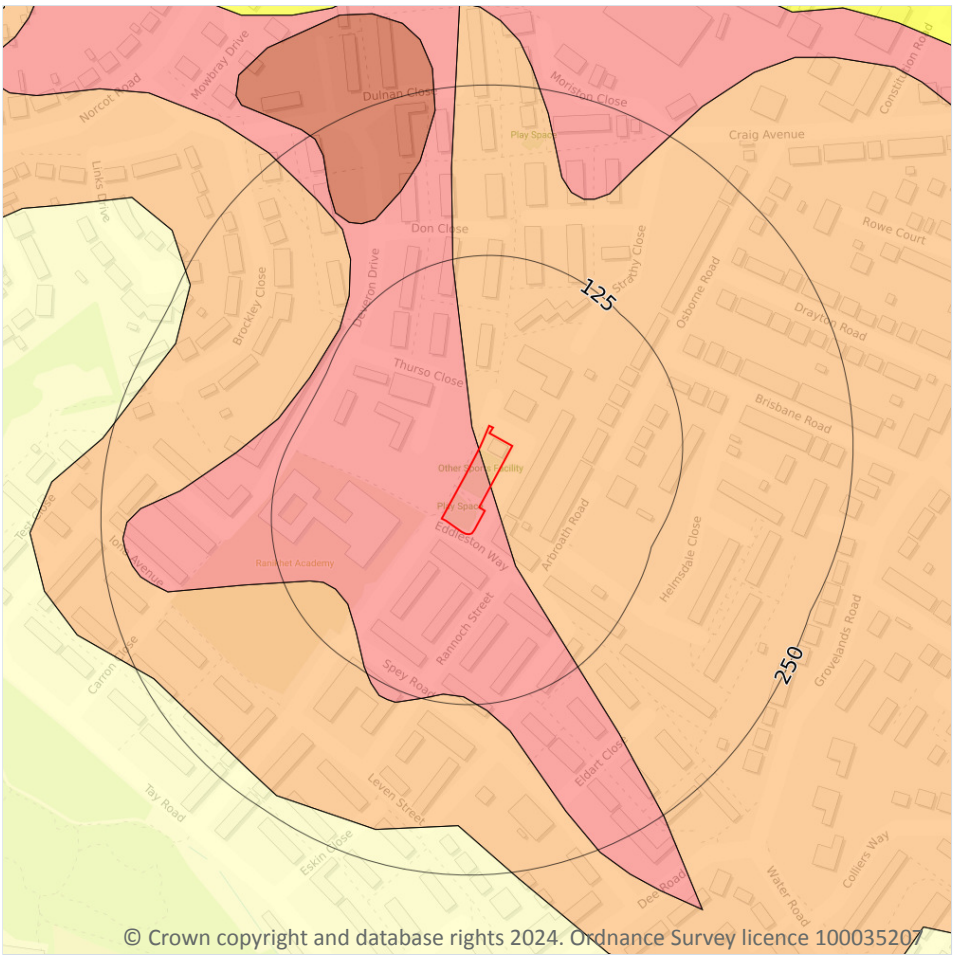
Features are displayed on the Natural ground subsidence - Landslides map on **page 97 >**

Location	Hazard rating	Details
On site	**Negligible**	**Slope instability problems are not thought to occur but consideration to potential problems of adjacent areas impacting on the site should always be considered.**

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	2

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.

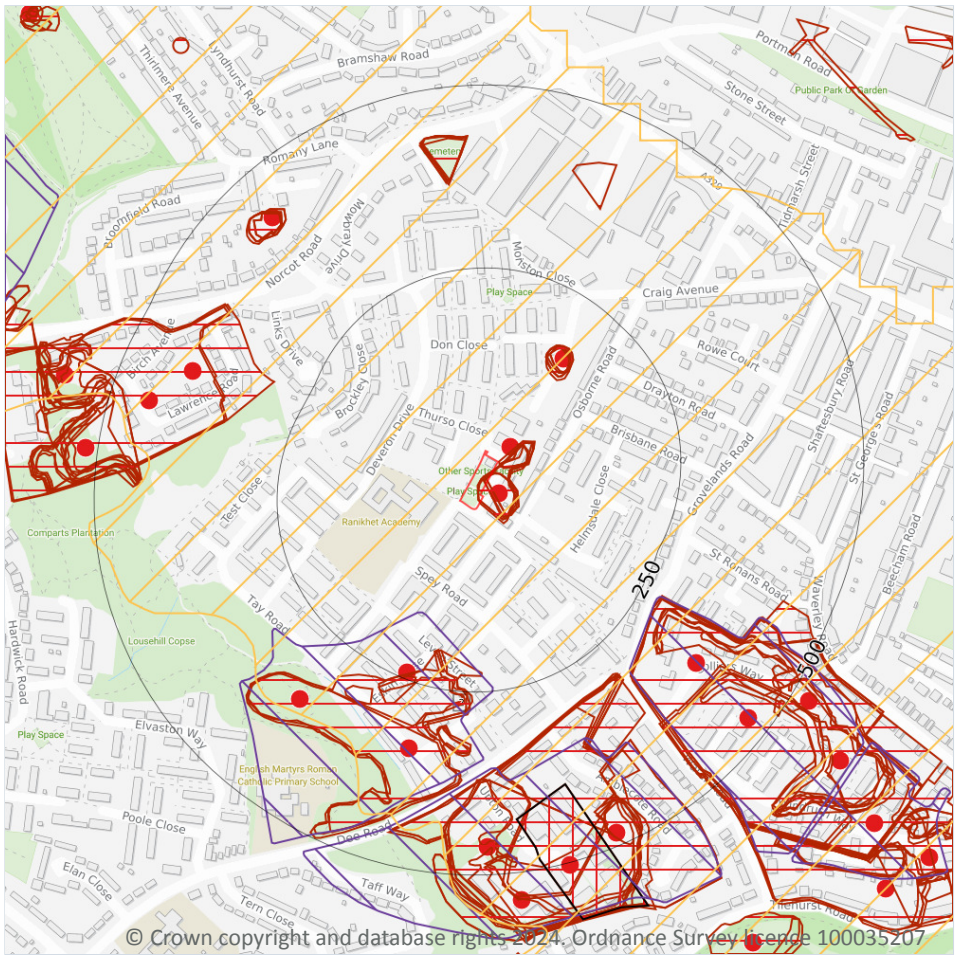
Features are displayed on the Natural ground subsidence - Ground dissolution of soluble rocks map on **page 99 >**

Location	Hazard rating	Details
On site	**Low**	**Soluble rocks are present within the ground. Some dissolution features may be present. Potential for difficult ground conditions are at a level where they may be considered, localised subsidence need not be considered except in exceptional circumstances.**

Location	Hazard rating	Details
On site	**Moderate**	**Soluble rocks are present within the ground. Many dissolution features may be present. Potential for difficult ground conditions are at a level where they should be considered. Potential for subsidence is at a level where it may need to be considered.**

This data is sourced from the British Geological Survey.

18 Mining and ground workings



Site Outline

Search buffers in metres (m)

- BritPits
- Surface ground workings
- Underground workings
- Underground mining extents
- Historical mineral planning areas
- TCA non-coal mining

Non Coal Mining

- Sporadic underground mining of restricted extent possible
- Localised small scale underground mining possible
- Small scale mining possible
- Underground mining known or likely within or in close proximity
- Underground mining known within or in very close proximity

18.1 BritPits

Records within 500m	14

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

Features are displayed on the Mining and ground workings map on **page 101 >**

ID	Location	Details	Description
A	21m SE	Name: Penham's Shaw Gravel Pit Address: Tilehurst, READING, Berkshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
A	27m NE	Name: Penham's Shaw Gravel Pit Address: Tilehurst, READING, Berkshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
B	164m NE	Name: Penham's Shaw Gravel Pit Address: Tilehurst, READING, Berkshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
D	241m S	Name: Grovelands Brick Tile & Pottery Works Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	338m S	Name: Grovelands Brick, Tile & Pottery Works Address: READING, Berkshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
C	338m S	Name: Grovelands Brick, Tile & Pottery Works Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

ID	Location	Details	Description
3	348m SW	Name: Grovelands Brick Tile & Pottery Works Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
F	367m SE	Name: Grovelands Brick Tile & Pottery Works Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
5	406m W	Name: Norcot Kiln Address: Tilehurst, READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
K	432m NW	Name: Norcot Farm Gravel Pit Address: Tilehurst, READING, Berkshire Commodity: Sand & Gravel Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
H	447m W	Name: Norcot Kiln Address: Tilehurst, READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
G	462m S	Name: Westwood Kiln Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

ID	Location	Details	Description
E	469m SE	Name: Grovelands Brick, Tile & Pottery Works Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority
6	483m S	Name: Westwood Kiln Address: READING, Berkshire Commodity: Clay & Shale Status: Ceased	Type: A surface mineral working. It may be termed Quarry, Sand Pit, Clay Pit or Opencast Coal Site Status description: Site which, at date of entry, has ceased to extract minerals. May be considered as Closed by operator. May be considered to have Active, Dormant or Expired planning permissions by Mineral Planning Authority

This data is sourced from the British Geological Survey.

18.2 Surface ground workings

Records within 250m	**20**

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 101 >**

ID	Location	Land Use	Year of mapping	Mapping scale
A	**On site**	**Unspecified Pit**	**1938**	**1:10560**
A	**On site**	**Old Gravel Pits**	**1910**	**1:10560**
A	**On site**	**Old Gravel Pits**	**1900**	**1:10560**
A	**On site**	**Unspecified Pits**	**1932**	**1:10560**
A	**On site**	**Unspecified Pits**	**1932**	**1:10560**
A	**On site**	**Unspecified Pit**	**1961**	**1:10560**
A	**On site**	**Old Gravel Pits**	**1900**	**1:10560**
A	2m NE	Unspecified Pit	1961	1:10560
A	6m NE	Unspecified Ground Workings	1938	1:10560
B	136m NE	Old Gravel Pit	1900	1:10560
B	141m NE	Unspecified Pit	1938	1:10560
B	141m NE	Old Gravel Pit	1910	1:10560

ID	Location	Land Use	Year of mapping	Mapping scale
B	141m NE	Old Gravel Pit	1900	1:10560
B	145m NE	Unspecified Pit	1961	1:10560
B	148m NE	Unspecified Pit	1932	1:10560
B	148m NE	Unspecified Pit	1932	1:10560
2	198m S	Unspecified Ground Workings	1961	1:10560
C	198m S	Clay Pit	1938	1:10560
C	198m S	Clay Pit	1932	1:10560
D	243m S	Unspecified Heap	1961	1:10560

This is data is sourced from Ordnance Survey/Groundsure.

18.3 Underground workings

Records within 1000m	**1**

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

Features are displayed on the Mining and ground workings map on **page 101 >**

ID	Location	Land Use	Year of mapping	Mapping scale
G	396m S	Unspecified Workings	1991	1:10000

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	3

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

Features are displayed on the Mining and ground workings map on **page 101 >**

ID	Location	Site Name	Mineral	Type	Planning Status	Planning Status Date
C	157m SW	Grovelands Tile and pottery Works	Loam with Sand	Surface mineral working	Valid	14/03/47
E	275m SE	Grovelands	Sand, clay, bricks, roofing tiles	Surface mineral working	Valid	Not available
G	347m S	Westwood Kiln	Clay, bricks	Surface mineral working	Valid	15/06/51

This data is sourced from the British Geological Survey.

18.6 Non-coal mining

Records within 1000m	1

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 101 >**

ID	Location	Name	Commodity	Class	Likelihood
1	**On site**	**Not available**	**Chalk**	**B**	**Underground mine workings may have occurred in the past or current mines may be working at significant depth to modern engineering standards. 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	3

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
On site	**Stone**
327m SE	Stone
380m S	Stone

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.

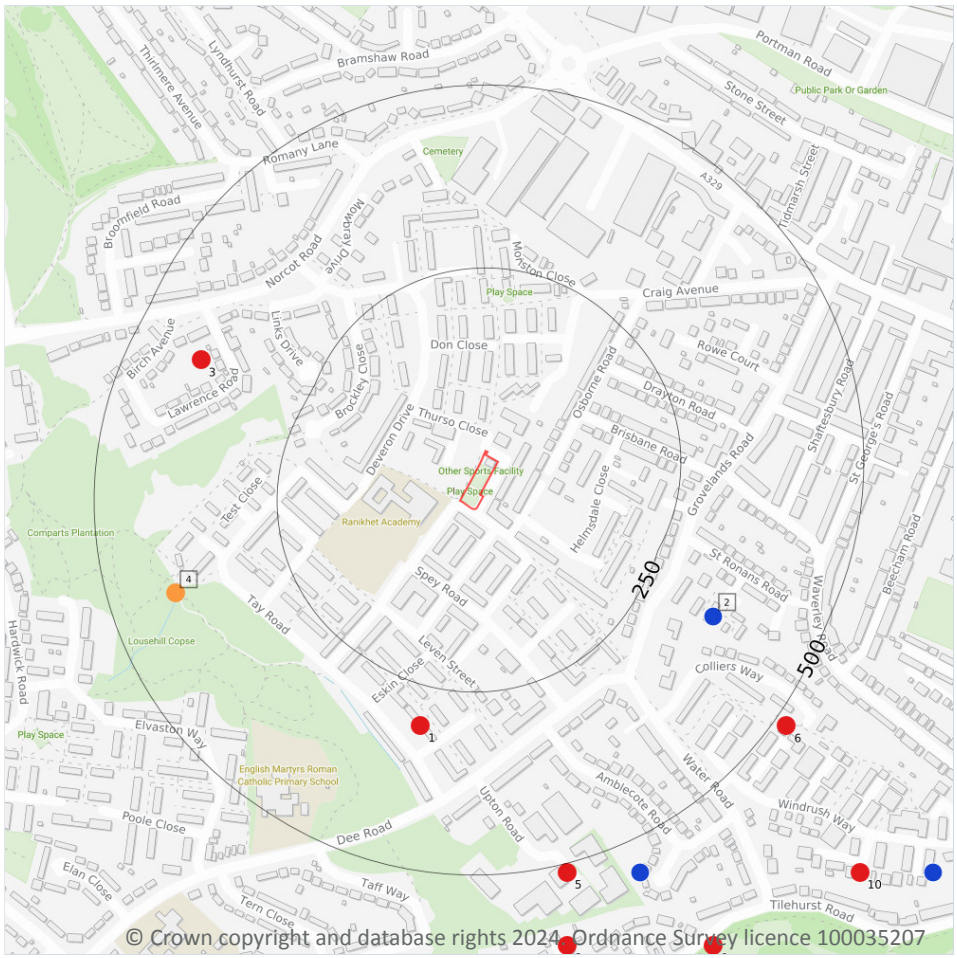
18.16 Clay mining

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



Site Outline

Search buffers in metres (m)

- Natural cavities (Area)
- Natural cavities (Point)
- Mining cavities
- Reported recent incidents
- Historical incidents
- BGS karst database (Point)
- BGS karst database (Line)
- BGS karst database (Area)

19.1 Natural cavities

Records within 500m	1

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.

Features are displayed on the Ground cavities and sinkholes map on **page 110 >**

ID	Location	Details	Source
2	355m SE	Type: Sinkhole x 1, Solution Pipe x 1 Superficial Geology: Worked Ground Bedrock Geology: Chalk Group, Lambeth Group	Simple Bibliography: Reading Borough Council Full Bibliography: - Confidentiality: Data source can be revealed, data can be used freely

This data is sourced from Stantec UK Ltd.

19.2 Mining cavities

Records within 1000m	9

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.

Features are displayed on the Ground cavities and sinkholes map on **page 110 >**

ID	Location	Mine Address	Mineral	Data source	Publisher
1	305m S	Grovelands-Excavations (2), Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
3	403m NW	Norcot Kiln, Tilehurst, Berkshire	Chalk	-	PhD Thesis, University of Reading
5	512m S	Westwood Kiln, Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
6	518m SE	Grovelands-Works Complex, Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
8	609m S	Brooklands Kiln, Tilehurst, Berkshire	Chalk	-	PhD Thesis, University of Reading
9	679m SE	Grovelands-Excavations (1), Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
10	722m SE	Reading/berks Brick Co, Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
-	800m S	Prospect Park Works, Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading
-	940m NW	Grovelands-Excavations (3), Tilehurst, Berkshire	Chalk	The Brick-making Industry in Reading: A Temporal & Spatial Analysis	Undergraduate Dissertation, University of Reading

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	1

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.

Features are displayed on the Ground cavities and sinkholes map on **page 110 >**

ID	Location	Name	Reliability
4	409m W	Comparts Sink	Poor

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	2

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 113 >**

Location	Estimated properties affected	Radon Protection Measures required
On site	**Between 1% and 3%**	**None**

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

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

21 Soil chemistry

21.1 BGS Estimated Background Soil Chemistry

Records within 50m	4

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**
20m SE	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

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	0

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.

This data is sourced from Ordnance Survey/Groundsure.

22.5 Royal Mail tunnels

Records within 250m	0

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

This data is sourced from Groundsure/the Postal Museum.

22.6 Historical railways

Records within 250m	0

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

This data is sourced from OpenStreetMap.

22.7 Railways

Records within 250m	0

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

This data is sourced from Ordnance Survey and OpenStreetMap.

22.8 Crossrail 1

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.9 Crossrail 2

Records within 500m	0

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

This data is sourced from publicly available information by Groundsure.

22.10 HS2

Records within 500m	0

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

This data is sourced from HS2 ltd.

Data providers

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

Terms and conditions

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