

Geo-environmental Site Assessment

Health and Life Sciences Project

University of Reading

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Quality information

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Table of Contents

1.	Introduction.....	5
2.	Site Location and Description	7
3.	Development History	12
4.	Geology, Hydrogeology and Hydrology	16
5.	Review of Geo-environmental Risk	25
6.	Conclusions / Recommendations for Further Work.....	31
7.	References	33
	Appendix A – Landmark Envirocheck Report.....	34
	Appendix B - GEL 2016 Site Investigation Report.....	35
	Appendix C GEL 2016 Supplementary Gas Monitoring Report	36
	Appendix D – Site Reconnaissance Photographs.....	37
	Appendix E Background to Legislation on Contaminated Land	38
	Appendix F Risk Assessment	39

Figures

Figure 1 Site Location Plan

Figure 2 Site Layout Plan

1. Introduction

1.1 Reason for Report

AECOM Ltd (AECOM) has carried out a Geo-environmental Assessment on behalf of the University of Reading (UoR) (the Client), of the proposed Health and Life Sciences (HLS) development area (the Site) at and around the existing Engineering building.

AECOM has reviewed readily available information on the geo-environmental characteristics of the site, reviewed site specific site investigation records and undertaken a site walkover reconnaissance, including supplementary gas monitoring, to characterise the site in order to make an assessment of the potential contaminated land ground-related risks associated with the proposed redevelopment.

1.2 Report Objectives

This report has been prepared in general accordance with the procedures in the Model Procedures for the Management of Land Contamination, CLR 11 (DEFRA/EA, 2004), BS 5930:2015 Code of Practice for Ground Investigations (BSI), and BS 10175:2011: +A1 2013: Investigation of Potentially Contaminated Sites – Code of Practice (BSI), to:

- Describe the environmental setting of the site;
- Describe the findings of a site reconnaissance;
- Summarise the history of the site;
- Summarise the underlying soils, geology and hydrogeology;
- Summarise the findings of ground investigation works;
- Provide a Conceptual Site Model for the prevailing ground conditions;
- Present a site characterisation and evaluation of potential land contamination risks;

The report concludes with recommendations for undertaking further works, as required.

1.3 Sources of Information

This report has been prepared using a combination of published records, site investigation reports and site walkover observations. The records include statutory records and historical mapping supplied within a Landmark Envirocheck Report, published geological and hydrogeological mapping, and historical borehole records from both the online British Geological Survey (BGS) archives and from recent site investigation works conducted at the site.

Key sources of information are listed below, with copies provided as supporting appendices:

- Landmark (2017) Envirocheck Report Ref: 115805868_1_1 (**Appendix A**)
- Geotechnical Engineering Limited Interpretative Report on Ground Investigation (ref 31710, May 2016) (**Appendix B**)
- Geotechnical Engineering Limited, Supplementary Ground Gas Risk Assessment (ref 32362, October 2016) (**Appendix C**)

A complete listing of all information sources is included in the Reference section.

1.4 Proposed Development

It is understood that the proposed development of the Health and Life Sciences building (HLS) for the University of Reading will comprise a new biological sciences and science research facility on the site of the Engineering building, the latter of which is to be demolished.

It is understood that the Engineering Building will be demolished in its entirety while the areas of the adjacent Systems Engineering building to be demolished include the link corridor, lecture theatre and common room.

1.5 Limitations of the Report

The opinions expressed in this report and the comments and recommendations given are based on a desk assessment of readily available information from the Landmark Envirocheck Report, Environment Agency (EA) and British Geological Society; supplemented by site information, including the findings of site investigation and monitoring works undertaken by Geotechnical Engineering Limited (GEL) in 2016, AECOM walkover and supplementary round of ground gas monitoring conducted by AECOM in March 2017 for an assessment of the geo-environmental status of the site.

The information, views and conclusions drawn are based, in part, on information supplied to AECOM by other parties. AECOM has proceeded in good faith on the assumption that this information is accurate. AECOM accepts no liability for any inaccurate conclusions, assumptions or actions taken resulting from any inaccurate supplied to AECOM from others.

Reference to historical Ordnance Survey (OS) maps provides invaluable information regarding land use history. However, it should be noted that historical evidence will be incomplete for the period pre-dating the first edition and between successive maps.

Any risks identified in this report are perceived risks, based on the information reviewed and therefore partially based on conjecture from available information.

The comments made on gas and groundwater conditions are based on observations made during historical site work and the monitoring programme. It should be noted that groundwater levels might vary owing to seasonal or other effects.

Contaminated Land is defined under Part IIA of the Environmental Protection Act 1990 (EPA) and that definition is reproduced in later sections of this report.

As the material encountered and samples obtained during on-site investigations represent only a small proportion of the materials present on-site, there may be other conditions prevailing at the site which have not been revealed by this investigation and which have therefore not been taken into account in this report. Where suspect materials are encountered during future site works, additional specialist advice should be sought to assess whether the new information will materially affect the recommendations currently given and whether further measures are needed.

It should also be noted that the effects of ground and water borne contamination on the environment are constantly under review, and authoritative guidance values are potentially subject to change. The conclusions presented herein are based on the guidance available at the time this report was prepared, and no liability can be accepted for the retrospective effects of any changes or amendments to the legislation or guidance.

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2. Site Location and Description

2.1 Location

The Health and Life Sciences (HLS) project represents a new biological sciences and science research facility building development for the University of Reading.

The building will be located on the eastern fringe of the Whiteknights campus, off Pepper Lane, on the site of the current Engineering Building. The site is located at National Grid Reference SU 7352, 7151 or the Campus post code RG6 6UR. A site location plan is provided as Figure 1.

2.2 Site Setting

The area of investigation comprises the former Engineering Building and immediate surround on the University of Reading Whiteknights Campus. The area is approximately 0.56 hectares (ha) in size (Figure 2).

The existing building is roughly T-shaped in plan, comprising a four-storey brick structure at the northern end with a single storey element extending to the south. The current site topography falls in a northerly direction (southwest to northeast) at a nominal gradient of approximately 1 in 45 between survey levels of 70.0 metres above Ordnance Datum (mAOD) along the southern boundary and 68.2mAOD adjacent to the proposed building entrance.

The current building is bound by a tarmacadam surfaced car park to the east with the entrance at its southern end. The area to the north and south is mainly surfaced with grass with pedestrian pathways and a number of semi-mature/mature trees. A block-paved pathway is located west of the building.

Table 2.1: Features Surrounding the Site

Direction	Summary
North	A grassed area including a number of semi-mature/mature trees with university campus buildings beyond.
South	A grassed area including a number of semi-mature/mature trees beyond which are a campus access road with a recently remediated above-ground storage tank area immediately beyond.
East	Tarmacadam surfaced car park to the east with campus access road beyond.
West	A block-paved pathway and the computer science building (to which the engineering building is attached via a corridor) are located west of the current Engineering building.

2.3 Site Reconnaissance

A walkover survey of the site was undertaken on the 1st March 2017.

The aim of the visit was to identify the range of activities carried out on the site and any obvious potential sources of ground contamination. In addition supplementary gas monitoring of existing boreholes was carried out.

The principal observations made during the visit are summarised below with a photographic record of the visit is included as **Appendix D**.

2.3.1 Observations

Engineering Building

Access to the Engineering building was controlled by an asbestos remediation contractor. Some parts of the building were sealed for removal works and could not be accessed, including the northern half of the building. The engineer was accompanied by Sean Callaghan of the University Estate Management team as a visitor to the site into areas cleared of asbestos (southern half).

The ground floor workshop has been cleared of all plant and machinery, an intact floor was observed and no visual or olfactory evidence of contamination was noted (Photo 1). Ground floor rooms had utility floor ducts from which asbestos shuttering has been removed. The remaining concrete channels were dry and no visual olfactory

evidence of contamination was noted (Photo 2). Redundant fuse boards were noted on the north wall (Photo 3). The electricity room in the basement was not accessible, though Mr Callaghan confirmed there was no transformer present in the building.

The Plant room in the south basement was inspected. All plant is mounted on raised concrete plinths and a small amount of water on the floor, a potential minor plant leak, was observed. No visual olfactory evidence of contamination was noted (Photo 4).

Immediate Surrounding

Access to the site surround was controlled by Francis Construction and their sub-contractor Willis and Sons. The area is currently undergoing subsurface utility re-routing and installations. The site supervisor and site manager both confirmed that BH02 to the north of the Engineering building had been excavated as part of the utility works (Photo 6). The location of BH03 in former Car Park 12 was within the contractor compound occupied by cabins, vehicles and spoil heaps of broken out tarmac and imported ballast and sand. Despite scraping clear the area indicated for BH03 on the GEL plan, using an excavator and small grading bucket, the well could not be located. BH01 and BH04 were located and sampled as described in the section below.

Discussion with the site manager for the utility works provided anecdotal evidence that the ground to 3m below ground level (bgl) where excavated appeared clean with no visual olfactory evidence of contamination. Service runs were excavated between approximately 1m bgl in Made Ground to 3m bgl into clayey deposits (interpreted as Head deposits). Photos 9-11 present current views of the surroundings of the Engineering Building.

Surface Water on-site

The closest surface water features to the Engineering building were identified on site. These include a pond 210m east (Photo 12), a dry drainage ditch 150m east of the site (Photos 13-14), a spring observed as apparently dry (Photo 15) and Whiteknights Lake to the north/north east (Photos 16-17). The closest discharge consent for cooling waters (surrendered) is shown at Whiteknights Lake (Photo 18).

Surface Water off-site

A dry drainage ditch (interpreted as hydraulically up-gradient) was located approximately 190m south east of the site on the south side of Pepper Lane adjacent to houses (Photo 19). A pond was located within school grounds 225m south west of the site (Photo 20).

2.3.2 Supplementary Gas Monitoring

BH01 (Photo 5) and BH04 (Photo 8) were located and sampled using a GFM435 Landfill gas Analyser and a Phoccheck Tiger PID. The wells were then dipped using an oil/water interface probe. The conditions were overcast, slightly breezy with low (<1000mb) and falling barometric pressures. As such can be considered a worst case. The results are presented in Table 2.2 below.

Table 2.2 Gas Monitoring Results (AECOM, 1st March 2017)

Borehole	Evidence of contamination	Methane peak (%)	Carbon Dioxide peak (%)	Oxygen - minimum (%)	Flow - steady (l/hr)	Carbon monoxide (ppm)	Hydrogen sulphide (ppm)	PID (ppm)	Water level (m bgl)	Atmospheric Pressure (mb)
BH01	None	0.0	2.0	18.0	<0.1	0	0	0.0	4.11	994
BH02	Borehole excavated as part of subsurface utility re-routing and installation.									
BH03	Borehole could not be located within former carpark – currently contractor compound. The contractor scraped away spoil piles of tarmac and imported sand at and around the borehole location as indicated on the GEL plan; however it was concluded that the borehole is covered by spoil at another location or by a site cabin.									
BH04	None – bentonite swelling covering gas tap - cleared	0.0	3.6	14.7	<0.1	0	0	0.0	3.54	991

2.4 Information from Statutory Authorities Etc

2.4.1 Landmark Envirocheck Report

Table 2.2 summarises information contained in the Landmark Envirocheck Report. The report collates data from a variety of sources including the Environment Agency (EA) and the British Geological Survey (BGS).

All data suppliers are referenced in the report.

Table 2.2: Summary of Statutory Information

Subject	Number present			Details		
	On site	0-250m	250-500m			
Agency and Hydrological						
BGS Groundwater Flooding Susceptibility	Yes	Yes	Yes	Three entries for the site state “Limited potential for groundwater flooding to occur and the Potential for groundwater flooding of property situated below ground level (two entries)”.		
				Five entries within 250m of the site as follows: · Potential for groundwater flooding to occur at surface (72m NE) · Potential for groundwater flooding of property situated below ground level (106m NW and 201m SE) · Limited potential for groundwater flooding to occur (84m W and 190m W)		
				A further eleven entries between 267m NW and 498m SE are identified to have “Potential or Limited Potential of flooding”.		
Contaminated Land Register Entries and Notices	0	0	0			
Discharge Consents	0	0	1	The nearest entry relates to a revoked consent for trade discharge of cooling water from the Plant Science, Food Studies and Chemistry department to a pond 286m to the north east. Revoked in December 2015. An additional five entries are located between 553m north and 942m south of the site, all of which are revoked.		
Enforcement and Prohibition Notices	0	0	0			
Integrated Pollution Controls	0	0	0			
Integrated Pollution Prevention and Control	0	0	0			
Local Authority Integrated Pollution Prevention and Control	0	0	0			
Local Authority Pollution Prevention and Controls	0	0	0	Two entries greater than 500m from the site for PG1/14 Petrol Filling Station 907m NE and PG6/46 Dry Cleaning 978m NW.		
Local Authority Pollution Prevention and Enforcements	0	0	0			

Subject	Number present			Details
	On site	0-250m	250-500m	
Pollution Incidents to Controlled Waters	0	2	0	The nearest entry relates to a 'Category 2 – Significant Incident' located 185m west in 1999. The cause of the incident is not detailed and the pollutant is classified as unknown chemicals. At 210m NE of the site one additional incident has been recorded as miscellaneous pollutant and classified as a 'Category 3- Minor Incident'. Five incidents are reported between 592m and 785m of the site and are all classified as 'Category 3- Minor Incidents'.
Prosecutions Relating to Authorised Processes	0	0	0	
Prosecutions Relating to Controlled Waters	0	0	0	
Registered Radioactive Substances	0	0	0	Two entries both for the University of Reading, 646m NE (superseded) and 805m NW (Authorised).
Substantiated Pollution Incident Register	0	0	0	
Waste				
The Envirocheck report indicates that both Reading Unitary Council and Wokingham District Council have 'supplied landfill data' for the site, though no further details are provided. The potential for In-filled land (Non -Water) is reported in the 1995 mapping, 929m north of the site as 'Unknown Filled Ground (Pit, quarry etc)' The potential for In-filled land (Water) is reported in five entries at the following distances from the site (and mapping dates); 424m south (1962), 647m east (1931), 661m east (1931), 825m south east (1962) and 917m east (1931) as 'Unknown Filled Ground (Pond, marsh, river, stream, dock etc)'.				
Hazardous Substances				
The Envirocheck report does not list any entries for hazardous substances.				
Industrial Land Use				
Contemporary Trade Directory Entries	0	3	2	The nearest entry is Kinsella James located 67m south of the site relating to boiler repairs, classified as inactive. The nearest active entry to the site is located 116m north east of the site relating to the laboratories of the Reading Science Centre.
Fuel Station Entries	0	0	0	A single Open entry relates to a Petrol Station 908m north east of the site.

2.5 Sensitive Land Uses

The Sensitive Land Uses Map of the Envirocheck Report indicates no sensitive land uses on site or within 250m of the site.

A Nitrite Vulnerable Zone is reported 384m south west of the site (Surface Water).

One Ancient Woodland, 'Redhatch Copse', is located 825m south east of the site.

2.6 Unexploded Ordnance

According to regional unexploded bomb (UXB) mapping published by Zetica for West Berkshire, the site lies within a zone that experiences a low risk of UXB.

3. Development History

3.1 Review of Historical Mapping

The historical Ordnance Survey (OS) maps obtained with the Landmark Envirocheck report date from 1887 to 2017. Table 3.1 summarises a review of the mapping.

Year [scale]	Features on-site	Features off site
1877 [1:1,250] 1883 [1:10,560]	The site comprises open land, lightly forested. The site crosses a county boundary.	The surround area is predominantly agricultural and woodlands. There are roads 100m to the north (unnamed) and south west (Pepper Lane) of the site. There are buildings and woodland 150m to the north of the site, associated with Whiteknights Park. There are some drainage routes associated with this area. Blandford Lodge with associated buildings is situated 250m north west. 'The Wilderness' and 'Home Farm' with associated buildings are situated 300m and 600m to the south east of the site. 'Briggins' with associated buildings is situated 250m to the south of the site. 320m to the north east of site is a waterway that links with Whiteknights Lake 500m to the north. There is a gravel pit 500m to the south and 900m to the north of the site. The south of reading is approximately 1kilometere (km) north of the site. There is a waterway emerging 875m to the south west of the site, flowing west. There is a potential pond 850m to the west of site. The village of Earley is located approximately 900m to the north east.
1899 [1:1,250]	No significant changes in land use noted.	Swimming bath located 100m to the south west of the site. Reservoir situated 820m to the south west of the site. No other significant changes in land use noted.
1900 [1:10,560]	No significant changes in land use noted.	No significant change in land use is noted.
1901 [1:10,560]	No significant changes in land use noted.	No significant change in land use is noted.
1911-1912 [1:1,250]	No significant changes in land use noted.	Sewage tank noted 90m to the east of the site. Housing developments 800m to the north and north east and 500m to the south west of the site. No other significant change in land use is noted.
1913 [1:10,560]	No significant changes in land use noted.	No significant changes in land use noted.

Year [scale]	Features on-site	Features off site
1931-1936 [1:2,500]	No significant change in layout is noted.	Large housing development to the west and south of the site. A hospice has been built 370m to the south of the site.
1938 [1:10,560]	No significant changes in land use noted.	No significant changes in land use noted.
1948 [Aerial Photo]	No significant changes in land use noted.	No significant changes in land use noted.
1958 [1:1,250] 1959 [1:1,250]	No significant changes in land use noted.	A boiler house with associated tanks is indicated 20m to the south east A pipeline is recorded as passing within 5m of the south west boundary of the site. This pipeline links to a track 225m to the north west of the site. Sewage tank to the east of site marked as disused. Faculty of Letters marked 270m to the north west of the site. Further development to the north west of the site around Blandford Lodge and >500m to the east and south of the site. Development marked as offices 360m to the east of the site. Housing development >500m to the west of the site increases in size. Allotment gardens are labelled 900m to the north east
1962 [1:10,000]	No significant changes in land use noted.	No significant changes in land use noted.
1967 – 70 [1:1,250]	Two building are indicated on site, labelled “Applied Physical Science Laboratory” and “Instrument Workshop”.	Buildings associated with University of Reading have been built to the north.
1973 [1,10,000] 1974 [1:1,250]	No significant change in layout is noted.	Further buildings associated with University of Reading have been built on the site and to the north, west and east, adjacent to the site. A disused tank is indicated 100m to the east. Further housing development >250m to the south and south east of the site. A spring is labelled 280m to the east of the site, feeding into Whiteknights Lake. Three drains are marked >320m to the east. The allotments 900m to the north east of the site have been turned into a school and playing field.
1976 [1:1,250] 1979 [1:10,000]	No significant change in layout is noted.	Further buildings related to Reading University have been built surrounding all sides of the site. Drain marked 150m to the east of the site.

Year [scale]	Features on-site	Features off site
1990 [1:10,000] 1987-93 [1:1,250]	No significant change in layout is noted. The former "Applied Physical Science Laboratory" is now labelled as "Laboratory"	Additional buildings within 250m of the site, associated with the University of Reading. Square building constructed 320m to the south east of the site. Reservoir 830m to the south of the site is labelled as covered and adjacent to a pumping station. Meteorological station located 500m to the north east of the site.
1993 [1:10,000]	No significant change in layout is noted. The buildings within the site are now connected to the Department of Cybernetics to the west of the site.	Boiler room with four associated tanks are situated 10m to the south of the site. Adjacent buildings within 50m of the site are labelled as Department of Cybernetics, Accelerator Building, Boiler Room, University Cottages, Mathematics Laboratory and Department of Food Studies. Gas governor is labelled 130m to the west and 320m to the south east of the site. There is an electrical substation 290m to the north west of the site, adjacent to Blandford Lodge and 250m north of the site next to the students union. This map does not extend to 1km from the site.
1995 [1:10,000]	No significant change in layout is noted.	No significant changes in land use noted.
1999 [1:10,000] Aerial Photo	No significant change in layout is noted. The aerial photo shows the east of the used as a car park.	Pond noted 200m to the south west of the site, 200m to the south east of the site, 320m north of the site and 500m south of the site. Drains and issues are marked within the housing development, 500-1000m south of the site and 500-1000m west of the site.
2003 [1:10,000]	No significant change in layout is noted.	No significant changes in land use noted.
2006 [1:10,000]		Building development within the offices located 450m to the east of the site. Overall area has not changed. Building development to 950m to the north east of the site.
2009 [1:10,000]	No significant change in layout is noted.	No significant changes in land use noted.
2013 [1:10,000]	An extension to the north west corner of the building is recorded.	Further development associated with the University of Reading is noted between 100m and 500m north of the site including the extension of current buildings and construction of new buildings. Continued development of the housing area 800m to the east/north east of the site and 550m to the south west of the site.
2017	No significant change in layout is noted.	No significant changes in land use noted.

Year [scale]	Features on-site	Features off site
[1:10,000] Aerial Photo		

3.2 Summary of Findings

The historical Ordnance Survey (OS) maps obtained within the Landmark Envirocheck report date between 1884 to present indicate that the site has been occupied by agricultural land from the earliest mapping until circa 1967 when the site underwent development for the University of Reading. A building, later marked as laboratory and instrument workshops, was built and later extended between 2009 and 2013. The site has remained part of the University of Reading since its development around 1973.

The surrounding area was originally defined by agricultural land. The surrounding area has been developed with mostly residential housing and offices. The University of Reading has expanded, on and around the site, from around 1973 to present. The immediate surroundings of the site now mainly comprise other university buildings. Whiteknights Lake and associated watercourses are present throughout mapping to the east of the site. Circa 1958 a boiler house with associated tanks is indicated 20m to the south.

4. Geology, Hydrogeology and Hydrology

4.1 Geology

4.1.1 Published Records

The 1:50,000 scale geological map of the area produced by the BGS (Sheet 268, Reading) and the BGS online 'Geology of Britain viewer' indicate the site is underlain by the geological succession summarised in Table 4.1.

Table 4.1: Geological Succession from Published Mapping

Period	Group	Geological Stratum
Quaternary	Superficial Deposits	HEAD –gravel, sand and clay.
Quaternary	Superficial Deposits	Boyn Hill Gravel Member – sand and gravel with possible lenses of silt, clay or peat.
Palaeogene	Thames	London Clay Formation – Clay, silt and sand. The London Clay mainly comprises bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay.

4.1.2 Made Ground

Made Ground is not noted in any BGS mapping however it is noted as within some of the BGS borehole logs for the site and was reported within the Trial Pits and Boreholes completed in 2016; refer to section 4.1.7 below.

4.1.3 Superficial Deposits

Head deposits are indicated to underlie the site. This is described by the BGS as "Polymict deposit comprising gravel, sand and clay depending on upslope source. Poorly sorted and poorly stratified deposits formed mostly by solifluction and/or hillwash and soil creep. Essentially comprises sand and gravel, locally with lenses of silt, clay or peat and organic material". The typical thickness of this deposit is not stated.

The Boyn Hill Gravel Member is shown to the north, east and west of the site and was considered likely to be present beneath head deposits – confirmed during site investigation (refer to Section 4.1.7). This is described by the BGS as "Poorly sorted, stratified gravel and locally tabular cross-bedded sand beds. Gravel assemblage is characterised by abundant angular flint (77-81%), sparse rounded flint (5-10%), sparse vein quartz (4-7%), sparse quartzite (1.5-5%), sparse Greensand chert (2.5-4%) and less than 1% of other types". This formation is typically encountered at thicknesses of up to 9m, at an average of 5m.

4.1.4 London Clay Formation

The London Clay Formation is described by the BGS as comprising "bioturbated or poorly laminated, blue-grey or grey-brown, slightly calcareous, silty to very silty clay, clayey silt and sometimes silt, with some layers of sandy clay. It commonly contains thin courses of carbonate concretions ('cementstone nodules') and disseminated pyrite. It also includes a few thin beds of shells and fine sand partings or pockets of sand, which commonly increase towards the base and towards the top of the formation. At the base, and at some other levels, thin beds of black rounded flint gravel occurs in places. Glauconite is present in some of the sands and in some clay beds, and white mica occurs at some levels". This formation is typically encountered at thicknesses of up to 150m.

4.1.5 Soil Chemistry

BGS Soil Chemistry datasets detail the topsoil concentrations of five potentially harmful elements (PHEs): Arsenic (As), Cadmium (Cd), Chromium (Cr), Nickel (Ni) and Lead (Pb), as presented within the Envirocheck report. Elevated concentrations of these PHEs can exist because of natural geological conditions or possible human contamination.

The following BGS estimated soil chemistry levels are attributed to the site:

Arsenic <15mg/kg, Cadmium <1.8mg/kg, Chromium 60-90mg/kg, Nickel 15-30mg/kg, Lead <100mg/kg.

4.1.6 Ground Stability Records

The Envirocheck report suggests that there is a very low risk of collapsible ground, landslide ground and running sand ground hazards.

There is a low to very low risk of shrinking or swelling clay ground hazards.

Compressible ground and the potential for ground dissolution are not identified as hazards.

4.1.7 Exploratory Hole Records

The BGS maintains an archive of historical exploratory hole logs throughout the UK. AECOM has searched the database and a summary of those which are considered to provide useful information on the ground profile at the site is given below.

The following BGS boreholes (SU77SW352 and 353) located in proximity to the north of the existing engineering building (National Grid co-ordinates SU 73514, 71562 and SU73539,71567 respectively) recorded the following general ground sequence:

- "Topsoil" to a depth of 0.38m below ground level (bgl);
- "Firm, brown and mottled brown and grey, sandy CLAY with some fine and medium gravel" to 1.68m bgl (Head deposits);
- "Dense to very dense, brown, clayey SAND and GRAVEL" to 4.27m bgl (Boyn Hill Gravel Member);
- "Stiff, brown, silty CLAY" to 4.57m bgl (London Clay Formation);
- "Stiff, fissured, grey, silty CLAY" to 6.10m bgl (London Clay Formation).

The geological profile is supported by the existing borehole records in the vicinity of the Engineering building. The boreholes are generally shallow and include soil descriptions only.

The borehole log data (from five logs surrounding the Engineering building area) show a ground profile to depths of 10m. Ground water strikes occurred at between 2m-5m depth. However, it was not apparent whether this was perched ground water or the water table.

During the 2016 GEL Site Investigation four groundwater monitoring wells were installed. Table 4.2 below presents a summary of the ground conditions reported in the borehole logs appended with GEL report 31710 (May 2016) (**see Appendix B**).

Table 4.2: Geotechnical Engineering Ltd Exploratory Holes

Borehole Ref NGR Depth Date Elevation	Stratum	Description	Depth to Top of Stratum (m bgl)	Thickness (m)	Groundwater
BH01 473518, 171482 18m bgl April 2016 69.5mAOD	Made Ground	Grass over soft to firm dark brown slightly sandy gravelly clay. Gravel is subangular to rounded fine to coarse flint.	0.0	0.5	Groundwater not encountered during drilling. Monitoring levels 3.5m to 4.34m bgl
	Head Deposits	Firm light brown or orange-brown slightly gravelly sandy clay. Gravel is subangular to rounded fine to medium flint.	0.5	3.25	
	Boyn Hill Gravel Member	Medium dense light brown slightly clayey medium and coarse sand over very sandy fine to coarse flint gravel to 5m. Underlain by very stiff light brown slightly sandy clay to 5.8m. Dense light brown	3.25	6.2	

Borehole Ref NGR Depth Date Elevation	Stratum	Description	Depth to Top of Stratum (m bgl)	Thickness (m)	Groundwater
		gravelly fine to coarse sand to 6.2m			
	London Clay Formation	Stiff dark brownish grey silty clay with rare shell fragments. From 9m, stiff dark grey silty clay with frequent fine sand sized selenite. From 15m, Very stiff dark grey silty clay with frequent fine and medium gravel sized pockets of light grey fine sand.	6.2	18	
BH02 473544, 171549 18m bgl April 2016 68.1mAOD	Made Ground	Grass over dark brown slightly gravelly clayey medium and coarse sand. Gravel is angular and subangular brick and flint. From 1m, very soft light brown slightly gravelly sandy clay. Gravel is angular to subrounded fine to medium concrete and flint	0.0	1.9	Groundwater not encountered during drilling Monitoring levels 3.22m to 3.85m bgl
	Boyn Hill Gravel Member	Medium dense light brown slightly clayey very gravelly fine to coarse sand to 2.7m. Underlain by medium dense light orange-brown clayey gravelly fine to coarse sand to 4.3m Gravel is angular to rounded fine to coarse flint. From 4.3m, stiff light brown slightly gravelly sandy clay.	1.9	4.7	
	London Clay Formation	Stiff dark brownish grey silty clay with frequent fine sand sized selenite crystals From 8.4m, stiff to very stiff dark brownish grey silty clay. From 11.4m, Very stiff dark grey silty clay with frequent fine sand sized selenite crystals.	4.7	18	
BH03 473549, 171504 18m bgl April 2016 68.6mAOD	Made Ground	Tarmacadam over gravelly medium and coarse sand and concrete. Gravel of flint and concrete	0.0	1.1	Groundwater encountered at 3.1m
	Head Deposits	Firm to stiff dark orange-brown mottled light grey sandy clay.	1.1	2.75	Monitoring levels 3.25m

Borehole Ref NGR Depth Date Elevation	Stratum	Description	Depth to Top of Stratum (m bgl)	Thickness (m)	Groundwater
	Boyn Hill Gravel Member	Medium dense to dense orange-brown sandy fine and medium flint gravel becoming gravelly fine to coarse sand.	2.75	6.3	to 3.79m bgl
	London Clay Formation	Stiff light brown mottled dark orange-brown slightly sandy clay. Becoming very stiff at 8.8m.	6.3	18	
BH04 473501, 171510 18m bgl April 2016 69.45mAOD	Made Ground	Block paving over slightly clayey sandy concrete and flint gravel underlain by soft to firm light brown slightly sandy gravelly clay. Gravel is flint.	0.0	0.9	Groundwater not encountered during drilling
	Head Deposits	Stiff light orange brown slightly gravelly sandy clay. Gravel is flint. Underlain by firm sandy clay.	0.9	3.5	Monitoring levels 3.83m to 4.3m bgl
	Boyn Hill Gravel Member	Dense light brown slightly clayey very gravelly medium and coarse sand. Gravel is flint. Underlain by loose light brown very gravelly fine to coarse sand.	3.5	6.2	
	London Clay Formation	Stiff dark brown grey silty clay. From 9m includes frequent fine sand sized selenite. From 14.45m very stiff dark grey silty clay with frequent fine and medium sand sized pockets of light grey fine sand and rare shell fragments.	6.2	18	

The ground conditions revealed by the GEL ground investigation confirm the strata indicated by the geological records, proving Head deposits over the Boyn Hill Gravel Member. The superficial deposits were underlain by the London Clay Formation. A variable thickness of Made Ground was present above these materials.

4.2 Hydrogeology

4.2.1 Aquifer Classification

The EA's Groundwater Protection Policy adopts aquifer designations that are consistent with the Water Framework Directive. According to this system:

The underlying bedrock geology, the London Clay Formation, has been classified by the EA as Unproductive Strata. The EA defines Unproductive Strata as 'rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow'.

The superficial deposits have been classified by the EA as a Secondary (undifferentiated) aquifer.

The EA states that a Secondary (undifferentiated) aquifer “has been 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 minor and non-aquifer in different locations due to the variable characteristics of the rock type”. However, the deposits potentially contain “permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases form an important source of base flow to rivers”.

4.2.2 Vulnerability of Groundwater Resources

The EA's Groundwater Vulnerability Map of the area shows that the soils overlying the Unproductive Strata beneath the site are not classified. However, the wider area surrounding the Reading University campus is identified as a Minor Aquifer High vulnerability zone (EA website).

In terms of identifying the risk of contamination from potential polluting activities in a given area to groundwater sources (wells, boreholes and springs) used for supplying public drinking water, the EA identifies Source Protection Zones. These show the extent of a groundwater source catchment and are divided into three zones, as follows:

- SPZ 1 (Inner protection zone) is located immediately adjacent to the groundwater source. It is based on a 50-day travel time from any point below the water table and is designed to protect against the effects of human activity and biological/chemical contaminants that may have an intermediate effect on the source. The zone has a minimum radius 50m.
- SPZ 2 (Outer protection zone) is larger than SPZ 1 and is defined by a 400-day travel time from a point below the water table to the source. The travel time designed to provide delay and attenuation of slowly degrading pollutants. This zone has a minimum radius of 250m or 500m, depending on the size of the abstraction.
- SPZ 3 (Source catchment protection) covers the complete catchment area of a groundwater source.

Mapping produced by the EA and supplied with the Envirocheck report shows that the site is not situated within a Source Protection Zone.

Zone 1, Zone 2 and Zone 3 Source Protection Zones (ref Th200) are recorded 76m north-west of the site with the groundwater source reported as 200m north-west of the site and assigned as Reading University.

This SPZ is understood to relate to the Seaford and Newhaven Chalk Formation underlying the London Clay, however due to the extensive cover of the London Clay Formation above the Chalk it is considered that there is a very low risk of the abstraction being affected by any contamination (if present) at the site. The London Clay was encountered from between 4.7 to 6.3m bgl to the borehole completion depths of 18m bgl in the four GEL boreholes drilled in 2016.

4.2.3 Site Characteristics

The regional direction of groundwater flow is expected to follow the regional topography to the north / north-east in the direction of Whiteknights Lake located to the north of the site. The River Kennet is located approximately 2.1km west of the site and the River Thames is located approximately 2.5km north of the site.

The superficial deposits aquifer may contribute to the base flow of local surface water features (Whiteknights Lake). Groundwater levels recorded by GEL on four occasions indicate that the standing water level in wells on the site is within the superficial Boyn Hill Gravel Member deposits.

4.2.4 Licensed Groundwater Abstractions

With reference to the Envirocheck report there are three entries for the University relating to one licensed groundwater abstraction from a single point for drinking, cooking and sanitary use 482m west of the site.

One further abstraction from a single point for the same use is reported 1.6km north west of the site for the Royal Berkshire Hospital.

4.3 Hydrology

4.3.1 Surface Water Courses and Drainage

The Envirocheck reports that the nearest surface water feature is located 150m east of the site. This relates to a drainage ditch identified on the Ordnance Survey mapping, potentially feeding into Whiteknights Lake to the north east.

The Envirocheck report also identifies three 'Offline Drainage Features'; 186m south of the site, 307m south of the site and 355m east of the site.

Ponds are located 210m east and 225m south west of the site.

The closest part of Whiteknights Lake is located approximately 300m east of the site where a narrow tip widens to the north. This tip may also be the rising of a spring indicated on the Ordnance Survey mapping.

The River Kennet is located approximately 2.2km to the west of the site, joining with the River Thames located approximately 2.5km north of the site.

4.3.2 Surface Water Abstractions

With reference to the Envirocheck report there are no licensed surface water abstractions within 1km of the site.

4.3.3 Flooding

The indicative floodplain map for the area, presented in the Envirocheck report shows three entries for the site stating Limited potential for groundwater flooding to occur and the Potential for groundwater flooding of property situated below ground level (two entries).

There are five entries within 250m of the site as follows:

- Potential for groundwater flooding to occur at surface (72m north east)
- Potential for groundwater flooding of property situated below ground level (106m north west and 201m south east)
- Limited potential for groundwater flooding to occur (84m west and 190m west)

There are a further eleven entries between 267m north west and 498m south east for the Potential or Limited Potential of flooding.

4.4 Radon

The Envirocheck report indicates that the site is located within a lower probability radon area, as less than 1% of homes are above the action level. No radon protective measures are necessary in the construction of new dwellings.

4.5 Quarrying, Mining and Landfills

An attempt has been made to identify any quarrying operations, past and present that have taken place in the vicinity of the site. The sources of information referenced in this element of the desk study include:

- Envirocheck datasheet supplied by Landmark
- Old Ordnance Survey maps
- Geological maps
- EA online mapping

The Envirocheck report indicates that both Reading Unitary Council and Wokingham District Council have 'supplied landfill data' for the site, though no further details are provided relating to the site.

The potential for In-filled land (Non -Water) is reported in the 1995 mapping, 929m north of the site as 'Unknown Filled Ground (Pit, quarry etc)'.

The potential for In-filled land (Water) is reported in five entries at the following distances from the site (and mapping dates); 424m south (1962), 647m east (1931), 661m east (1931), 825m south east (1962) and 917m east (1931) as 'Unknown Filled Ground (Pond, marsh, river, stream, dock etc)'.

With reference to the above data there is no further evidence of any mining, quarrying operations or landfilling activities on the site or within 1km of the site.

4.5.1 Mining

With reference to the Envirocheck report, the site is not indicated to lie in an area considered to be affected by coal mining.

4.6 Previous Ground Investigations

4.6.1 Geotechnical Engineering Limited (GEL) Interpretative Report on Ground Investigation (ref 31710, May 2016) (Appendix B)

GEL undertook site investigation works in April 2016. These works were implemented to characterise ground conditions at the site at and around the Engineering building to inform the design of the HLS development.

The scope of investigation included:

- Four cable percussion boreholes.
- In-situ SPT testing and undisturbed sampling (UT100/U100).
- Installation of ground gas and ground water observation wells in each borehole.
- Post fieldwork monitoring on two occasions (subsequently expanded to four rounds as reported in GEL report 32362).
- Two machine excavated trial pits.
- A single soakaway test in accordance with BRE365 (2007).
- Three hand dug trial pits to establish existing foundation details.
- Two in-situ Dynamic Cone Penetrometer tests to establish California Bearing Ratio values.

Summary of Environmental findings

Perched water was encountered in TP02 at the interface of Made Ground and Head deposits at 1.1m bgl. A soakaway test was performed at TP02 and negligible infiltration was noted, suggesting limited water mobility within Made Ground in this area.

Groundwater was encountered during drilling at BH03 at 3.5m bgl rising to 3.1m bgl after 20 minutes.

Soil

Chemical laboratory testing of the scheduled soil samples, as detailed in the GEL Interpretative Report, recorded no exceedances against a screening for the proposed commercial end use with the site assessed with a low risk to human health with no remedial works required.

Groundwater

GEL concluded that proposed hardstanding will serve to limit any potential contamination from surface into the underlying Secondary (Undifferentiated) Aquifer of the superficial deposits.

Whilst chemical analysis of groundwater in BH01 to BH04 was generally recorded below the Tier 1 screening values (Environmental Quality Standards (EQS) for freshwater or Drinking Water Standards (DWS) exceedances of selenium, sulphide, polyaromatic hydrocarbons and total petroleum hydrocarbons, above the Tier 1 screening values. It is noted that the screening values were very conservative, with hydrocarbons exceedance against stringent drinking water standards.

Buried Concrete

Based on the water soluble soil and groundwater sulphate values GEL recommended a concrete specification DS- 1 AC-1, In accordance with the BRE Special Digest 1 (2005).

The geotechnical findings of the GEL report are not discussed in this Environmental assessment.

4.6.2 Geotechnical Engineering Limited, Supplementary Ground Gas Risk Assessment (ref 32362, October 2016) (Appendix C)

The initial GEL report recommended a further two rounds of gas monitoring (four in total) which were subsequently undertaken by GEL and reported in October 2016.

The following table, extracted from that report, presents a summary of the combined gas monitoring results.

Borehole	Response Zone/Strata (m bgl)	Evidence of Contamination	No. of Monitoring Visits	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Flow (l/hr)	Carbon Monoxide (ppm)	Hydrogen Sulphide (ppm)	Volatiles Organic Compounds (ppm)	Water Level (m bgl)	Atmospheric Pressure (Mb)
BH01	1.00 – 6.20/ HD & BHG	No	4	0.0-0.1	1.4-4.1	9.9-20.5	0.0	0-14	0	0.0-1.8	3.50-4.34	1003-1019
BH02	1.00-4.30/ MG, HD & BHG	No	4	0.0	0.6-5.1	11.2-20.0	0.0	0-20	0	0.0-1.7	3.22-3.85	1003-1018
BH03	1.00 – 6.30/ HD & BHG	No	4	0.0-0.1	0.0-9.2	0.0-20.5	-0.2 - 0.0	0-1	0-2	0.0-6.7	3.25-3.79	1004-1020
BH04	1.00 – 6.20/ HD & BHG	No	4	0.0	1.1-4.6	12.7-20.4	0.0	0-14	0	0.0-1.7	3.83-4.3	1003-1014

Notes: MG – Made Ground; HD – Head deposits; BHG – Boyn Hill Gravel Member

No visual evidence of contamination was noted.

No positive gas flow was detected during the four visits, with a maximum negative flow of -0.2l/hr.

The report states that “In accordance with the guidance in BS8485:2015, the GSV would indicate a Characteristic Gas Situation 1(CS1), with a very low hazard, however since that the maximum recorded concentration of carbon dioxide is nearly twice the maximum “five percent” threshold, it is recommended that ground gas precautionary measures be adopted in accordance with Characteristic Situation 2(CS2).

In addition it recommends that once the proposed scheme has been finalised, that details of the protection measures should be designed in accordance with BS8485:2015.

A maximum soil vapour concentration ({Volatile Organic Compounds} - VOCs) of 6.7ppm was recorded using the PID during the monitoring visits. Based on these results, vapour protection measures are not considered necessary for the site”.

4.7 Other Reports

4.7.1 Energy Centre Remediation

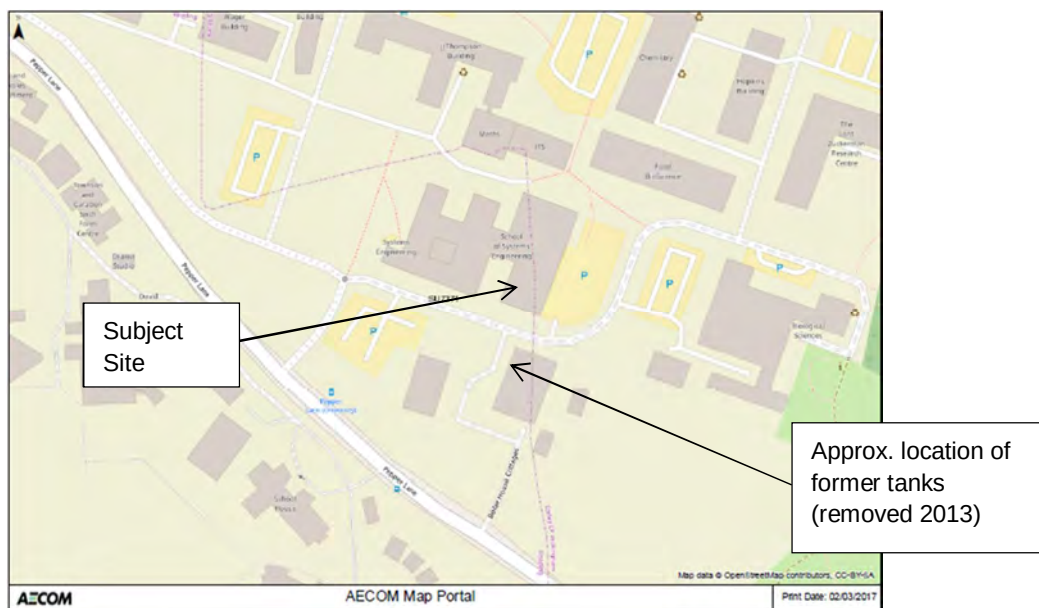
Four above ground storage tanks (USTs), located to the south of the site associated with the former boiler room were de-commissioned 2013 during the development of the Energy Centre. It is understood that a total of 20,000 litres of heating oil were removed from the tanks which were subsequently decommissioned and removed from the site.

Upon the commencement of the excavation works soils were found to be locally impacted by hydrocarbons, presumed to relate to historical leakage of the tanks.

Impacted soils were excavated and removed off site and AECOM was appointed with the objective of verifying the excavation works and assessing any residual impact with respect to hydrocarbons at the site, as reported in the AECOM letter report dated 3rd February 2013, reference 60289171/psm/L10447.

The validation area is located approximately 20m south of the current Engineering building on the south of the campus access road, as presented in Plate 1, below.

Plate 1 – Location of Former Heating Oil Storage Tanks (removed 2013)



The main conclusions of the validation works were as follows:

- The tanks and associated concrete slab were removed between 25th and 26th September 2013.
- Most of the contaminated soils in the west of the site were excavated and removed between 23rd October and 28th October 2013.
- The removal of all the contamination was constrained by the presence of live electrical services in the east of the main pit and the presence of an active foul sewer (trending from north to east).
- The results from the validation samples indicate that the residual risk to human health (commercial) and controlled water is considered to be low.

5. Review of Geo-environmental Risk

5.1 Introduction

This section is aimed at identifying possible risks, if any, to identified receptors arising from substances used or deposited on-site, or from other sources of land contamination. Both past and current potentially contaminative land uses have been considered.

5.2 Sources of Contamination

5.2.1 Historical Usage

The contamination on a site will largely depend on the history of the site and the range of processes carried out and materials used and produced there. The following sources of information have been reviewed:

The earliest mapping from 1887 indicated that the site was agricultural land until circa 1967. Mapping from 1967 shows the site and surrounding area was developed as part of the University of Reading. Mapping shows the buildings on the site to have been used as a university laboratory and an instrument workshop.

5.2.2 Current Usage

Since circa 2013 no significant changes have been made on the site and it is still in use by the University of Reading, however, the site is now due to be demolished and the building is currently vacant.

The desk study and walkover survey has not identified any significant potential sources of contamination present on the site. On the basis of the reconnaissance survey, we consider there is a very low probability of significant contamination / releases on the site with no evidence of staining / contamination with all building slabs intact, with no signs of cracks, etc.

Chemical laboratory testing of the scheduled soil samples, as detailed in the Geotechnical Engineering Interpretative Report on Ground Investigation report dated May 2016, reference 31710 (**Appendix B**), recorded no exceedances against a screening for the proposed commercial end use with the site assessed with a low risk to human health with no remedial works required.

5.2.3 Ground Gas Risk

Neither the desk based assessment nor the ground investigation identified any potential sources of ground gas, such as biodegradable or significant organic deposits on the site. No landfilling activities were identified within 1km and the nearest potential infilled feature was located 424m south.

Gas monitoring, undertaken at the site (GEL 2016) on four occasions, identifying elevated concentrations of carbon dioxide with a peak levels of 9.2%. Gas flow rates were negligible and methane was recorded as levels <0.1%. A supplementary gas monitoring visit was undertaken by AECOM in March 2017, in low (<1000mb) and falling barometric conditions (considered a worst case scenario) identified a peak carbon dioxide reading of 3.6%, with negligible flow and no methane detected.

Based on the very low risk of gas generation identified at the site, the absence of significant sources of offsite land gas generation and plausible pathways and, the consistency of ground gas data (including supplementary worst case conditions), it is considered that the monitoring undertaken is sufficient to characterise the site.

Using a precautionary approach based on the peak carbon dioxide levels measured and following guidance in BS8485:2015, the site was classified Characteristic Situation 2(CS2) – Low risk (GEL, 2016).

The gas monitoring, undertaken at the site (GEL 2016, AECOM, 2017) identified negligible levels of volatile organic compounds (<6.7 ppm) with no vapour protection measures considered necessary. This was confirmed in the supplementary AECOM monitoring round. Groundwater levels were typically measured at depths between 3.22m and 4.64m bgl beneath the site with no evidence of the presence of free phase product in groundwater. As vapour monitoring shows no evidence of elevated levels, with no free phase detected in groundwater, it can be concluded that vapours generated from groundwater contamination beneath the site do not present an unacceptable risk to human health.

The Envirocheck report indicates that the site was within an area where the risk from Radon is generally considered low (less than 1% of homes are above the UK 'Action Level') with no radon protection necessary.

5.2.4 Off Site Sources

Historical above ground heating oil storage tanks were identified to be located approximately 20m to the south of the site, associate with the former boiler room. During the re-development of the area with the Energy Centre in 2013 the tanks were decommissioned. Localised hydrocarbon impact of soils was identified, presumed to relate to historical leakage of the tanks. The Impacted soils were excavated with validation sampling undertaken with the residual risk to human health (commercial) and controlled waters assessed as low.

5.3 Potential Contaminants of Concern

With reference to the historical review and with reference to the other sources listed above the following potential sources of contamination can be anticipated at the site:

Table 5.1 Potential Contaminants of Concern

Sources	Activity / Location	Potential Contaminants of Concern
S1- Potential contaminated Made Ground	Built up areas including roads and buildings / On and off site	Unknown constituents of Made Ground (metal, phenols, sulphates, asbestos, poly aromatic hydrocarbons (PAHs) Land gas generation (carbon dioxide, methane)
S2 – Storage and use of fuel/oil/lubricants other chemicals	Former Engineering Building laboratory and instrument workshop/ Onsite	Solvents, petroleum (TPH) and poly aromatic hydrocarbons (PAHs), mineral oils
S3 – Offsite former Heating Oil Storage Tanks	Historical leakage, tanks associated with former boiler room., removed and impacted soils excavated 2013 / off site (approx.. 20m south)	Heating oils (TPH)

5.4 Pathways for Migration

The principal contamination pathways for migration may include the following:

- P1 – Dermal contact, inhalation or ingestion of the contaminants present in topsoil or underlying strata, during works and post-development
- P2 – Leaching of contaminants, impact and migration of groundwater;
- P3 – Surface water run-off and/or direct percolation from surface;
- P4 – Ingress and / or accumulation of ground gas/vapours.

5.5 Potential Receptors

Human Health Receptors

- R1 – Final end users
- R2 – Construction/ Maintenance Workers
- R3 – Adjacent site users

Controlled Waters Receptors

R4 – Groundwater (Superficial Secondary(Undifferentiated) Aquifer, Unproductive bedrock aquifer, SPZ 76m north-west)

R5 – Surface Water (Unnamed water course) – Drainage ditch 150m east

Property Receptors

R6 – Future proposed building structures and services

Other

No potential sensitive ecological system, archaeological site or ancient monument receptors were identified.

5.6 Assessment of Plausible Contaminant Linkages

A risk assessment of the identified plausible contamination linkages has been undertaken for the site in line with current legislation outlined in Appendix E of the report. The assessment takes into consideration the sources of possible contamination risk and the presence of any plausible pathways or receptors as outlined in the Environmental Protection Act 1990 (Part 2A).

A summary of the assessed risk is provided in Table 5.2. The risk matrix used in the assessment is based on guidance within R&D Publication 66 (NHBC and Environment Agency, 2008) and included in Appendix F.

For the purpose of this risk assessment, it is assumed that the proposed end use of the site following re-development is a commercial development.

A CSM illustrating plausible contaminant linkages has been formulated for the site. The qualitative risk assessment of the possible linkages of the above sources (S1 to S3), transport pathways (P1 to P4) and receptors (R1 to R6) is provided in Table 5.2 below:

Table 5.2: Plausible Pollutant Linkages (PPLs) and Qualitative Risk Assessment

Source (s)	Pathway	Receptor	Consequence	Probability	Risk	Justification
Hazards to Human Health						
S1 – Soil Contamination/ Made Ground S2 – Storage and use of fuel/oil other chemicals S3 – Offsite Former Heating Oil storage tanks	P1 - Dermal contact, inhalation or ingestion of the contaminants present in topsoil or underlying strata, during works and post-development;	R1 – Final end users	Medium	Unlikely	Low	Low Risk – Complete PPLs are unlikely to present a risk. No unacceptable levels of contamination have been identified at the site. Post development the site will be encapsulated beneath footprint of building / hardstanding.
		R2 - Construction / Maintenance Workers	Medium	Low	Low to moderate	Low to moderate Risk – Complete PPLs are unlikely to present an unacceptable risk No unacceptable levels of contamination have been identified at the site. Risks are likely to be short term i.e. for the duration of earthworks exposing contaminated ground and can be easily managed by the implementation of appropriate risk assessment, and mitigation measures during construction by the contractor.
		R3 - Adjacent site users	Medium	Unlikely	Low	Low Risk – Complete PPLs are unlikely to present a risk. Any future groundwork should be assessed with the appropriate risk assessment and mitigation measures if necessary
	P4 – Ingress and /or accumulation of ground gas /vapours	R1 – Final end users	Severe	Low	Moderate	Moderate Risk – Complete PPLs are likely to present an unacceptable risk without mitigation. The site has been characterised with a category CS2, low risk with respect to elevated levels of carbon dioxide. With implementation of appropriate mitigation measures the risk can be reduced to very low.
		R2 - Construction / Maintenance Workers	Severe	Low	Moderate	Moderate Risk – Complete PPLs may present an unacceptable risk but should be managed by the implementation of appropriate risk assessment, and mitigation measures during construction. Risks are likely to be short term.
Hazards to the Water Environment						
S1 – Soil Contamination/	P3 – Leaching of contaminants.	R4 - Groundwater	Medium	Unlikely	Low	Low Risk – Complete PPLs are unlikely to present a risk. No unacceptable levels of contamination have been identified at

Source (s)	Pathway	Receptor	Consequence	Probability	Risk	Justification
Made Ground S2 – Storage and use of fuel/oil other chemicals	impact and migration of groundwater (Secondary A aquifer)	(Superficial Secondary(Un differentiated) Aquifer, Unproductive bedrock aquifer, SPZ 76m north-west				the site. Post development the site will be encapsulated beneath virtually impermeable footprint with engineered surface drainage. Site is underlain by significant thickness of low permeability: London Clay, an unproductive aquifer, limiting downward migration.
	P4 – Surface water run-off and /or direct percolation from surface;	R5 – Surface Water (Drainage ditch 150m east)	Medium	Unlikely	Low	Low Risk – Complete PPLs are unlikely to present a risk. No unacceptable levels of contamination have been identified at the site. Post development the site will be encapsulated beneath virtually impermeable footprint with engineered surface drainage.
Hazards to Building Fabric, Structures and Services						
S1 – Soil Contamination/ Made Ground	P5 – Direct contact of ground with in-ground structures;	R6 – Future proposed building structures and services	Minor	Likely	Low	Low Risk - Complete PPLs are unlikely to present an unacceptable risk GEL (2016) recommends a concrete specification DS- 1 AC-1 In accordance with the BRE Special Digest 1 (2005)I
S1 – Soil Contamination/ Made Ground S2 – Storage and use of fuel/oil other chemicals S3 – Off-site Former Heating Oil storage tanks	P4 – Ingress and /or accumulation of ground gas /vapours	R7 – Future proposed building structures and services	Medium	Likely	Moderate	Moderate Risk – Complete PPLs are likely to present an unacceptable risk without mitigation. The site has been characterised with a category CS2, low risk with respect to elevated levels of carbon dioxide. With implementation of appropriate mitigation measures the risk can be reduced to very low.

5.7 Human Health

Based on the findings from the desk study information and review of site specific investigation and analytical results no unacceptable levels of contamination have been identified within soils at the site which are considered to pose an unacceptable risk to the future site users. In addition post-development the site will be encapsulated by the new building footprint preventing any potential pathways to future users. As such the risk was assessed to be low.

A moderate risk to site users was assessed with respect to elevated levels of carbon dioxide at the site identified through the gas monitoring works. This could be reduced to very low with the installation of appropriate gas protection measures within the proposed development.

It is considered that the risk to site/maintenance workers from contaminated soils is low to moderate. This is because direct contact of with soils by construction workers during any excavation works is considered possible, although can be reduced to low through an appropriate site specific health and safety risk assessment and appropriate PPE.

5.8 Controlled Waters

The site is underlain by a Secondary A superficial aquifer underlain by the Unproductive aquifer of the London Clay formation.

Source Protection Zones (are recorded 76m north-west of the site with the groundwater source reported as 200m north-west of the site and assigned as Reading University. This SPZ is understood to relate to the Seaford and Newhaven Chalk Formation underlying the London Clay, however due to the extensive cover of the London Clay Formation above the Chalk it is considered that there is a very low risk of the abstraction being affected by any contamination (if present) at the site. The London Clay was proved from between 4.7 to 6.3m bgl to a depth of 18m bgl in the four GEL boreholes drilled in 2016.

Monitoring of the groundwater (GEL, 2016) has identified some elevations of determinants, of particular interest elevated hydrocarbons. The banding of the hydrocarbons of groundwater in the wells of the HLS (Carbon banding EC13-35) indicate heavier end fuels, which would correspond to the historical fuel oil leakage at the Energy Centre, in close proximity the site. This source has been removed (2013) with any residual impact in a state of natural source zone depletion (NSZD). and as such the groundwater impact can be considered to be a shrinking plume.

A low risk was assessed with respect to controlled waters; this is because no unacceptable levels of contamination have been identified at the site and due to the fact that the site is underlain by significant thickness of low permeability: London Clay, an unproductive aquifer, limiting any migration pathways to sensitive receptors.

5.9 Property

Substances that can be involved in chemical attack on building materials and structures may be present beneath the site, these substances may include sulphates.

The risk is considered to be low, with GEL (2016) recommending a concrete specification DS- 1 AC-1 in accordance with the BRE Special Digest 1 (2005).

A moderate to low risk to buildings was assessed with respect to landfill gas generation from the potential presence of Made Ground although this can be reduced to low with a site specific gas risk assessment and the installation of appropriate gas protection measures within the proposed development.

6. Conclusions / Recommendations for Further Work

Based on the findings of the desk review and site investigation works carried out at the site no significant source of contamination was identified that can be considered to present an unacceptable risk to long term human health associated with the proposed commercial end use.

Monitoring of the groundwater (GEL, 2016) identified some elevations of determinants, of particular interest elevated hydrocarbons, beneath the site. However the banding of the hydrocarbons of groundwater in the wells (Carbon banding EC13-35) indicated heavier end fuels, and was linked to the historical fuel oil leakage at the Energy Centre, in close proximity the site, subject to remediation in 2013, and as such considered to not considered to present an unacceptable risk to human health or controlled waters.

Elevated levels of carbon dioxide were measured during gas monitoring, and based on a precautionary approach and following guidance in BS8485:2015, the site was classified Characteristic Situation 2(CS2) – Low risk. As such appropriate gas protection measures will be required.

Therefore, it is considered that no remedial works, other than the incorporation of engineering measures (gas protection) are required for the proposed commercial end use development.

Following guidance in BS8485:2015 the proposed commercial university development at the site would be considered to be classified as a Type C building (commercial / public building) with a minimum gas protection score of 2.5 required for the situation 2 identified.

The protective measures required can be achieved through a combination of the following measures:

- Structural Barrier: i.e. a cast insitu slab can afford a gas protection score of between 0.5 to 1.5 dependent on the level of reinforcement and penetrations
- Ventilation Measures: a passive sub floor dispersal layer can offer a gas protection score of between 1.5 to 2.5 dependent on performance
- Gas Membrane: a suitable gas resistant membrane (meeting the requirements of Table 7) can offer a gas protection score of 2

It is also recommended, in accordance with BS8485:2015, that all works should be installed to a reasonable level of workmanship / in line with current good practise, under CQA with integrity testing and independent validation.

It should be noted that due to the presence of building structure, it has not been possible to investigate the sub-surface conditions across a large portion of the site. As such there may be ground conditions at the site that have not been revealed during intrusive ground investigations and therefore have not been previously taken into account.

An inspection and discovery strategy will be required to identify and deal with any unexpected contamination encountered during the demolition works. Groundworkers should remain vigilant for unforeseen or suspicious ground conditions. A contamination watching brief will be undertaken at all excavations and during the demolition and removal of existing slab. Identification of potential contamination should initially be based on visual and/or olfactory assessment.

General indicators of possible contamination could be arisings that are stained or appear inconsistent with the general soil mass. Examples could be oily (or free phase) pockets, fibrous materials, strong odours or vibrant colours associated with the soil itself, but also physical foreign objects such as cement board, ash, brick, concrete, glass and rubbish.

Physical contaminants such as potential Asbestos Containing Materials (pACM) or other Man Made Mineral Fibres (MMMF) should be treated as hazardous until proven otherwise.

Upon discovery of suspect ground conditions the works should be stopped and the Client's Contract Administrator and Geo-environmental Advisor informed. Work in the affected area should not continue until a strategy and programme have been formulated and, if required, approved by the appropriate regulatory authorities.

It is recommended that the Local Environmental Health Department are consulted on the scope of the proposed measures to be adopted at the earliest opportunity.

Statutory authorities should be consulted with respect to any specific requirements with respect to water supplies.

7. References

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- British Standards Institution (2015): BS 8485: *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*. London, BSI.
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- Geotechnical Engineering Ltd (2016) *University of Reading - Health and Life Sciences Building, Supplementary Ground Gas Risk Assessment*, 32362
- Landmark (2016) Envirocheck Report Reference 115805868_1_1 February 2017
- National House Building Council (2001) *NHBC Standards 2011. Part 4- Foundations*. Milton Keynes, NHBC.
- National House Building Council and Environment Agency (2008) *Guidance for the Safe Development of Housing on Land Affected by Contamination*. NHBC, Environment Agency and Chartered Institute of Environmental Health (R&D Publication 66).
-



Project name HLS
 Client Name UoR
 Date: Feb 2017
 Design: -- MR Checked: -- GJ
 Drawing Reference: 60441574/M001.003

Figure 1 – Site Location Plan

AECOM

Portwall Place
 Portwall Lane
 Bristol, BS1 6NB

Tel: +44 (0)117 927 7000
 Fax: +44 (0)845 863 0881
 www.aecom.com



Project name HLS
 Client Name UoR
 Date: Feb 2017
 Design: -- MR Checked: -- GJ
 Drawing Reference: 60441574/M001.003

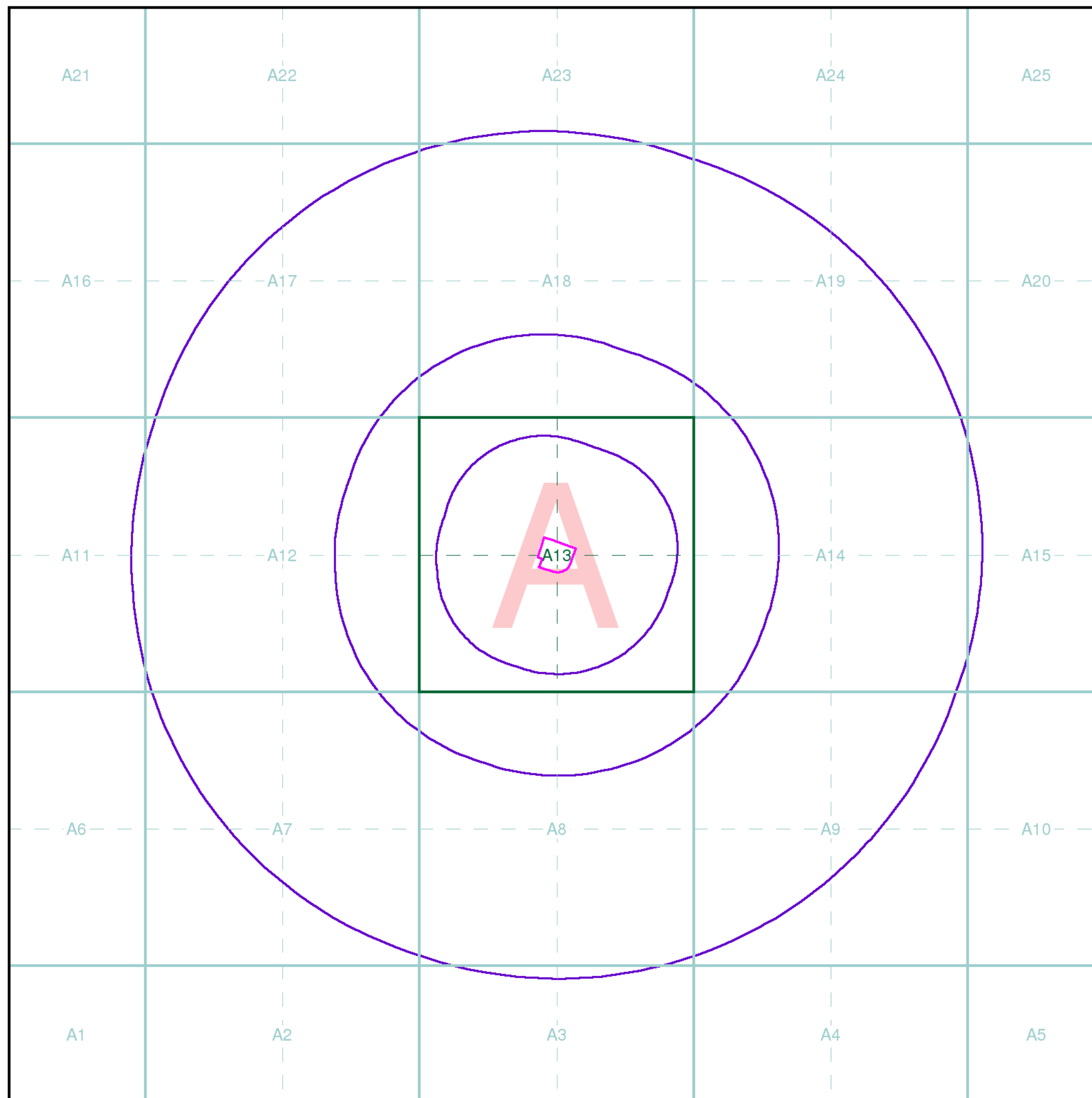
Figure 2 – Site Layout Plan

AECOM

Portwall Place
 Portwall Lane
 Bristol, BS1 6NB

Tel: +44 (0)117 927 7000
 Fax: +44 (0)845 863 0881
 www.aecom.com

Appendix A – Landmark Envirocheck Report



Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice

Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment

A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant

A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

MS J Foy, Aecom Infrastructure & Environment UK Ltd,
Longcross Court, 47 Newport Road, Cardiff, CF24 0AD

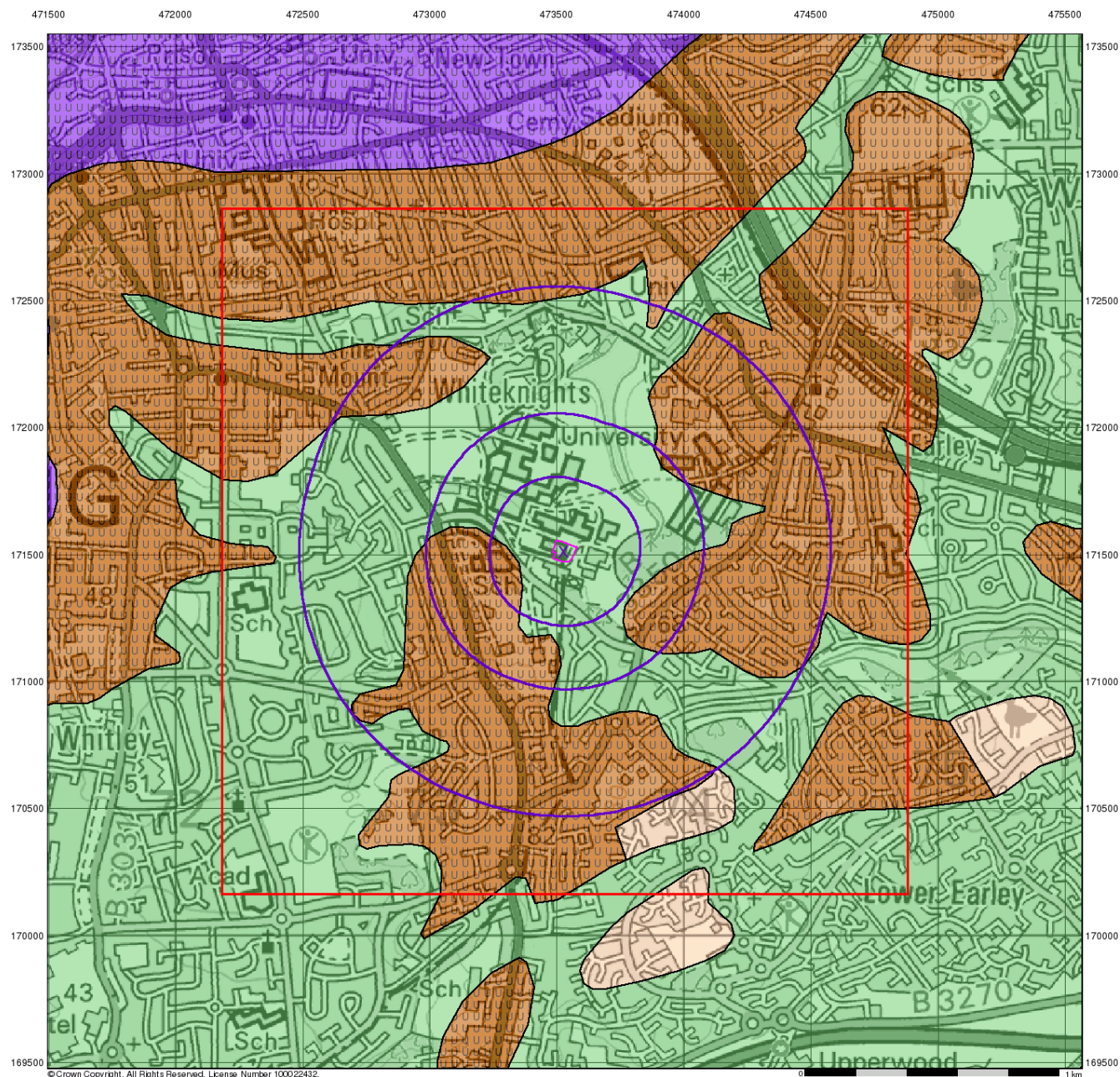
Order Details

Order Number: 115805868_1_1
Customer Ref: 60441574/M001.003
National Grid Reference: 473530, 171510
Site Area (Ha): 0.56
Search Buffer (m): 1000

Site Details

Life Sciences Building, University of Reading, Shinfield Road,
READING, RG6 6UR

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<http://www.landmarkinfo.co.uk/Terms/Show/515>



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0 1 km

Groundwater Vulnerability

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

**Major Aquifer
(Highly Permeable)**

- High (H) 1, 2, 3, U
- Intermediate (I) 1, 2
- Low

**Minor Aquifer
(Variably Permeable)**

- High (H) 1, 2, 3, U
- Intermediate (I) 1, 2
- Low

**Non Aquifer
(Negligibly Permeable)**

-

Water or Sea

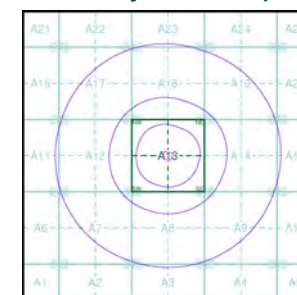
-

Drift Deposit

-

Soil Classes

Site Sensitivity Context Map - Slice A

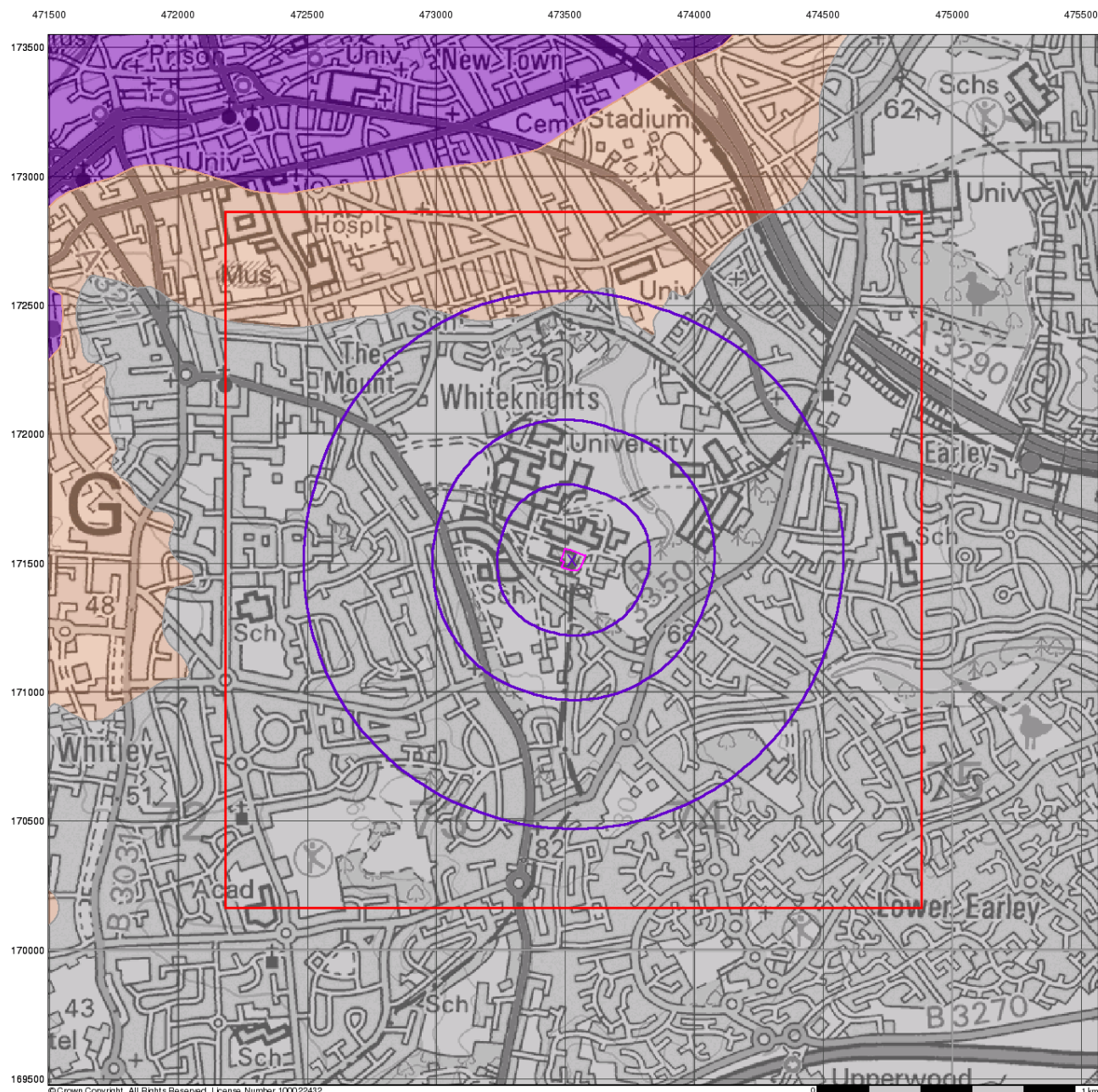


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Order Number: 115805868 1 1
 Customer Ref: 60441574/M001.003
 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

Site Details

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0 1 km

Bedrock Aquifer Designation

General

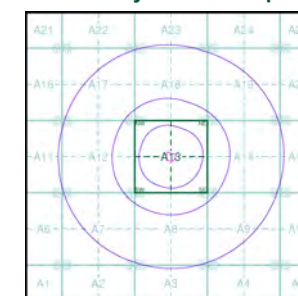
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A

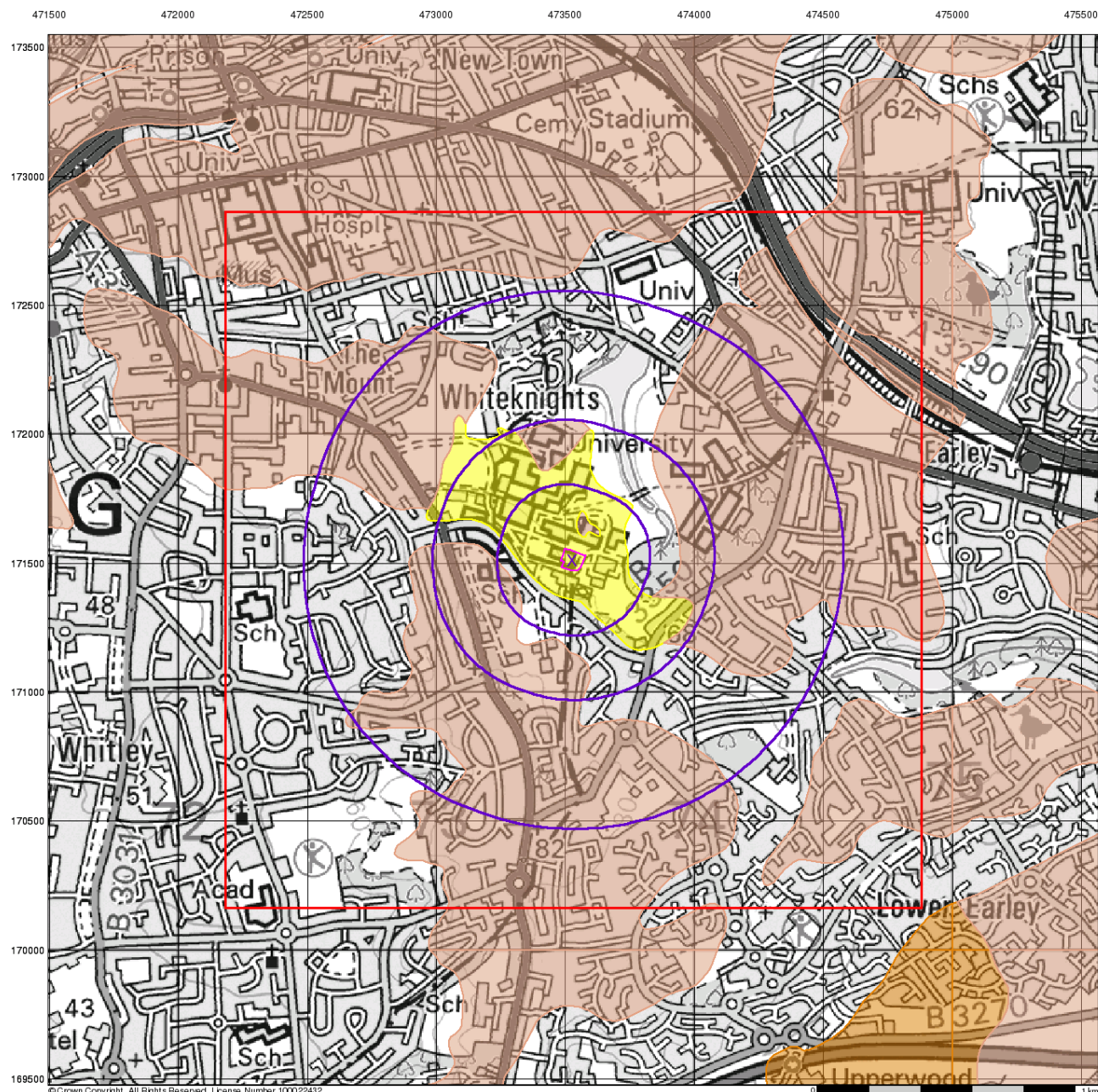


Order Details

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 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

Site Details

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Superficial Aquifer Designation

General

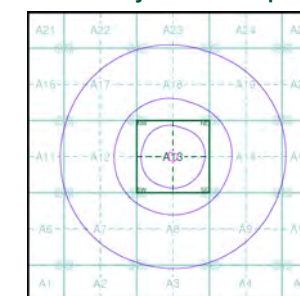
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

Site Sensitivity Context Map - Slice A

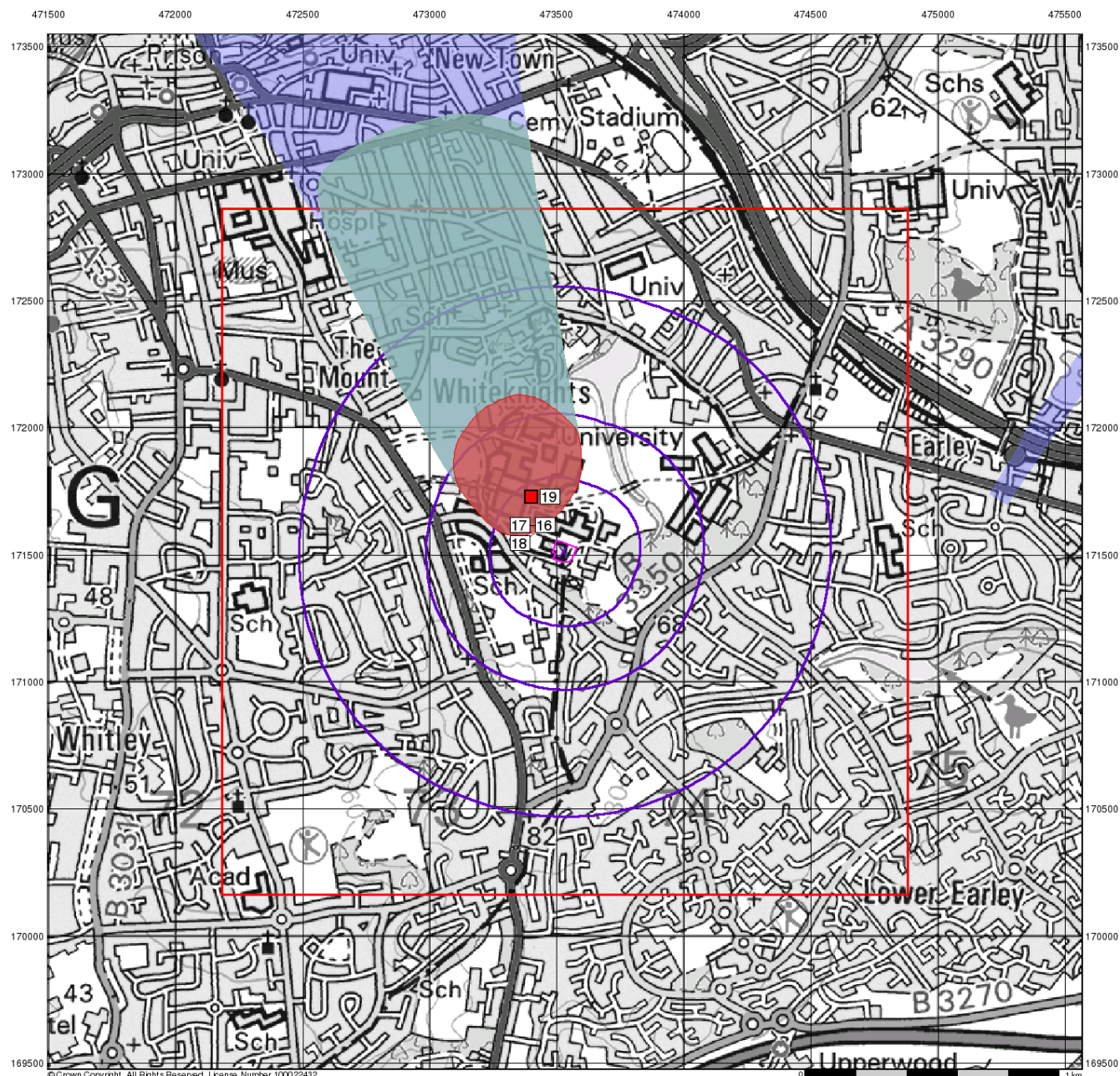


Order Details

Order Number: 115805868_1_1
 Customer Ref: 60441574/M001.003
 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

Site Details

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Source Protection Zones

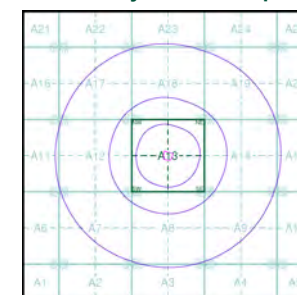
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)
- Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A

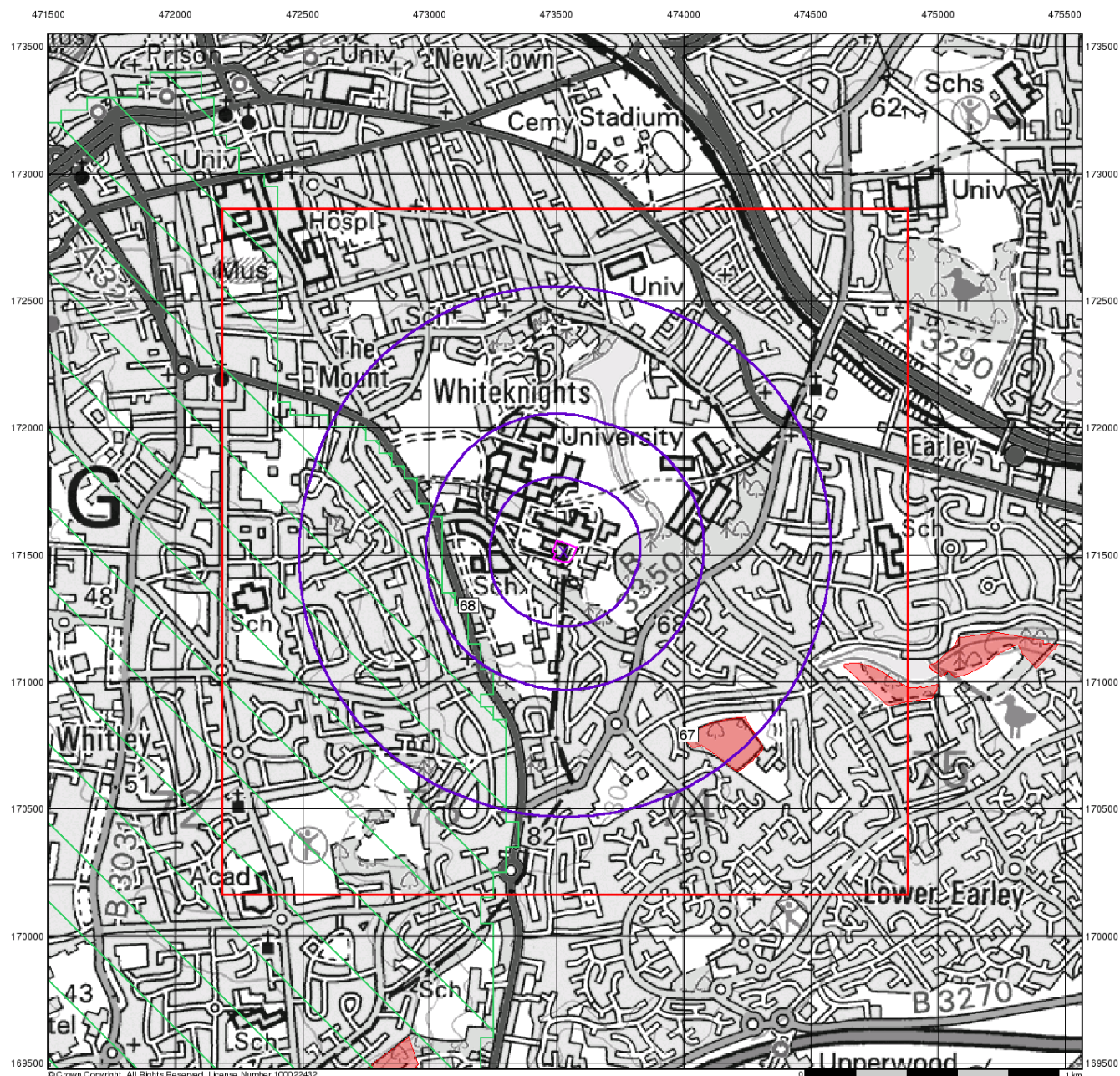


Order Details

Order Number: 115805868_1_1
 Customer Ref: 60441574/M001.003
 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

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Sensitive Land Uses

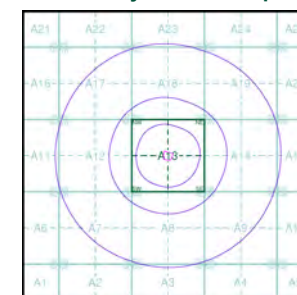
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Sensitive Land Uses

- Ancient Woodland
- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area
- World Heritage Sites

Site Sensitivity Context Map - Slice A

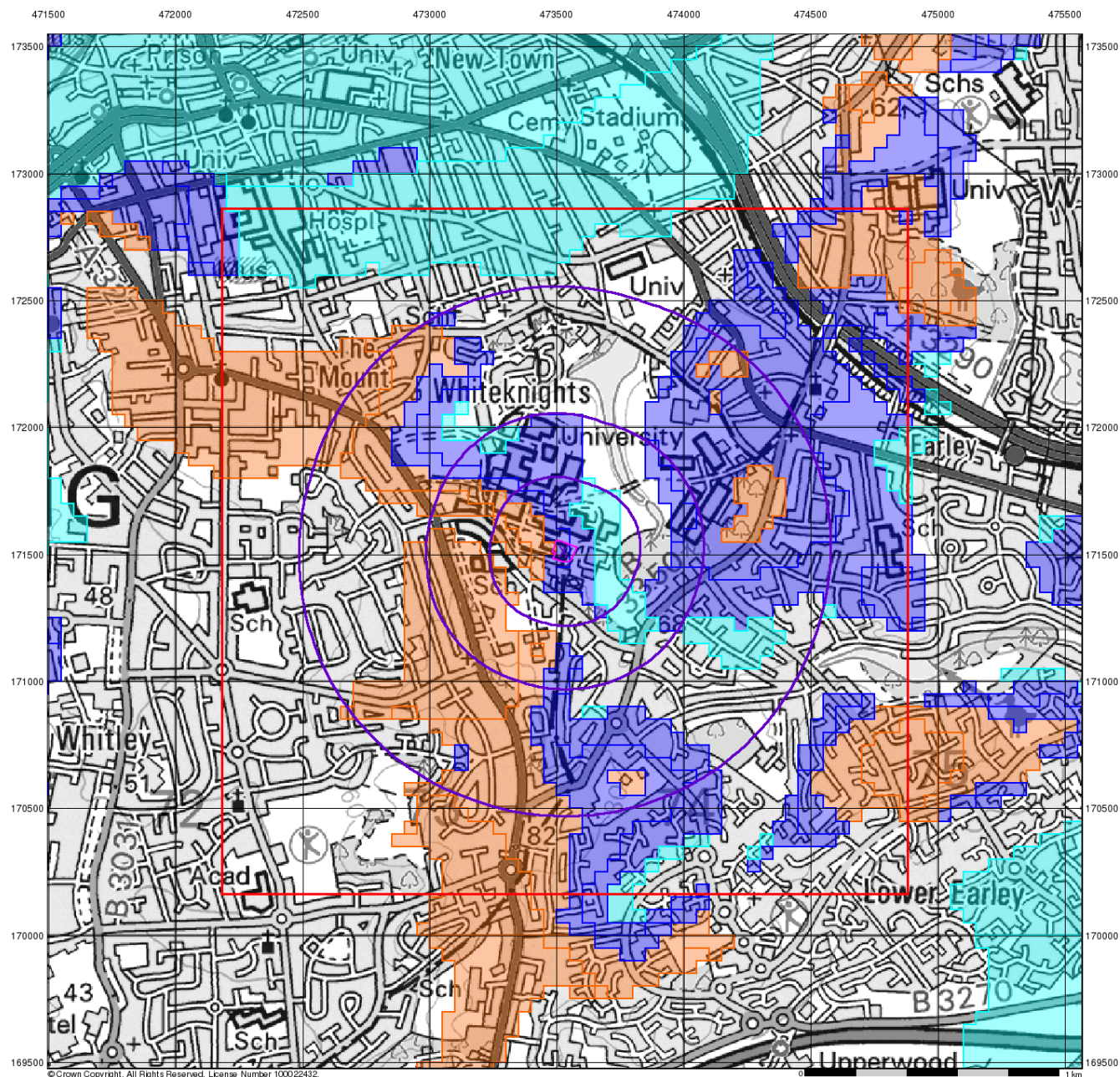


Order Details

Order Number: 115805868_1_1
 Customer Ref: 60441574/M001.003
 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

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BGS Flood GFS Data

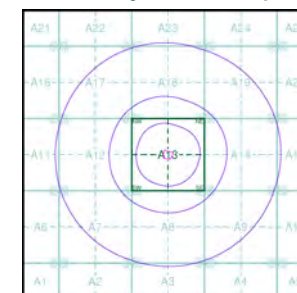
General

- ◇ Specified Site
- ◇ Specified Buffer(s)
- X Bearing Reference Point
- Slice

Agency and Hydrological (Flood)

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

Site Sensitivity Context Map - Slice A



Order Details

Order Number: 115805868_1_1
 Customer Ref: 60441574/M001.003
 National Grid Reference: 473530, 171510
 Slice: A
 Site Area (Ha): 0.56
 Search Buffer (m): 1000

Site Details

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Landmark
 INFORMATION GROUP

Tel: 0844 844 9952
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Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

115805868_1_1

Customer Reference:

60441574/M001.003

National Grid Reference:

473530, 171510

Slice:

A

Site Area (Ha):

0.56

Search Buffer (m):

1000

Site Details:

Life Sciences Building, University of Reading
Shinfield Road
READING
RG6 6UR

Client Details:

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Longcross Court
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Cardiff
CF24 0AD

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	8
Hazardous Substances	-
Geological	9
Industrial Land Use	12
Sensitive Land Use	17
Data Currency	18
Data Suppliers	24
Useful Contacts	25

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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Report Version v50.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 2			1	5
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 3				2
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 3		Yes		
Pollution Incidents to Controlled Waters	pg 3		2		5
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances	pg 5				2
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 5			2	1 (*1)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 6	Yes	n/a	n/a	n/a
Drift Deposits			n/a	n/a	n/a
Bedrock Aquifer Designations	pg 6	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 6	Yes	n/a	n/a	n/a
Source Protection Zones	pg 6		4		
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Detailed River Network Lines					n/a
Detailed River Network Offline Drainage	pg 6		Yes	Yes	n/a

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 8	2	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 8				1
Potentially Infilled Land (Water)	pg 8			1	4
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Geological					
BGS 1:625,000 Solid Geology	pg 9	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 9	Yes	Yes	Yes	Yes
BGS Recorded Mineral Sites	pg 9				3
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
CBSCB Compensation District			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 10	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 10	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 10	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 10	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 12		3	2	25
Fuel Station Entries	pg 14				1
Points of Interest - Commercial Services	pg 14				6
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 15	2	5		3
Points of Interest - Public Infrastructure	pg 16			3	7
Points of Interest - Recreational and Environmental	pg 16				2
Gas Pipelines					
Underground Electrical Cables					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 17				1
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones	pg 17			1	
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	0	2	473500 171513
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (NE)	0	2	473527 171513
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (E)	0	2	473550 171513
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NE (NE)	72	2	473600 171600
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	84	2	473400 171513
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	106	2	473450 171650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	190	2	473300 171450
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (SE)	201	2	473650 171300
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (NW)	267	2	473250 171650
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (S)	272	2	473500 171200
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SE (E)	300	2	473850 171400
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NW (S)	320	2	473527 171150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A8NW (S)	330	2	473450 171150
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14NW (NE)	365	2	473900 171700
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	372	2	473950 171513
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (NW)	386	2	473200 171800
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A18SW (NW)	398	2	473300 171900
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A8NE (S)	420	2	473550 171050
	BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A14SW (SE)	498	2	474000 171250

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	Discharge Consents Operator: University Of Reading Property Type: EDUCATION/NURSERY/SCHOOL/COLLEGE/UNI/TRAINING VENUE Location: Plant Science, Food Studies & Chemistry Depts, University Of Reading, Berk Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CNTM.0105 Permit Version: 1 Effective Date: 26th February 1992 Issued Date: 26th February 1992 Revocation Date: 23rd December 2015 Discharge Type: Trade Discharges - Cooling Water Discharge: Pond - No Outlet Environment: Receiving Water: Whiteknightslake Status: Surrendered under EPR 2010 Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	286	3	473770 171740
2	Discharge Consents Operator: Thames Water Utilities Ltd Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Reading, Universityreadinguniversity Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.1777 Permit Version: 2 Effective Date: 3rd September 2010 Issued Date: 3rd September 2010 Revocation Date: 19th August 2014 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Whiteknights Stream Status: Surrendered under EPR 2010 Positional Accuracy: Located by supplier to within 100m	A18SE (N)	553	3	473600 172100
2	Discharge Consents Operator: Thames Water Utilities Ltd Property Type: PUMPING STATION ON SEWERAGE NETWORK (WATER COMPANY) Location: Reading, Universityreadinguniversity Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.1777 Permit Version: 1 Effective Date: 2nd November 1989 Issued Date: 2nd November 1989 Revocation Date: 2nd September 2010 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Whiteknights Stream Status: Temporary Consents (Water Act 1989, Section 113) Positional Accuracy: Located by supplier to within 100m	A18SE (N)	553	3	473600 172100
3	Discharge Consents Operator: University Of Reading Property Type: EDUCATION/NURSERY/SCHOOL/COLLEGE/UNI/TRAINING VENUE Location: J J Thompson Physical Lab, University Of Reading, Berks Authority: Environment Agency, Thames Region Catchment Area: Not Given Reference: CTRC.0714 Permit Version: 2 Effective Date: 7th May 1992 Issued Date: 21st July 1964 Revocation Date: 23rd December 2015 Discharge Type: Trade Discharges - Cooling Water Discharge: Pond - No Outlet Environment: Receiving Water: Whiteknightslake Status: Surrendered under EPR 2010 Positional Accuracy: Located by supplier to within 10m	A18SE (N)	615	3	473540 172170

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
3	Discharge Consents Operator: University Of Reading Property Type: EDUCATION/NURSERY/SCHOOL/COLLEGE/UNI/TRAINING VENUE Location: J J Thompson Physical Lab, University Of Reading, Berks Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Ctr.0714 Permit Version: 1 Effective Date: 21st July 1964 Issued Date: 21st July 1964 Revocation Date: 6th May 1992 Discharge Type: Trade Discharges - Cooling Water Discharge: Pond/Lake Environment: Receiving Water: Whiteknightslake Status: Transferred from Rivers (Prevention of Pollution) Act 1951-1961 Positional Accuracy: Located by supplier to within 10m	A18SE (N)	615	3	473540 172170
4	Discharge Consents Operator: Thames Water Utilities Ltd Property Type: WTW/WATER COLLECTION/TREATMENT/SUPPLY Location: Earley Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0099 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge: Freshwater Stream/River Environment: Receiving Water: River Thames Status: Authorisation revokedRevoked Positional Accuracy: Located by supplier to within 100m	A9SW (S)	942	3	473900 170600
5	Local Authority Pollution Prevention and Controls Name: Weldale Connect Location: 324 Wokingham Road, Reading, Berkshire, RG6 1JU Authority: Reading Borough Council, Environmental Health Department Permit Reference: EPA/PAR.B/28/98/P2 Dated: 24th August 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address	A19SE (NE)	907	4	474348 172009
6	Local Authority Pollution Prevention and Controls Name: Laundry 2 Go Location: 60 Christchurch Road, Reading, Rg2 7az Authority: Reading Borough Council, Environmental Health Department Permit Reference: EPA/PAR.B/DC2/P2 Dated: 1st November 2011 Process Type: Local Authority Air Pollution Control Description: PG6/46 Dry cleaning Status: Permitted Positional Accuracy: Manually positioned to the address or location	A17SW (NW)	978	4	472660 172058
	Nearest Surface Water Feature	A13SE (E)	150	-	473725 171500
7	Pollution Incidents to Controlled Waters Property Type: Not Given Location: READING Authority: Environment Agency, Thames Region Pollutant: Chemicals - Unknown Note: Confirmed incident Incident Date: 8th April 1999 Incident Reference: THWE1999042538 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m	A13SW (W)	185	3	473300 171500

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
8	Pollution Incidents to Controlled Waters Property Type: Not Given Location: Reading University Authority: Environment Agency, Thames Region Pollutant: Miscellaneous - Unknown Note: Confirmed As A Pollution Incident Incident Date: 12th October 1993 Incident Reference: WE930348 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NE (NE)	210	3	473700 171700
9	Pollution Incidents to Controlled Waters Property Type: Not Given Location: READING Authority: Environment Agency, Thames Region Pollutant: Chemicals - Unknown Note: Not Supplied Incident Date: 22nd June 1997 Incident Reference: THWE1997029339 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A12NE (W)	592	3	472900 171600
10	Pollution Incidents to Controlled Waters Property Type: Not Given Location: EARLEY Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 29th July 1993 Incident Reference: WE930257 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SE (N)	610	3	473540 172165
11	Pollution Incidents to Controlled Waters Property Type: Not Given Location: EARLEY Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: No Incident Date: 15th July 1995 Incident Reference: S2950093 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	653	3	474000 171000
11	Pollution Incidents to Controlled Waters Property Type: Not Given Location: EARLEY Authority: Environment Agency, Thames Region Pollutant: General Note: Not Supplied Incident Date: 22nd November 1997 Incident Reference: THSE1997035964 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A9NW (SE)	656	3	474000 170995
12	Pollution Incidents to Controlled Waters Property Type: Not Given Location: READING Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 13th October 1995 Incident Reference: WE950403 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NE (N)	785	3	473750 172300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
13	Registered Radioactive Substances Name: University Of Reading Location: Whiteknights, PO Box 217, READING, Berkshire, RG6 6AH Authority: Environment Agency, Thames Region Permit Reference: AE4075 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA Status: Authorisation superseded by a substantial or non substantial variationSuperseded Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	646	3	474110 171894
14	Registered Radioactive Substances Name: University Of Reading Location: PO Box 217, READING, Berkshire, RG6 6AH Authority: Environment Agency, Thames Region Permit Reference: Bw8224 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA Status: Application has been authorised and any conditions apply to the operatorAuthorised Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	805	3	473170 172290
15	Water Abstractions Operator: University Of Reading Licence Number: 28/39/22/0077 Permit Version: 103 Location: Whiteknights Park - Reading - Borehole Authority: Environment Agency, Thames Region Abstraction: Schools And Colleges: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Whiteknights Park - Reading Authorised Start: 01 April Authorised End: 31 March Permit Start Date: 1st April 2011 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A12NE (W)	482	3	473040 171700
15	Water Abstractions Operator: University Of Reading Licence Number: 28/39/22/0077 Permit Version: 102 Location: Whiteknights Park - Reading - Borehole Authority: Environment Agency, Thames Region Abstraction: Schools And Colleges: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Whiteknights Park - Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 4th August 2004 Permit End Date: 31st March 2011 Positional Accuracy: Located by supplier to within 10m	A12NE (W)	482	3	473040 171700
15	Water Abstractions Operator: University Of Reading Licence Number: 28/39/22/0077 Permit Version: 100 Location: Whiteknights Park, Reading Authority: Environment Agency, Thames Region Abstraction: Schools and Colleges: General Use (Medium Loss) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 1056 Yearly Rate (m3): 240000 Details: Whiteknight Park, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th April 1993 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A12NE (W)	520	3	473000 171700

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Royal Berkshire Hospital Licence Number: 28/39/22/0521 Permit Version: 100 Location: Royal Berkshire Hospital Authority: Environment Agency, Thames Region Abstraction: Hospitals: Drinking; Cooking; Sanitary; Washing; (Small Garden) Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): 350 Yearly Rate (m3): 127750 Details: Royal Berkshire Hospital, Reading Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 17th January 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A21SE (NW)	1660	3	472400 172800
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 39 West London Scale: 1:100,000	A13SW (NE)	0	3	473527 171513
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Designation: Unproductive Strata	A13SW (NE)	0	2	473527 171513
	Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated	A13SW (NE)	0	2	473527 171513
16	Source Protection Zones Name: Reading University Source: Environment Agency, Head Office Reference: Th200 Type: Zone I (Inner Protection Zone): Travel time of 50 days or less to the groundwater source.	A13NW (NW)	76	3	473455 171618
17	Source Protection Zones Name: Reading University Source: Environment Agency, Head Office Reference: Th200 Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A13NW (NW)	76	3	473455 171618
18	Source Protection Zones Name: Reading University Source: Environment Agency, Head Office Reference: Th200 Type: Zone III (Total Catchment): The total area needed to support the discharge from the protected groundwater source.	A13NW (NW)	76	3	473455 171618
19	Source Protection Zones Name: Reading University Source: Environment Agency, Head Office Reference: Th200 Type: Groundwater Source	A13NW (NW)	200	3	473400 171730
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
	Detailed River Network Lines None				
20	Detailed River Network Offline Drainage River Type: Tertiary River Hydrographic Area: D006	A13SE (S)	186	3	473536 171284

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	Detailed River Network Offline Drainage River Type: Tertiary River Hydrographic Area: D006	A8NW (S)	307	3	473531 171163
22	Detailed River Network Offline Drainage River Type: Tertiary River Hydrographic Area: D006	A14NW (E)	355	3	473917 171634

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Reading Unitary Council - Has supplied landfill data		0	6	473520 171513
	Local Authority Landfill Coverage Name: Wokingham District Council - Has supplied landfill data		0	5	473527 171513
23	Potentially Infilled Land (Non-Water) Bearing Ref: N Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1995	A18NE (N)	929	-	473824 172427
24	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A8NW (S)	424	-	473358 171080
25	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A14SE (E)	647	-	474216 171422
26	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A14NE (E)	661	-	474234 171608
27	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1962	A9SW (SE)	825	-	473892 170724
28	Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1931	A14SE (E)	917	-	474481 171368

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Thames Group	A13SW (NE)	0	2	473527 171513
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic: <15 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13SW (NE)	0	2	473527 171513
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13NE (NE)	65	2	473569 171601
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13SW (SW)	191	2	473309 171413
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: <100 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A13SE (SE)	301	2	473840 171369
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic: 15 - 25 mg/kg Concentration: Cadmium: <1.8 mg/kg Concentration: Chromium: 60 - 90 mg/kg Concentration: Lead Concentration: 100 - 200 mg/kg Nickel: 15 - 30 mg/kg Concentration:	A14SE (E)	923	2	474500 171500
29	BGS Recorded Mineral Sites Site Name: Earley Rise Brick Field Location: Earley Rise, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 234941 Type: Opencast Status: Ceased Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Tertiary Geology: Lambeth Group Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A18NE (N)	915	2	473816 172415

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	BGS Recorded Mineral Sites Site Name: Earley Rise Brick Field Location: , Earley Rise, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 234942 Type: Opencast Status: Ceased Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Tertiary Geology: Lambeth Group Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A18NE (N)	971	2	473787 172483
31	BGS Recorded Mineral Sites Site Name: Earley Rise Brick Field Location: , Earley Rise, Reading, Berkshire Source: British Geological Survey, National Geoscience Information Service Reference: 234939 Type: Opencast Status: Ceased Operator: Not Supplied Operator Location: Not Supplied Periodic Type: Tertiary Geology: Lambeth Group Commodity: Common Clay and Shale Positional Accuracy: Located by supplier to within 10m	A18NE (N)	997	2	473847 172491
	BGS Measured Urban Soil Chemistry No data available				
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	104	2	473476 171372
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	191	2	473309 171413
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	2	473537 171477
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NE (NE)	65	2	473568 171602

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Radon Potential - Radon Affected Areas Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (NE)	0	2	473527 171513

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
32	Contemporary Trade Directory Entries Name: Kinsella James Location: 1, University Cottages, Pepper Lane, Reading, RG6 5SE Classification: Boilers - Servicing, Replacements & Repairs Status: Inactive Positional Accuracy: Automatically positioned to the address	A13SW (S)	67	-	473524 171404
33	Contemporary Trade Directory Entries Name: Reading Scientific Services Ltd Location: Reading Science Centre, The University, Whiteknights, Reading, RG6 6LA Classification: Laboratories Status: Active Positional Accuracy: Automatically positioned to the address	A13NE (NE)	116	-	473679 171586
33	Contemporary Trade Directory Entries Name: R S S L Pharma Location: Lord Zukerman Research Centre, The University, Whiteknights, Reading, Berkshire, RG6 6LA Classification: Pharmaceutical Manufacturers & Distributors Status: Inactive Positional Accuracy: Automatically positioned to the address	A13NE (NE)	116	-	473679 171586
34	Contemporary Trade Directory Entries Name: Communication Systems & Installations Location: Ardenwood, Pepper Lane, Earley, Reading, RG6 5SH Classification: Fibre Optics Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (SE)	401	-	473737 171119
35	Contemporary Trade Directory Entries Name: Tate & Lyle Sucralose Location: Earley Gate, Whiteknights Road, Reading, Berkshire, RG6 6BZ Classification: Food Products - Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address	A14NW (E)	463	-	474039 171565
36	Contemporary Trade Directory Entries Name: Zinetic.Co.Uk Location: University Of Reading Science & Technology Centre, Earley Gate Whiteknights Road, Reading, Berkshire, RG6 6BZ Classification: Computer Manufacturers Status: Active Positional Accuracy: Automatically positioned to the address	A19SW (NE)	519	-	473983 171853
36	Contemporary Trade Directory Entries Name: Bio Interactions Location: Science & Technology Centre, Earley Gate, Whiteknights Road, Reading, RG6 6BZ Classification: Laboratories Status: Active Positional Accuracy: Automatically positioned to the address	A14NW (NE)	542	-	474015 171850
37	Contemporary Trade Directory Entries Name: Adphos (Uk) Ltd Location: 8, Fowler Close, Earley, Reading, RG6 7SS Classification: Printing Engineering Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A9NW (SE)	635	-	474069 171103
38	Contemporary Trade Directory Entries Name: Fresh & Clean Services Location: 92, Northcourt Avenue, Reading, RG2 7HQ Classification: Cleaning Services - Commercial Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	637	-	473047 171023
38	Contemporary Trade Directory Entries Name: Northcourt Garage Bearing Engineering Ltd Location: 88-90, Northcourt Avenue, Reading, RG2 7HQ Classification: Garage Services Status: Active Positional Accuracy: Automatically positioned to the address	A7NE (SW)	637	-	473038 171031
39	Contemporary Trade Directory Entries Name: Train Rite Location: 67, Elm Road, Earley, Reading, RG6 5TR Classification: Fork Lift Trucks Status: Inactive Positional Accuracy: Automatically positioned to the address	A8NE (S)	657	-	473727 170841

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
40	Contemporary Trade Directory Entries Name: Associated Pallets Ltd Location: 101, Barnsdale Road, Reading, RG2 7JQ Classification: Pallets, Crates & Packing Cases Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	667	-	472969 171063
40	Contemporary Trade Directory Entries Name: The B S S Group Location: 101, Barnsdale Road, Reading, RG2 7JQ Classification: Industrial Engineers Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NE (SW)	667	-	472969 171063
41	Contemporary Trade Directory Entries Name: My Home Services Ltd Location: Unit F7 ,University Of Reading, Reading, Berkshire, RG6 6AT Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A18NW (NW)	704	-	473236 172209
42	Contemporary Trade Directory Entries Name: Printmagic Location: 1a, Upper Redlands Road, Reading, RG1 5JJ Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A18NW (N)	809	-	473393 172358
42	Contemporary Trade Directory Entries Name: Purco Print Location: Unit 4-5,Barnat Works,1A Upper Redlands Rd, Reading, Berkshire, RG1 5JJ Classification: Printers Status: Inactive Positional Accuracy: Manually positioned within the geographical locality	A18NW (N)	827	-	473406 172378
43	Contemporary Trade Directory Entries Name: Trusteco Location: 69, Whiteknights Road, Reading, RG6 7BB Classification: Carpet, Curtain & Upholstery Cleaners Status: Active Positional Accuracy: Automatically positioned to the address	A19NW (NE)	810	-	474026 172203
44	Contemporary Trade Directory Entries Name: Richardsons Botanical Identifications Location: 49-51 Whiteknights Rd, Reading, Berkshire, RG6 7BB Classification: Laboratories Status: Inactive Positional Accuracy: Manually positioned to the address or location	A19NW (NE)	829	-	473962 172263
45	Contemporary Trade Directory Entries Name: Crusader Cleaning Location: 39, Stanhope Road, Reading, RG2 7HW Classification: Commercial Cleaning Services Status: Active Positional Accuracy: Automatically positioned to the address	A12SW (W)	837	-	472654 171405
46	Contemporary Trade Directory Entries Name: Ryan Location: 13, Holmes Road, Reading, RG6 7BH Classification: Electrical Engineers Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (NE)	841	-	474265 172013
46	Contemporary Trade Directory Entries Name: Aladdin Location: 10, Holmes Road, Reading, RG6 7BH Classification: Carpet, Curtain & Upholstery Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (NE)	861	-	474263 172050
47	Contemporary Trade Directory Entries Name: Get Fresh Location: 11, Linden Road, Reading, RG2 7EG Classification: Cleaning Services - Domestic Status: Active Positional Accuracy: Automatically positioned to the address	A8SW (S)	864	-	473265 170647
48	Contemporary Trade Directory Entries Name: Purco Print Location: 7, Upper Redlands Road, Reading, RG1 5JJ Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address	A18NW (N)	866	-	473380 172413

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
49	Contemporary Trade Directory Entries Name: Meridian Cleaning Services Location: 31, Cressingham Road, Reading, RG2 7RU Classification: Cleaning Services - Commercial Status: Inactive Positional Accuracy: Automatically positioned to the address	A7NW (SW)	871	-	472845 170895
50	Contemporary Trade Directory Entries Name: Weldale Service Station Location: 324, Wokingham Road, Reading, RG6 1JU Classification: Petrol Filling Stations - 24 Hour Status: Inactive Positional Accuracy: Automatically positioned to the address	A19SE (NE)	907	-	474348 172009
51	Contemporary Trade Directory Entries Name: Clean Uk Ltd Location: 36a, Elm Road, Reading, RG6 5TS Classification: Commercial Cleaning Services Status: Active Positional Accuracy: Automatically positioned to the address	A8SE (S)	912	-	473531 170558
51	Contemporary Trade Directory Entries Name: David Evans Valeting Location: 12, Devitt Close, Reading, RG2 8EF Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address	A8SE (S)	952	-	473547 170518
52	Contemporary Trade Directory Entries Name: Top Gear Tyres Ltd Location: Whitley Park Lane, READING, RG2 7BE Classification: Tyre Dealers Status: Active Positional Accuracy: Automatically positioned to the address	A17SW (NW)	972	-	472648 172025
52	Contemporary Trade Directory Entries Name: Laundry 2 Go Location: 60, Christchurch Road, Reading, RG2 7AZ Classification: Dry Cleaners Status: Inactive Positional Accuracy: Automatically positioned to the address	A17SW (NW)	979	-	472659 172059
53	Contemporary Trade Directory Entries Name: Spick N Span Location: Flat 12, Thames House, Regis Park Road, Reading, RG6 7AF Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address	A19NW (NE)	1000	-	473960 172453
54	Fuel Station Entries Name: Weldale Sf Connect Location: 324, Wokingham Road, Reading, RG6 1JU Brand: BP Premises Type: Petrol Station Status: Open Positional Accuracy: Manually positioned to the address or location	A19SE (NE)	908	-	474348 172009
55	Points of Interest - Commercial Services Name: Northcourt Garage Ltd Location: 88-90 Northcourt Avenue, Reading, RG2 7HQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SW)	637	7	473038 171031
55	Points of Interest - Commercial Services Name: Northcourt Garage Bearing Engineering Ltd Location: 88-90 Northcourt Avenue, Reading, RG2 7HQ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7NE (SW)	638	7	473038 171030
56	Points of Interest - Commercial Services Name: Car Wash Location: 324 Wokingham Road, Reading, RG6 1JU Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A19SE (NE)	908	7	474348 172009
56	Points of Interest - Commercial Services Name: Weldale Sf Connect Location: 324 Wokingham Road, Reading, RG6 1JU Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A19SE (NE)	935	7	474388 171996

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
57	Points of Interest - Commercial Services Name: A M Ltd Location: 149 Linden Road, Reading, RG2 7EJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7SE (SW)	928	7	473127 170628
57	Points of Interest - Commercial Services Name: A M Windscreens Services Location: 149 Linden Road, Reading, RG2 7EJ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A7SE (SW)	928	7	473127 170628
58	Points of Interest - Manufacturing and Production Name: Instrument Workshop Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	0	7	473545 171493
58	Points of Interest - Manufacturing and Production Name: Workshop Location: RG6 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A13SE (SE)	0	7	473545 171492
58	Points of Interest - Manufacturing and Production Name: Tanks Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A13SE (S)	14	7	473547 171458
58	Points of Interest - Manufacturing and Production Name: Tank Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SW (S)	17	7	473525 171454
58	Points of Interest - Manufacturing and Production Name: Tank Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SW (S)	17	7	473529 171454
58	Points of Interest - Manufacturing and Production Name: Tank Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SE (S)	17	7	473533 171453
58	Points of Interest - Manufacturing and Production Name: Tank Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A13SE (S)	19	7	473537 171451
59	Points of Interest - Manufacturing and Production Name: Tank Location: RG6 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A14NW (E)	588	7	474150 171663
60	Points of Interest - Manufacturing and Production Name: Reading Enterprise Centre Location: University of Reading, Whiteknights Road, Reading, RG6 6BU Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to address or location	A14NW (NE)	632	7	474123 171848
61	Points of Interest - Manufacturing and Production Name: Barnat Works Location: RG1 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location	A18NW (N)	826	7	473393 172375

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
62	Points of Interest - Public Infrastructure Name: Outfall Location: RG6 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	300	7	473779 171751
62	Points of Interest - Public Infrastructure Name: Weir Location: RG6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A13NE (NE)	313	7	473831 171713
63	Points of Interest - Public Infrastructure Name: Sluice Location: RG6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18SE (NE)	384	7	473738 171878
64	Points of Interest - Public Infrastructure Name: Sluice Location: RG6 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	810	7	473816 172304
65	Points of Interest - Public Infrastructure Name: Wokingham Road Fire Station Location: Fire Station, Wokingham Road, Reading, RG6 1JU Category: Central and Local Government Class Code: Fire Brigade Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	903	7	474306 172063
65	Points of Interest - Public Infrastructure Name: BP Service Station Location: 324 Wokingham Road, Reading, RG6 1JU Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	907	7	474348 172009
65	Points of Interest - Public Infrastructure Name: BP Service Station Location: 324 Wokingham Road, Reading, RG6 1JU Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	907	7	474348 172009
65	Points of Interest - Public Infrastructure Name: BP Connect Location: 324 Wokingham Road, Reading, RG6 1JU Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	907	7	474348 172009
65	Points of Interest - Public Infrastructure Name: Weldale Connect Location: 324 Wokingham Road, Reading, RG6 1JU Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	907	7	474348 172009
65	Points of Interest - Public Infrastructure Name: Weldale Sf Connect Location: 324 Wokingham Road, Reading, RG6 1JU Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A19SE (NE)	908	7	474348 172009
66	Points of Interest - Recreational and Environmental Name: Playground Location: Linden Road, RG2 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A7SE (S)	955	7	473190 170576
66	Points of Interest - Recreational and Environmental Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7SE (S)	959	7	473187 170573

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
67	Ancient Woodland Name: Redhatch Copse Reference: 1494921 Area(m ²): 37200.49 Type: Ancient and Semi-Natural Woodland	A9SW (SE)	825	8	474016 170793
68	Nitrate Vulnerable Zones Name: Not Supplied Description: Surface Water Source: Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	A12SE (SW)	384	9	473150 171300

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices Reading Borough Council - Environmental Health Department Wokingham District Council - Environmental Health Department South Oxfordshire District Council - Environmental Health Department West Berkshire Council - Environmental Health Department	April 2014 February 2013 January 2015 November 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Discharge Consents Environment Agency - Thames Region	January 2017	Quarterly
Enforcement and Prohibition Notices Environment Agency - Thames Region	March 2013	As notified
Integrated Pollution Controls Environment Agency - Thames Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control Environment Agency - South East Region - West Thames Area Environment Agency - Thames Region	January 2017 January 2017	Quarterly Quarterly
Local Authority Integrated Pollution Prevention And Control South Oxfordshire District Council - Environmental Health Department Wokingham District Council - Environmental Health Department West Berkshire Council - Environmental Health Department Reading Borough Council - Environmental Health Department	June 2014 June 2014 June 2015 October 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Local Authority Pollution Prevention and Controls South Oxfordshire District Council - Environmental Health Department Wokingham District Council - Environmental Health Department West Berkshire Council - Environmental Health Department Reading Borough Council - Environmental Health Department	June 2014 June 2014 June 2015 October 2014	Annual Rolling Update Annual Rolling Update Bi-Annually Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements South Oxfordshire District Council - Environmental Health Department Wokingham District Council - Environmental Health Department West Berkshire Council - Environmental Health Department Reading Borough Council - Environmental Health Department	June 2014 June 2014 June 2015 October 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Nearest Surface Water Feature Ordnance Survey	July 2012	Quarterly
Pollution Incidents to Controlled Waters Environment Agency - Thames Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes Environment Agency - Thames Region	March 2013	As notified
Prosecutions Relating to Controlled Waters Environment Agency - Thames Region	March 2013	As notified
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	July 2012	Annually
River Quality Chemistry Sampling Points Environment Agency - Head Office	July 2012	Annually
Substantiated Pollution Incident Register Environment Agency - South East Region - West Thames Area Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	January 2017 January 2017 January 2017	Quarterly Quarterly Quarterly
Water Abstractions Environment Agency - Thames Region	October 2016	Quarterly
Water Industry Act Referrals Environment Agency - Thames Region	January 2017	Quarterly

Agency & Hydrological	Version	Update Cycle
Groundwater Vulnerability Environment Agency - Head Office	April 2015	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	August 2015	As notified
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	August 2015	As notified
Source Protection Zones Environment Agency - Head Office	February 2017	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2016	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	November 2016	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	November 2016	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	November 2016	Quarterly
Flood Defences Environment Agency - Head Office	November 2016	Quarterly
Detailed River Network Lines Environment Agency - Head Office	September 2014	Annually
Detailed River Network Offline Drainage Environment Agency - Head Office	March 2012	Annually
Surface Water 1 in 30 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 100 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water 1 in 1000 year Flood Extent Environment Agency - Head Office	October 2013	As notified
Surface Water Suitability Environment Agency - Head Office	October 2013	As notified
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	Annually

Waste	Version	Update Cycle
BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites Environment Agency - Head Office	January 2017	Quarterly
Integrated Pollution Control Registered Waste Sites Environment Agency - Thames Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency - South East Region - West Thames Area Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	August 2016 August 2016 August 2016	Quarterly Quarterly Quarterly
Licensed Waste Management Facilities (Locations) Environment Agency - South East Region - West Thames Area Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	January 2017 January 2017 January 2017	Quarterly Quarterly Quarterly
Local Authority Landfill Coverage Oxfordshire County Council Reading Borough Council - Planning South Oxfordshire District Council - Environmental Health Department West Berkshire Council - Environmental Health Department Wokingham District Council - Environmental Health Department	May 2000 May 2000 May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
Local Authority Recorded Landfill Sites Oxfordshire County Council Reading Borough Council - Planning South Oxfordshire District Council - Environmental Health Department West Berkshire Council - Environmental Health Department Wokingham District Council - Environmental Health Department	May 2000 May 2000 May 2000 May 2000 October 2005	Not Applicable Not Applicable Not Applicable Not Applicable Not Applicable
Potentially Infilled Land (Non-Water) Landmark Information Group Limited	December 1999	Not Applicable
Potentially Infilled Land (Water) Landmark Information Group Limited	December 1999	Not Applicable
Registered Landfill Sites Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Transfer Sites Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	March 2003 March 2003	Not Applicable Not Applicable
Registered Waste Treatment or Disposal Sites Environment Agency - Thames Region - South East Area Environment Agency - Thames Region - West Area	March 2003 March 2003	Not Applicable Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive	July 2016	Bi-Annually
Explosive Sites Health and Safety Executive	September 2016	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements Oxfordshire County Council South Oxfordshire District Council - Planning Department (West) West Berkshire Council Wokingham District Council Reading Borough Council - Planning	February 2016 February 2016 February 2016 February 2016 May 2016	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Planning Hazardous Substance Consents Oxfordshire County Council South Oxfordshire District Council - Planning Department (West) West Berkshire Council Wokingham District Council Reading Borough Council - Planning	February 2016 February 2016 February 2016 February 2016 May 2016	Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update Annual Rolling Update
Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	October 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2016	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011	Not Applicable
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	June 2015	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	January 2017	Quarterly
Fuel Station Entries Catalist Ltd - Experian	November 2016	Quarterly
Gas Pipelines National Grid	July 2014	Quarterly
Points of Interest - Commercial Services PointX	December 2016	Quarterly
Points of Interest - Education and Health PointX	December 2016	Quarterly
Points of Interest - Manufacturing and Production PointX	December 2016	Quarterly
Points of Interest - Public Infrastructure PointX	December 2016	Quarterly
Points of Interest - Recreational and Environmental PointX	December 2016	Quarterly
Underground Electrical Cables National Grid	December 2015	Bi-Annually

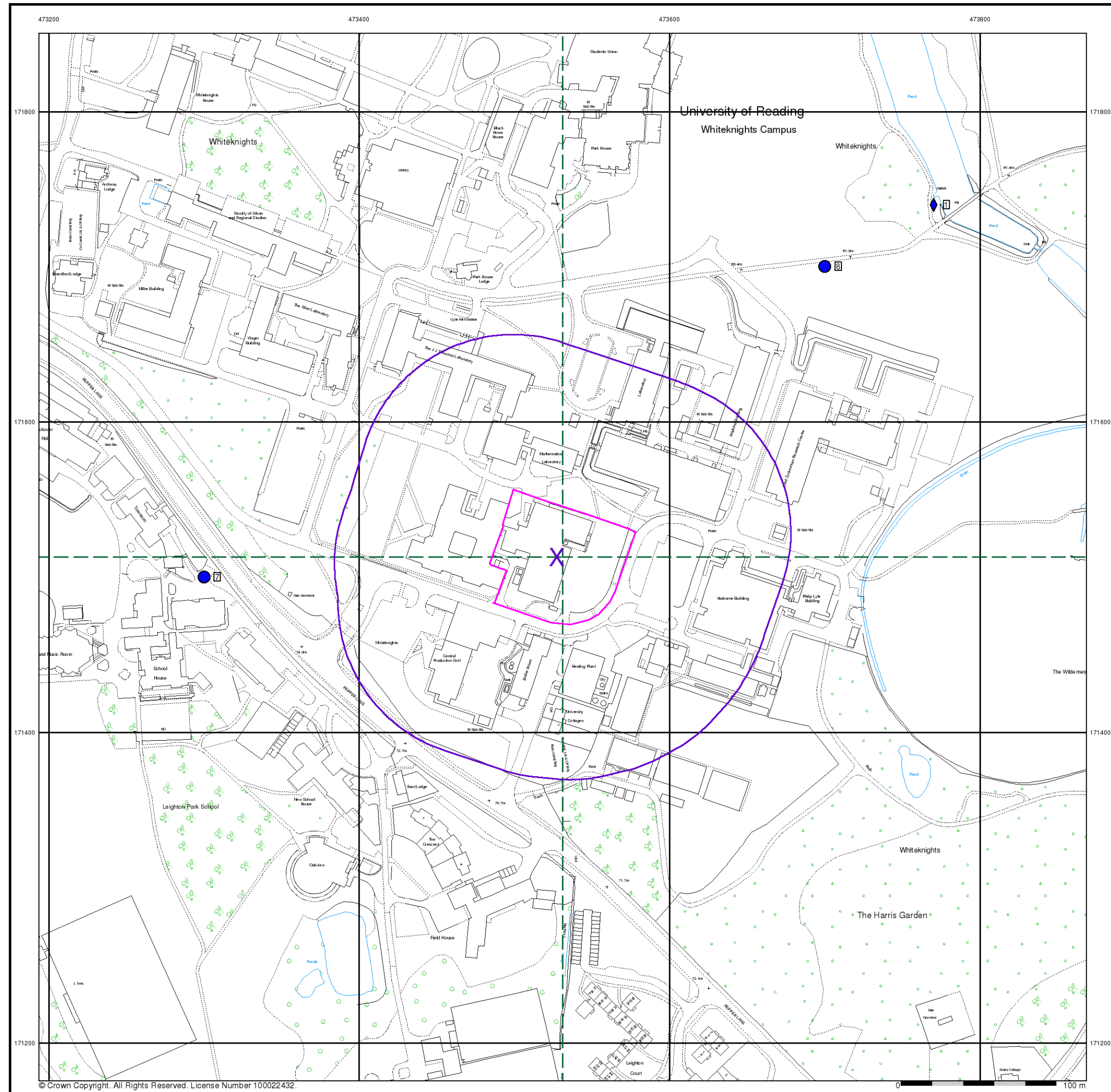
Sensitive Land Use	Version	Update Cycle
Ancient Woodland Natural England	August 2016	Bi-Annually
Areas of Adopted Green Belt South Oxfordshire District Council Wokingham District Council	February 2017 February 2017	As notified As notified
Areas of Unadopted Green Belt South Oxfordshire District Council Wokingham District Council	February 2017 February 2017	As notified As notified
Areas of Outstanding Natural Beauty Natural England	January 2017	Bi-Annually
Environmentally Sensitive Areas Natural England	January 2017	Annually
Forest Parks Forestry Commission	April 1997	Not Applicable
Local Nature Reserves Natural England	January 2017	Bi-Annually
Marine Nature Reserves Natural England	January 2017	Bi-Annually
National Nature Reserves Natural England	January 2017	Bi-Annually
National Parks Natural England	February 2017	Bi-Annually
Nitrate Sensitive Areas Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	April 2016	Not Applicable
Nitrate Vulnerable Zones Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	Annually
Ramsar Sites Natural England	January 2017	Bi-Annually
Sites of Special Scientific Interest Natural England	January 2017	Bi-Annually
Special Areas of Conservation Natural England	January 2017	Bi-Annually
Special Protection Areas Natural England	January 2017	Bi-Annually
World Heritage Sites English Heritage - National Monument Record Centre	September 2015	Bi-Annually

A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	 British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	 Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	

Contact	Name and Address	Contact Details
2	British Geological Survey - Enquiry Service British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
3	Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
4	Reading Borough Council - Environmental Health Department Civic Centre, Reading, Hampshire, RG1 7DT	Telephone: 0118 939 9099 Fax: 0118 958 9770 Website: www.reading.gov.uk
5	Wokingham District Council - Environmental Health Department Council Offices, Shute End, Wokingham, Surrey, RG40 1BN	Telephone: 0118 974 6000 Fax: 0118 974 5053 Website: www.wokingham.gov.uk
6	Reading Borough Council - Planning Civic Centre, READING, Hampshire, RG1 7TD	Telephone: 0118 939 0900 Fax: 0118 958 9770 Website: www.reading.gov.uk
7	PointX 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
8	Natural England County Hall, Spetchley Road, Worcester, WR5 2NP	Telephone: 0300 060 3900 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
9	Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA) Government Buildings, Otley Road, Lawnswood, Leeds, West Yorkshire, LS16 5QT	Telephone: 0113 2613333 Fax: 0113 230 0879
10	Environment Agency - Head Office Rio House, Waterside Drive, Aztec West, Almondsbury, Bristol, Avon, BS32 4UD	Telephone: 01454 624400 Fax: 01454 624409
-	Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.



General

Specified Site

Specified Buffer(s)

Bearing Reference Point

Map ID

Several of Type at Location

Pylon

Overhead Transmission Line

Agency and Hydrological

Contaminated Land Register Entry or Notice (Location)

Contaminated Land Register Entry or Notice

Discharge Consent

Enforcement or Prohibition Notice

Integrated Pollution Control

Integrated Pollution Prevention Control

Local Authority Integrated Pollution Prevention and Control

Local Authority Pollution Prevention and Control Enforcement

Pollution Incident to Controlled Waters

Prosecution Relating to Authorised Processes

Prosecution Relating to Controlled Waters

Registered Radioactive Substance

River Network or Water Feature

River Quality Sampling Point

Substantiated Pollution Incident Register

Water Abstraction

Water Industry Act Referral

Hazardous Substances

COMAH Site

Explosive Site

NIHHS Site

Planning Hazardous Substance Consent

Planning Hazardous Substance Enforcement

Geological

BGS Recorded Mineral Site

Waste

BGS Recorded Landfill Site (Location)

BGS Recorded Landfill Site

EA Historic Landfill (Buffered Point)

EA Historic Landfill (Polygon)

Integrated Pollution Control Registered Waste Site

Licensed Waste Management Facility (Landfill Boundary)

Licensed Waste Management Facility (Location)

Local Authority Recorded Landfill Site (Location)

Local Authority Recorded Landfill Site

Potentially Infilled Land (Non-water)

Potentially Infilled Land (Non-water)

Potentially Infilled Land (Water)

Potentially Infilled Land (Water)

Potentially Infilled Land (Water)

Registered Landfill Site

Registered Landfill Site (Location)

Registered Landfill Site (Point Buffered to 100m)

Registered Landfill Site (Point Buffered to 250m)

Registered Waste Transfer Site (Location)

Registered Waste Transfer Site

Registered Waste Treatment or Disposal Site (Location)

Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Segment A13

A21

A22

A23

A24

A25

A16

A17

A18

A19

A20

A11

A12

A13

A14

A15

A6

A7

A8

A9

A10

A1

A2

A3

A4

A5

N

Order Details

Order Number:

115805868_1_1

Customer Ref:

60441574/M001.003

National Grid Reference:

473530, 171510

Slice:

A

Site Area (Ha):

0.56

Plot Buffer (m):

100

Site Details

Life Sciences Building, University of Reading, Shinfield Road, READING, RG6 6UR

Landmark[®]

INFORMATION GROUP

Tel:

0844 844 9952

Fax:

0844 844 9951

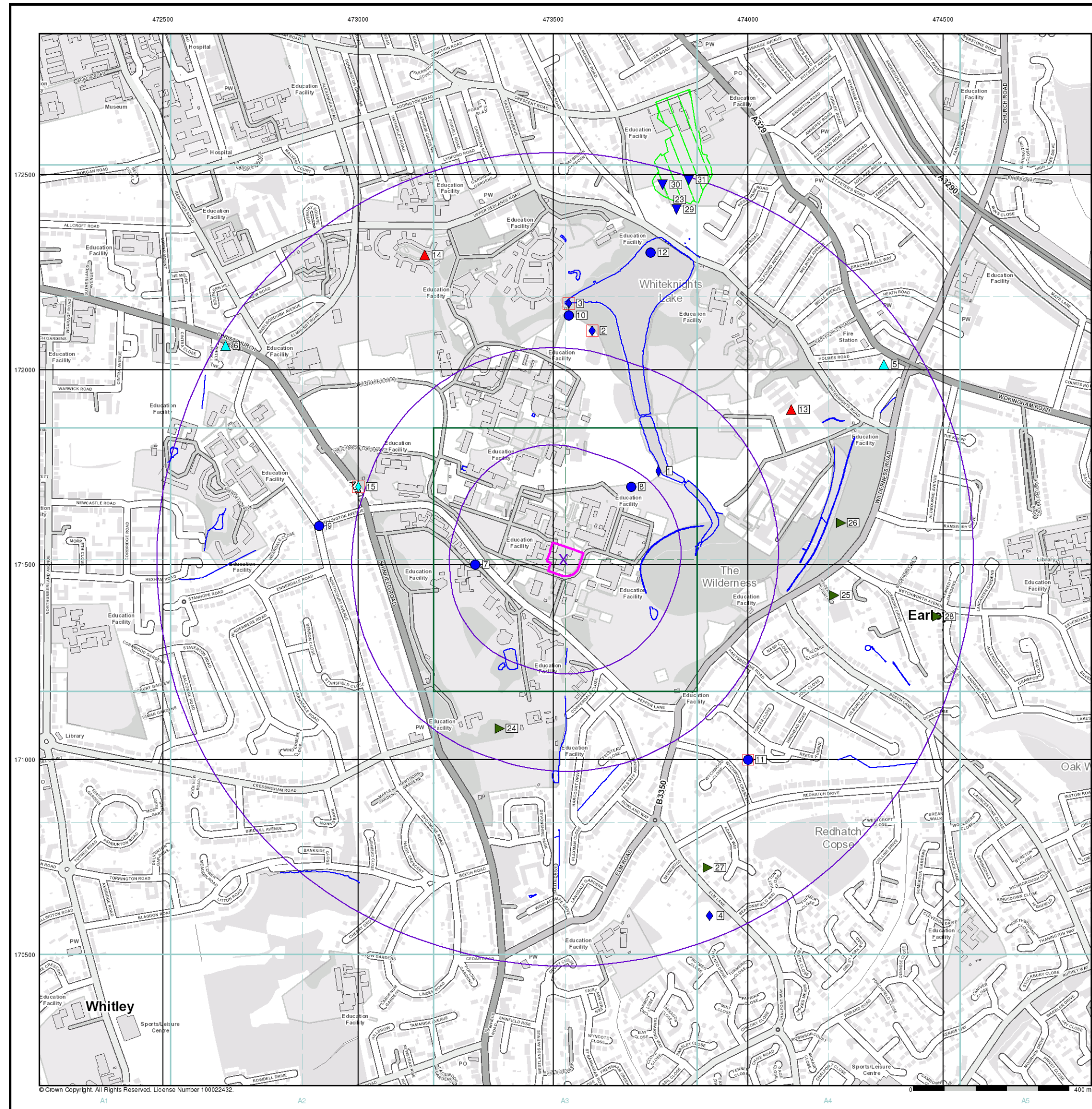
Web:

www.envirocheck.co.uk

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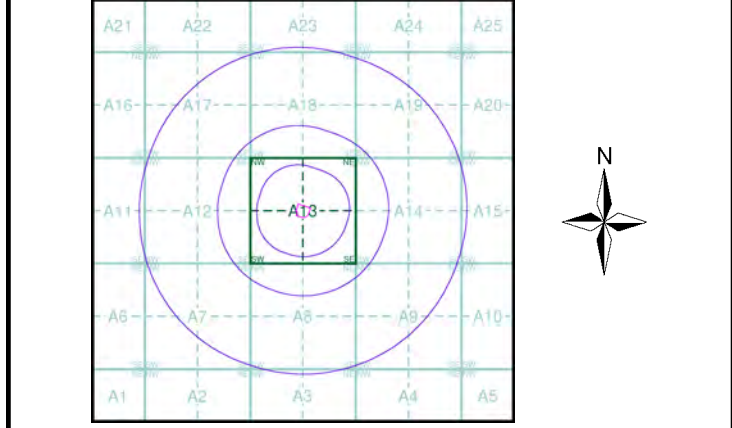
A Landmark Information Group Service v50.0 27-Feb-2017 Page 1 of 1



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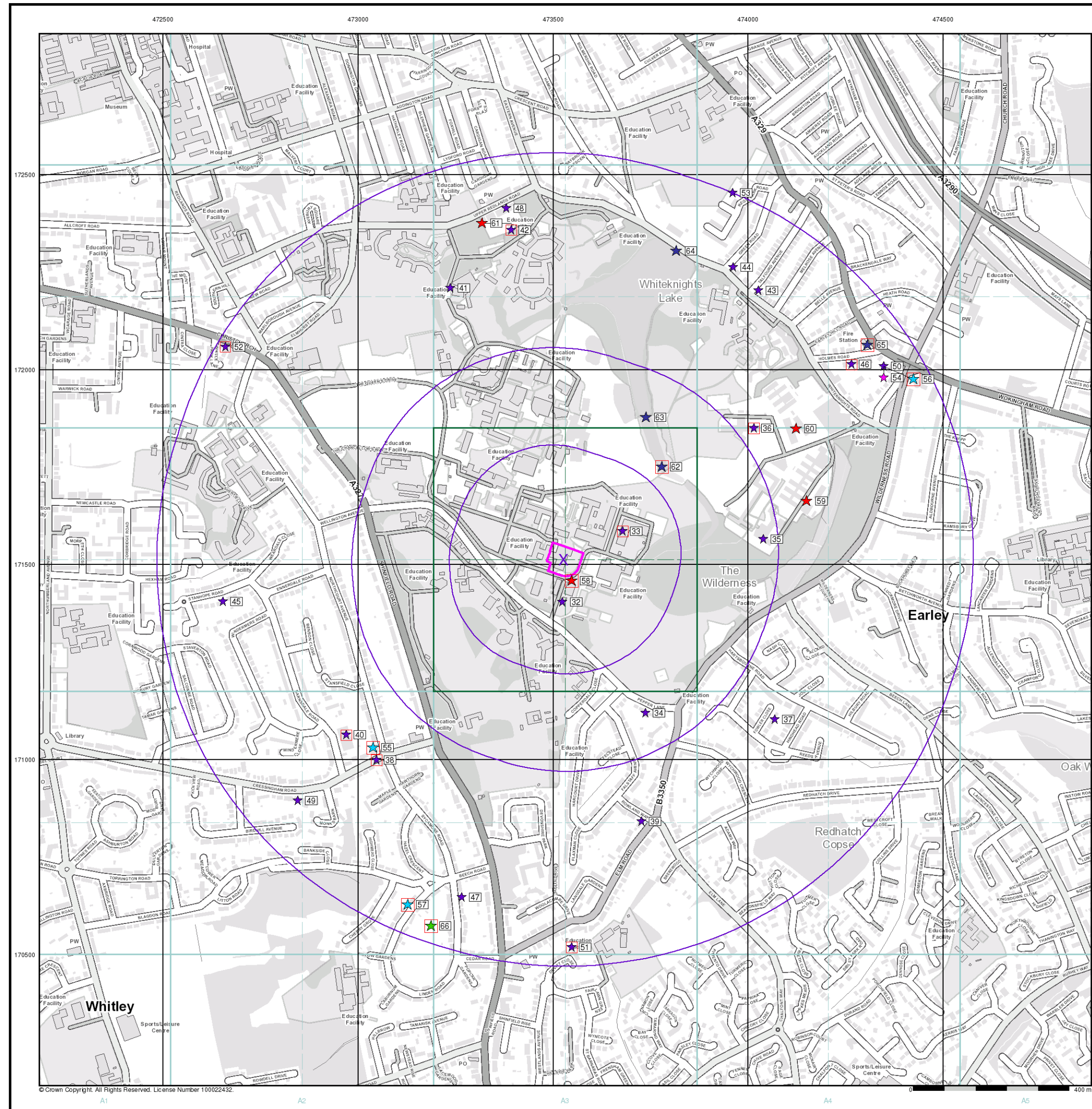
- General**
 - Specified Site
 - Specified Buffer(s)
 - Bearing Reference Point
 - Map ID
 - Several of Type at Location
- Agency and Hydrological**
 - Contaminated Land Register Entry or Notice (Location)
 - Contaminated Land Register Entry or Notice
 - Discharge Consent
 - Enforcement or Prohibition Notice
 - Integrated Pollution Control
 - Integrated Pollution Prevention Control
 - Local Authority Integrated Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control
 - Local Authority Pollution Prevention and Control Enforcement
 - Pollution Incident to Controlled Waters
 - Prosecution Relating to Authorised Processes
 - Prosecution Relating to Controlled Waters
 - Registered Radioactive Substance
 - River Network or Water Feature
 - River Quality Sampling Point
 - Substantiated Pollution Incident Register
 - Water Abstraction
 - Water Industry Act Referral
- Hazardous Substances**
 - COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
 - BGS Recorded Mineral Site
- Waste**
 - BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buffered Point)
 - EA Historic Landfill (Polygon)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Boundary)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Registered Landfill Site (Location)
 - Registered Landfill Site (Point Buffered to 100m)
 - Registered Landfill Site (Point Buffered to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details
Order Number: 115805868_1_1
Customer Ref: 60441574/M001.003
National Grid Reference: 473530, 171510
Slice: A
Site Area (Ha): 0.56
Search Buffer (m): 1000

Site Details
Life Sciences Building, University of Reading, Shinfield Road,
READING, RG6 6UR



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Industrial Land Use Map

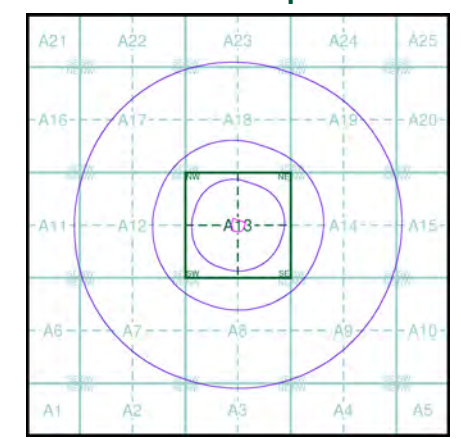
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

Industrial Land Use Map - Slice A

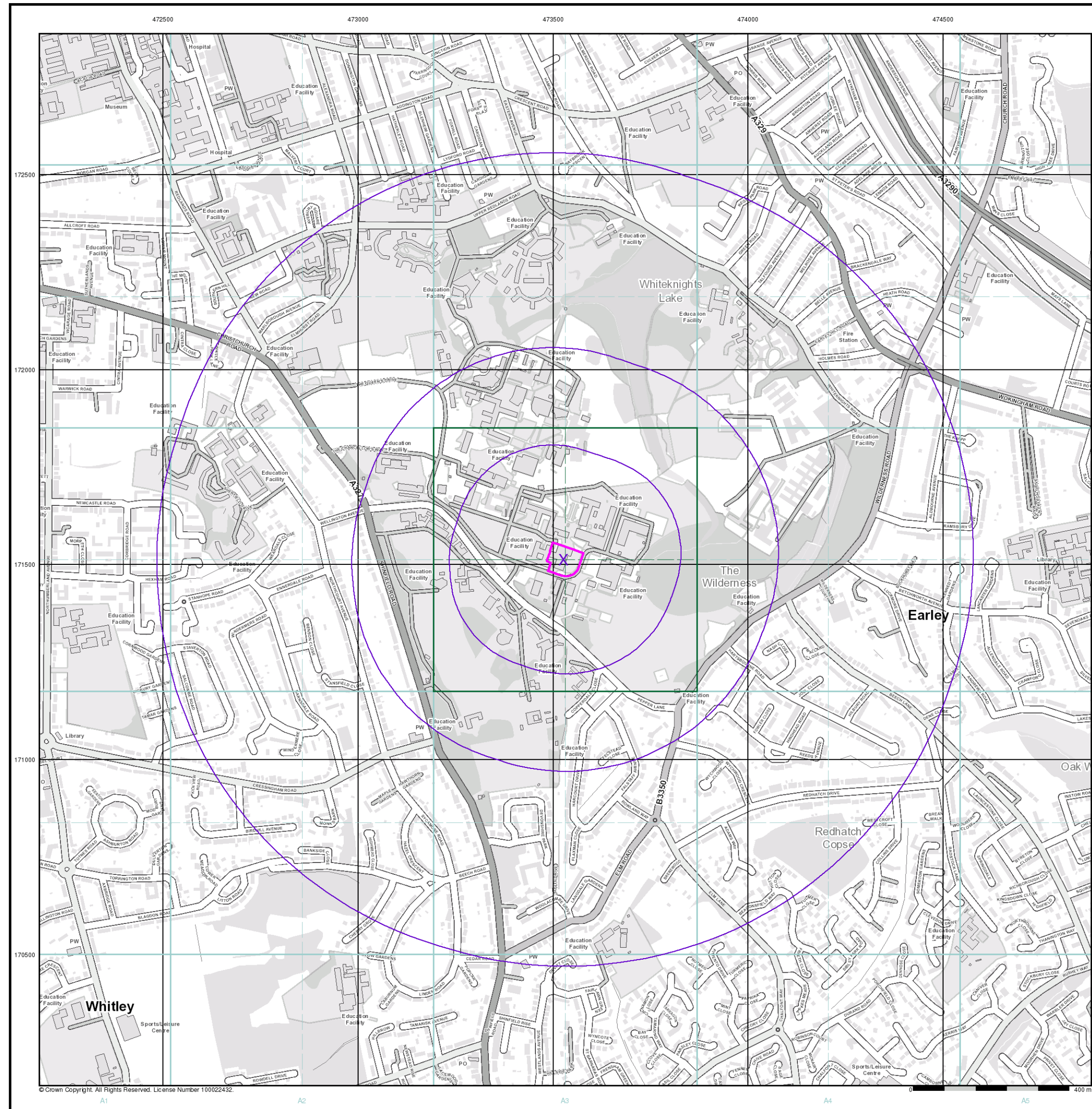


Order Details

Order Number: 115805868_1_1
Customer Ref: 60441574/M001.003
National Grid Reference: 473530, 171510
Slice: A
Site Area (Ha): 0.56
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Life Sciences Building, University of Reading, Shinfield Road, READING, RG6 6UR



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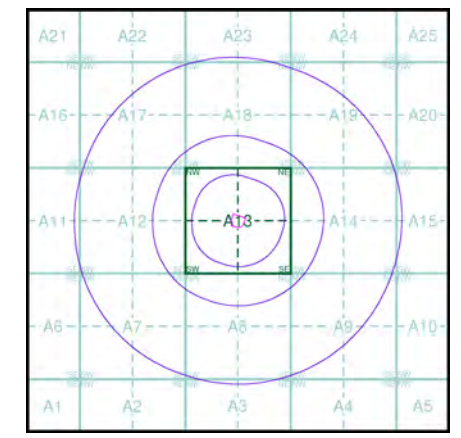
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



Order Details

Order Number: 115805868_1_1
Customer Ref: 60441574/M001.003
National Grid Reference: 473530, 171510
Slice: A
Site Area (Ha): 0.56
Search Buffer (m): 1000

Site Details

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